

PARSA

Quarterly Newsletter

Issue 14
April
2013

Message from the editor

Dear PARSA Members

Thank you to everyone who sent through information for this quarter's newsletter. It is always so interesting to read about the research currently being done by the PARSA students (as well as their supervisors) and we encourage everyone to please submit their research articles to also be shared with our members. We hope to be able to share work from all the different parasitological fields so please be proud and promote your work in our next newsletter =)

In this current newsletter, there are three reviews of some fantastic research being done by some of our PhD students, an exciting post-doctoral position in molecular biology (parasitology), and some very note-worthy conferences for 2013 and 2014! Also please take note of the attachment with the newsletter for an upcoming ACTMP conference to be held in Malaysia next year!!

A reminder that this year's annual PARSA conference will be hosted by the North-West University, Potchefstroom, with the preliminary dates set in the school holidays, **22–25 September**. The conference will be held in the Potchefstroom area but not the town itself due to "Aardklop" occurring at the same time. The first announcement will be sent out shortly with more detailed information.

Thank you to all those members who have paid your annual PARSA membership fees! We truly appreciate it! We hope you have all received your membership certificate to verify your payment and membership status. Please let me know if you have not received your certificate (contact me at parsa.news@yahoo.com) and I will look into it a.s.a.p.

Please note that nominations for the annual Elsdon-Dew medal as well as the WO Neitz Memorial Scholarship are due soon. The closing dates are currently set at **31 May** and **26 July** respectively so please make sure all nominations are sent in before these dates. Thank you!

Stay safe and keep warm!!

Kind regards

Kerry



Dear PARSA member:

Amazing that we are already closing in on the second half of the year! I sincerely hope you had a very productive first 4 months and that we will be able to read all about your advances in the field of parasitology in the various national and international journals. The main thing that I can report on here is that the planning of our annual PARSA conference is going very well and that the first announcement will be sent out on Monday 6 May. It promises to be another great conference and an opportunity for all of us in the parasite community to get together and share our latest research and ideas. As mentioned previously, PARSA 2013 will be from 22-25 September, close to the little town of Parys, and will be hosted by the parasitologists from North-West University.

Earlier this year we also had our first Excom meeting and here I would just like to give feedback on the main item that was discussed. As you know we already started a discussion on the future of the published conference abstracts at the previous AGM and the final decision there was that the members will leave it to the Excom to make the final decision. Just to recap: The main concern was that since the abstracts were not reviewed, but only edited (i) it did not carry any subsidy, (ii) preliminary work and results get sighted by other researchers and (iii) it might hamper the publication of future full length papers on the same topic using the data reported on in the abstract. After wide consultation, we in the end decided that we are going to stop with the publication of the PARSA conference abstracts in the Journal of the South African Veterinary Association, since the negatives far outweigh the positives. Instead we will rather consult with the journal and see if it will be possible to rather publish a selection of full length papers on a specific theme that was presented at the conference in order to showcase the research of our members. We are currently formalising a plan for this and I will keep you posted on this new and exciting development. In order to still expose our work to the larger parasitic community we will still continue to post all the abstracts on our PARSA website. This will then be done shortly after the annual conference.

Planning for the 2014 International Congress on Parasites of Wildlife is also going very well and I can confirm that it will take place from 31 August to 04 September 2014 in Skukuza, Kruger National Park, South Africa. It will run back-to-back with TTP8 (the 8th International Congress on Ticks and Tick-borne Pathogens), also hosted by PARSA, which will take place in Cape Town during the last week of August 2014. The congress now also has a logo and the website is in the process of being setup. I am really very excited about this congress and especially at such a superb venue.

Regards



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(President: PARSA)

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Next Issue...

For the next issue we are looking for the following contributions:

- Feature articles on research being done in your institute (with photos).
- Summary on the life and work of a respected and well-known parasitologist.
- Student abstracts from across southern Africa conveying the various research being done on parasites in Africa.
- Reviews and photos of the parasitological conferences and workshops attended.
- News to be distributed including job and bursary opportunities, post-graduate project opportunities and awards won by our PARSA members.

Due: June 2013

Please note...

Please note that most of this information is also available on the PARSA website as well as some additional information not present here. Check it out at:

www.parsa.ac.za

2013 Conferences

9th Annual BioMalPar Conference - Biology and Pathology of the Malaria Parasite

13 May – 15 May 2013
EMBL Heidelberg, Germany

The purpose of this conference is to bring together malaria researchers from Europe and overseas to share their research on malaria. The scientific aims are to address fundamental questions of the biology of the malaria parasite, its vector.

<http://www.embl.de/training/events/2013/BMP13-01/index.html>

American Association of Veterinary Parasitologists Annual Meeting

20 July – 23 July 2013
Chicago, USA

The American Association of Veterinary Parasitologists (AAVP) meets each summer concurrently with the annual meeting of the American Veterinary Medical Association. Periodically this meeting is also held jointly with other parasitology-related societies. The American Association of Veterinary Parasitologists (AAVP) will hold its 58th Annual Meeting on July 20th-23th in Chicago, IL.

<http://www.aavp.org/about-us/aavp-annual-meeting>

7th International Symposium on Monogenea (ISM 7)

4 August – 9 August 2013
Rio de Janeiro, Brazil

The local organizing committee of the 7th International Symposium on Monogenea is delighted to invite all to Rio de Janeiro (Brazil) in 2013 for an exciting scientific meeting and a fantastic travel experience in Rio de Janeiro, the cidade maravilhosa (wonderful city).

http://zoo.bio.ufpr.br/ISM7/ISM7_Brazil.html

International Conference on Malaria and Related Haemosporidian Parasites of Wildlife

August – 11 August 2013
Vilnius, Lithuania

MalariaRCN is hosted by the Nature Research Centre and the Lithuanian Academy of Sciences. It will support lectures and will also provide partial support for students to attend this meeting. The conference will promote international exchange and enhance collaborations throughout the world for wildlife malaria research, and the conservation and health of terrestrial vertebrates.

<http://malariarcn.org/conference2013>

World Association for the Advancement of Veterinary Parasitology (WAAVP)

25 August – 29 August 2013
Perth, Australia

WAAVP 2013 will bring together parasitologists from around the world to present and discuss the latest advances in their research as well as important issues relevant to veterinary parasitology. Our discipline embraces a broad and growing field of applied parasitology and WAAVP 2013 will provide the opportunity to look to the future as well as build on the successes over the last 50 years. This conference will celebrate WAAVP's 50th Birthday!

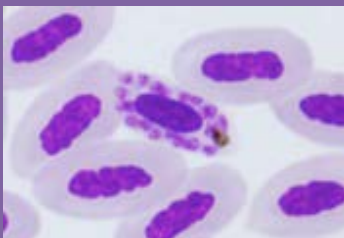
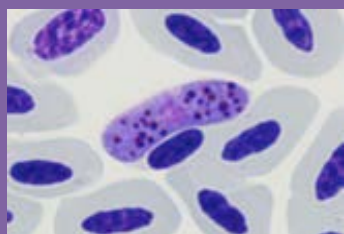
www.waavp2013perth.com

Latin American Congress of Parasitology XXI

6 October – 9 October 2013
Guayaquil, Ecuador

The XXI Latin American Congress of Parasitology will be held 6–9 October 2013 in Guayaquil, Ecuador. The organizers are Dr. Edgar Montalvo Mendoza (President-FLAP) and Dr. Orlando Ramos Cruz (Secretary-FLAP). For further enquiries email: organizacion@flap2013.com.

www.flap2013.com



Student Research

Luther van der Mescht (PhD Student, Stellenbosch University)

Exploring mechanisms that shape Siphonaptera diversity on small mammals at various spatial scales across South Africa

Fleas (Siphonaptera) are obligate ectoparasites of domestic and wild animals. They have a global distribution and occur mostly on mammals and birds, but have been accidentally found on reptiles. Siphonaptera can be divided into 246 genera, comprising approximately 2500 described species globally. Southern Africa is home to 30 of these genera and approximately 106 described species of which more than half (≈ 65 species) are found in South Africa (SA) alone. Around three quarters of all fleas occur on rodent hosts. It has been suggested that fleas are permanent satellites of their hosts, which refers to the association between fleas and their host species. In general, fleas spend part of their life in the host's nest/burrow (egg, larvae and pupae) and the rest, to variable extent, on the body of the host (adult stages). Flea species vary behaviourally and morphologically and these differences often influence their response to environmental and host factors. Although not the only determinants, host identity, range and species composition, as well as climatic conditions significantly influence the abundance, diversity and distribution of fleas over ecological and evolutionary time and at various spatial scales.

As is the case with many parasite taxa, research to date is heavily biased towards species associated with veterinary and medical fields and therefore of economic importance. It is evident from the literature that flea borne diseases have historically and more recently been a major subject of investigation. Some authors have even suggested that flea borne diseases are re-emerging and are on the rise globally due to changes in flea vector distribution. Relatively few studies have been undertaken to investigate flea-small mammal host ecology, more so in Africa. Most studies in Africa, including SA, have focused on fleas and the incidence of plague. Subsequently, a few descriptive studies were conducted on fleas associated with scrub hare and small carnivores. Flea host lists and distribution maps are available for SA, but are limited and/or outdated (dates back to the 1960's). Globally, contemporary studies on macroparasites, including fleas, are increasingly focusing on spatial variation of parasite communities and the underlying mechanisms involved in shaping current patterns. Host species composition and environmental factors vary spatially, which will have implications for flea diversity and distribution at all spatial scales. Only a few studies have investigated the phylogeographic distribution of parasites, especially fleas, across a large geographic scale. At present, little is known at smaller spatial scale, with an absence of information for taxa that are endemic to southern Africa.



Fieldwork at Springbok, Northern Cape



Four-striped mouse (*Rhabdomys pumilio*)



Luther van der Mescht (PhD Student, Stellenbosch University) **cont...**

Exploring mechanisms that shape Siphonaptera diversity on small mammals at various spatial scales across South Africa

The main aim of my study is to explore the mechanisms involved in shaping Siphonaptera diversity at various spatial scales within SA. Firstly, at a local scale the study aims to compare flea species composition between *Rhabdomys pumilio* and several co-occurring small mammal species (differing in relatedness and spatial overlap). At a regional scale, we will investigate the effect of biome-linked environmental factors on the flea assemblage found on *R. pumilio* species throughout SA. Thirdly, we will investigate the level of differentiation of two relatively common and widespread flea species (*Listropsylla agrippinae* and *Chiastopsylla rossi*) on *R. pumilio* over various known hard and soft barriers to dispersal. This will ultimately lead to the fourth and final aim, which is to establish and compare the phylogeographic distribution of these two flea species in southern Africa.



Listropsylla agrippinae



Chiastopsylla rossi



**ACTMP
2014**



Upcoming Conferences

6th ASEAN Congress of Tropical Medicine and Parasitology (ACTMP) (2014)

The Malaysian Society of Parasitology and Tropical Medicine (MSPTM) takes great pleasure to invite you to the Golden Jubilee of MSPTM and 6th ASEAN Congress of Tropical Medicine and Parasitology (ACTMP) which will be held in Kuala Lumpur, Malaysia from 5-7 March 2014. The theme for the congress is: GLOBAL CHALLENGES IN TROPICAL DISEASES: Bridging Gaps and Building Partnerships.

Please see the attached pdf document for more information and www.actmp2014.com

ICOPA XIII (2014)

Dear colleagues and friends On behalf of the Mexican Society of Parasitology and the Latin American Federation of Parasitology, I welcome you to our great Mexico City and to the exciting XIII International Congress of Parasitology from 10th to 15th August 2014. Our slogan "ancient parasites, old hosts, new knowledge" reflects the diversity of parasites, their hosts and their impact on global health and the environment; therefore it will contribute to gain new perspectives, ideas and networks.

For more information please look at www.icopa2014.com

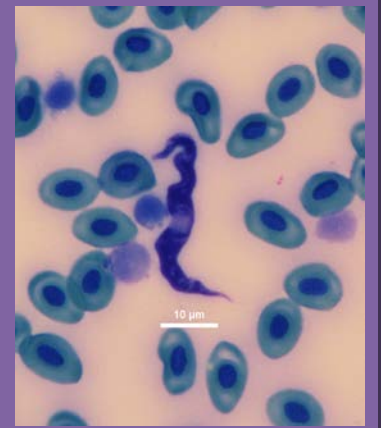
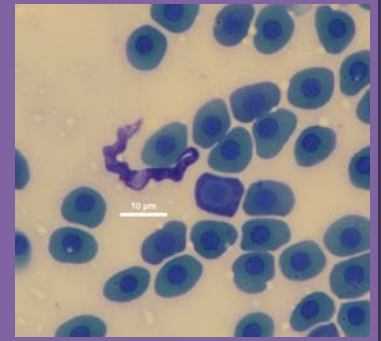
Student Research

Kyle McHugh (PhD student, North West University)

Blood parasites from Lake Liambezi

In August 2011, I was given the opportunity to go with the Rhodes University, department of Ichthyology and Fisheries science students to Lake Liambezi, Namibia. Lake Liambezi is located at the end of the Caprivi swamps. It is formed when the Zambezi River floods its banks and the whole eastern section of the Caprivi becomes inundated with freshwater. The Chobe River has its origins in Lake Liambezi which drains into the Zambezi River Basin. The Kwando-Linyanti River forms a wide belt, this very wide and shallow bed which creates the swamp and makes up the southern border of the Caprivi swamps. The lake has a surface area of 300 km² but only 12% of this is open water, because it is densely populated with thick reed beds mainly being *Phragmites mauritianus* and submerged vegetation mainly made up of *Potamogeton pusillus*. It is a very shallow lake with a maximum depth of 5m and an average depth of 3m. The lake is home to forty three fish species mainly made up of large cichlids, which form the basis of a small gill net fishery among the local people.

The main objective was to sample to take blood smears from the various fish species in order to determine if there were any blood parasites and to identify the species of blood parasites if any were found. What we found was that nine of the thirteen fish species studied was infected with trypanosomes. The trypanosomes had a wide variety of smaller and large parasites with a total body length ranging from 18.73 μm to 55.14 μm . These parasites corresponded in overall morphometrics and staining properties to that of the widely distributed *Trypanosome mukasai* Hoare, 1932. I would like to extend my heartfelt thanks to Professor Nico Smit and Doctor Olaf Weyl for giving me this opportunity to go to Lake Liambezi and collect these samples.



Student Research

Andrea Spickett (PhD student, ARC-OVI)

Comparative analysis of the gastrointestinal helminth communities of selected taxa of rodents and insectivores in different vegetation zones in South Africa

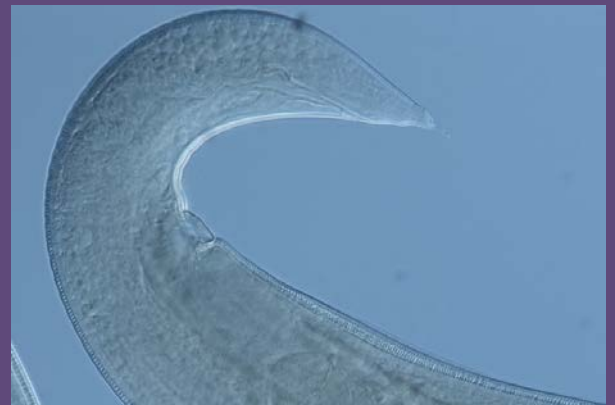
Largely due to their high adaptability to a wide range of environmental challenges, rodents and insectivores form part of nearly all terrestrial communities and are amongst the most numerous of all mammals (de Graaf, 1981). They contribute significantly to biodiversity and their large numbers and short generation intervals add significantly to the energy flow in nature and make them an important factor in food webs and maintaining ecosystems (Bjelić-Čabrilo *et al.*, 2009). Despite the ecological and economic importance of these small mammal taxa, little is known of their helminth communities. Most studies have been conducted in the Palaearctic region while only a few comprehensive studies have been conducted in Africa. In South Africa, current information addressing helminth assemblages of small mammals is limited and known studies are restricted to taxonomic records (Ortlepp, 1939; Collins, 1972). A recent exception is the study by Froeschke *et al.* (2010), investigating the effect of a rainfall gradient on the helminth species richness of *Rhabdomys pumilio* along the arid western side of South Africa. The rodent *R. pumilio* is widely distributed across the central and western parts of South Africa while its congener *R. dilectus* occurs in the mexic eastern parts of the country. At present limited data exists on the helminth diversity in both hosts and it is uncertain if these helminth assemblages persist throughout South Africa. Climate and vegetation play an important role in the survival and transmission of helminth parasites and it is expected that this would influence helminth diversity in different parts of the country.

The aims of this study are; firstly, using *R. pumilio* and *R. dilectus* as models, to record and compare the helminth assemblages between two closely related, but spatially distinct rodent species in South Africa; secondly, to determine the effect of plant structure, cover and precipitation on the helminth communities; thirdly, to record the temporal variation in helminth abundance in *R. pumilio* and in *R. dilectus*; fourthly, to record baseline information on the helminth diversity and assemblages associated with co-occurring rodents and insectivores. This will allow inferences on the importance of host diet, size, sex, habitat use and phylogenetic relatedness on helminth assemblages.

During the past two years fieldtrips have been conducted at 19 localities across South Africa, collecting *Rhabdomys* spp. and co-occurring small mammal species representing insectivores as well as gerbilline and murine rodents. In 2012 a total of 158 small mammals including soricid and murid hosts were examined at a single locality in Gauteng province. A total of 3 397 nematodes, belonging to eight species were recovered. The most common species was *Neoheligionella capensis* to which more than 50% of all nematodes belonged, followed by a second heligmosomoid nematode, *Heligionina boomkeri* and two members of Oxyuroidea, *Syphacia obvelata* and *Syphacia* sp. Of the eight species present at this locality only the two spirurids had an indirect lifecycle, using arthropods as intermediate hosts, whereas the remaining six species were directly transmitted. *Mastomys coucha* was the host with the highest species diversity (n=6) closely followed by *R. pumilio* which harboured five different species in its gastrointestinal tract.



Neoheligionella capensis: bursa of male



Neoheligionella capensis: posterior end of female

*Research Position – 2013***Post-doctoral fellow**

National Zoological Gardens of South Africa,
DST-NRF Professional Development Programme

Molecular Biology (Parasitology) with a Bioinformatics focus

Technological innovations made it possible to read the complete genetic code of individuals. Understanding genomes and the biological consequences of the enclosed genetic variation remains a large challenge. The Veterinary Parasitology Unit of the NZG Research and Scientific Services Department applies a range of high-throughput techniques and bioinformatics tools, including Next Generation Sequencing approaches, to systematically discover and study genetic variation (SNPs, structural variation) and functional genomic elements.

Key competencies: The successful candidate will be involved in genome-wide projects to integrate different genomic, genetic and epigenetic data sets to eventually understand underlying molecular mechanisms of wildlife pathogens in South Africa. The successful candidate must be able to work independently and within a team, understand genetic databases, be responsible for leading the project and supervise postgraduate students, and contribute to the scientific outputs of the unit. Extensive knowledge of modern molecular biology techniques is essential. Excellent problem-solving skills, be innovative, self-motivated individual with an interest in applying cutting-edge technologies to a diverse set of challenges. The unit is currently working with both national and international partners. We provide a dynamic, multi-disciplinary environment and there is an opportunity to play an important role in different ongoing projects.

Minimum requirements: The candidate should preferably have a PhD degree in Bioinformatics or Molecular Biology, Molecular Parasitology and Genetics, with experience in Genomics and/or Next Generation DNA Sequencing data analysis.

Remuneration: R300 000.00 per annum plus R100 000.00 for research, renewable for a second and third year based on satisfactory performance.

Contact person: Dr Sibusiso Mtshali

Contact details: e-mail: sibusiso@nzg.ac.za; Tel: (012) 339 2822; Mobile: 072 243 2640

Interested parties are requested to send applications (with a cover letter, full CV and qualifications) to the above e-mail. Short-listed candidates who are invited to an interview will be expected to demonstrate proof of the above key competencies and minimum requirements.

Contact Details

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*Call for Applications*Elsdon-Dew Medal

PARSA awards this medal on merit to individuals who add valuable contributions to parasitology in Africa. Motivated nominations, with a detailed curriculum vitae (4 copies), are called for and should be submitted confidentially to the PARSA secretary. Documents may be submitted before **31 May 2013** to the PARSA Secretary, Dr. Marinda C. Oosthuizen at marinda.oosthuizen@up.ac.za or +27 (0)12 529-8390.

WO Neitz Memorial Scholarship

This trust was created to assist South African nationals or permanent residents for post-graduate study in parasitology at institutions abroad. Honours, master's doctoral and post-doctoral study will qualify. As the amount available will not cover the total costs of study abroad, it is imperative that applicants should seek other sources of funding, e.g. NRF bursaries.

Applications should include the following:

1. A curriculum vitae
2. A certified academic record, including undergraduate studies
3. Detailed outline of the field of study or research project
4. Letter of support by employer or most recent academic supervisor
5. Details of how the proposed study will be financed.

Applications should be sent to: Prof. Nico. Smit at Tel: +27 (0)18 299-2128 or email: nico.smit@nwu.ac.za.

Deadline for applications is **26 July 2013**. Incomplete applications will not be considered.