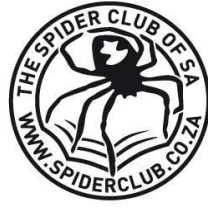


The Spider Club News



JUNE 2018 – VOLUME 34 No. 2



Spider paraphernalia : Ex-arachnophobe Irma's adorable spider slippers

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Don't forget to consult the SCSA diary on our website and Facebook page for super events coming up soon. If you are a registered SCSA member you will receive emails and/or texts advising you of what's coming up. As usual, Norman Larsen will be in attendance at the Cape Union Mart Adventure Centre in Cape Town's Canal Walk every Saturday from 11-12 to demonstrate and talk about spiders.

About the Spider Club

The Spider Club of Southern Africa is a non-profit organisation. Our aim is to encourage an interest in arachnids – especially spiders and scorpions - and to promote this interest and the study of these animals by all suitable means.

Membership is open to anyone – people interested in joining the club may apply to any committee member for information.

Field outings, day visits, arachnid surveys and demonstrations, workshops and exhibits are arranged from time to time. A diary of events and outings is published at the end of this newsletter.

Our Mission Statement

"The Spider Club provides a fun, responsible, social learning experience, centred on spiders, their relatives and on nature in general."

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... At the Spider Club of Southern Africa page

Note from the Editor



We have quite a varied newsletter this quarter, which includes some wonderful photos from Singaporean macro photographer Nicky Bay, taken in Gorongosa National Park in Mozambique. Central Mozambique is a wonderful area to visit, and Gorongosa NP is not far south of Mount Gorongosa itself. I visited this area in early 2010 and climbed the mountain as well as visited the national park. Highly recommended for its wildlife, though I did not enjoy the tsetse flies! (at lower altitudes).

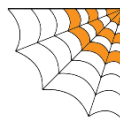
We have a book review and report on some scientific papers including one co-authored by member Dr Ian Engelbrecht.

Ian also wrote a moving obituary on Ethne Engelking and we mourn this untimely loss to the citizen science community of southern Africa.

We also welcome Laylaa Suliman to the committee. Laylaa is very enthusiastic, and has become an essential component of our expo team. She writes her first contribution to our newsletter in this issue. And note that our committee is now made up in the main by young people in their twenties and early thirties! Which bodes well for the future of the club.

Yours in spidering

Joan



FROM THE HUB WINTER 2018

Spiders spin silk, they weave webs



ANNUAL GENERAL MEETING: On 10th June we held our AGM at Kloofendal Nature Reserve in their rather splendid Eco Centre. After the general club business Ian Engelbrecht gave an emotional obituary for Ethne Engelking from Otjiwarongo who tragically died in a car crash. She was instrumental in running the Baboon Spider Atlassing project with Ian through the Animal Demography Unit at the University of Cape Town. (See page 18 for more information on the project). Then Jonathan Leeming gave a slick presentation “Bite me!” on the non-danger of spider venom, and introduced us to his new, self-published book “One World” which will be reviewed by Laylaa Suliman in next quarter’s newsletter.

The committee has stayed essentially the same although Jaco le Roux is now officially off it and Laylaa Suliman has joined the committee. She has been a staunch supporter of the club for several years, attending most field events and charming all and sundry at our demonstrations. Details of the full committee are on page 3.

PERMITS FOR BABOON SPIDERS AND SCORPIONS: All baboon spiders and all non-buthid scorpions are listed on the ordinances of all provincial nature conservation bodies and as such a permit ought to be sought to collect, keep and transport these animals anywhere in South Africa. This is because these charismatic arachnids could be endangered mainly because they are sought after by the international pet trade. This has been so for many years but came to a head recently because one of our enthusiastic members, Joanie Beytell, “rescued” a baboon spider from a wasp, rehabilitated it and kept it. At the time she was unaware that it was illegal to keep it without a permit from Nature Conservation and because of the publicity she was advised to apply for one. She did, the permit was refused, the spider confiscated and Joanie was fined. So, Spider Club members, please be aware that at least the Gauteng Directorate of Agriculture and Rural Development (GDARD) has teeth and uses them.

ANNUAL SUBS: On 1st July we start our new “financial year”. If you would like to pay your annual subscription, the time to do so is now. Subs are still R120.00 per annum and this huge sum allows you and your immediate family to attend all Spider Club events for free. Those who don’t pay their annual subscription have to cough up R50 per person per event! So you see, if you intend to bring your spouse, offspring or parents to an event or you alone attend three events per year it is well worth paying R120.00. An annual subscription renewal form is attached.

DIARY: We have to postpone the sorting session which was diarised for 15th July and will now take place on **5th August**. We simply need more time to prepare worksheets and easy-to-use keys. On **28th July** Joan and Laylaa will be running our stand at the Pretoria branch of the SANPARKS Honorary Rangers’ annual show at the Pretoria Botanical Garden. Our first field trip will be on **16th September** to the Alice Glockner Provincial Nature Reserve off the N3 highway just beyond Suikerbosrand.

Keep warm.

Astri Leroy



OBITUARY -ETHNE ENGELKING

It is with a heavy heart that I write this piece. As I'm sure everyone is now aware, Ethne Engelking passed away tragically in a motor-vehicle accident on the afternoon of the 8th May 2018. Ethne was a fervently active member of many of the biodiversity and conservation related social networks that most of us are now part of. The news of her passing sent shock waves through those communities. Sadly, I had never personally met her, but another of my friends and arachnological associates, Paul Bester, did so, during a trip to Namibia several years ago. He recounted the story of her friendly, generously hospitable, and somewhat distractible nature – distractible in the sense that she always had her eyes open for the next interesting little creature that might cross her path, and would often stop mid-conversation to pursue and examine said creature. I had repeatedly promised to visit her at her home town of Otjiwarongo in Northern Namibia. Sadly, that is no longer a possibility.



My first recollection of Ethne was when she got in touch via Facebook after a friend of mine had released a short video of the highlights of an expedition we had done in the Soutpansberg where we had rediscovered a rare baboon spider species. In that video we had footage of pitfall traps that we'd set up to catch the spiders. Anyone who knows about pitfall trapping, knows that it is seriously hard work. That first message from Ethne had photographs of pitfall traps she'd already set up in her back yard, inspired by what she saw in the video, asking if the setup was correct. This is not the kind of message that an arachnologist receives every day, and it was my first glimpse of the passion and dedication of this special person.

Ethne and I stayed in touch about spider and scorpion related matters after that. She was often out with her UV light at night searching for scorpions, or turning rocks during the day, ever eager to learn how to identify the various spiders and scorpions she found. She took every opportunity she could to travel to interesting parts of the country for the same purpose. She came across some incredible animals too, including some special burrowing scorpions that use their tails to tap on the ground to communicate with each other like toktokkie beetles.

It soon became clear that Ethne was a doer, the kind of person who likes to get things done. I invited her to become involved in the Baboon Spider Atlas project to assist with harvesting photos from social media, and she took to the task like a duck to water. It was a fantastic experience working with her. We experimented with different ways of approaching people, the kind of wording to use in private messages, and the processes we'd follow to channel those records where they needed to go. I even drew up a process flow diagram, which she was very excited about – the only person I can recollect ever being excited about one of my process flow diagrams! Eventually we got it right and she was off, messaging each and every person she could find who had posted a baboon spider photo to get the relevant details and permission to use it.

Her role in the atlas project cannot be understated. Data contributions come from two sources. One is the large community of citizen scientists to actively contribute photographic records to the ADU Virtual Museum (which the Atlas is built on) on an ongoing basis. The second is social media. Ethne was so effective at what she did on social media that she single-handedly matched the number of contributions from the whole of the ADU community together. The project has built the largest database on baboon spider distribution in existence in a very short time, and we owe that success in large part to Ethne's hard work and dedication.

Her contribution went beyond this though. She was so enthusiastic about being involved that she offered to assist with doing identifications on the Virtual Museum's SpiderMap project, which captures records of all kinds of spiders. As it currently stands, she is the top contributor of identifications by a very long margin, having identified well over 3000 records during the two years that she was involved. Her involvement in social media also went beyond simply asking people for their baboon spider photos, and her presence and contributions were well known and respected. Her passing has left a very large hole in the lives of the people who knew her. The outpourings of heartfelt sorry that we all saw are a testament to this. Her contributions are irreplaceable. She will be missed.

Ian Engelbrecht

8th June, 2018



BOOKS

Amazing Arachnids: Jillian Cowles

ISBN 978-0-691-17658-1

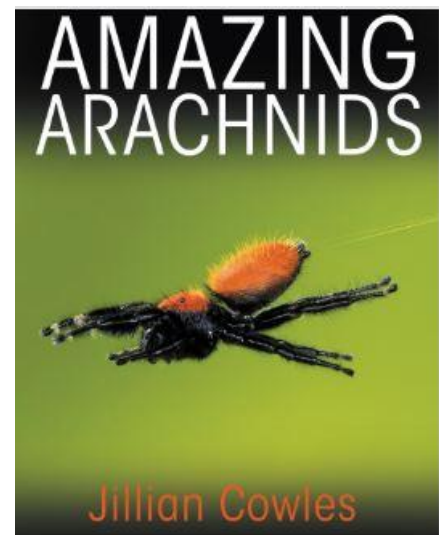
2018 Princeton University Press, USA

Hardcover 328 pages

R604 at Loot.co.za

US \$39.86 at amazon.com
(Kindle version US \$41.40)

Review by Joan Faiola



On the face of it, this book calls to mind the excellent *Arachnids*, by Jan Beccaloni (Natural History Museum 2009), which we reviewed after its publication in 2009, and which is still in print. *Amazing Arachnids* has a slightly different approach, in that it concentrates mainly on the fauna of the southwestern United States, mostly Arizona, and looks at that in some detail. The author has studied this fauna and has included photographs of arachnid behaviour that she witnessed. Therefore, there are sequences showing, for instance, a scorpion giving birth, or the hunting technique of a spitting spider.

The book, after the usual introductory chapter, is divided into sections covering 10 of the 11 extant arachnid orders. The author does not cover Ricinulei (hooded tick spiders), which are not present in the Southwestern United States. This is the case in South Africa too. Beccaloni contains a chapter of 12 pages on Ricinulei, if you need to find out more about them. In the book under review, 9 of the 10 orders get a chapter each, but spiders get 12 chapters, covering more than half the content of the book.

General evolution and biology of the orders is covered in the introductory chapter, and each section per order covers more detail of evolution, biology and behaviour.

As an example, the chapter on scorpions starts with the order's evolutionary history, explains fluorescing in scorpions, shows electron microscopy of the pectines and uses these photos to explain the use of pectines by the scorpion. It also includes courtship, birth and ecdysis. It is generously illustrated showing the scorpion diversity of the area.

Pseudoscorpions are shown to be fascinating creatures with the ability to produce "silk from their jaws, venom from their claws, and 'milk' from their ovaries". The photo sequences show the female carrying her embryos in a membranous pouch carried under the abdomen, the uses of silk for brood nests, moulting and hibernation chambers, and hitchhiking travel by pseudoscorpions as a means of dispersal (phoresy).

The chapter on Acari (ticks and mites) is quite short, but expounds the latest controversy that the two groups, Acariformes and Parasitiformes evolved from separate lineages and might possibly be two defined orders, with the latter evolving much later than the first. Once again molecular data is turning taxonomy on its head.

The book goes to town on Araneae – the spiders. There are interesting discussions on sociality, silk, sex and intelligence in spiders which are worth reading. Then follow 11 chapters, generously illustrated, dealing with the spider families that occur in the Southwestern United States. A lot of these families will be recognisable to South African readers, though there are a few that don't occur in South Africa but are nonetheless fascinating. For instance, the family Homalonychidae (sand spiders) are the result of convergent evolution when compared to *Sicarius* (now *Hexophthalma* for the African species) – they look similar and also have special setae on the body to hold sand particles, yet are unrelated to Sicariidae.

The other orders, Uropygi (Vinegaroons: also known as Thelyphonida), Schizomida (Short-tailed Whipscorpions), Amblypygi (Tailless Whipscorpions or Whipspiders), Palpigradi (Microwhipscorpions), Opiliones (Harvestmen) and Solifugae (Wind spiders, known as Romans or Sun spiders in South Africa) have short and well-illustrated chapters.

I was impressed with the book. It is well-written and engages with its factual accounts. I would certainly recommend it to anyone who wishes to learn more about arachnids. I was also impressed that Loot.co.za had it so soon after its release date on 23rd May 2018, and at a fair price when compared to its price in US dollars at Amazon. If you don't have the Beccaloni, this new book is quite a bit cheaper. (But why does the Kindle price exceed that of the hardcover price at Amazon?)



Yebo Gogga 2018

May 2018 at University of the Witwatersrand

By Laylaa Suliman



There is a Spider Club? It actually exists? A very common question when I tell people that my weekend plans include stripping the bark off trees, turning over rocks and whipping grass. Not to mention drawing the fear from people who have been bitten by the 'it is hairy and therefore scary' bug. I must admit that those interactions are the highlights of my year, especially when I am swarmed by school children, nervous students and enthusiastic families. I find that Yebo Gogga is the ideal opportunity to change minds and saves lives (arachnid lives).

This year was my second Yebo Gogga event and I felt honoured to represent the silent spiders and scorpions of Southern Africa. I am referring to them as silent because I feel that they are often misrepresented, many times by those who do not know them at all. This results in misinformed individuals, who I have found, are quick to make assumptions first and do the research and ask the questions later. That is where we come in, to answer questions, no matter how bizarre, and then sneak in some factual information. Gentle persuasion can take a lot of patience, especially when addressing a handful of 5-year-olds who are both curious but not yet convinced.



The event starts mid-week and runs from Wednesday to Sunday, plenty of time to treat the common arachnophobia symptoms. We stand behind our large exhibit with our showstoppers lined up, ready to attract a lot of attention, when the buses start pouring kids onto Wits Campus. An array of uniforms ranging from the 1930s-style dresses to golf shirts and jeans, flood our stand during the duration of Yebo Gogga. Nearly 1000 visitors per day at this year's event, we were

told! The mornings are the busiest as teachers are eager to hop their pupils from stand to stand as fast as possible. It is overwhelming for them since there are 40 exhibitors, all with a wealth of knowledge to share. Everyone is eager for as much foot traffic as possible. Some even use dried cricket tasters as bribery.

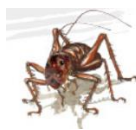
We had our own secret weapon, our UV torch. It does 'magic' right before our audience's eyes. I refer to it as magic because we have yet to determine exactly why they glow under UV light. This put our scorpions in the spotlight and gave them a chance to shine. We normally have Rain Spiders that are the stars of our stand but this time the scorpions stole the stage. We had four exquisite species, the *Parabuthus transvaalicus* which was our Mr. Venomous and a *Hadogenes gunningi* as Ms. Non-Venomous. The other two (two different *Opisthophthalmus* spp) spent the days in their makeshift splash pools (water bowls). We judged their unusual behaviour to be due to the lack of humidity in the air. It was rather fascinating to witness.

The behaviour of the crowd was even more amusing especially when they asked, 'is it alive?' while pointing at the Giant Flat Rock Scorpion - our preserved specimen kept in a really flimsy plastic and styrofoam container. I did the classic: "No, but this one is." and revealed the statue-still live Flat Rock Scorpion (*Hadogenes gunningi*). I think I lost a bit of trust when they expected her to yawn or do something lively. Either way, she was a major hit and deserves an award for her composure throughout the event. Another worthy mention is the Velvet Spider (Eresidae: *Gandanameno* sp), a recent mother yet incredibly calm as we exposed her neat web attached to a piece of bark.

The live specimens play a major role in educating the public about arachnids and proving how essential their existence is. When we use the word 'defensive' over 'dangerous' it immediately alters the perception that spiders are not walking fangs or hunters of humans. I discovered that people do not want to be afraid, it is just a reaction to the unknown. That is why I even name the specimen, to make them familiar and recognisable. If a child sees Stormy the Baboon Spider or Sunshine the Flat Rock Scorpion again, alarm bells won't go off but rather light bulbs of positive associations based on these experiences. It is all about association at the end of the day.

I studied Branding so I am very familiar with the influence of connotations, especially negative ones. Events like Yebo Gogga allow us to show a different side to arachnids. Whether it ends up with people finding them cute, admiring their beauty or showing a new level of respect for them, it begins a transformation toward a deeper understanding of the natural world. That is why I will never miss a Yebo Gogga or the opportunity to share my undying passion and borderline obsession with spiders and scorpions.

(Photo of Astri Leroy at Yebo Gogga 2018 taken by Laylaa Suliman)



***Neobrettus* sp. in India, with original observations of the natural history of a little studied genus**

Dr Richard J. Pearce

It is well documented that, to date, there are more recognised species of jumping spider (Salticidae, Blackwall 1841) than in any other family. The World Spider Catalog (WSC, 2018) currently lists 6077 salticid species, distributed amongst 634 different genera. Thus, salticids account for close to 13% of all recognised spider species as of 2018. Species within the Salticidae vary markedly in body size, with larger species measuring in excess of 20mm (chelicerae to tip of opisthosoma). Many species are much smaller.

Salticid spiders are typically diurnal in habit and are active hunters, relying on excellent eyesight in conjunction with remarkably sophisticated problem-solving capabilities. Taxonomically, this entelegyne¹ family can be distinguished by a number of descriptive characters, including; a square-fronted carapace, four forwardly directed eyes with particularly large anterior median eyes (AME), two claws on each leg, short spinnerets (anterior and posterior pairs of similar length, whilst lacking cylindrical glands or spigots - Richman et al. 2017; Jocqué and Dippenaar-Schoeman, 2007).

Given the diversity of this family, coupled with the small size of many species, it is hardly surprising that many species are overlooked and underrepresented in the research literature. Salticid spiders in the genus *Neobrettus* are a perfect example of this. The spiders are generally small (females may measure between 2-4 mm), exhibit cryptic colouration and are little known. Six *Neobrettus* species have currently been described (WSC, 2018), all within the Old World and, until recently, none further west than Bhutan, with most sightings across Southeast Asia. It was with some delight, therefore, that I was contacted by a friend and colleague, Javed Ahmed, regarding the first recorded sightings of *Neobrettus* sp. in India. Not only did we now have evidence of the most westerly sighting of this delightful genus, but Javed and his team had also been able to make a number of original observations regarding the ecology and behaviour of these spiders.



**Figure 1: *Neobrettus* sp. observed in West Bengal (India)
a) Adult female b) Adult male**

Collaborating with Javed and his team, I was delighted to help explore and interpret these behaviours, resulting in our recent publication in *Peckhamia* (Ahmed et al., 2018). Indeed, what we have learned about *Neobrettus spp.* reveals spiders with a truly fascinating ecology. We were fortunate to obtain observations of both sexes in the wild (Figure 1), including foraging behaviour), with a series of observations following female *Neobrettus sp.* from construction of egg sacs to eventual hatching and distribution of the spiderlings.

Foraging behaviour included observations of oophagy², with females stealing eggs from other salticids. Of particular note was the tendency of females guarding their egg sacs to feed on small numbers of their own eggs. This unusual behaviour (filial egg cannibalism) may have evolved to allow the females to guard their eggs without leaving the egg sac to hunt. The sacrifice of a small number of eggs, thus, being outweighed by the potential gains associated with round the clock guarding behaviour on the part of the mother (especially given that oophagy by other spiders and egg parasitism by various parasitoids³ pose genuine threats). In order to test this hypothesis, further investigations will be required. Both interspecific oophagy and filial egg cannibalism, along with a number of other noteworthy behaviours, are described in more detail in our paper (Ahmed et al., 2018; see below for reference and a full link).



Figure 1: *Neobrettus* female observed engaging in filial egg cannibalism whilst guarding her egg sac from predators and parasitoids

Arachnology is a subject deserving of our attention and rewarding the observant with many original observations. The more we learn, the more we realise the critical role of spiders in terrestrial ecosystems. At the same time, we are discovering that many spider species across the world are faced with increasing pressure in a changing world and are under threat. With less than 0.5% of catalogued species assessed for extinction risk on the IUCN Red List (IUCN, 2017), never has there been a greater need to observe, record and report on spider distribution, behaviour and ecology.

Images of *Neobrettus* sp. © Indranil Banerjee

The full paper discussing our observations of *Neobrettus* in India can be found at:

http://peckhamia.com/peckhamia/PECKHAMIA_166.1.pdf

Peckhamia is an open access journal.

The author:

Dr Richard J. Pearce sits on the Council of the British Arachnological Society and is a member of the IUCN Species Survival Commission Spider & Scorpion Specialist Group. He is happy to be contacted on matters arachnological and can be reached via his Twitter account - @DrRichJP

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Footnotes

1 Entelegyne – Grouping of spiders with complex genitalia. Complex sclerotised epigyne in females with corresponding complex palp in males.

2 Oophagy – eating of eggs, in this case the female spider's own eggs by the female.

3 Parasitoid - a species which lives on or in another species, the host, feeding upon it.



SEEN BY JOH HENSCHEL IN ISRAEL

After Prof. Yael Lubin's visit to South Africa in January-February 2017, Joh Henschel visited her in Israel during November last year. A colleague, Dr. Efrat Gavish-Regev, took us to her study site in the Upper Soreq valley near Jerusalem, where *Tetragnatha* spiders had established an enormous colony, fed by midges and other insects emerging from the stream, enriched with Jerusalem's waste water. Millions of spiders and egg cocoons were associated with a silken mega-blanket, which covered all shore vegetation with silver angel hair as far as the eye could see. Spider heaven!

Photos by Joh Henschel

Below left: *Tetragnatha* on webs with egg sacs



Below right: Spider webs overhanging the Upper Soreq river



FILISTATIDAE: A family that is not well represented at our end of Africa

By Astri Leroy

Many of you will know of Nicky Bay's amazing macro photography and have seen the photos from his recent visit to the E O Wilson lab in Gorgongosa, northern Mozambique. (See photo spread in this issue.) He is from Singapore and is therefore more familiar with South East Asian spiders, so he asked us for identifications of "our" African spiders. The picture below had most of us very confused. I had NO idea what it could be but Nicky had asked if it was indeed a member of the family Filistatidae, which it is! The wonder of social media is that Ivan Magalhães from Brazil picked up the entry and said that it is indeed a filistatid and likely an undescribed species of the *Pritha/Tricalamus* group of genera. A first for Mozambique and probably the whole of southern Africa! This is the photo in question.



Nicky's comment:" It was found in a bark crevice. *Portia* was found just 30 cm above. I've already notified Piotr Naskrecki about it to keep a lookout at that tree and advise on the procedure should specimens be required". Piotr Naskrecki is an entomologist and a research associate with the Museum of Comparative Zoology at Harvard University, Associate Director at the E.O. Wilson Lab in Gorgongosa, Mozambique and amongst many other things, the author of the book *The Smaller Majority*.

Serendipitously at almost the same time George Wilson from Maun, Botswana posted a photo of strange little spider that again had me utterly confused. I first thought it could be a small male trapdoor spider of some kind so asked Ian Engelbrecht for his opinion. He was sure it was NOT any kind of trapdoor spider and he suggested Filistatidae. But my goodness - the two spiders really don't look alike. Off to Dippenaar's "Field guide to the Spiders of South Africa" again, the photograph of *Afrofilistata fradei* looks different. According to the field guide they have only been collected from Namibia and the arid parts of Northern and Western Cape and the dry far north of Limpopo Province.



According to Magalhães filistatids represent an antique lineage of araneomorph spiders which are most diverse in arid and semiarid regions of the globe. Phylogenetic relationships among its genera are still largely unexplored

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Photo Credits:

Page 16 – Nicky Bay

Page 17 – George Wilson



NEW PAPER ON THE BABOON SPIDER ATLAS SHOWS HOW CITIZEN SCIENCE CAN BE USED TO FURTHER KNOWLEDGE

A new paper by Heather Campbell and Ian Engelbrecht of the University of Pretoria demonstrates how citizen science can be combined with traditional scientific research to obtain meaningful information to document the diversity and distribution of baboon spiders.

The Baboon Spider Atlas (BSA) is a collaboration between scientists of the Universities of Pretoria and Cape Town.

Citizen scientists submit photos of baboon spiders with geodata. The database comprises the information obtained from the photographic records, together with data obtained from scientific surveys and collections. The BSA is the largest database of baboon spiders, with 2126 records as of 5th October 2017, with citizen science contributing the most records (1239) over a much shorter period (see graph Fig.3).

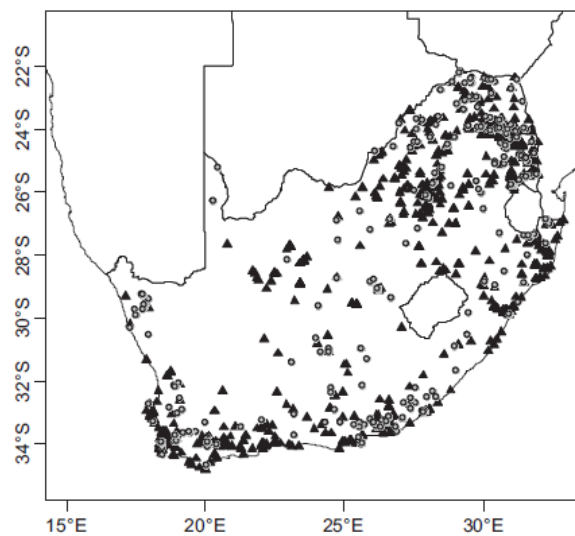


Fig. 2. Map of Baboon Spider Atlas database records for South Africa using all georeferenced point localities based on traditional sources of data (grey circles, $n = 438$) and citizen science observations (black triangles, $n = 969$).

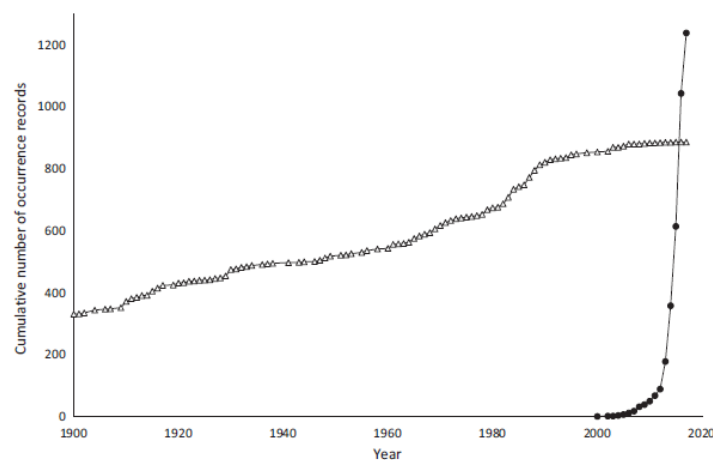


Fig. 3. Cumulative number of records contributed through citizen science (black circles, $n = 1239$), as well as traditional avenues of data collection including museum specimens and records from the published literature (white triangles, $n = 887$). For museum and literature records, many dates are before 1900, or are unknown, and are included here as pre-1900 records.

Preliminary analyses indicate 30 potential new species and show expansion of known species ranges. The findings are being used to analyse how distribution might be influenced by external factors such as rainfall and temperature.

Analysis indicates an unexpected result with regard to wandering behaviour. Contrary to traditional belief that only mature males wander (to find females) and that females and immatures do not leave their burrows, results show that 32% of wandering baboon spiders are adult females and 19% are immatures. This finding needs to be studied further.

Accurate distribution data is important for conservation planning and can be supplied by the Atlas.

BSA data collection is ongoing and will be useful for obtaining new insights on baboon spider ecology and behaviour. The success of the BSA shows potential for its methodology to be used in projects on other poorly known taxa.

If you wish to obtain an electronic copy of the paper, please contact the Spider Club.

Paper:

The Baboon Spider Atlas – using citizen science and the ‘fear factor’ to map baboon spider (Araneae: Theraphosidae) diversity and distributions in Southern Africa

Authors: HEATHER CAMPBELL and IAN ENGELBRECHT Department of Zoology and Entomology, University of Pretoria, Pretoria, South Africa

2017: The Royal Entomological Society

ABSTRACT:

1. Charismatic invertebrates are popular subjects for citizen science but it is harder to engage the public in research on animals that are perceived as dangerous. Many successful citizen science projects exist in North America and Europe, but with the increased use of new technologies and social media, there is a greater capacity to expand citizen science to less developed regions.
2. Baboon spiders are African members of the tarantula family. They are threatened by habitat loss and illegal harvesting for the pet trade, and conservation efforts are hampered by a lack of knowledge on their ecology.
3. Here, we describe the Baboon Spider Atlas, a project combining traditional research with citizen science to map the diversity and distributions of baboon spiders (Araneae: Theraphosidae) in Southern Africa. Our project embraces the ‘fear factor’ associated with spiders to obtain photographic records from the public.
4. The Baboon Spider Atlas has assembled the largest database of information on baboon spiders in Southern Africa and is providing novel insights into their biology. Distribution ranges have been extended and potential new species discovered. Preliminary results suggest that their distribution may be limited more by cold, wet climatic conditions than hot, dry conditions. Records for wandering adult females and immatures highlight a previously undocumented behaviour and challenges the notion that baboon spiders are sedentary animals. Ultimately, the project is generating the data needed for effective conservation and motivating further research that will provide a better understanding of baboon spider biology.

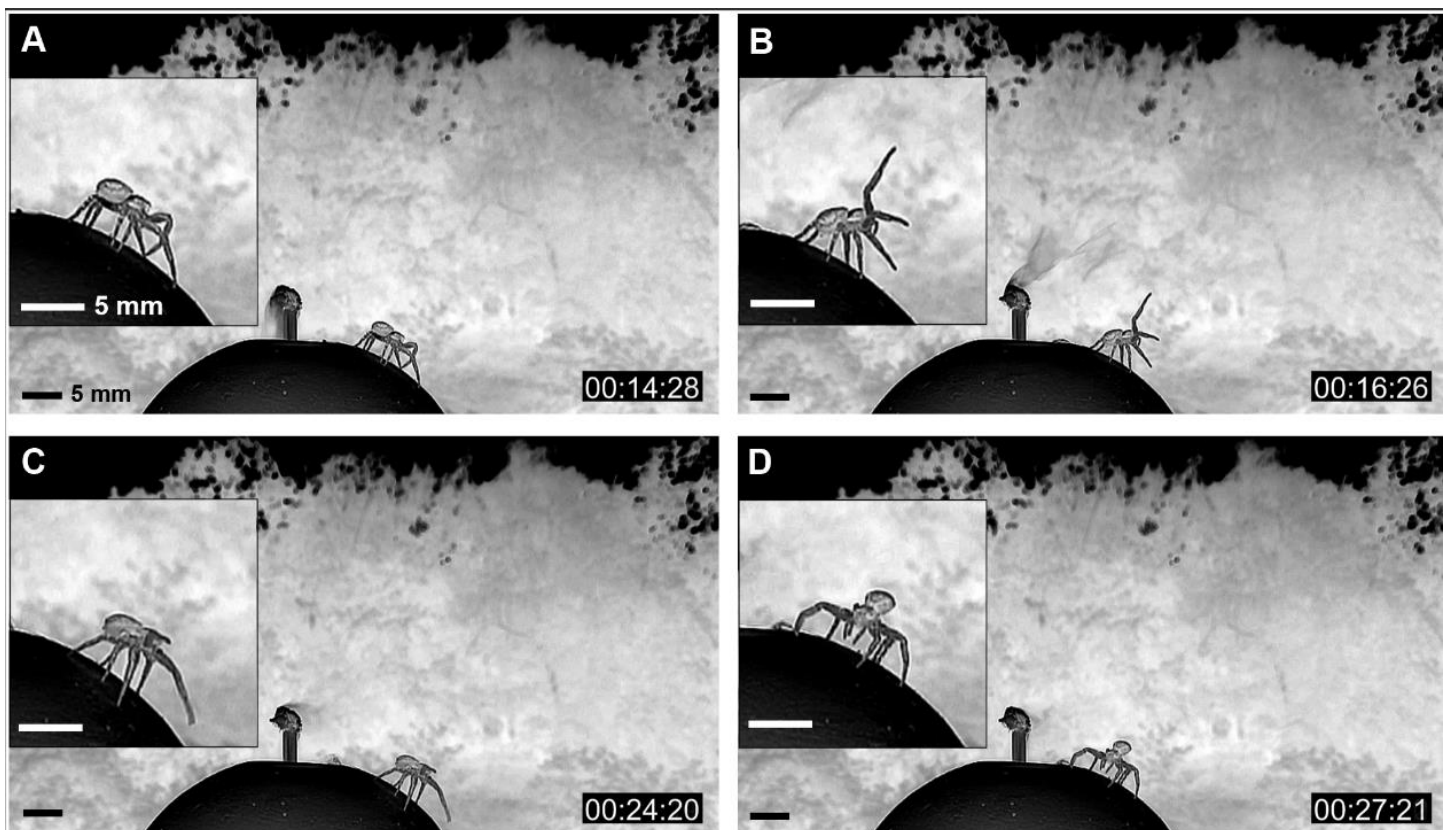


NEW PAPER ON BALLOONING IN SPIDERS

The authors of this very interesting paper draw attention to the fact that very little scientific study of ballooning in spiders has been done.

The authors used a set of experiments both in the field and in a wind tunnel, using relatively large *Xysticus* sp spiders (Thomisidae) with a mass of 16 – 20 mg. (Adults and sub adults – we normally associate ballooning with spiderlings dispersing a few days after hatching). They were able to observe and film the spiders' behaviour prior to ballooning, and found that spiders actively evaluate wind conditions by testing wind speed with the front leg (leg 1). The spiders preferred a relatively gentle wind speed of less than 3 metres per second.

In addition, the physical properties of the silk used for ballooning by the study spiders were identified. The spiders used 50 – 60 nanoscale fibres with a diameter of 121 – 323 nm¹ and a length of up to more than 3 metres.



Above: Fig 3. Sequence of active sensing motion with front leg (leg I) (negative images) – see paper for explanation.

Note 1 : nm stands for nanometer, an SI unit of length, equal to 10⁻⁹ m (a billionth of a meter).

Paper (Free access to the public):

Cho M, Neubauer P, Fahrenson C, Rechenberg I (2018) An observational study of ballooning in large spiders: Nanoscale multifibers enable large spiders' soaring flight. PLOS Biology 16(6): e2004405. <https://doi.org/10.1371/journal.pbio.2004405>



NEW PAPER ON THE MECHANISM OF JUMPING IN SALTICIDS

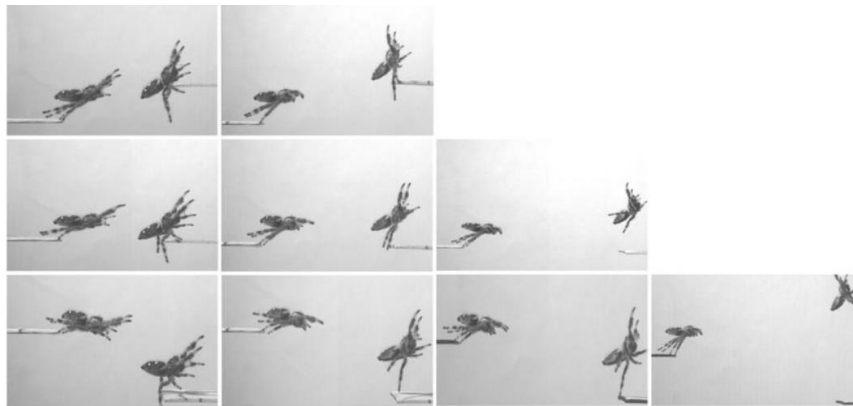
A new study at University of Manchester (UK) has demonstrated that a jumping spider can jump to order.

The purpose of the paper was in fact to study the mechanism of jumping in jumping spiders, the results to be applied to designing robots. The lead scientist is from the School of Mechanical, Aerospace and Civil Engineering and is not a zoologist, although the rest of the team work in Life Sciences. The team bought four *Phidippus regius* (Salticidae), a species from eastern North America, from a pet shop in Manchester, but only one of them, “Kim”, had the capability to jump to order. *P. regius* is a large species for a salticid, with a length of up to 20 mm. The biggest salticid in South Africa is *Hyllus treleaveni*, which attains a length of 17 mm.

Kim was able to learn to jump as required by the team in a series of measured experiments. The findings proposed that salticids use muscle contraction as opposed to hydraulics. More work should be done on this aspect, as it is common belief that salticids use hydraulics to perform their jumps.

The abstract to the paper sums it up:

“Jumping spiders are proficient jumpers that use jumps in a variety of behavioural contexts. We use high speed, high resolution video to measure the kinematics of a single regal jumping spider for a total of 15 different tasks based on a horizontal gap of 2–5 body lengths and vertical gap of +/-2 body lengths. For short range jumps, we show that low angled trajectories are used that minimise flight time. For longer jumps, take-off angles are steeper and closer to the optimum for minimum energy cost of transport. Comparison of jump performance against other arthropods shows that *Phidippus regius* is firmly in the group of animals that use dynamic muscle contraction for actuation as opposed to a stored energy catapult system. We find that the jump power requirements can be met from the estimated mass of leg muscle; hydraulic augmentation may be present but appears not to be energetically essential.



Above: Three of the jumps performed by the spider: Top - jumping to a platform above the take off platform. Middle – jumping to a platform on the same level. Bottom – jumping to a platform below the take off platform.

Energy and time optimal trajectories in exploratory jumps of the spider *Phidippus regius*

Mostafa R. A. Nabawy, Girupakaran Sivalingam, Russell J. Garwood, William J. Crowther & William I. Sellers

Scientific Reports volume 8, Article number: 7142 (2018). Freely available online at

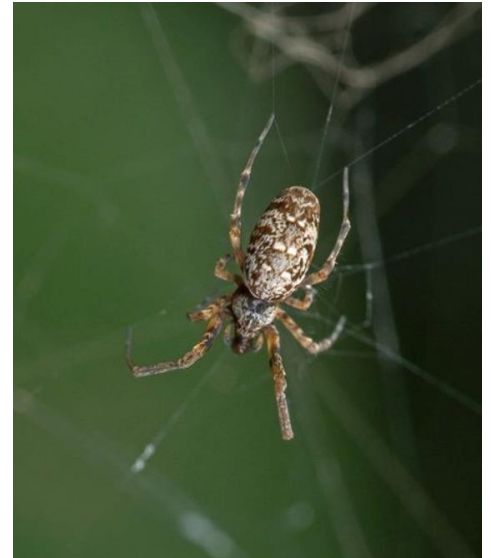
<https://www.nature.com/articles/s41598-018-25227-9>



SPIDERS OF GORONGOSA NATIONAL PARK

Here are some amazing photos taken by Nicky Bay from Singapore when he visited Gorongosa National Park in Mozambique with some other macro photographers. Nicky is more familiar with the fauna of SE Asia than southern Africa but we have done our best to identify the spiders shown.

Enjoy these AWESOME photos!



Top left: Tetragnathidae: *Leucauge medjensis*
Below left: Tetragnathidae: *Tetragnatha* sp

Top right: Uloboridae – found in web of *Cyrtophora*
Below right: Theridiidae: *Argyrodes* sp. poss *A. stridulator*



Top left: Salticidae

Centre left: face of *Olios* sp. (Sparassidae)

Bottom array: Idiopidae: possibly *Ctenolophus* sp. with close ups of eye pattern (above) and mating claw and male palp (below)

Top right: Araneidae: *Araneus* sp. Similar to, but not, *Araneus apricus*

Centre right: Baboon spider Theraphosidae

