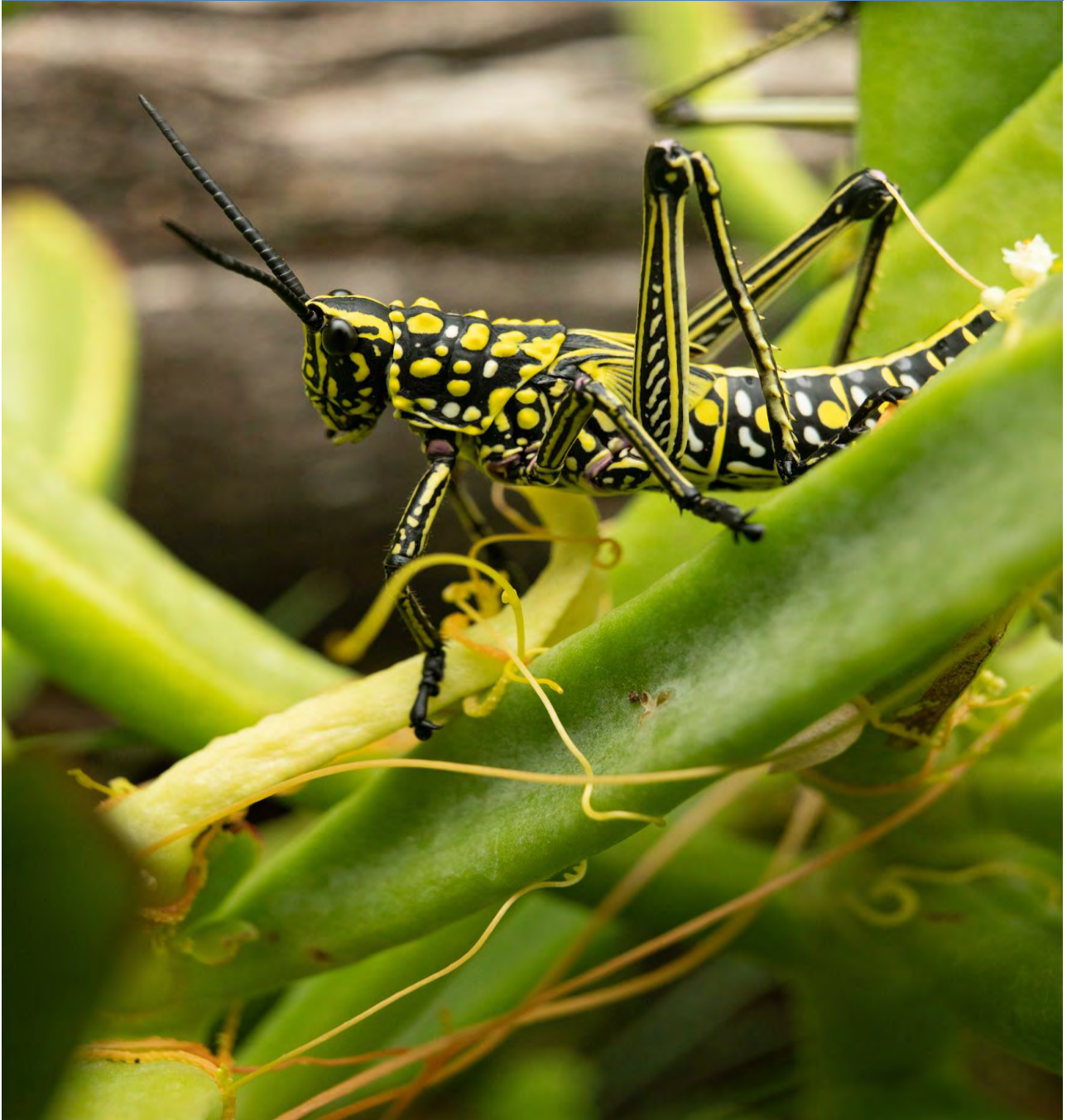
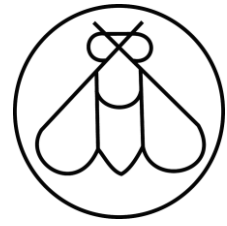


# ROSTRUM

NEWSLETTER OF THE ENTOMOLOGICAL SOCIETY OF SOUTHERN AFRICA



Cover Image: Orthoptera - Pyrgomorphidae - Phymateus viridipes– Xavier Brits

## NEWS FROM THE EDITOR

It has been another challenging year. For some people, myself included, 2021 felt more challenging than 2020. Yet, we can look back at an eventful year, even if it was largely dictated by the virus that will not give up. The society has adjusted, not only having the second virtual AGM, but the first fully virtual ESSA congress. This achievement had to happen at short notice, as the hybrid congress was forced online with the announcement of stricter lock down rules on the verge of the conference.

Although it feels like we are in the eye of the storm yet again, the prospect of being able to engage in live in-person conferences in 2022 is an attractive one. The International Congress of Entomology 2020 conference has officially transitioned to ICE 2022, and we give updates on this fortunately still proceeding congress. With a tantalising programme and line up of plenary speakers, the opportunity to attend this exciting event is something I am greatly looking forward to. Student travel bursaries are still available, and we strongly encourage applicants, as there is still time to submit abstracts and register. Even if ICE 2022 is not an option, there will undoubtedly still be local conferences that can be attended.

We would like to give the first announcement of some exciting upcoming initiatives for early career entomologists. Watch this space for more engagements for this demographic.

Finally, we would like to congratulate the winner of this year's YEEP prize, Kayla Noeth of Wits University who has given us some insight on the day in her life as entomologist.

Keep safe, everyone. Enjoy the festive season and all the best for 2022.

Shüné Oliver  
Rostrum Editor  
[shuneo@nicd.ac.za](mailto:shuneo@nicd.ac.za)



## Calling early career entomologists!

Are you an entomology student, post-doctoral fellow or early career faculty member?

**We want to hear from you!**

What are your research interests?

What do you think you would need to advance your career?

Are you interested in finding out about new projects or positions?

Would you like to find potential collaborators or supervisors?

The society wants to get you talking and networking. We are launching an early career entomologist network to help young entomologists get a kickstart; either into academia or industry.

Watch this space for more information. In the meanwhile, follow us!



@entsocsa



Entomological Society  
of Southern Africa

Photo credit: *Hermetia illucens*-Nina Parry



## FOCUSSING ON THE “SECOND S” IN ESSA

It can be quite easy to forget that ESSA is the Entomological Society of Southern Africa and not South Africa only. The society would like to expand our reach into the rest of the Southern African Development Community (SADC) region. As an example, with the last society report, there were only 12 members from the SADC region. Outside of the SADC region, there are only three African members.

We would like to encourage members to share information about the society with their specialised entomology groups to encourage delegates from the SADC region in particular to join the society. Please feel free to share the information with your colleagues: <https://entsocsa.co.za/membership/>. The society administrator Fanie Vermaak can be contacted at [admin@entsocsa.co.za](mailto:admin@entsocsa.co.za).



# MSC PROJECT REPORT BACK: ECDYSONE RECEPTOR KNOCKDOWN: IMPLICATIONS ON LONGEVITY, REPRODUCTIVE SUCCESS AND PLASMODIUM SUSCEPTIBILITY IN THE MALARIA VECTOR *ANOPHELES FUNESTUS*.

**SURINA MAHARAJ: UNIVERSITY OF THE WITWATERSRAND**

The World Malaria Report for 2021 was released in December, and the story it told was worrying. With the declaration of the COVID-19 pandemic, there were multiple warnings about the resurgence of a variety of diseases due to interrupted public health interventions, and malaria was one of those diseases (see: <https://theconversation.com/malaria-still-kills-1-100-a-day-it-cant-afford-to-lose-resources-to-coronavirus-136976>). Although the worst-case scenario was not realised, in 2020 an increase of 14 million malaria cases and 69 000 deaths. This is notable increase as, as malaria cases have been plateauing since 2015.

As such, now more than ever, it is important to not mitigate the gains made in malaria control. One of the ways this can be done is by control of the vector of the disease, the *Anopheles* mosquito. Vector control is critical for managing vector-borne diseases such as malaria, but there are many challenges for operational programmes. With malaria cases remaining fairly stable without decreasing prior to the pandemic (see: <https://www.cidrap.umn.edu/news-perspective/2020/12/who-says-malaria-control-has-hit-plateau>), it is clear that current interventions might not be enough to reach the goal of malaria elimination, a target defined as no local transmission. As such, novel vector control interventions beyond the conventional insecticide-based methods are required.

With the WHO issuing guidance for the use of genetically modified mosquitoes for vector control, genetic modification could potentially be a tool in the vector control arsenal (<https://www.who.int/news/item/19-05-2021-who-issues-new-guidance-for-research-on-genetically-modified-mosquitoes-to-fight-malaria-and-other-vector-borne-diseases>). This, however, is not ready to be implemented on a large scale, particularly for *Anopheles* mosquitoes. One of the practical problems is the lack of information on genes suitable for targeting by modification.

*Anopheles funestus* is an African mosquito species and the most efficient vector of malaria in the world. Despite this, there is a remarkable lack of information about the biology of this species. This is due to the difficulty in breeding them in captivity. This means that they are difficult to study, despite their important role in the African malaria burden. An understanding of the basic biology of this species is critically important for the future of malaria control on the continent.

20-Hydroxyecdysone (20E) is a well-known insect ecdysteroid hormone which controls moulting in a variety of insect species. This hormone acts through the ecdysone receptor to control several functions over and above moulting, one of them being reproduction. These functions are regulated

through the 20E pathway. The hormone and its receptor (hereafter referred to as EcR) form a complex with the ultraspiracle protein, which binds to ecdysone responsive elements on the DNA to control gene transcription. Therefore, without the EcR, the signalling pathway will be disrupted, and the functions associated with the pathway will be perturbed.

In mosquitoes, this pathway has unsurprisingly been implicated in egg production and egg laying. There are also a number of other functions implicated, including generalised survival, blood feeding behaviour and response to the *Plasmodium* parasite. The aim of my MSc project was therefore to understand the biological role of the EcR in *An. funestus* by knocking down the expression of this gene. This was done by nanoinjecting double stranded RNA to reduce the expression of the gene (for a simple explanation on how the process works see [https://www.youtube.com/watch?v=cK-OGB1\\_ELE](https://www.youtube.com/watch?v=cK-OGB1_ELE)).



Figure 1: Nanoinjection was conducted by inserting the needle into the thorax of *Anopheles funestus* female mosquitoes while using the Nanoject II to dispense a precise volume of double stranded RNA into the mosquito.

Before examining the effect of EcR knockdown on a variety of phenotypes, it was validated that nanoinjection reduced the expression of the gene. Quantitative Real time polymerase chain reaction (qRT-PCR) was used to confirm the reduction in the amount of EcR mRNA transcripts. It was found that injection of double stranded EcR RNA reduced the amount of target transcript, while injection with double stranded Green fluorescent protein (GFP) RNA did not have the same effect. This process was performed and the effect on various phenotypes were examined.

Knockdown of the EcR resulted in a marked reduction in longevity, confirming the role of the receptor in survival. The 20E pathway plays a role in reproduction, so the effect of EcR knockdown on egg production was examined. Knockdown did not result in a failure to lay eggs but did result in a reduction of both fertility and fecundity. This appeared to be due to impaired vitellogenesis. An examination of the egg follicles of the three groups showed that the knockdown group (dsEcR) has poorly developed eggs, with the eggs in the mated females as poorly developed as in the virgin females.

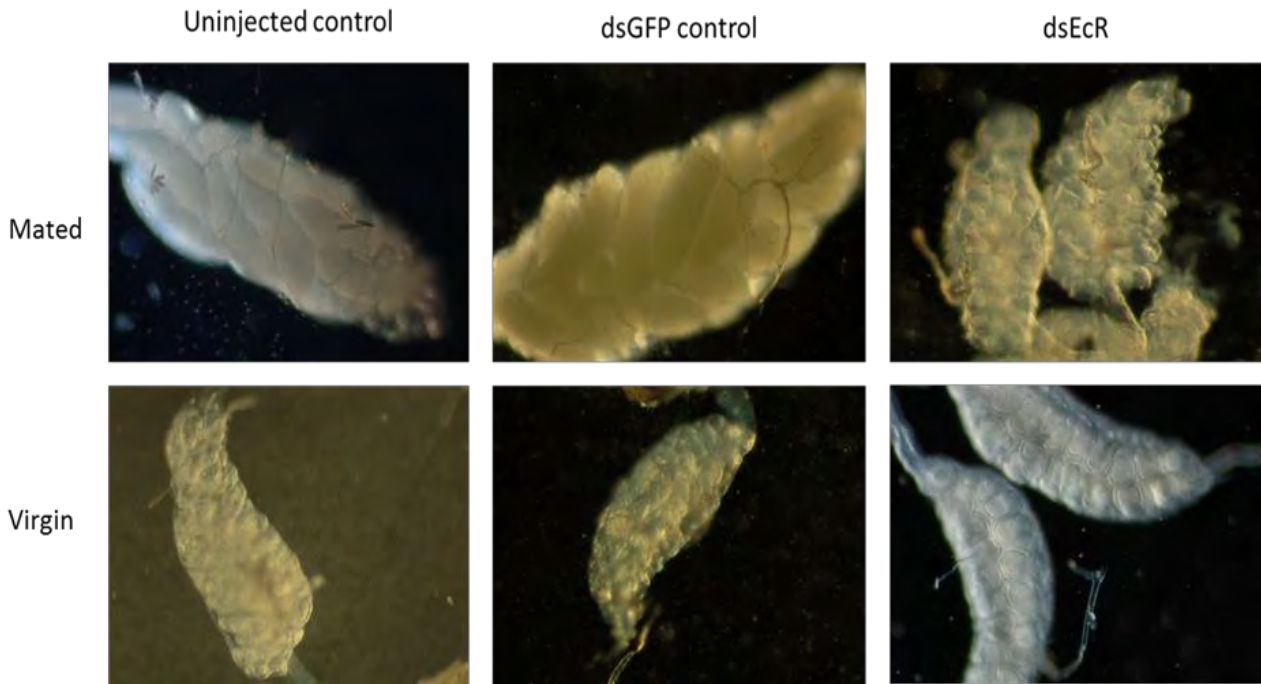


Figure 2: Egg development in the three *An. funestus* treatments. In all treatments, the virgin oocysts contained poorly developed eggs. After mating, both uninjected females and females injected with double stranded GFP RNA (dsGFP) developed eggs, but the eggs did not develop in the EcR knockdown group (dsEcR).



Finally, the effect of EcR knockdown on susceptibility to the *Plasmodium falciparum* parasite was assessed. To do this, the three groups of mosquitoes were exposed to the parasite by a standard membrane feeding assay. Interestingly, knockdown of the EcR resulted in a reduction in parasite intensity. This was interesting as knockdown of the receptor resulted in the reduction of the Leucine Rich Repeat Immune Gene 9 (LRIM 9) expression. Knockdown of gene was previously shown to increase the density of the murine malaria parasite *P. berghei*. This difference may be due to the vastly different infection models of the rodent and human parasite.

Figure 3: Standard membrane feeding assay used to offer blood to *Anopheles* females.

The results suggests that knockdown of the EcR results in the reduction of parasite (i.e. has transmission reducing activity) as well as reducing the longevity, fertility and fecundity of *An.*

*funestus*. As such, this gene is a target for vector control interventions. Genetic modification by generating EcR knock out mutants would not be a viable option, as the fitness costs suggests that such mosquitoes would not be able to propagate in the wild. However, there are numerous commercial 20E agonists available, which could potentially be used as chemical inhibitors of the receptor via the 20E pathway. This study therefore has potential to be a novel vector control target in this important vector.



## JOZI BEE HOTEL PROJECT: CITIZEN SCIENCE IN ACTION



In a time when we are encouraged to stay at home, one group from Wits University were encouraging hotel usage but with a twist. **Dr Chevonne Reynolds**, a senior lecturer at Wits University is the project leader of the Jozi Bee Hotel project. This project ran during the course of 2021 and was a citizen science project advertised, among other places, by the ESSA. The project was a collaboration between the university, everyday citizens and Tutus Loco bee hotels. The project aimed to distribute bee hotels to citizens in 2021 in order to monitor the presence of solitary bees. Dr Reynolds took some time out of her schedule to tell us a little about the project.



**You state the solitary bees are a way to measure biodiversity. What is special about these bees and what makes them such good markers?**

A: These bees are good proxies because they are obvious markers of biodiversity without requiring specialised knowledge and identification skills. They are easy to count because they nest in the bee hotel, and there are also interesting functional differences between the groups based on their behaviour. This is quite easy to tell based on the way they create the nest. Therefore, it is easy to measure the biodiversity as you start with a blank canvas and as the holes start to fill, the simple way to gather information is a useful and easy measure of biodiversity.

Figure 1: An example of a Tutus Loco bee hotel (<https://www.jozibeehotelproject.com/about-2>)

**How long has the project been running for and how was it initiated?**

A: I was struck by the idea for the project sitting in my own garden. I wanted a bee hotel for myself, and based on my previous experience, it seemed like a great idea to measure urban biodiversity. The bee hotels are cost effective, and I thought it could be a good way of informing the public about solitary bees; you would be surprised how many people do not know anything about solitary bees. This work is an offshoot of my ornithology work, as birds can be used as a measure of biodiversity in the city making the move far less daunting. I couldn't be happier with my decision and the path it set me on.

**For how long will the project be running?**

A: The project began in April with a range of preparatory steps. This included canvassing, registration and set up as well as launching the website. In July and August, the hotels were distributed, and data collection began in September. The project ran from September to December.

**Is there anything particularly unusual that has been spotted in the hotels? Do they attract unusual visitors, or have they been designed in such a way that they preferentially attract solitary bees?**

A: The structures mostly attract solitary bees because the holes are quite small. As such, they do not attract the larger solitary species like carpenter bees. There are some interesting wasps that do visit the hotels, though. Aphid wasps have been spotted; these are parasitic wasps that scavenge



aphids and plug the holes with their corpses. They then lay their eggs in the holes. We also have videos of parasitic wasps targeting the eggs of the bees.

**Are you happy with the response to the project, and did you receive the coverage that you had originally envisioned?**

A: Unfortunately, not exactly. The initiation of the project coincided with the political unrest and as such we could not obtain the penetration that we initially hoped for. That being said, we initially only planned on distributing 200 hotels. Yet we distributed 400 hotels, and 330 were deployed in September. We managed to maintain 280 to 290 hotels in the end.

**Is this your first engagement with a citizen science project? Do you feel that citizen science can be useful to entomologists in general?**

A: Absolutely. I am actively involved with citizen science and a number of societies that utilise citizen scientists. I am a huge advocate for what citizen science can achieve. Bees and butterflies are excellent examples of enigmatic insects that excite people and draw them in. Citizen science for data generation all the way, but like with everything, there are caveats. How would you convince an indecisive science graduate to give entomology a try?

**Tell us a little about your team, which seems to be a range of younger to senior scientists. How was the team assembled and what role does everyone play?**

A: Paris Pencharz was my Honours student in 2020 but was going to pursue her MSc abroad. Therefore, in the period before she left, she worked for the project temporarily and was my right-hand person. She did the initial engagement, was involved with the features of the website as well as the enrollment.

Brishan Kaylan was involved in the technical side. He was involved with the data collection and databases.

Natasha Shilubane was the full-time communications person. Communication, particularly on social media was particularly critical for community engagement, and the active social presence was key to the maintenance of participation in the project.

Peter Webb is the owner of the Tutus Loco bee hotels, where we sourced the bee hotels and Prof. Marcus Byrne is a senior entomologist from the university and was a consultant on the project.

**Your project is linked to iNaturalist. This seems like a natural fit. Could you give the society a bit of a summary of what iNaturalist does and if and why you would recommend it to the entomology community?**

A: iNaturalist (<https://www.inaturalist.org/>) is a powerful tool for science and conservation. It is an excellent tool for updating distributions and red listing. As the data becomes more abundant, a greater and richer set of questions can be asked. The pictures are an archive of natural history that can be used to answer questions at a large scale.

**When your project is complete, where do you envision reporting your results? Publication? Information on social media?**

A: The data will ultimately be published in an open access journal to allow for the widest possible dissemination. However, the information will not only be made available to the academic community, and we plan on providing information on our social media platforms.

**You have had quite an academic journey, not only moving between Wits and UCT and from organic chemistry to working with solitary bees. You said that you are an ornithologist, but after this project will you continue working with insects?**

A: My academic label is ornithologist, and there are substantial bird databases available to work from. However, my interest is in landscape questions of how pattern affects process. For these particular questions, birds are useful, but so are bees and dung beetles. Therefore, I am interested in anything that helps to answer questions at large spatial scales.



Visitors to bee hotels during the course of the Jozi Bee Hotel project (Pictures: Peter Webb, Tutus Loco bee hotels)



## UPCOMING INITIATIVE FROM THE FORESTRY AND AGRICULTURAL BIOTECHNOLOGY INSTITUTE (FABI), AT THE UNIVERSITY OF PRETORIA

We would like to let you know about a new **initiative to highlight graduate student research on the behavioural and chemical ecology of forest insects**. Beginning in January 2022 we will host a series of three webinars that will provide a platform for graduate students to present their work and develop their networks.

Talks will be pre-recorded and submitted in advance of each symposium for judging. **The top three from each region will be presented for a total of six student presentations per symposia. The best talk from each region (i.e., two will be selected from each symposia) will be recognized and our goal is to offer financial assistance to each winner to attend the IUFRO All-Division 7 meeting in 2022 in Portugal** where the winners will present their talks in a symposium highlighting student research in the working party (the symposia has been approved by the organizing committee of the All-Division 7 meeting and we have some funding already secured).

**The first webinar will occur 24-January at 12:00 UTC and will have talks from graduate students studying in Europe (n=3) and Africa (n=3).**

The second webinar will occur 21-February at 18:00 UTC and will have talks from graduate students studying in North America (n=3) and Central/South America (n=3).

The third webinar will occur 28-March at 04:00 UTC and will have talks from graduate students studying in Asia (n=3) and Oceania (n=3).

We ask your assistance in bringing this webinar series to the attention of anyone interested in attending and watching, and in particular helping make graduate students aware of this opportunity. Anyone interested in participating needs to visit the registration page

(see [https://www.fabinet.up.ac.za/index.php/event/IUFRO\\_WP\\_7.03.16\\_Mentoring\\_Program/](https://www.fabinet.up.ac.za/index.php/event/IUFRO_WP_7.03.16_Mentoring_Program/)).

Although only the top three talks from each region will be played in the webinars, all submitted talks will be uploaded to the WP 7.03.16 YouTube page where they can be viewed.

**Quentin Guignard** •PhD •Chemical & visual ecology •Deputy coordinator IUFRO WP 7.03.16

Email: [quentin.guignard@fabi.up.ac.za](mailto:quentin.guignard@fabi.up.ac.za)

Web: <https://www.fabinet.up.ac.za/index.php/people-profile?profile=1212>

IUFRO WP 7.03.16: <https://www.iufro.org/science/divisions/division-7/70000/70300/70316/>



## STUDENT PROJECT ADVERTISEMENT

### MSC BURSARY OPPORTUNITY IN 2022:

### “THE IMPACT OF ARTIFICIAL LIGHT ON MOSQUITO ACTIVITY AND PHYSIOLOGY”



#### Preamble:

The Department of Zoology & Entomology, University of Pretoria, is inviting 1 excellent MSc candidate to apply for a 2 year research project measuring the impact of artificial light on aspects of mosquito biology. This lab-based project is part of a larger initiative entitled “**Reducing vector borne disease risk by optimizing artificial light expansion across Africa**” funded by the Jennifer Ward Oppenheimer Research Grant, with Principal Investigator and Senior Lecturer Dr. Bernard W.T. Coetzee, and collaborators, which for this call are Prof. Lizette Koekemoer (WRIM/ WITS / NICD) and Dr Megan Riddin (UP ISMC). A competitive stipend and project running costs are included.

#### Background to the Project:

The use of artificial light at night (ALAN) has increased steadily in recent decades, and African nations are set to significantly increase their citizen’s access to electrical grid infrastructure. However, there is a concomitant realisation that ALAN may impact both human and environmental health. Because light is such a fundamental environmental cue, many organisms, including humans, have evolved such that their chronobiology is fundamentally entrained by light. In consequence, the impact of changing light regimes on aspects of the biology of a host of organisms is not well known, especially so for vectors of medical concern. Some mosquito species are repelled by certain lights in certain intensities and wave lengths, but others may be attracted to and increase their biting activity under artificial light.

In this project, you will conduct a series of well-designed lab-based experiments to test how the alteration of light, in terms of its timing, spectra and intensity, alters fundamental biological parameters on mosquitoes of medical concern (especially *Anopheles*), and particularly their feeding activities. In addition to making new contributions of our understanding of ALAN on insects, the project will contribute vital parameterization data to ongoing field and modelling studies, to assess how ALAN interacts with other drivers of mosquito biology.

#### Requirements:

Interested candidates should have a deep passion for science and advancing our understanding of the natural world. Ideal qualities are:

- A critical thinker with attention to detail and a willingness to learn.
- Lab experience with insects, experimental design experience, writing and statistical experience are distinct advantages.
- A penchant for scientific exploration, co-learning and strong work ethic is indispensable.
- This is an outcomes focused project and so an emphasis on delivering them is essential.

**Minimum requirements:**

- BSc Honours degree or equivalent with an excellent academic record. Given the multidisciplinary nature of the larger project and a broad range of focal areas, not necessarily restricted to a specific field.
- Typical fields include, but are not limited to, Ecology, Zoology, Entomology, Genetics, Remote Sensing, Environmental Science or Medical Sciences.
- Female and previously disadvantaged applicants are encouraged to apply.
- This is a full-time appointment only.

**Location and start date:**

The candidate will be registered at the Department of Zoology and Entomology of the University of Pretoria, with extensive laboratory work at the UP Institute for Malaria Control's insectary and laboratory, with an option to be physically based there. The project can commence as soon as a suitable candidate is appointed.

**Application procedure and submission:**

The following is required (in this order, attached in a single email).

- i. Cover letter,
- ii. Up to date CV,
- iii. A 1 – 2-page motivation and statement of interest in the research, and
- iv. Copies of all academic transcripts.

All required documents to please be combined in a single PDF file. The CV must include at least 2 contactable references. Interested applicants to submit their applications to Dr Bernard W.T. Coetzee (bernard.coetzee@up.ac.za) with the email subject line "Vectors & Light MSc application". No applications will be accepted after the closing date. Please note that feedback will only be given to shortlisted candidates. The University of Pretoria retains the right not to make an appointment / re-advertise and to verify all information provided by candidates.

**Required reading for applicants:**

1. Wilson et al. 2021 *Parasites and Vectors* 14:28. 2. Gaston et al. 2013 *Biological Reviews* 88: 912-927. 3. Sanders et al. 2021 *Nature Ecology and Evolution* 5: 74-81. 4. Sheppard et al. 2017 *Parasites and Vectors* 10:255. 5. Rund et al. 2016 *Insects* 7. 6. Van der Kooi et al. 2021 *Annual Review of Entomology* 66:435 7. See also [www.bernardcoetzee.com](http://www.bernardcoetzee.com) and PI's Google Scholar: <https://scholar.google.com/citations?user=sRFFIPAAAAAJ&hl=en>

**For enquiries contact:** Dr. Bernard W.T. Coetzee (bernard.coetzee@up.ac.za)

**Closing Date for applications:** 14 January 2022

Editor's note: Artificial light at night is a critical entomological driver for a range of insects.

Check out the following resources for more information.

<https://www.darksky.org/light-pollution/wildlife/>

<https://theconversation.com/fireflies-need-dark-nights-for-their-summer-light-shows-heres-how-you-can-help-158285>

<https://www.labroots.com/trending/earth-and-the-environment/20849/artificial-lighting-disrupts-pollinating-insects-vision>

<https://onlinelibrary.wiley.com/toc/17524598/2021/14/2>



View of Europe at night, composite image from Suomi NPP satellite data from 2012. Resolution approx. 750m per pixel (Credits: NASA)



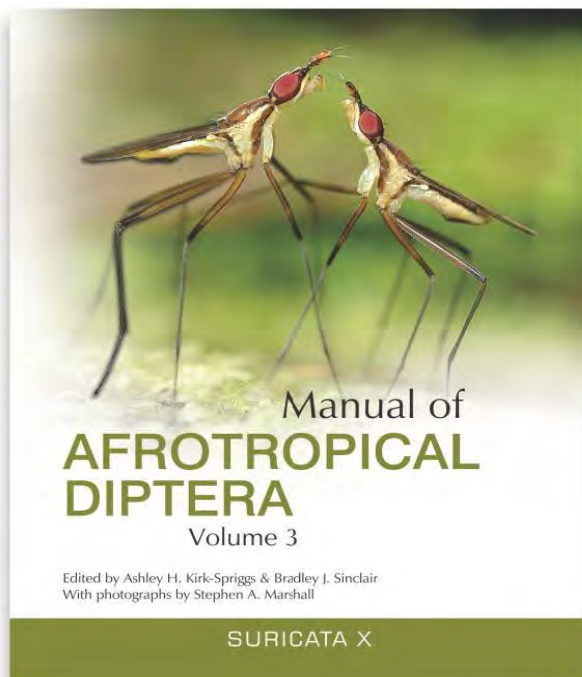


# Manual of AFROTROPICAL DIPTERA

## Volume 3

**True flies**, or **Diptera**, constitute one of the largest orders of insects in the biosphere, with over 160,000 described species worldwide, more than 20,000 of which occur in the Afrotropical Region. They are as diverse morphologically and biologically as they are numerous and many groups have evolved spectacular structural adaptations that are commensurate with their environment and biology. During their long evolutionary history, virtually every terrestrial niche has been occupied by the Diptera, making them one of the most successful groups of organisms on Earth. Many have co-evolved in association with other organisms and become highly specialised parasites or parasitoids of a range of disparate groups of plants and animals. Whether focusing on their systematics, biology, biogeography, conservation, or the more applied aspects, the Diptera remain a fascinating and intriguing group. This four volume book, a collaboration of **over 90 international experts** on Diptera, is the first-ever synopsis of the **108 families** of flies known from the Afrotropical Region and includes discussions on biology and immature stages, economic importance, classification, identification to the genus level, as well as a synopsis of each genus. This work provides the basics for understanding the diversity of a major order of insects in a large tropical and sub-tropical region and is the first such synopsis of its kind for any major insect order occurring in the Afrotropics. Volume 1 of the *Manual*, which included introductory chapters and keys to Diptera families and Volume 2, which included families chapters for the nematocerous Diptera and lower Brachycera were published in 2017.





### VOLUME 3

**Volume 3** is published in full colour and comprises 1,032 printed pages. The volume includes **family chapters** by the world's leading experts, dealing with **51** of the 108 families of flies that occur in the region and covers the Brachycera–Cyclorhapha, excluding Calyptratae (sometimes termed the higher Diptera). Each chapter includes a diagnosis of the family, sections dealing with biology and immature stages, economic significance, classification and identification, an identification key to genera (if two or more) and a synopsis of the fauna section, arranged genus by genus alphabetically. The text is richly illustrated with over **3,440 illustrations**, including **1,746 colour** and **101 black and white images** and **1,600 line drawings** of flies.

**Price: R1 500.00**



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Website: [www.sanbi.org](http://www.sanbi.org)

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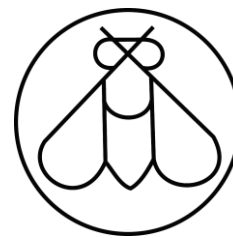
The manual is currently available to download from SANBI's website:

<http://biodiversityadvisor.sanbi.org/biodiversity-stewardship-resources-new/literature/4327-2/suricata/>





## ESSA YOUNG ENTOMOLOGISTS' TRAVEL GRANTS



As part of its aim to promote all aspects of entomology, the Entomological Society of Southern Africa (ESSA) initiated the Young Entomologists' Travel Grants scheme in 2018. The grants are to support young ESSA members from southern Africa to (i) present research results at international scientific meetings or workshops with entomological relevance, or (ii) gain valuable entomological skills and experience by visiting an international research group. By doing so, the ESSA hopes to support the development of professional entomologists, and to broaden the range of skills and global relevance of research undertaken in southern Africa.

Each year, a number of ESSA Young Entomologists' Travel Grants, each to the value of up to R25,000, may be awarded.

### ELIGIBILITY AND CONDITIONS

To be eligible for an ESSA Young Entomologists' Travel Grant, applicants must satisfy ALL of the following criteria:

- Paid student or ordinary member of the ESSA for a minimum of two consecutive calendar years
- Resident and/or registered as a student or postdoctoral associate/fellow in a country within the Southern African Development Community (SADC; i.e., Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe)
- Thirty-five (35) years of age or younger, or within five years of completing a PhD (if older than 35) on the closing date for entries
- Accepted to give an oral presentation at an international conference or workshop outside of the applicant's country of residence and/or received notification of willingness to be hosted by an international researcher

The amount awarded will be determined based on a detailed budget provided by the applicant. Return international economy airfares and accommodation are the only allowable expenses in the budget. Conference registration fees and daily allowances must be paid by the applicant.

Applicants awarded an ESSA Young Entomologists' Travel Grant must submit a two-page report, including appropriate documentary photographs, to the ESSA within one month of their return to their country of residence. The report will be published in *Rostrum*, the newsletter of the ESSA.

### HOW TO APPLY

Applicants must complete the form attached to this notice (or downloaded from the ESSA website), attach the required documents, and provide a cover letter of no more than one page explaining how receipt of an ESSA Young Entomologists' Travel Grant will benefit their development as a professional entomologist and the discipline of entomology in southern Africa.

Applications must be received no less than two months prior to the proposed date of departure.

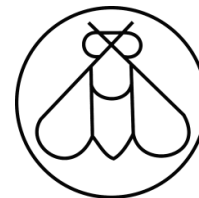
Submit entries to the ESSA President, Dr Chris Weldon, by email: [cwweldon@zoology.up.ac.za](mailto:cwweldon@zoology.up.ac.za)

Applications will be assessed by the ESSA Executive Committee based on the following criteria:

- Fulfilment of all eligibility criteria
- Quoted budget realistic and justified
- Quality and persuasiveness of cover letter

### ENTRY CLOSING DATE

There is no closing date for applications to the ESSA Young Entomologists' Travel Grants scheme. All applications received no less than two months prior to the proposed date of departure will be carefully considered in each calendar year and grants will be awarded based on the availability of funds.



APPLICATION FORM

1. PERSONAL INFORMATION

Title:		Member no.:	
Family name:			
Given names:			
Gender:		Race:	
		Date of birth:	
Residential address:			
City:		Postal code:	
Country:			

2. Details of travel

Type of event:			
Name of event or host:			
Destination city:		Destination country:	
Departure date:		Return date:	

3. BUDGET

Item	Cost	Justification
Return economy airfare	R	
Accommodation	R	
Total	R	NOTE: Total must not exceed R 25,000

4. Acceptance of conditions

By checking the following boxes I agree to the conditions of funding stipulated below:

<input type="checkbox"/>	I will cover the costs of all conference registration fees and daily allowances.		
<input type="checkbox"/>	I will submit a two-page report, including appropriate documentary photographs, to the ESSA within one month of my return to my country of residence.		
<input type="checkbox"/>	I will return all funds to the ESSA if for any reason I am not able to travel to the international conference or research group as detailed in this application.		
Signature:		Date:	

5. SUPPORTING DOCUMENTS

In addition to a completed application form, include electronic copies of the following supporting documents:

<input type="checkbox"/>	Evidence of paid ESSA membership for the current and previous year
<input type="checkbox"/>	Evidence of residential status or registration as a student or postdoctoral associate/fellow in a country within the Southern African Development Community
<input type="checkbox"/>	Evidence of date of birth (e.g., passport or identity document)
<input type="checkbox"/>	Evidence of date of PhD award (if over 35)
<input type="checkbox"/>	Invitation to present an oral presentation at an international conference or workshop outside of your country of residence and/or notification of willingness to be hosted by an international researcher
<input type="checkbox"/>	Cover letter of no more than one page explaining how receipt of an ESSA Young Entomologists' Travel Grant will benefit your development as a professional entomologist and the discipline of entomology in southern Africa

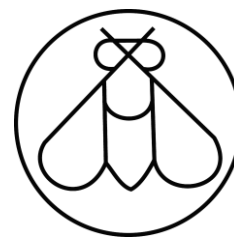
## ROSTRUM PHOTOGRAPHIC COMPETITION

Entries for the photographic competition are still open all year round. Please feel free to send entries to Shüné Oliver at [shuneo@nicd.ac.za](mailto:shuneo@nicd.ac.za)

<https://www.insectweek.co.uk/tips-insect-photography>

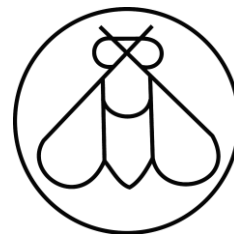
<https://digital-photography-school.com/get-stunning-macro-photos-mobile-phone/>

<https://ctsp.co.za/smartphone-macro-shots-pro-tips/>



## ESSA YOUNG ENTOMOLOGISTS' ESSAY PRIZE

As part of its aim to promote all aspects of entomology, the Entomological Society of Southern Africa (ESSA) initiated the Young Entomologists' Essay Prize in 2014. The prize is to encourage discussion and critical evaluation of entomological issues relevant to Southern Africa by upcoming amateur and professional entomologists.



In each year that the prize is made available, an essay topic on a current issue facing the entomological profession in southern Africa will be set. Essays should be original and thought provoking. Reference to published sources of information should be kept to a minimum but are necessary when claiming a fact or providing evidence and examples. The essays must be written in English and should be between 1000-1250 words in length. Numbered referencing should be used for in-text citations. A list of cited references should be included but does not contribute to the word limit.

Entrants for the ESSA Young Entomologists' Essay Prize must satisfy ALL of the following criteria. Entrants must be:

- Paid-up student or ordinary members of the ESSA.
- Residents, or registered as a student or postdoctoral associate/fellow, in a country within the Southern African Development Community (SADC; i.e., Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe).
- Thirty-five (35) years of age or younger on the closing date for entries.

Entries will be assessed by the ESSA Executive Committee, who may also call upon other members of the ESSA to contribute to the assessment. Assessment will be based on the following criteria:

- Comprehension of the topic
- Clear placement of the argument within the context of Southern Africa
- Originality of ideas
- Persuasiveness and coherency of the argument
- Appropriate and effective use of facts, evidence or examples
- Grammar and spelling

The winning entrant will receive a certificate and be awarded a cash prize of R2000. The winning essay will be featured in *Rostrum*, the newsletter of the ESSA. Readers of *Rostrum* will be invited to respond to the essay in the following issue.

Only one prize will be made in each year that it is available.

It is understood that the winning entry contains the views and opinions of the winning entrant. These views and opinions will not necessarily reflect those of the ESSA.

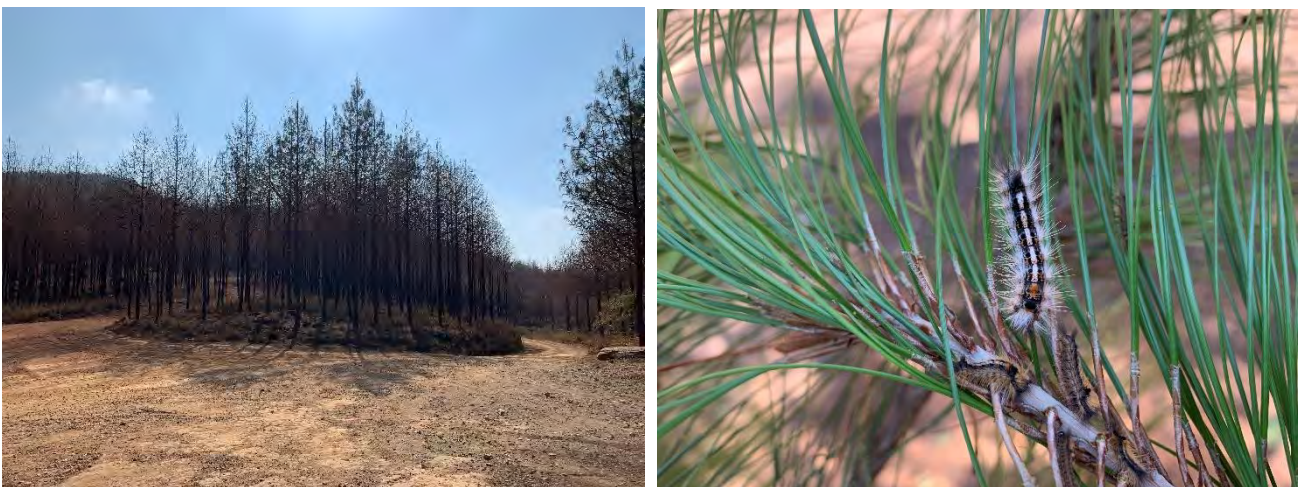
The new essay topic for 2022 will be released in April 2022 edition of *Rostrum*.



## YOUNG ENTOMOLOGIST'S ESSAY PRIZE WINNER: A DAY IN MY LIFE AS AN ENTOMOLOGIST

**KAYLA NOETH: UNIVERSITY OF THE WITWATERSRAND**

It looked like a fire had swept through several hectares of pine plantations as I drove past on the rocky mountain road. I pulled up next to a particularly badly hit compartment with my bakkie. I was high up in mountains south-west of Barberton, Mpumalanga, where it was too cold to grow anything other than pine trees. The sight before me was devastating, more so due to the fact that the scale of the damage was not, indeed, caused by a fire, but instead a very tiny, very fuzzy caterpillar (well, several thousands of them). The needles on all the trees were stripped bare, scattered on the plantation floor, because this particular caterpillar isn't a very efficient feeder. The culprit? *Euproctis terminalis*, or the brown-tailed moth- a native moth belonging to the Erebidae family, which had apparently decided the native vegetation was no longer good enough and instead developed a voracious appetite for pine needles.



Left: Severely defoliated pine plantation near Barberton, Mpumalanga during August 2019; Right: larvae of *E. terminalis* feeding on pine needles.

A day in the life of any entomologist can range from the very typical to the very atypical. It depends on the field of entomology you're in. I used to be in forestry, before I made the move to infectious diseases and medical entomology. Working as a forest entomologist was challenging, demanding and tested the limits of my intelligence, patience and determination. The role of the forest entomologist is to curb the damage caused by forestry pests to below the economic injury level- that is to say, to the extent that the damages caused by pests don't influence the profits of the company. Once a forest pest has established itself, it's

incredibly difficult to eradicate it completely. The best strategy is to control the damage as far as possible.

It would be very convenient if one could take the equivalent of a large can of Doom and spray that on every pest you find. Alas, it's not quite that easy. There are many things to consider before employing any control tactic. For instance, is it environmentally safe? Is it economically feasible? What are the legal and ethical considerations around the proposed control strategy, and what are the chances of success? Often, solutions to forestry problems need to be lucrative and creative, while still being effective and inexpensive. Companies don't want to spend millions of rands on a control strategy that doesn't have a high chance of success, or that would land them in legal trouble.

When the forester contacted me about the problem in Barberton, his first instinct was to send a plane over the plantation and spray several hundreds of hectares with insecticide. While this would be effective in some ways- it would certainly kill all the larvae feeding on the pine needles- it would not be the most environmentally friendly strategy to use, and there would be legal considerations to take into account, since pesticide usage is strictly regulated in South Africa. As the forest entomologist, you'll need to consult with the foresters and advise them of the best route to take for effective control, considering legal, ethical, environmental and financial implications.

Often this means spending hours researching possible strategies that could be implemented, drawing on the findings of previous researchers and adapting them to the present situation. In this instance, we collaborated with our colleagues at the University of Pretoria and expanded on research from the 1970's that led to the successful identification of a sex pheromone produced by female *E. terminalis* adults. We could then synthesise these pheromones at large scale for use in a trapping program. Trapping programs using pheromones have the advantage of being relatively inexpensive and environmentally friendly, making them popular strategies to use.

It is also always a good idea to collect data throughout the duration of the trapping program to measure the efficacy of the program. This may complicate the implementation and maintenance of the control program slightly, as there will be an additional layer of logistics involved to ensure that the field teams capture the data accurately and timeously. This data will be invaluable in evaluating the overall success of the control program, which will ultimately help decide if it's worth continuing with the program, or if the strategy should be optimised to be more successful. A well-written, concise report of the findings could mean

the difference in the company continuing to invest in the control program, or deciding to try another method of control.

A typical day in the life of a forest entomologist can therefore range between spending the day in the office doing research, doing data entries and writing up scientific reports, to doing fieldwork, consulting with foresters, co-ordinating field teams and handling the logistics of large-scale control programs, as well as diagnosing problems found in plantations, screening existing plantations for pest problems and designing trials to test new control strategies. No two days are the same when you're a forest entomologist, and that's what makes being a forest entomologist incredibly interesting. There will always be new challenges to tackle, new solutions to come up with, and new research to expand upon to optimise the status quo- and the rewards can be incredibly satisfying.

We implemented a smaller-scale trapping program in the heavily defoliated compartments in Barberton. We did this by baiting yellow delta traps with the female sex pheromone synthesised by our university colleagues. We hung these traps throughout the damaged compartments to trap out the male *E. terminalis* adults. This would lead to mating disruption, whereby mating between adult males and females would be disrupted and subsequently result in significantly less fertile eggs laid by the females, and thus less hungry caterpillars. This would hopefully curb the following season's damage significantly. When I returned a year later to see how the compartment was doing, the damaged plantations had recovered almost entirely. All the trees were green, their branches thick with needles, and not a hairy caterpillar in sight. The trapping program had been really effective in controlling the population of *E. terminalis*. Not many things feel as good as successfully implementing a control strategy.



Left: Adult male *E. terminalis* moths captured via a pheromone baited delta-trap; Right: recovery of the damaged plantation near Barberton, August 2020.



## UPCOMING EVENTS

19-24 July 2020

### XXVI International Congress of Entomology

<http://www.ice2020helsinki.fi>

Helsinki, Finland



This conference has officially been postponed until 18-23 July 2022 and is the final postponement.



Please find the following information from the ICE 2022 newsletter

- We welcome further proposals for symposia on actual entomological topics. The current list of accepted symposia is posted at the congress website (<http://www.ice2020helsinki.fi>). New symposia for the section “Ecosystem Services” are welcome in particular to balance this section with other sections in our programme. For guidance, please see the section on Scientific Symposia at our website: <https://ice2020helsinki.fi/call-for-symposia/>
- Abstract submissions for all types of presentations are still welcome! Remember that only one presentation per delegate is allowed (but you can be a co-author to several presentations).
- All presenting authors need to be registered congress participants.
- Delegate registration procedure: Here is a stepwise procedure for registering to ICE2022Helsinki, including instructions concerning payment of the fees:
  - Go to ICE2020Helsinki website: <http://www.ice2020helsinki.fi>
  - Click on Registration on the panel on the left side
  - Click on the green button "Register" at the bottom of page
  - You will be sent a registration link to the email address which you entered at step 3.
  - Go to your emails and click on the link (or copy to your web browser and go to that page)
  - Fill in the relevant information concerning your registration.



- On the bottom of the registration page you will see two payment method options: by credit
  - card (via PayTrail), or by invoicing (10€ extra charge for invoice handling)
  - Select the payment method and proceed.
- Note about paying the congress fee by invoicing: make sure that the automatically sent invoice reaches you! The invoicing email has as sender no-reply@contio.fi and it may happen that some filters direct the message to your junk-mail folder. If you don't receive the invoice, and it is not in your junk-mail box, please alert the organizers at: ento2020helsinki@gmail.com, cc to the personal email of the organizer: heikki.hokkanen@uef.fi
  - Specification of the procedure concerning transfer of an ICE2022 registration to another person. Due to transferring our registration system to the new service provider, we need to re-specify the procedure for transferring a registration:  
how to do it
    - all requests to transfer a registration should to be sent to the congress email address ento2020helsinki@gmail.com
    - write in the subject area "Registration transfer request" to help us spot easily your request
    - provide full details of the current registrant's information including email address used for the registration, and
    - provide full details of the person to whom the registration should be transferred to (including the email address for correspondence)
  - The covid-19 situation in Finland remains considerably better than in many other countries. However, we strongly encourage all participants to get double (or triple if possible) vaccinated before arriving in Finland, and to follow current entry requirements. Link to the actual situation in Finland: <https://thl.fi/en/web/infectious-diseases-and-vaccinations/what-s-new/coronavirus-covid-19-latest-updates/situation-update-on-coronavirus>
  - We are in the process of updating the list of hotels, with whom we have negotiated a conference rate for our participants. Be aware of malicious criminal firms, selling to you (via phone or email) hotel accommodations in Helsinki in our name. In case this happens to you, contact your local police officers and ask for legal steps to be taken.

## SOCIAL MEDIA TO FOLLOW

Do not forget to follow our own society social media accounts:

(<https://www.facebook.com/TheEntomologicalSocietyOfSouthernAfrica/>; Twitter: @entsocsa;  
Instagram: @entsocsa)

If you enjoyed learning about the Jozi Bee Hotel Project discover more on their Instagram page: @jozibeehotelproject as well as their Facebook page.



## NEW MEMBERS

We would like to welcome the following new society members:

- Courtney Morris, Citrus Research International, Stellenbosch
- Dr Luisa Nardini, Wits Research Institute for Malaria, Wits University.





## CONTRIBUTIONS TO *ROSTRUM*

Send all contributions for the next issue of *Rostrum* by email to **Shüné Oliver** before **15 April 2022**:  
[Shuneo@nicd.ac.za](mailto:Shuneo@nicd.ac.za) or contact the editor for details about the next issue.

Picture: Nina Parry

Goodbye and keep safe!

