AFRAS

12th Colloquium

Goudini
South Africa
22–25 January 2017

PROGRAMME
&
ABSTRACTS

GENERAL INFORMATION

On behalf of the Organising Committee of the 12th Colloquium of the African Arachnological Society (AFRAS), we would like to welcome you to the ATKV Goudini Resort and Spa. This Colloquium is particularly special to the African arachnological community, as it coincides with the 30th birthday of AFRAS, with the first Colloquium of the Research Group for the Study of African Arachnids (RGSAA) held in 1987. We also celebrate the 20th birthday of the South African National Survey of Arachnida (SANSA), which was launched in 1997. Both milestones will be celebrated during the course of this colloquium.

During the Colloquium there will be two workshops presented, the first dealing with the South African National Survey of Arachnida (SANSA), held on Monday, and the second dealing with medically important arachnids, held on Wednesday morning. Tuesday's programme will cover a range of topics, including biology, behaviour, taxonomy/systematics and biogeography. We trust that the range of topics covered will stimulate all of the delegates and provide an enriching experience.

The congress venue falls within the Fynbos Biome of the Cape Floristic Kingdom, and thus provides a unique opportunity to sample some unique arachnids. After the medically important arachnids workshop, delegates can collect around the resort or travel to desirable localities close by for collecting, or can relax and enjoy various facilities in the resort. Delegates are requested to be vigilant for snakes, venomous spiders and scorpions while collecting – fortunately on this occasion there are several members of the Tygerberg Poison Centre on hand should there be any unforeseen drama!

Registration and all lectures will take place in the Slanghoek Conference Hall, with all meals being taken in the Slanghoek Restaurant at the same facility. The Russian Party on Tuesday evening will be held at the Goudini Banquet Hall.

The Annual General Meeting of AFRAS will be held on Monday afternoon after the lecturing sessions, and all delegates are kindly requested to attend and participate in the proceedings.

If you have any questions, please contact members of the Organizing Committee (Charles Haddad, Ansie Dippenaar-Schoeman and Robin Lyle) or Louise van Tonder of ATKV Goudini Spa and Resort, and we will assist you in whichever way necessary.

Regarding the programme below, all presenters are underlined and entrants for the student competition are indicated with an asterisk. Page numbers below presentation times indicate the page on which the abstract appears.

With best wishes for a wonderful and productive 12th AFRAS Colloquium!

PROGRAMME

SUNDAY 22/01/2017

TIME	
15:00 – 18:00	**REGISTRATION AT GOUDINI RESORT & SPA: SLANGHOEK CONFERENCE HALL**
18:00 – 19:00	**MEET AND GREET AT SLANGHOEK RESTAURANT**
19:00	***WELCOMING DINNER AT SLANGHOEK RESTAURANT***

MONDAY 23/01/2017

TIME	PAPERS (SLANGHOEK CONFERENCE HALL)
	SESSION 1 (CHAIRPERSON: Ansie Dippenaar-Schoeman) – SANSA WORKSHOP
09:00 – 09:05	**WELCOME AND INTRODUCTION**
09:05 – 09:35 P6	**A.S. Dippenaar-Schoeman, C.R. Haddad, S.H. Foord, R. Lyle & L.N. Lotz – SANSA - The state of our spiders: how far have we come and where are we going?**
09:35 – 09:55 P30	**R. Lyle, A.S. Dippenaar-Schoeman, R. Jocqué, L.N. Lotz, S.H. Foord, P. Marais & P. Webb – Spider jewels of the Diamond Route reserves**
09:55 – 10:15 P17	**V.L. Hamilton-Attwell & A.S. Dippenaar-Schoeman – Spiders of Fernkloof Nature Reserve (FNR)**
10:15 – 10:35 P24	**E. le Roux & A.S. Dippenaar-Schoeman – SANSA: Our present knowledge of the spider diversity of the Kirstenbosch National Botanical Garden**
10:35 – 11:00	***SANSA BIRTHDAY TEA AT SLANGHOEK CONFERENCE HALL***
	SESSION 2 (CHAIRPERSON: Ansie Dippenaar-Schoeman) – SANSA WORKSHOP / RED LISTING
11:00 – 11:20 P26	**A.E.J. Leroy, J.M. Leroy & A.S. Dippenaar-Schoeman – Our present knowledge of the spider diversity of the Lowveld National Botanical Garden**
11:20 – 11:40 P32	**R. Lyle, A.S. Dippenaar-Schoeman & P. Webb – SANSA - a rich diversity of spiders collected from green urban areas of Tshwane/Pretoria**
11:40 – 12:00 P2	**R. Booysen* & C.R. Haddad – A comparative study of the efficiency of the SANSA sampling protocol in determining non-acarine diversity during winter and summer in Western KwaZulu-Natal, South Africa**
12:00 – 12:20 P9	**A.S. Dippenaar-Schoeman, R. Lyle, S. Chiloane, T. Sethusa & D. Raimondo – Preparing the first Red List of the spiders of South Africa**
12:20 – 12:40 P46	**T. Sethusa, A.S. Dippenaar-Schoeman, R. Lyle, & D. Raimondo – Making the case for conservation of spiders**
12:40 – 13:00	**GENERAL DISCUSSION**
13:00 – 14:00	***LUNCH AT SLANGHOEK RESTAURANT***
	SESSION 3 (CHAIRPERSON: Robin Lyle) – TAXONOMY / SYSTEMATICS I
14:00 – 14:30 P20	**R. Jocqué & A. Henrard – Keeping up the morphological approach: remarkable new characters for the systematics of the Zodariidae (Araneae)**
14:30 – 14:50 P40	**J.A. Neethling – A revision of the South African pseudoscorpions of the family Gymnobisiidae**
14:50 – 15:10 P28	**L.N. Lotz – An update on the spider genus *Loxosceles* (Araneae: Sicariidae) in southern Africa**
15:10 – 15:30 P54	**S. Zonstein & Y. Marusik – The remarkable African Palpimanidae: morphology and mating mechanisms**

15:30 – 16:00	***AFTERNOON TEA AT SLANGHOEK CONFERENCE HALL***
	SESSION 4 (CHAIRPERSON: Charles Haddad) – POSTERS: SANSA WORKSHOP
16:00 – 16:05 P8	**A.S. Dippenaar-Schoeman, R. Jocqué, P. Webb & R. Lyle – SANSA: Spider collecting at Wakefield**
16:05 – 16:10 P51	**P. Webb & A.S. Dippenaar-Schoeman – Rich spider diversity of a native grassland in the Gauteng Province**
16:10 – 16:15 P10	**A.S. Dippenaar-Schoeman, R. Lyle & P. Webb – Photo gallery of the spiders (Arachnida: Araneae) of the Telperion Nature Reserve**
16:15 – 16:20 P4	**R.A. Christiaan, A.S. Dippenaar-Schoeman & U. Schmiedel – Assessing biodiversity of spiders and scorpions in Namaqua National Park**
16:20 – 16:25 P7	**A.S. Dippenaar-Schoeman, C.R. Haddad, J. Pryke, C. Uys & N. Larsen – Spider diversity of the Table Mountain National Park**
16:25 – 16:30 P49	**V.O. van der Walt & A.S. Dippenaar-Schoeman – Jumping spiders of the Diamond Route Reserves**
16:30 – 16:35 P48	**L. Taylor, A.S. Dippenaar-Schoeman & S.H. Foord – Spiders of the Mariepskop Summit: faunistic diversity and affinities with the Natal Drakensberg Afromontane Fynbos and the Cape Fynbos (Arachnida: Araneae)**
16:35 – 16:40 P31	**R. Lyle, A.S. Dippenaar-Schoeman & P. Marais – Karoo BioGap Project – Spiders contribute to filling biodiversity information gaps in the Karoo**
16:40 – 16:45 P53	**L. Wiese & A.S. Dippenaar-Schoeman – SANSA: Spider diversity of the Addo Elephant National Park**
16:45 – 16:50 P5	**A.S. Dippenaar-Schoeman, S.H. Foord & R. Lyle – The spiders (Arachnida: Araneae) of Venetia Limpopo Nature Reserve**
16:50 – 16:55 P13	**I. Engelbrecht, D. Kambas & H. Campbell – The Baboon Spider Atlas: leveraging citizen science for charismatic creatures [presented by Robin Lyle]**
16:55 – 17:00 P43	**Lorenzo Prendini – Threats to southern Africa's unique scorpion fauna [presented by Charles Haddad]**
17:00 – 17:15	***AFRAS CONGRESS PHOTO OUTSIDE SLANGHOEK HALL***
17:15 – 18:00	***AFRAS ANNUAL GENERAL MEETING AT SLANGHOEK CONFERENCE HALL***
18:00 – 19:00	***FREE TIME***
19:00 – 21:00	***DINNER AT SLANGHOEK RESTAURANT***
21:00 – 22:00	***PHOTOGRAPHIC COMPETITION AT SLANGHOEK CONFERENCE HALL***

TUESDAY 24/01/2017

TIME	PAPERS (SLANGHOEK CONFERENCE HALL)
	SESSION 5 (CHAIRPERSON: Rudy Jocqué) – TAXONOMY / SYSTEMATICS II
09:00 – 09:30 P33	**Y. Marusik – What are Haplogyne spiders?**
09:30 – 09:50 P21	**P. Just*, J.A. Neethling, V. Opatova, F. Šťáhlavský & C.R. Haddad – The cytogenetics and sperm variability in pseudoscorpions of the family Geogarypidae**
09:50 – 10:10 P16	**C.R. Haddad, F.S. Ceccarelli, M.J. Ramírez & C.A. Owen – The intertidal spider genus *Amaurobioides* (Araneae: Anyphaenidae) in the Afrotropical Region: revision, biogeography and new data on biology**
10:10 – 10:30 P1	**T.L. Bird – Functional morphology of chelicerae as intromittent organs in solifuges (Solifugae: Arachnida)**

10:30 – 11:00	***MORNING TEA AT SLANGHOEK CONFERENCE HALL***
	SESSION 6 (CHAIRPERSON: Yael Lubin) – ECOLOGY
11:00 – 11:20 P14	**S.H. Foord & A.S. Dippenaar-Schoeman – Spider diversity increases with elevation on an isolated mountain in arid savanna of southern Africa**
11:20 – 11:40 P35	**J.M. Midgley*, N.P. Barker, A.S. Dippenaar-Schoeman & M.H. Villet – Spider diversity along an altitude gradient in the Sneeuberg Mountains, South Africa**
11:40 – 12:00 P18	**J.R. Henschel – Effects of livestock farming on populations of three arachnid groups (Araneae, Lycosidae, Scorpiones) in the Karoo at Tierberg LTER**
12:00 – 12:20 P47	**M.E. Siyam*, J.A. Dunlop & H.K. El-Hennawy – An overview of the spiders of Sudan**
12:20 – 12:40 P45	**S. Sebata*, C.R. Haddad, S.H. Foord & M. FitzPatrick – Spiders and holistic management practices at Debshan Ranch, Shangani, Zimbabwe**
12:40 – 13:00 P41	**O.D. Nwankwo* & S.C. Ewuim – Ecological studies of the spider fauna in Awka, South-Eastern Nigeria**
13:00 – 14:00	***LUNCH AT SLANGHOEK RESTAURANT***
	SESSION 7 (CHAIRPERSON: Stefan Foord) – BIOLOGY AND BEHAVIOUR
14:00 – 14:30 P29	**Y. Lubin, E. Yip, L. Ventura, Y.-C. Su & D. Smith – *Cyrtophora citricola*: A colonial spider on the move**
14:30 – 14:50 P44	**J. Pruitt – The Achilles' heel hypothesis: misinformed keystone individuals impair collective learning and reduce group success**
14:50 – 15:10 P22	**N. Larsen – Notes on Palpimanid prey capture**
15:10 – 15:30 P27	**J. Lichtenstein* & J. Pruitt – Participation in cooperative prey capture and the benefits gained from it are associated with individual personality**
15:30 – 16:00	***AFTERNOON TEA AT SLANGHOEK CONFERENCE HALL***
	SESSION 8 (CHAIRPERSON: Jan-Andries Neethling) – BIOGEOGRAPHY, BIOLOGY AND CONSERVATION
16:00 – 16:20 P34	**Y. Marusik & M. Omelko – Is the Palaearctic a separate Zoogeographical Realm?**
16:20 – 16:40 P19	**R. Jocqué, L. Baert, P. de Smedt, J. Bosselaers, M. Alderweireldt & A. Henrard – Can the protocol of the Belgian house-spider study be used in Africa?**
16:40 – 17:00 P23	**N. Larsen – Ongoing observations of *Seothyra* spiders**
17:00 – 17:20 P42	**C.A. Owen*, S. van Noort & J.A. Coetzee – Formidable foes: *Desis formidabilis* (Araneae: Desidae) and its unique parasitoid, *Echthrodesis lamorali* (Hymenoptera: Platygastridae)**
17:20 – 17:40 P15	**C.R. Haddad – How important is understanding microhabitat preferences of spiders to exposing true patterns of biodiversity and distribution?**
17:40 – 18:00 P50	**E. van der Westhuizen – Arachnids and animal welfare in display facilities: is it really necessary?**
	SESSION 9 (CHAIRPERSON: Candice Owen) – POSTERS: BIOLOGY, ECOLOGY, TAXONOMY
18:00 – 18:05 P25	**A.E.J. Leroy & J.M. Leroy – Watch the silk disappear**
18:05 – 18:10 P12	**G. Edwards* & C.R. Haddad – Do specialist termitophagous *Ammoxenus amphalodes* (Ammoxenidae) show a preference for sand mounds of their prey, *Hodotermes mossambicus* (Hodotermitidae)?**
18:10 – 18:15 P36	**J.M. Midgley & I. Engelbrecht – An exciting new *Ceratogyrus* from central Angola**
18:15 – 18:20 P52	**L. Whitehead* & C.R. Haddad – Effect of veld fire and road disturbances on the abundance and species richness of spiders associated with *Hyparrhenia hirta* grass tussocks**
18:20 – 18:25 P3	**K. Braun & A.S. Dippenaar-Schoeman – Swaziland's spiders: a preliminary checklist**
18:25 – 19:00	***FREE TIME***

19:00 – 20:30	***DINNER AT SLANGHOEK RESTAURANT***
20:30 – LATE	***RUSSIAN PARTY AT GOUDINI BANQUET HALL***

WEDNESDAY 25/01/2017

TIME	PAPERS (SLANGHOEK CONFERENCE HALL)
	SESSION 10 (CHAIRPERSON: Gerbus Muller) – MEDICALLY IMPORTANT ARACHNIDS
08:30 – 09:30 P38	**G.J. Muller, C.J. Marks, C.E. du Plessis, C.A. Wium, A.S. Dippenaar-Schoeman & L.N. Lotz – Discussion session dealing with talks on cytotoxic spider bite (necrotic arachnidism): facts and fallacies, spider identification, clinical manifestations, differential diagnosis and management**
09:30 – 09:50 P11	**C.E. Du Plessis, D.J. van Hoving & C.A. Wium – The influence of media reports on calls received at the Tygerberg Poison Information Centre regarding spider bites**
09:50 – 10:10 P37	**H.T. Modler & G.J. Muller – A poster with a set of recognition criteria to assist in the identification of the most venomous scorpions in southern Africa – *Parabuthus granulatus* and *P. transvaalicus***
10:10 – 10:30	**GENERAL DISCUSSION**
10:30 – 11:00	***MORNING TEA AT SLANGHOEK CONFERENCE HALL***
11:00 – 13:00	**FREE DAY COLLECTING / TOURISM**
13:00 – 14:00	***LUNCH AT SLANGHOEK RESTAURANT***
14:00 – 19:00	**FREE DAY COLLECTING / TOURISM**
19:00	***COLLOQUIUM DINNER AND AFRAS PARTY AT SLANGHOEK RESTAURANT***
21:00	***PRIZE GIVING***

THURSDAY 26/01/2017 – DEPARTURE

ORAL PRESENTATION

TAXONOMY / SYSTEMATICS

Functional morphology of chelicerae as intromittent organs in solifuges (Solifugae: Arachnida)

T.L. Bird

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The Solifugae (solifuges, sunspiders, red romans, *haarskeerders*, etc.) is a mesodiverse order of arachnids, comprising just over 1100 described species. Solifuges are most likely a monophyletic group. Synapomorphies include the presence of malleoli, which are racquet-shaped, chemosensory structures situated ventrally on the fourth pair of legs, and large, two-segmented, scissor-like chelicerae. The chelicerae of solifuges are of particular interest: they are very large, up to a third of the length of the body; they are central to solifuge systematics, with two of the three main character systems employed in solifuge systematics, namely dentition and the male flagellum, restricted to the chelicerae; and they are used for a diverse range of functions, including prey capture, feeding, defense, and mating. Primary functions, however, seem to differ between sexes: eating, digging and defense in females, and reproduction in males. These differences in function are also reflected in the cheliceral morphology, often resulting in spectacular modifications in males. Mating in solifuges is often violent, with the jaws of the males playing a vital role during mating. Solifuges are unique amongst arachnids in that the jaws themselves serve as intromittent organs in most species for which mating has been observed. Solifuge mating can be divided into three main phases: somatic contact phase (grabbing, somatic massage, and moving of female), genital contact phase (preinsemination, insemination and postinsemination), and release phase. The relevance of male cheliceral morphology as an adaptation to each mating phase will be discussed.

ORAL PRESENTATION*

SANSA WORKSHOP

A comparative study of the efficiency of the SANSA rapid sampling protocol in determining non-acarine diversity during winter and summer in Western KwaZulu-Natal, South Africa

R. Booysen & C.R. Haddad

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The South African National Survey of Arachnida (SANSA) aims to survey the arachnids of Southern Africa to identify, record, conserve and educate the community on these animals. The grassland biome covers various parts of South Africa such as Mpumalanga, Gauteng, Free State, North West and towards the inland of KwaZulu-Natal. Some spiders inhabiting grasslands have adapted uniquely in terms of body shape, colour and general behaviour. The degree-square that Newcastle, KwaZulu-Natal is situated in has not yet been surveyed before. This study aims to survey the biodiversity of non-acarine arachnids in the Newcastle area and compare their diversity during winter (June – July 2015) and summer (December 2015 – January 2016). The SANSA rapid sampling protocol was used to collect specimens from riparian, montane, plantation and grassland habitats using beating, sweeping, pitfall traps, litter sifting, Berlese-Tullgren funnels, and day and night hand collecting. These collecting methods exploit specific microhabitats that some species may inhabit, resulting in a more accurate analysis of species distribution and stratification. In total, 5152 spiders representing 293 morphospecies were collected, of which 3295 and 1857 individuals, and 190 and 171 morphospecies (including juveniles), were collected during winter and summer, respectively. Beating yielded the highest abundance during both seasons, while day active search sampled the most species in both seasons. Berlese-Tullgren funnels were the least efficient in both abundance and species richness during both seasons. Abundance and species richness were highest in grassland for pitfalls in both seasons, but patterns varied between seasons for all of the other methods. Further surveys, particularly in poorly sampled areas of South Africa, are urgently needed to improve distribution data for spider species in the country.

POSTER PRESENTATION

ECOLOGY

Swaziland's spiders: a preliminary checklist

K. Braun[1] & A.S. Dippenaar-Schoeman[2,3]

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There have been limited surveys of the spiders found in Swaziland, with only occasional collections and observations made over the years. The objective of this project was to compile a preliminary checklist based on all existing records that could be located. Identification of the spiders was carried out, although in some cases, identification to species level was not possible, particularly with photographic records. This is an ongoing project, as there are still specimens awaiting identification, and further investigation of records held by other organisations is needed. Presently 184 species from 36 families are known from Swaziland. The Araneidae with 32 spp. is the most diverse family, followed by the Salticidae and Thomisidae both with 22 spp. each. The 184 species represents less than 10% of the number of spiders found in South Africa, and comparison with percentages for other groups of plants and animals suggest that further investigation of records will reveal many more species.

POSTER PRESENTATION

SANSA WORKSHOP

Assessing biodiversity of spiders and scorpions in Namaqua National Park

R.A. Christiaan[1], A.S. Dippenaar-Schoeman[2,3] & U. Schmiedel[4]

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The objective of this project is to enhance the knowledge about the distribution and habitat preferences of spider and scorpion species in the Namaqua National Park. We would like to find out which scorpion and spider species can be found in the study area, how many of them are diurnal or nocturnal, and how many are plant-dwellers, web-dwellers or ground hunters. We investigated how many different scorpions and spiders can be found in four different habitats: (a) East-exposed midslope with medium plant species diversity and low height of vegetation; (b) Lower slope with low vegetation height; (c) Hilltop between the rocks with tall vegetation; (d) West-exposed midslope with low to medium height of vegetation. So far each habitat was visited once during the day and once during night. So far the spiders are the most diverse, represented by 26 families and 60 species. This represents new distribution data for all of the sampled species. Two species recorded were known from Namibia and are now recorded for the first time from South Africa, while a further three are possibly new to science. The scorpions comprise species of the genera *Hadogenes, Hottentotta, Parabuthus* and *Uroplectes*. The highest number of specimens belonged to the genus *Parabuthus*. The project is still ongoing

POSTER PRESENTATION

SANSA WORKSHOP

The spiders (Arachnida: Araneae) of Venetia Limpopo Nature Reserve

A.S. Dippenaar-Schoeman[1,2], S.H. Foord[3] & R. Lyle[1]

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The Oppenheimer De Beers group has several Diamond Route reserves throughout South Africa that are made available for research. One of the Diamond Route reserves is the Venetia Limpopo Nature Reserve, a 36 000-hectare reserve in the northern parts of the Limpopo province of South Africa. The reserve has been identified as an important buffer zone around the Mapungubwe World Heritage Site, a core area of the Vhembe Biosphere in the Savanna Biome of South Africa. The reserve was sampled by the South African National Survey of Arachnida (SANSA) Venda team using five different sampling techniques. A total of 484 specimens were sampled, representing 95 species of spiders belonging to 24 families. The Salticidae with 14 spp. was the most diverse family, followed by the Oxyopidae (10 spp.) and Araneidae (11 spp.). A total of 4.17% of the South African species are protected in this reserve. A photo gallery of representative species is provided.

ORAL PRESENTATION

SANSA WORKSHOP

The state of our spiders: how far have we come and where are we going?

A.S. Dippenaar-Schoeman[1,2], C.R. Haddad[3], S.H. Foord[4], R. Lyle[1] & L.N. Lotz[5]

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The South African National Survey of Arachnida (SANSA) was initiated in 1997 and is 20 years old this year. In this paper we reflect on the present state of our knowledge of the spiders of South Africa, with feedback to illustrate why SANSA as a team effort is so successful. We discuss funding opportunities; collaboration; consolidation of data; product development; marketing efforts; survey initiatives; spider biodiversity; compiling of national and provincial lists; and efforts to increase awareness and capacity building. With a wealth of information now available, future projects are discussed, such as conservation assessments; publication of the first Red Data book on spiders; species pages for the Encyclopaedia of Life; more review articles; and the need to improve the taxonomy of certain families. We show why team efforts are required to document highly diverse faunal groups.

POSTER PRESENTATION

SANSA WORKSHOP

Spider diversity of the Table Mountain National Park

A.S. Dippenaar-Schoeman[1,2], C.R. Haddad[3], J. Pryke[4], C. Uys[4] & N. Larsen[5]

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The aim of this study is to document the spider fauna of the Table Mountain National Park (TMNP) as part of the South African National Survey of Arachnida (SANSA). One of the focus areas is to survey protected areas to obtain species-specific information, and species distribution patterns for Red Data assessments. SANSA presently has an agreement with SANParks to survey and determine the arachnid diversity of the National Parks of South Africa. TMNP is the third national park to be surveyed in the Western Cape. The park is found discontiguously across the Cape Peninsula, with Table Mountain in the northern part of the park and Cape Point in the south. TMNP is dominated by Peninsula granite fynbos, while the top of the mountain and some north facing slopes have Peninsula sandstone fynbos and south facing slopes have patches of afro-temperate forests. For the spider checklist all historical and existing published records were used, as well as the new records sampled by students and researchers at Stellenbosch University and University of Cape Town that addressed various ecological questions. To date 53 spider families represented by 180 genera and 291 species have been recorded from the TMNP. The Salticidae (45 spp.) is the most species-rich family, followed by the Gnaphosidae (30 spp.) and Thomisidae (28 spp.). Information on spider guilds, endemicity value and conservation status for each species will be provided. The TMNP protects approximately 14.4% of the total South African spider fauna. Similar to plants and other arthropod groups, several spider species are presently known to be endemic to the TMNP.

POSTER PRESENTATION

SANSA WORKSHOP

SANSA: Spider collecting at Wakefield

A.S. Dippenaar-Schoeman[1,2], R. Jocqué[3], P. Webb[4] & R. Lyle[1]

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As part of the South African National Survey of Arachnida (SANSA), two surveys have been undertaken at a Diamond Route farm of the Oppenheimer De Beers group. The De Beers Wakefield farm in the Midlands of KwaZulu-Natal, South Africa was sampled in January 2015 and November 2015. The farm is situated within the Mooi River Highland Grassland and Eastern Mistbelt Forest vegetation types. A sweep net, beating tray, litter sieve and pittraps were used to sample the different habitats. Although several members of the class Arachnida were sampled, the spiders were the most diverse. During the first survey 27 spider families represented by 56 species were sampled, and during the second survey the number of spider species was increased to 135 species from 33 families. The Salticidae with 23 spp. is the most diverse family, followed by the Theridiidae (17 spp.) and the Thomisidae and Araneidae, both with 13 spp. Photographs of collected specimens provided a valuable contribution to the SANSA Virtual Museum. Four of the species sampled were first records for South Africa, while another two species are possibly new to science.

ORAL PRESENTATION

Preparing the first Red List of the spiders of South Africa

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A Red List is far more than just a list of species and their conservation status; it is also a tool to help focus future research. Before Red Listing can be done a large amount of specific species information is needed. This includes: 1. Currently known distribution data of each species compiled from the literature, Spider World Catalogue, information from the SANSA databases and Virtual Museums; 2. The taxonomic status of each species, indicating when described, from where, when last sampled, whether it was recently revised, whether known from both sexes, and if any identification tools are available; 3. Other information on the species, such as images of the species, a common name, information on habitat, biology and behaviour, and environmental data to determine possible threats. Not only will we have a list indicating the rare and possibly threatened species, but we will know which species are Data Deficient. This information is important to help direct survey efforts in future to try to recollect specimens from type localities, to do redescriptions, and describe both sexes of a species. Eventually, with all this data that is fed into a Red List online database we will have datasets available for all South African spider species. An additional benefit is that this information will also feed into the online species pages that are being generated by SANBI as part of the Encyclopedia of Life.

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POSTER PRESENTATION

SANSA WORKSHOP

Photo gallery of the spiders (Arachnida: Araneae) of the Telperion Nature Reserve

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The De Beers Diamond Route includes a group of reserves in several provinces and biomes that are available for research. Telperion Nature Reserve is located near Bronkhorstspruit in the Gauteng province of South Africa, within the Grassland Biome. This biome is one of the most seriously threatened vegetation types in South Africa. More than 40% of the grassland areas have been irreversibly transformed. As part of the South African National Survey of Arachnida (SANSA), surveys are underway to determine the diversity of Arachnida in the Gauteng grasslands. Several faunal surveys have been undertaken in the Telperion Reserve. One of these was a bioblitz in April 2014, which was done by the ARC team and members of the Spider Club of South Africa. During the bioblitz more than 400 images of spiders were captured for display on the SANSA Virtual Museum. Most of the spiders that were sampled from Telperion are typical grassland species, as illustrated by the 20 species depicted on this poster.

ORAL PRESENTATION

MEDICALLY IMPORTANT ARACHNIDS WORKSHOP

The influence of media reports on calls received at the Tygerberg Poison Information Centre regarding spider bites

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Various factors beyond medicine and arachnology play a role in the medical effects of spiders on humans; journalism is only one of them. This study aimed to determine the influence of media reports on calls received at the Tygerberg Poison Information Centre regarding spider bites. A retrospective analysis of the database was conducted from January 2010 – December 2013. Media reports were obtained from a web search and the archives of all major South African newspapers and the media group 'Media24'. Calls pertaining to spider bites were compared 30 days prior to and 30 days after publication of articles covering spider bites. Only 2.6% of the calls received were related to spider bites. Most calls received (72.5%) were from the general public. Of the 225 suspected spider bites only 10% could be identified. Most patients presented with local swelling (25.7%), pain (18.3%) and redness (17.1%). Antivenom was advised in 5.1% of cases. An increase in calls after publications in nationally distributed newspapers/magazines was seen. History pertaining spider bite is often unreliable. A spider in the vicinity does not equal a spider bite. Necrotic arachnidism is over-diagnosed and is often a convenient diagnosis for unexplained local tissue or dermal problems. Most articles were sensationalized and not verified, leading to misinformation being published. Nationwide media reports on spider bites raised the number of calls to the centre. The diagnosis of spider bites should only be made with substantial evidence to help debunk the myths surrounding spider bites.

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POSTER PRESENTATION*

BIOLOGY

Do specialist termitophagous *Ammoxenus amphalodes* (Ammoxenidae) show a preference for sand mounds of their prey, *Hodotermes mossambicus* (Hodotermitidae)?

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The specialist termitophagous spider *Ammoxenus amphalodes* (Araneae: Ammoxenidae) feeds on a single species of termites, *Hodotermes mossambicus* (Isoptera: Hodotermitidae), and can be found inside the sand mounds (=soil dumps) built by the termites. Soil mounds of *H. mossambicus*, ants and moles were measured and collected from ten 5m x 5m plots in a suburban grassland area in the central Free State, South Africa, during late May 2016 (autumn). All termites and/or ants found inside soil mounds and an area of $1m^2$ around each mound were noted. A total of 259 soil mounds were sampled, of which 184 (71.04%) were built by *H. mossambicus*, 42 by unknown organisms (16.22%), five by moles (1.93%), and the rest by various ants. Only 33 *A. amphalodes* were collected from the mounds, of which 30 individuals were collected from 20 *H. mossambicus* mounds, a mound occupation rate of 10.87%. Mound occupation was slightly higher for *Anoplolepis custodiens* ants (n = 2, 16.67%) and *Tetramorium* sp. ants (n = 1, 11.11%). There was very little correlation between *A. amphalodes* abundance and mound height, circumference, diameter, mass or volume. The low occupation of sand mounds could be attributed to the phenology of *Ammoxenus amphalodes* in central South Africa, where numbers are generally low in autumn. A second set of plots will be sampled in summer 2017, the time of year when *A. amphalodes* activity densities peak. We anticipate a much higher rate of mound occupation during this season.

POSTER PRESENTATION

SANSA WORKSHOP

The Baboon Spider Atlas: leveraging citizen science for charismatic creatures

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[presented by R. Lyle]

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Species distribution data are critical for conservation purposes, like Red Listing and spatial conservation planning. Baboon spiders are large, long-lived mygalomorph spiders with limited tolerance for environmental disturbance. They are protected by law in several southern African countries, but are in demand by collectors in the international pet trade. Despite their size and charisma, taxonomic diversity and conservation requirements are poorly documented. The Baboon Spider Atlas was initiated to address these knowledge gaps. It is a collaborative initiative between the Department of Zoology and Entomology at the University of Pretoria, the Animal Demography Unit at the University of Cape Town, and the Tarantupedia. Its goals are to discover the diversity and map distributions of all southern African baboon spider species using citizen science as a primary tool for data generation. To date the project has accumulated one of the largest databases of baboon spider records in existence, with over 50% of the records obtained from social media. The project website includes a record upload form that simplifies the process of uploading records, and the project database is accessible through an online interface so records to be integrated directly into GIS and data analysis packages. Localities are generalized to a Quarter Degree Grid Square system for public access, while records for sensitive species are hidden, to protect against misuse. The results of the project have demonstrated that baboon spider diversity is significantly underestimated in southern Africa, highlighting the need for further research on these charismatic creatures.

ORAL PRESENTATION

ECOLOGY

Spider diversity increases with elevation on an isolated mountain in arid savanna of southern Africa

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In general, taxon richness decreases with elevation or peaks at mid-elevations. The response of spider diversity to elevation is largely unknown. Here we report on the long-term patterns of spider diversity across a north-south elevational transect of an inselberg in the tropics of Africa. Spiders were trapped twice a year (wet and dry) between 2009 – 2016, with pitfalls set out in 5 × 2 grids, replicated four times at 11 elevational sites set out at 200 m elevational intervals between 800 – 1700m a.s.l. in the Soutpansberg, Limpopo Province, South Africa. A total of 224 species were recorded. Generic richness generally increased with elevation (species richness had a similar pattern) and there was considerable seasonal and inter-annual variation. Structural habitat complexity interacted with mist precipitation at higher elevations on the mountain to drive diversity and endemicity. The importance of refugia for the maintenance of diversity are discussed.

ORAL PRESENTATION

BIOGEOGRAPHY

How important is understanding microhabitat preferences of spiders to exposing true patterns of biodiversity and distribution?

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A large proportion of spider species in terrestrial ecosystems can be readily collected using "standard" methods such as pitfall trapping, litter sifting, sweeping and beating. As a result, such species typically have well understood distribution patterns related to vegetation types, geological structures and soil types, and climatic patterns. A smaller proportion of spider species are very rarely collected with "standard" methods, and are often considered to be rare or locally endemic, simply on the basis of limited specimens or distribution records. Here the argument is presented that collector experience, particularly using hand collecting in different microhabitats not sampled using "standard" methods, is critical in understanding the microhabitat preferences of "rare" species. Once these microhabitats have been identified for particular species, then focused sampling there can uncover the occurrence of "rare" species in much broader distribution ranges, often in very high abundances. Examples are presented for species of Archaeidae, Corinnidae and Trachelidae collected from grass tussocks; salticids associated with abandoned termitaria; and mygalomorph species with particular soil type preferences. Collectors are strongly encouraged to spend a considerable portion of their time during surveys collecting by hand in atypical microhabitats not usually sampled with "standard" methods, including grass tussocks, bark, rocks and termitaria.

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ORAL PRESENTATION

TAXONOMY / SYSTEMATICS

The intertidal spider genus *Amaurobioides* (Araneae: Anyphaenidae) in the Afrotropical Region: revision, biogeography and new data on biology

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The spider genus *Amaurobioides* O. Pickard-Cambridge, 1883 (Araneae: Anyphaenidae) represents something of a biological anomaly amongst spiders, with all of its members associated with the intertidal zone of oceans, as opposed to the terrestrial habitats most other spiders occupy. Very few other spiders are able to withstand the extreme conditions associated with this habitat. A recent biogeographical molecular study showed that the ancestors of *Amaurobioides* originated in South America, where the family is especially diverse, and dispersed eastward to Africa during the mid-Miocene, after which they dispersed to Australia, New Zealand and Chile by rafting, aided by the Antarctic Circumpolar Current and the West Wind Drift. Thus, the evolution of intertidal specialization in the genus originated in Africa. Historically, the genus was thought to be represented in the Afrotropical Region by a single species, *A. africana* Hewitt, 1917, but recent results from molecular studies and genitalic morphology confirm that a second new, sympatric species also occurs along the southern coastline of South Africa. Aside from morphological and size differences, the species also appear to be ecologically separated, with *A. africana* occurring on rocky surfaces facing towards the ocean, receiving direct wave action, and the smaller new species occurring on surfaces directed away from the ocean, and usually not receiving direct wave action. Two further new species are recognized, the first known only from a single locality near Hermanus in the Western Cape, South Africa, and the second represented by "*A. africana*" populations in coastal Namibia. Molecular data also revealed the presence of endosymbiotic Rickettsiales, belonging to a single species, from six specimens of *Amaurobioides* from five localities along the south coast of South Africa, possibly hosted by both *A. africana* and the new species. This is the first report of Rickettsiales in the Anyphaenidae. More detailed morphological and molecular studies are needed to understand the distribution of the four Afrotropical species and the microhabitat factors influencing their distribution.

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ORAL PRESENTATION

SANSA WORKSHOP

Spiders of Fernkloof Nature Reserve (FNR)

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Little is yet known about the spider fauna of Fernkloof Nature Reserve, a beautiful fynbos reserve in the Western Cape, South Africa. Fynbos is one of the most diverse yet distinctive floras in the world, and is characterised by unique tree-less evergreen heathlands and shrublands growing on nutrient poor soil. It is dominated by small- and leathery-leafed and evergreen grass-like shrubs, and is dependent on periodic veld fires. Fynbos is a subdivision of the Cape Floral Kingdom (CFK), the smallest of the six Global Floral Kingdoms. The FNR covers 1800 ha in the Kleinrivier Mountains above Hermanus in the Western Cape Province. This reserve is a fine example of fynbos, with six of the seven endemic plant families with over 1600 species of the CFK representing an extremely high plant and possibly spider species diversity. Spiders were sampled by SANSA team members (Haddad and Lyle) and Dr Griswold. The first author sampled specimens when available and photographed when possible, using smart phones, macro-lenses or a microscope, and material was identified by the second author. The aim of this study, the fifth in a series of surveys in protected areas in the Western Cape Province, was to compile the first checklist of the spider species of Fernkloof Nature Reserve (FNR). Considering the high level of local fynbos diversity, FNR might be home to a rich spider fauna, as only a few collecting efforts (270 specimens) have resulted in sampling thirty-nine families, represented by 99 genera and 137 species. The most species-rich families are the Salticidae (17 spp.), followed by the Gnaphosidae (13 spp.), Thomisidae (12 spp.) and Theridiidae (11 spp.), while 18 families are represented by singletons. Information on spider guilds, endemicity value and conservation status are provided. Fourteen Western Cape endemic species are presently known from the reserve and 6.7% of the total South African spider fauna are protected in the FNR. Two species are recorded from the Western Cape for the first time, and FNR is also the type locality of the salticid *Rumburak lateripunctatus*.

ORAL PRESENTATION

ECOLOGY

Effects of livestock farming on populations of three arachnid groups (Araneae, Lycosidae, Scorpiones) in the Karoo at Tierberg LTER

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Livestock can affect populations of arachnids in numerous ways. This includes changes in the density and structure of vegetation, which may, in turn, affect the structure of webs and conditions for hunting. Through effects on plant phenology, livestock can also affect insect populations, particularly pollinators or herbivorous insects, thus reducing prey populations of arachnids. In contrast, coprophagous and parasitic insects would increase arachnid prey populations. Trampling by livestock damages arachnid burrows or webs, either killing them or requiring more energy by arachnids to rebuild, reducing energy available for reproduction. Livestock may also have various effects on predators of arachnids. These and several other ecological impacts of livestock would change with type (large or small) and stocking density. A study of web spiders, hunting spiders and scorpions was initiated at Tierberg-LTER, Prince Albert, a 100-ha livestock exclosure, and two adjacent farms, one a sheep farm, the other a farm stocked with sheep, cattle and horses, in order to test the hypothesis that livestock changes arachnid populations. It is predicted that the web spiders would be more abundant inside the exclosure than outside, and that sheep would more often damage webs and burrows than cattle and horses would. Arachnids hunting on the surface are predicted to benefit from coprophagous insects in different ways, as the size and spatial clumping of dung differs between large and small stock. This project is part of an ongoing long-term research programme focusing on ecosystem changes in relation to local land use and climate change.

ORAL PRESENTATION

BIOLOGY

Can the protocol of the Belgian house-spider study be used in Africa?

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We investigated the spider fauna of houses through a collaborative approach in Belgium. Information required for the collections to be eligible for the project was address, construction year, type of house and surroundings. More than 800 spiders were collected in 43 Belgian houses heated in winter. The spiders were qualified as 'house spiders' or 'garden spiders'. Of the 93 species collected, 19 could be defined as house spiders. *Pholcus phalangioides* (Fuesslin, 1775) was the most common, followed by *Eratigena atrica* (C. L. Koch, 1843) and *Steatoda triangulosa* (Walckenaer, 1802). Garden spiders enter the house much more often in houses in a rural environment than in those situated in clusters and mainly in spring. House spiders are most common in autumn when many of them are breeding. The common house spiders colonize houses shortly after their construction. It is argued that a similar protocol could be used for a study of house spiders in Africa and certainly in temperate South Africa.

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ORAL PRESENTATION

TAXONOMY / SYSTEMATICS

Keeping up the morphological approach: remarkable new characters for the systematics of the Zodariidae (Araneae)

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Although there is a clear shift towards molecular characters for the delimitation and separation of taxa, arguments based on morphological structures remain important, certainly above the species level. It is surprising that observation of morphological details by the means of a simple stereomicroscope may still provide crucial characters that have been overlooked so far. It is evident that studies of the ultrastructure of somatic, as well as of genitalic organs, with the scanning electron microscope is even more productive in this respect. We here report on several new characters that can be used to delimit new genera, to re-establish synonymized taxa, or to corroborate the formerly doubtful inclusion of genera in a particular family. Among the spectacular new findings in the Zodariidae are the plug pit on the cymbium of some species, the first such structure that apparently produces a sticky matter to seal the epigyne via a gland clearly opening on the outside. We further illustrate the existence of dorsal abdominal glands and dorsal abdominal modifications in some males of a new genus and the discovery of a dual femoral organ. Probably the most remarkable observation is the existence of a dorsal tibial process on all legs in both sexes of all representatives of the Zodariidae. This structure provides a novel synapomorphy for the family, corroborating the inclusion of basal genera in it.

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ORAL PRESENTATION*

KARYOLOGY

The cytogenetics and sperm variability in pseudoscorpions of the family Geogarypidae

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Pseudoscorpions represent the fourth largest order of arachnids. However, their taxonomy is still based mostly on their morphology, without detailed knowledge of the variability. That is a reason why the real diversity might in fact be largely underestimated. Recently, some advanced methods have emerged, and when we combine these in an integrative approach, our understanding of the real species diversity and their relationships can be estimated more precisely. In our study, we focused on the family Geogarypidae – 10 species from Africa, Australia and Europe were examined by means of karyology, molecular phylogeny, morphology and sperm size analysis. The cytogenetic methods show conspicuous interspecific differences. The male diploid number varies between 13 and 31, and we have recognized different numbers of nucleolar organizers. Surprisingly, three cytotypes were discovered in *Geogarypus flavus*. When phylogeny was reconstructed using CO1 sequences, the cytotypes formed separate branches. Also the variability in the size of spermatozoa in Geogarypidae is striking, with acrosomes measuring up to almost 1 mm and showing species-specific patterns. The size of the spermatozoa differs among cytotypes of *G. flavus*. This indicates that this species might be a complex of at least three cryptic species, and thus, we would like to emphasize the importance of multidisciplinary approaches in taxa with enigmatic species delimitation.

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ORAL PRESENTATION

BIOLOGY

Notes on Palpimanid prey capture

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Palpimanids, with three genera in southern Africa, have been poorly studied, with no revision or biological notes available. Joh Henschel has observed *Palpimanus stridulator* capturing *Caraparachne areoflava* inside their burrows, while they have also been collected from the webs of *Stegodyphus* and *Seothyra*. Personal observations and photography of *Palpimanus capensis* and *Diaphorocellus* sp. adds to the information about this very interesting family.

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ORAL PRESENTATION

BIOLOGY

Ongoing observations of *Seothyra* spiders

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Seothyra is found inhabiting sandy dunes with sparse vegetation and is endemic to southern Africa. The females and juveniles are found in their buckspoor retreats, with a vertical burrow about 150mm deep. The depth is usually determined by the depth of moisture penetration resulting from rainfall. The females are eaten by the spiderlings, a process known as matriphagy. *Seothyra* are sexually dimorphic, and males are Batesian mimics of *Camponotus* ants (sugar ants) or mutillid wasps (velvet ants) in both appearance and movements. These spiders also have a relationship with Grey-backed Sparrow Larks. The current project is to investigate the biology and photograph specimens, especially the males.

ORAL PRESENTATION

SANSA WORKSHOP

SANSA: Our present knowledge of the spider diversity of the Kirstenbosch National Botanical Garden

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The formation of the South African National Biodiversity Institute (SANBI) in September 2004 through the proclamation of the National Environmental Management: Biodiversity Act (NEMBA) provided the ideal opportunity to showcase the biological diversity held within South Africa's eight national botanical gardens. For years the main focus having been on documenting, studying and conserving South Africa's indigenous flora. There are still inevitably many gaps in our knowledge and understanding of the faunal diversity conserved in our gardens. The national gardens constitute a large proportion of 'green space' and these gardens have major conservation value for invertebrates. As part of SANSA, surveys are underway in several national botanical gardens. With this study we report on our present knowledge of the spider diversity of the Kirstenbosch National Botanical Garden (KNBG). Although some surveys have been undertaken in the KNBG, no detailed checklist is yet available. So far 45 spider families, represented by 143 species have been collected. The Salticidae is the most diverse family with 20 spp., followed by the Thomisidae with 13 spp. and Theridiidae with 11 spp.

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POSTER PRESENTATION

BEHAVIOR

Watch the silk disappear

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A photo essay and observations on prey wrapping and silk ingestion of two large araneid spiders, A*rgiope australis* (Araneae, Argiopinae) and *Neoscona triangula* (Araneae, Araneinae), is presented. The differences and similarities observed in flexibility of web location, both spatially and temporally, are discussed. *Argiope australis* is diurnal and does not remove and reconstruct its web regularly, but rests at the web hub throughout most of a 24-hour period. *Neoscona triangula* is nocturnal and constructs its much less sturdy orb-web at nightfall and removes it the next morning. The variability between wrap-then-bite and bite-then-wrap for different prey items snared in the webs at different times of day or night is discussed.

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ORAL PRESENTATION

SANSA WORKSHOP

Our present knowledge of the spider diversity of the Lowveld National Botanical Garden

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The South African National Biodiversity Institute (SANBI) – formerly the South African Botanical Institute was formed in September 2004 through the proclamation of the National Environmental Management: Biodiversity Act (NEMBA). It provides an ideal opportunity to showcase the biological diversity of South Africa's eight National Botanical Gardens. As part of SANSA, surveys are underway in several National Botanical gardens. With this study we report on our present knowledge of the spider diversity of the Lowveld National Botanical Garden (LNBG) in Mbombela in the Mpumalanga province of South Africa, with observations on behaviour of some of the spiders collected. Although several surveys have been undertaken in the LNBG, this is the first detailed checklist to be published for the spider fauna of the LNBG. So far 31 spider families, represented by 138 species, have been collected. The Araneidae and Thomisidae are the most diverse families with 20 spp. each, followed by the Theridiidae with 11 spp. The first male of *Allocosa aurichelis* Roewer, 1959 (Lycosidae) was collected in LNBG, and a lynx spider, *Oxyopes galla* Caporiacco, 1941 (Oxyopidae), previously only known from East Africa, was recorded from the LNBG, a first record for South Africa.

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ORAL PRESENTATION*

BEHAVIOUR

Participation in cooperative prey capture and the benefits gained from it are associated with individual personality

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In animal societies, individuals' behavioral idiosyncrasies often guide which tasks they perform. Such personality-specific task participation can increase individual task efficiency, thereby improving group performance. While several recent studies have documented group-level benefits of within-group behavioural (i.e., personality) diversity, how these benefits are realized at the individual level is unclear. Here we probe the individual-level benefits of personality-driven task participation in the social spider *Stegodyphus dumicola*. In *S. dumicola* the presence of at least one highly bold individual catalyzes foraging behaviour in shy colony members, and all group constituents heavily compete for prey. We assessed boldness by examining how quickly spiders resumed normal movement after a simulated predator attack. We test here whether 1) participants in collective foraging gain more mass from prey items, and 2) whether bold individuals are less resistant to starvation than shy spiders, which would motivate the bold individuals to forage more. Next, we assembled colonies of shy spiders with and without a bold individual, added one prey item, and then tracked the mass gain of each individual spider after this single feeding event. We found that spiders that participated in prey capture (whether bold or shy) gained more mass than non-participators, and colonies containing a single bold spider gained more total mass than purely shy colonies. We also found that bold spiders participated in more collective foraging events and were more susceptible to starvation than shy spiders, suggesting that the aggressive foraging of bold individuals may represent a strategy to offset starvation risk. These findings add to the body of evidence that animal personality can shape social organization, individual performance, and group success.

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ORAL PRESENTATION

SYSTEMATICS

An update on the spider genus *Loxosceles* (Araneae: Sicariidae) in southern Africa

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In this paper the present state of knowledge of the genus *Loxosceles* Heineken & Lowe, 1835 in southern Africa is discussed. The distribution of some of the 16 described Afrotropical species of *Loxosceles* is updated and the types of *L. bergeri* Strand, 1906 and *L. pilosa* Purcell, 1908 are discussed. A further seven new species are looked at, as well as the female of *L. smithi* Simon, 1897.

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ORAL PRESENTATION

ECOLOGY

Cyrtophora citricola: A colonial spider on the move

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The araneid spider, *Cyrtophora citricola*, can be found solitarily and in colonies of up to several thousand individuals. It has a wide distribution, including the Mediterranean basin, East and West Africa and east to India and Sri Lanka. In the 1990s the species spread to Colombia and recently has expanded its range further to parts of South and Central America, the Caribbean islands and south Florida. What makes this spider such a successful invader? In Israel we have followed local range expansion, documented population dynamics, and experimentally investigated the conditions that enhance dispersal on the one hand, and colony establishment on the other. Gene-flow estimates support long-distance dispersal and differentiation among regions. The tendency to disperse persists throughout juvenile stages of both sexes. Dispersal is influenced by maternal condition and prey availability, and it is negatively density-dependent, which enhances colony establishment. Habitat structure plays an important role in colony formation and survival.

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ORAL PRESENTATION

Spider jewels of the Diamond Route reserves

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As part of the South African National Survey of Arachnida (SANSA) six of the protected areas of the Diamond Route reserves of the Oppenheimer De Beers group have been sampled during the last few years by members of the SANSA team. The three Northern Cape reserves surveyed were Tswalu Kalahari Reserve, where 136 spider species have been sampled, the Benfontein Nature Reserve (131 spp.) and the Rooipoort Nature Reserve (93 spp.). From the only Diamond Route reserve in the Limpopo province, the Venetia Limpopo Nature Reserve (92 spp.) has been sampled, and in Gauteng the Ezemvelo Nature Reserve (146 spp.). From the Oppenheimer De Beers Wakefield Farm in the KwaZulu-Natal Midlands 135 species are presently known. In total, 436 species from 50 families of spiders are presently protected in Diamond Route Reserves. This represents 22% of the spiders of South Africa. As nothing has yet been published on these reserves, most distributional records are new data for Red Listing. Several new species have also been identified waiting to be described, including a member of the Filistatidae.

POSTER PRESENTATION

SANSA WORKSHOP

Karoo BioGap Project – Spiders contribute to filling biodiversity information gaps in the Karoo

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The South African National Biodiversity Institute (SANBI) has secured funding from the National Research Foundation (NRF) Foundational Biodiversity Information Programme (FBIP) to sample the biodiversity in the Karoo. The funding is used to help provide the Department of Environmental Affairs (DEA) with foundational biodiversity data that will contributed to the Shale Gas Exploration Strategic Environmental Assessment (SGE SEA). Currently, the Karoo is poorly surveyed and existing biodiversity data has major gaps, especially in the area targeted for shale gas exploration. Spiders are one of the eleven taxa to be studied as part of this project. The project contributes to the South African National Survey of Arachnida (SANSA), as sampling will be done at sites in the Karoo, where little or no sampling has been done before. All specimens sampled will be stored in the National Collection of Arachnida and all databased records will be shared with SANBI.

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ORAL PRESENTATION

SANSA WORKSHOP

SANSA – a rich diversity of spiders collected from green urban areas of Tshwane/Pretoria

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Urbanization is one of the leading types of land use change today. Important for biodiversity is the rate of change in urban and suburban land covers. Spiders are important predatory arthropods and are excellent indicators of habitat modification and disturbance. Natural vegetation in urban environments is greatly impacted by human activities, and it is under constant threat of degradation and destruction. This vegetation, although fragmented, serves an important ecological function and needs to be properly managed and conserved. Studies on urban vegetation are lacking in South Africa, with only a handful having been carried out since the end of the last century. Little is known about the diversity of invertebrates in urban and suburban areas in South Africa. As part of the SANSA Grassland project, surveys were undertaken in several green urban areas in and around Tshwane in Gauteng. These areas include the following reserves: Faerie Glen, Groenkloof, Roodeplaatdam, Tswaing Crater and Serene Valley. The Pretoria National Botanical Garden and several areas around the Irene village were also surveyed. The availability of undeveloped green spaces could offer opportunities to preserve declining species, restore ecosystem functions, and support diverse ecosystem services.

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ORAL PRESENTATION

TAXONOMY / SYSTEMATICS

What are Haplogyne spiders?

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The name Haplogynae was suggested by Simon (1893) for a taxon grouping six families of ecribellate spiders: Sicariidae, Leptonetidae, Oonopidae, Hadrotarsidae, Dysderidae and Caponiidae. The limits of Haplogynae remained almost the same until Lehtinen (1967) demonstrated that the division of spiders into Cribellates and Ecribellates is unnatural, because it is based on a plesiomorphic character. Lehtinen (1967) united Haplogynae with the cribellate family Filistatidae due to some similarities in the copulatory organs, and suggested the name Filistatoidea. Since then almost all classification schemes consider these groups as related. Haplogynae is no typified taxon name (i.e. not based on a genus name), and therefore it is not clear to which of the six families it can be applied if it will be found that Haplogynae is not a monophyletic group. There is big confusion between the taxon name haplogyne and between the morphological term haplogyne. For example, all Mygalomorphae have haplogyne-type copulatory organs, although they do not belong to Haplogynae. The same is true for "Paleocribellata". Conversely, some Haplogynae have a developed epigyne (Pholcidae). The morphological term "haplogyne" has no proper definition, because Simon's haplogynes were defined as spiders with simple external genitalia, like in Mygalomorphae. Families currently placed in Haplogynae have entirely different structures of the endogynes. In the presentation I will try to provide arguments that Haplogynae is a polyphyletic taxon, and the general morphological term haplogyne has to be more specified, reflecting the structure of the copulatory organs, and not only their simplicity.

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ORAL PRESENTATION

BIOGEOGRAPHY

Palaearctic and Nearctic versus Holarctic: How do spiders fit into zoogeographic regions?

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There are two alternative opinions about subdivision of the Northern Hemisphere. Many biogeographists recognize Holarctic with two main subdivisions, Palaearctic and Nearctic, while some experts consider Palaearctic and Nearctic as separate biogeographical realms. In this presentation I will analyze distribution of spider taxa in the northern half of Eurasia, northern Africa and North America and show how it corroborates different biogeographical schemes. Special emphasis will be given to spiders distributed in the boreal and tundra zones. Spiders of these zones are much better studied in both hemispheres than in other living zones.

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ORAL PRESENTATION*

ECOLOGY

Spider diversity along an altitude gradient in the Sneeuberg Mountains, South Africa

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Spiders are a common component of epigaeic communities that are influenced by both microhabitat and prey availability, because they are predators. The invertebrate community, including spiders, was assessed at Asante Sana Private Game Reserve, Eastern Cape, South Africa, using unbaited pitfall traps along three transects over a 1000 m altitude range during a 15-month period in 2010/2011. The spider collections were zero-inflated, with 1086 specimens from 95 species collected. No statistically significant differences were observed between transects, but the community structure changed with altitude. Implications of the data and research are discussed, with reference to conservation and global climate change.

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POSTER PRESENTATION

CONSERVATION

An exciting new *Ceratogyrus* from central Angola

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During an expedition to central Angola during October and November 2016, an undescribed species of *Ceratogyrus* was discovered. While many *Ceratogyrus* have a foveal process, the size of the process on this species is the largest of any known species, extending over the abdomen. Notes on the habitat and known extent of distribution are also discussed, as well as potential conservation measures.

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ORAL PRESENTATION

MEDICALLY IMPORTANT ARACHNIDS

A poster with a set of recognition criteria to assist in the identification of the most venomous scorpions in southern Africa – *Parabuthus granulatus* and *P. transvaalicus*

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Parabuthus granulatus has been identified as the most venomous scorpion in South Africa. It is responsible for considerable morbidity and mortality, especially in children. Another species which is also of medial importance is *P. transvaalicus* (the venom of which is used for the manufacture of the scorpion antivenom). Failure of early identification of these two scorpion species increases the risk of not anticipating serious systemic toxic complications, especially respiratory failure. The identification of scorpions down to species level, however, is difficult for the non-arachnologist. This study aimed to compile a set of simple diagnostic morphological characteristics in poster form for distribution to medical facilities to enable easy identification of *P. granulatus* and *P. transvaalicus*. A literature search for data regarding the morphology of scorpions in southern Africa was undertaken (references Prendini and Soleglad). Unique morphological characteristics of *P. granulatus* and *P. transvaalicus* were analysed in order to construct an easy to use pictorial algorithm. Morphological characteristics of the two venomous scorpions to feature in the poster are discussed: 1) Members of the less venomous large scorpion families (Scorpionidae) have large, intimidating pincers and slender thin "tails". In contrast, the more venomous Buthidae have small, slender pincers and a thick "tail"; 2) *P. granulatus* and *P. transvaalicus* are large scorpions: 65 – 170 mm; 3) *P. granulatus* is light to dark brown in colour, whereas *P. transvaalicus* is dark brown to uniformly black; 4) Comparisons of the morphological characteristics of the last 2 "tail" segments and telsons of *P. granulatus* and *P. transvaalicus* will also provide vital indicators to distinguish between the two species. In conclusion, early identification of dangerous scorpions may assist in the proper management of scorpion stings.

ORAL PRESENTATION

MEDICALLY IMPORTANT ARACHNIDS

Cytotoxic spider bite (necrotic arachnidism): facts and fallacies, spider identification, clinical manifestations, differential diagnosis and management

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Motivation:
The medical entity cytotoxic spider bite has recently come under intense scrutiny. Many lay people believe that bites from various spider species cause necrotic skin ulcerations, despite medical evidence that most suspected cases are probably caused by something else rather than a spider bite. This workshop will attempt to address this issue and will make recommendations with regard to proper documentation, positive diagnosis and management of cytotoxic spider bite in South Africa. Spiders suspected of causing necrotic skin lesions in southern Africa include the genera *Cheiracanthium* (Eutichuridae), *Loxosceles* (Sicariidae) and *Sicarius* (Sicariidae). In addition, some large spiders, although not strictly cytotoxic, e.g. the baboon spiders (family Theraphosidae) and the rain spiders (genus *Palystes*), can inflict local wounds that may become infected.

Spiders in and around the house:
The National Collection of Arachnida at the ARC and the National Museum at Bloemfontein frequently receive queries about spiders in and around houses. With the large databases available at both organizations we investigate the following aspects: a) to determine the spider species commonly found in and around houses; b) to determine frequency of occurrence; c) to determine whether there are species differences between the provinces; and d) to determine the house species that come in contact with humans and might deliver bites. More than 50 spider species have been collected in houses. Of these species only about 10 can be considered as permanent or commonly found in houses. However, most of them are too small to harm people or their behaviour does not bring them directly into contact with people. Of the three species suspected of cytotoxic bites there seems to be a difference between provincial distribution patterns. Of the three species, *Cheiracanthium furculatum* is by far the most abundant (>400 specimens, 52%) sampled from houses in the Gauteng and the Free State provinces, while they occur in low numbers from the three Cape provinces. Therefore, species distributional patterns need to be taken into account before any decision about their medical importance could be taken.

Tygerberg Poison Information Centre data on spider bite:
Results are presented of documentation over a period of 4 years. From a total of 25 510 telephone consultations (January 2010 – December 2013), 661 were related to suspected spider bites. Of

these, 72% were from the general public and 28% from medical disciplines. A spider was seen in 225 cases and of these 67 could be identified: 31 of the spiders identified belonged to the button spiders (*Latrodectus* spp.), 9 rain spiders (genus *Palystes*), 8 baboon spiders (family Theraphosidae), 5 violin spiders (genus *Loxosceles*) and 3 sac spiders (genus *Cheiracanthium*). The rest (11) included a wide range of non-venomous spiders.

Clinical Picture:
Necrotic arachnidism is the clinical syndrome caused by the bite of cytotoxic spiders. In the majority of cases diagnosis is based solely on clinical findings. The diagnosis of necrotic arachnidism is usually presumptive and made through epidemiological information and evolution of the clinical picture, as few patients bring the spider with them for identification. The symptoms and signs of sac and violin spider bites are basically similar. Redness or a red mark appears to be a consistent finding in most patients. Within 12 – 24 hours the bite site may become erythematous, oedematous, painful with mottled haemorrhagic areas or blisters. After a couple of days the lesion may resemble a furuncle or carbuncle. In most cases the process is self-limiting. In the minority of cases the local lesion may be complicated by an aggressive, spreading cellulitis and a subcutaneous suppuration. Necrosis at the bite site may take 3 – 7 days to develop.

Differential diagnosis:
Necrotic arachnidism is an over-diagnosed clinical entity and is often a convenient diagnosis for unexplained local tissue injury/dermal necrosis. In the majority of cases, there is no positive history of the person actually having been bitten by a spider, and if so the spider is rarely caught and identified. If there is no history of an actual bite, diagnosis and investigations must focus on other important causes of dermal necrotic ulcers. These include infections (bacteria, fungi, viruses or parasites), inflammatory, vascular, and neoplastic aetiologies.

Management:
Treatment is primarily symptomatic and supportive and should be directed at preventing and treating infections. The majority of lesions are self-limiting and will heal spontaneously. Other possible causes should be excluded. Misdiagnosis of other serious disease states, e.g. cancer and resistant staphylococcal infections, may lead to irreversible, grave or lethal outcomes. A definite spider bite requires that the following criteria be met: (a) typical clinical effects at the time of a bite, (b) the spider being caught at time of the bite, and (c) spider identification by an expert.

Way forward:
A 'patient case report form' was developed as an attempt to improve the quality of documentation, identification, diagnosis and management of necrotic arachnidism (cytotoxic spider bites). The report form is available on request.

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ORAL PRESENTATION

TAXONOMY / SYSTEMATICS

A revision of the South African pseudoscorpions of the family Gymnobisiidae

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Despite recent taxonomic revisions and phylogenetic analysis, detailed morphological and ecological data is still lacking for the vast majority of pseudoscorpions, including the poorly-known South African fauna. Many of the original species descriptions are no more than a single paragraph with a simple sketch. Taking this into consideration, the need for detailed revisions of our indigenous fauna was recognized. A revision of the South African Geogarypidae spearheaded this endeavour and was completed in 2016. It was then decided that a revision of indigenous Gymnobisiidae fauna would build on the foundation laid down by the 2016 study. The South African Gymnobisiidae fauna consists of three species in the genus *Gymnobisium* Beier, 1931, with the genus being indigenous to the region. Of the three species, only the recently discovered troglobitic *G. inukshuk* Harvey & Giribet, 2016 is well described. *Gymnobisium octoflagellatum* Beier, 1947 is only known from a single male specimen, with the holotype currently in poor condition. *Gymnobisium quadrispinosum* (Tullgren, 1907), in comparison, was described from a deutonymph. Morphological data from the current study suggest that there are seven distinct species of Gymnobisiidae within South Africa, four of which are new to science. Here a brief report is presented on the progress of the project thus far, and what still needs to be achieved.

ORAL PRESENTATION*

ECOLOGY

Ecological studies of the spider fauna in Awka, South-Eastern Nigeria

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A study of spider communities in four habitats (farmland, fallow, marshy and forest) was conducted in Awka, south-eastern Nigeria between April 2012 and March 2013. Pitfall trap, sweepnet and jarring methods were used and the influence of some abiotic factors investigated. Two of the nineteen families found were new to Nigeria. Fallow habitat with 15 families and 337 individuals was the most productive habitat among the four, while the farmland showed the highest diversity index of 2.11. Lycosidae was the highest in abundance, species diversity and distribution within and across habitats. All four families recorded in the forest were also found in all the other habitats, except Zodariidae, which was not found in the marshy habitat. The other three habitats have exclusive families. A Duncan test showed that there was a significant difference between pitfall trap effort and the other methods in both abundance and species richness. Correlation coefficients showed a significant relationship between efforts of sweepnet and jarring methods, and temperature. Spiders caught by pitfall traps from fallow and marshy habitats showed a significant relationship with rainfall. Uloboridae and Nesticidae were the new additions to the family list of the very little known Nigerian spiders. Lycosidae was found to be the most abundant and dominant group in the area. While all the methods were good, pitfall trapping was the most efficient and the only method to collect Zodariidae. Rainfall and temperature showed some level of influence on the population and distribution of spiders in marshy and fallow habitats, particularly.

ORAL PRESENTATION

BIOLOGY

Formidable foes: *Desis formidabilis* (Araneae: Desidae) and its unique parasitoid, *Echthrodesis lamorali* (Hymenoptera: Platygastridae)

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Desis formidabilis (Araneae: Desidae) is one of only 11 spider species known to survive, feed and reproduce within the intertidal region in southern Africa. Although a potential range contraction was recently suggested, the species is historically recorded from Lüderitz (Namibia), around the South African coastline to East London (Eastern Cape, South Africa), where it nests in cool, wet areas beneath shells or in crevices on rocky shores. To cope with salt-water inundation during high tide, *D. formidabilis* seals its nest with silk, or is capable of forming a plastron around the body in the event of accidental submersion. Within a small section of its distribution, the eggs of the spider are attacked by a small Cape Peninsula endemic parasitoid wasp, *Echthrodesis lamorali* (Hymenoptera: Platygastridae). The relationship between the two species is hypothesized to have led to life history adaptation in both. *Desis formidabilis* exhibits compartmentalization of the nest, possibly as a parasitism response to attack by *E. lamorali*, while the endemic nature of the wasp may be linked to, amongst other environmental factors, spider nesting behaviour. This fascinating and unusual relationship between the maritime parasitoid wasp and spider will be discussed.

POSTER PRESENTATION

CONSERVATION

Threats to southern Africa's unique scorpion fauna

L. Prendini
[presented by C.R. Haddad]

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Southern Africa contains 8% of the world's scorpion genera and at least 10% of the species. Approximately 38% of the genera and at least 86% of the species are endemic. Three genera—*Hadogenes* (Hormuridae), *Opistophthalmus* (Scorpionidae) and *Parabuthus* (Buthidae)—dominate the fauna, comprising approximately 67% of the species. Each is characterised by numerous morphological novelties. Fossorial *Opistophthalmus* and *Parabuthus* possess uniquely different stridulation organs on the chelicerae and metasomal segments, respectively. Dorsoventrally compressed, lithophilous *Hadogenes* exhibit the highest trichobothrial counts among scorpions. Some *Opistophthalmus* display the lowest pectinal tooth counts. *Hadogenes* includes the world's longest scorpions, e.g., *H. troglodytes*, which reaches a length of 210 mm and a mass of 32 g. *Parabuthus* includes the world's largest buthid scorpions: *P. granulatus*, *P. schlechteri*, *P. transvaalicus* and *P. villosus* can reach a length of 140 mm and a mass of 14 g. Several *Opistophthalmus* are exceptionally large, e.g., *O. gigas* reaches 160 mm. Many *Opistophthalmus* display dimorphism in pedipalp chela shape and pectinal tooth counts, whereas many *Hadogenes* are characterised by dimorphism in metasomal length. Unfortunately, this unique diversity is increasingly threatened. Habitat destruction by agriculture, mining and urbanization continues unabated and illegal harvesting for the exotic pet trade has surged in recent years. Several species are now critically endangered. The threats to southern Africa's range-restricted scorpions makes the need to (1) complete the inventory of their diversity and distribution, (2) red-list the species, and (3) implement a robust framework for their protection, an urgent priority to ensure their continued survival.

ORAL PRESENTATION

BEHAVIOUR

The Achilles' heel hypothesis: misinformed keystone individuals impair collective learning and reduce group success

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Many animal societies rely on highly influential keystone individuals for proper functioning. When information quality is important for group success, such keystone individuals have the potential to diminish group performance if they possess inaccurate information. Here, we test whether information quality (accurate or inaccurate) influences collective outcomes when keystone individuals are the first to acquire it. We trained keystone or generic individuals to attack or avoid novel stimuli and implanted these trained individuals within groups of naive colony-mates. We subsequently tracked how quickly groups learned about their environment in situations that matched (accurate information) or mismatched (inaccurate information) the training of the trained individual. We found that colonies with just one accurately informed individual were quicker to learn to attack a novel prey stimulus than colonies with no informed individuals. However, this effect was no more pronounced when the informed individual was a keystone individual. In contrast, keystones with inaccurate information had larger effects than generic individuals with identical information: groups containing keystones with inaccurate information took longer to learn to attack/avoid prey/predator stimuli and gained less weight than groups harbouring generic individuals with identical information. Our results convey that misinformed keystone individuals can become points of vulnerability for their societies.

ORAL PRESENTATION*

ECOLOGY

Spiders and holistic management practices at Debshan Ranch, Shangani, Zimbabwe

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The multiple benefits of mob grazing are attracting considerable attention. These, among others, include increased soil organic matter, weed control and grass health. However, its impact on the arthropod fauna has not been studied yet. We use a matched pair design (grazing vs. no grazing) in three areas of the Debshan Ranch, western Zimbabwe, to assess the response of spider diversity to holistic planned grazing at six time intervals (surveys): before, during, 1, 3, 6 and 10 months after cattle introduction. At each of the six sites, sampling points were positioned 50, 100, 200 and 400 m along four perpendicular transects leading away from the cattle kraal (shelter) for a total of 16 sampling points. Spiders were sampled using pitfall traps and sweep netting at each of the sampling points. Generalized linear mixed models with Poisson error structure for family richness and spider abundance values were used to model the effects of grazing and distance from kraal. Spider abundance and family richness caught by pitfalls in the first four survey periods is significantly higher than caught by sweep nets. Although there has been a significant increase in spider abundance caught in the sampling periods, grazing had a negative effect on spider abundance but not spider family richness. Moreover, grazing interacts with distance to produce higher abundance of spiders at the furthest distance class. The intermediate disturbance hypothesis suggests that diversity peaks at intermediate levels of disturbance. The abundance model explained 60% of the variation, whereas the richness model explains only 9%. Data field collection for the time intervals of 6 and 10 months after cattle introduction still has to be done. Spider identification for all spiders has been done to family level; taxonomic resolution to species level is still ongoing.

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ORAL PRESENTATION

SANSA WORKSHOP

Making the case for conservation of spiders

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In the growing South African economy, biodiversity is constantly in competition for attention and limited resources. Within and among conservationists, more charismatic animals are always prioritises and invertebrates are often neglected and not advocated for. The neglect is often attributed to the lack of knowledge for the group and the many unresolved taxonomic issues. Through the project The Red List of South African Spiders, several consultation workshops were held to shed light on these very issues, and the current knowledge is being packaged to help conservationists make the case for spiders. Lessons learned from previous similar projects, e.g. Conservation Assessment of Butterflies, indicates that despite the continued drive for a balance between conserving a species and subsistence projects envisioned to create jobs and alleviate poverty, the wellbeing of species should be considered in decision-making processes. For example, data and knowledge generated through the Conservation Assessment of Butterflies project is used in making the case for the expansion of protected areas and in Strategic Environmental Assessments (SEA) for Strategic Infrastructure projects (SIPS). We therefore have a challenge and responsibility to upgrade the status or importance of spiders, identify areas and processes through which data and knowledge generated from The Red List of South African spiders will help advocate for the protection and/or conservation of spiders.

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ORAL PRESENTATION*

TAXONOMY

An overview of the spiders of Sudan

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Sudan covers a large area of eastern Africa and is of particular biogeographical interest for hosting a range of environments. A number of 153 valid spider species for Sudan, in its traditional sense, is based on the published literature. Following the political division of the country into the Republic of the Sudan and South Sudan, this translates into 113 and 59 species for these two countries, respectively. Six species of spiders (Arachnida: Araneae) are newly recorded from a series of localities in the eastern part of the Republic of the Sudan. *Crossopriza pristina* (Simon, 1890) (Pholcidae) was found at Tokar and New Halfa. These represent the first African records of this species. *Hippasa cinerea* Simon, 1898 (Lycosidae) was found at New Halfa, *Pardosa oncka* Lawrence, 1927 (Lycosidae) and *Wadicosa fidelis* (O. Pickard-Cambridge, 1872) (Lycosidae) were both found in the Dinder National Park. *Plexippoides favescens* (O. Pickard-Cambridge, 1872) (Salticidae) was found at New Halfa, and *Pseudicius spiniger* (O. Pickard-Cambridge, 1872) (Salticidae) – already known from South Sudan – is here reported from the Dinder National Park in the Republic. Additionally, we offer several new locality records for five species previously documented from the Republic of the Sudan. *Afroflistata fradei* (Berland & Millot, 1940) (Filistatidae) was found at New Halfa, *Ocyale pilosa* (Roewer, 1960) (Lycosidae) was found in the Dinder National Park, *Pardosa injucunda* (O. Pickard-Cambridge, 1876) (Lycosidae) was found at New Halfa, Kassala and in the Dinder National Park, *Thomisus daradioides* Simon, 1890 (Thomisidae) at Khashm El-Gerba and at New Halfa, and *Plexippus paykulli* (Audouin, 1825) (Salticidae) at New Halfa, Kassala and in the Dinder National Park. This brings the total species count for the Republic of the Sudan up to 119. Additionally, some new localities for five species already known from this country are documented.

POSTER PRESENTATION

SANSA WORKSHOP

Spiders of the Mariepskop Summit: faunistic diversity and affinities with the Natal Drakensberg Afromontane Fynbos and the Cape Fynbos (Arachnida: Araneae)

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Spiders were sampled on the Mariepskop Summit. High elevation mountain summits often harbour some unique and endemic taxa. The majority of the summit is classified as belonging to the Northern Escarpment Afromontane Fynbos of the Mesic Highveld Grassland Bioregion, situated within the Grassland Biome of South Africa. The aim of this study was to identify species with affinities to the fauna of the Natal Drakensberg Afromontane fynbos and the fynbos of the Cape, and also investigate whether or not spider assemblage structure differs between four different plant communities. During three surveys between 2013 and 2014, using six different collecting methods to allow the capture of a wider range of species, fifteen study sites spread across the four plant communities were sampled. Forty-three spider families, represented by 102 genera and 128 species, have been collected. The most species-rich families are the Salticidae (22 spp.), followed by the Thomisidae (12 spp.) and Araneidae (9 spp.), while 18 families are represented by singletons. The Shrubland, with 785 specimens represented by 79 spp., had the highest species diversity, followed by the Forest (n=328, 51 spp.), Grassland (n=282, 58 spp.) and the Rocky Community (n=168, 45 spp.). The Forest community was found to be the most distinct from the other communities. Thirty-eight species from 21 families were collected that probably have an association with fynbos vegetation; they are, however, not necessarily restricted to fynbos vegetation. The high number (17%) of indeterminate species may be indicative of the unique fauna, and contributes towards the 5.8 % of the total South African spider fauna presently protected on Mariepskop.

POSTER PRESENTATION

SANSA WORKSHOP

Jumping spiders of the Diamond Route Reserves

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As part of the South African National Survey of Arachnida (SANSA), surveys are undertaken in protected areas to determine the species that already receive some form of protection in South Africa. One of these projects focused on sampling in the different Diamond Route Reserves of the Oppenheimer De Beers group. As part of a jumping spider virtual museum project, a database on South African salticids has been developed. So far a total of 67 salticid species from 31 genera have been sampled and photographed from the Diamond Route Reserves. In this poster a photo gallery of 18 salticid species recorded from the Benfontein, Ezemvelo, Rooipoort, Tswalu and Venetia reserves and the Wakefield farm illustrates the rich diversity of the jumping spiders of the Diamond Route.

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ORAL PRESENTATION

CONSERVATION

Arachnids and animal welfare in display facilities: is it really necessary?

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During the last 10 years a marked shift in animal welfare in zoos and aquaria has been seen. World-wide condemnation of bad animal husbandry has seen zoos, aquaria and other animal display facilities upgrading their welfare and ethical policies. It is all good and well for mammals, birds and reptiles, but do we care about the welfare of terrestrial invertebrates, especially spiders and scorpions? Is it just acceptable to use arachnids as entertainment and fear-provoking animals in these centres, or can they actually be used as education tools to enlighten a largely ignorant public on the ecological value of these animals? The Pan-African Association of Zoos and Aquaria developed a Standard Operating Procedure with regular audits to screen the quality of animal care in their member facilities. During the presentation this process will be briefly discussed, as well as commenting on the styles of arachnid displays and the success of these in PAAZA member facilities.

POSTER PRESENTATION

SANSA WORKSHOP

Rich spider diversity of a native grassland in the Gauteng Province

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Interest in the invertebrate faunas of urban and suburban areas has increased in the last few years. These areas can be potential corridors for dispersal of wildlife through urban areas, promoting connectivity between species' meta-populations both within and outside towns and cities. This study reports on a six-year arachnid survey undertaken in a native grassland near the Irene village in Centurion, Gauteng province of South Africa. Forty-two spider families represented by 150 genera and 257 species have so far been collected, with the Salticidae (43 spp.), Araneidae (33 spp.) and Thomisidae (33 spp.) the most species-rich families. All species have been photographed and made a valuable contribution to the SANSA Virtual Museum. This study forms part of the SANSA Grassland project.

POSTER PRESENTATION*

ECOLOGY

Effect of veld fire and road disturbances on the abundance and species richness of spiders associated with *Hyparrhenia hirta* grass tussocks

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Many human activities threaten the existence of the South African grassland biome, including agriculture and urbanization. This biome is of great ecological importance due to its high diversity of plant life and animals. Disturbances in this habitat often result in *Hyparrhenia hirta* (common thatching grass), a pioneer species, dominating the area. This plant species is very resilient and can tolerate infertile soil and frequent veld fires. The effect of veld fires and road disturbances on the species richness and abundance of spiders associated with *H. hirta* were examined at three grassland sites in the Free State province of South Africa over a period of two years. Over the two-year sampling period there was a substantial decline in spider abundance (58.09%) and species richness (28.17%), especially in the pristine habitat. This was likely due to the severe drought experienced by South Africa since 2015. The pristine habitat also had the strongest correlation (although generally weak) between tussock properties and spider assemblages. This suggests that the spider assemblage in the pristine habitat is more sensitive to changes and habitat properties. Overall, *Tibellus* sp. immatures (Philodromidae) and *Poachelas striatus* (Trachelidae) were the most abundant spider species, while Philodromidae and Gnaphosidae were the most abundant spider families at all three sites for both 2015 and 2016. The most species-rich families were Gnaphosidae, Salticidae and Thomisidae.

POSTER PRESENTATION

SANSA WORKSHOP

SANSA: Spider diversity of the Addo Elephant National Park

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This study forms part of the South African National Survey of Arachnida (SANSA) in protected areas in the Eastern Cape of South Africa. SANSA presently has an agreement with SANParks to survey the National Parks of South Africa. The relatively poor knowledge of the arachnids of the Eastern Cape provided the impetus to set up a survey for the Addo Elephant National Park (AENP). The AENP, an area of 180 000 ha, is 72 km from Port Elizabeth. It lies in the dense valley bushveld of the Sundays River region and boasts five out of the seven floral biomes. A survey of arachnids in the AENP started in June 2009. Surveys were undertaken in the semi-arid Sundays River succulent thicket around Darlington Dam, where 105 spider spp. have been sampled; the fynbos and Afromontane forests of the Zuurberg Mountains (74 spp.); the subtropical thickets of Kabouga area just north of Kirkwood (52 spp.); the Alexandria coastal forest and dune thickets of Woody Cape area (113 spp.); and the Albany thicket of the main camp in the Sundays River Valley (65 spp.). To date 48 families represented by 266 species have been recorded. The Thomisidae (36 spp.) is the most species rich family, followed by the Araneidae (32 spp.) and Salticidae (28 spp.) Photographs of collected specimens provided a valuable contribution to the SANSA Virtual Museum. The survey in the AENP will continue for another two years.

ORAL PRESENTATION

SYSTEMATICS

Amazing characters found in African Chediminae (Araneae: Palpimanidae)

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In the presentation we will speak about the features recently found in several genera of Chediminae occurring in Africa, such as unique eye pattern in two new genera; mechanism locking epigastral furrow in *Chedima*; weakly sclerotized embolus in all genera; and a new mechanism of sperm transfer in *Diaphorocellus*.