The Pollinator Information Network Newsletter

Editorial

June 2017. Vol. 1, Issue 1

Welcome to the first issue of the Pollinator Information Network Newsletter!

Three-fourths of the world's flowering plants and about 35 percent of the world's food crops depend on animal pollinators to reproduce. More than 3,500 species of native bees help increase crop yields. Yet, other animal groups are important for pollination as well, including butterflies and moths, beetles, flies, thrips, birds and bats. These groups receive more and more attention in plant-pollinator networks. In order to summarize efforts related to the study of plant-pollinator interactions and networks, we have started an online quarterly newsletter on pollination biology, this being the first issue.

The *Pollinator Information Network Newsletter* was one of the projected outputs of a recently initiated project of the JRS Biodiversity Foundation, *i.e.* The Pollinator Information Network for Two-Winged Insects" or simply PINDIP. More information on this project, and a similar JRS-project on African pollinating Lepidoptera, as well as on the JRS Biodiversity Foundation itself, is included in this issue.

We will also be looking ahead to the 9th International Symposium of Syrphidae, which will be hosted by Brazil later this year, and the 9th International Congress of Dipterology, which will take place in Namibia in 2018. Also note the training course on dipterology later this year!

Finally, each issue will end with a list of new, although incomplete published research related to pollination biology, in its broadest sense.

We invite everyone concerned to submit relevant information for the *Newsletter*, including summaries of their own research and projects on pollination biology – or publications that they want to see high-lighted, relevant literature, upcoming conferences and symposia, possibilities for cooperation and grant applications related to plant-pollinator networks, *etc.*, before the 15th of August.

Enjoy reading!

Kurt Jordaens on behalf of the PINDIP team

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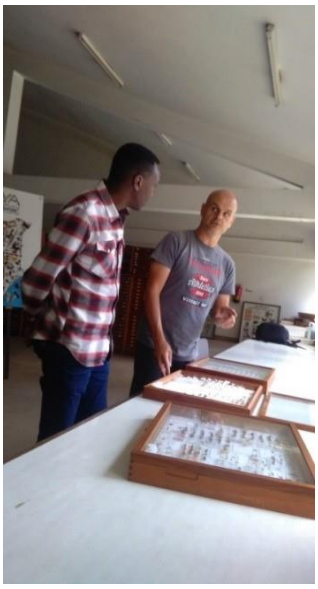
The pollinator information network for two-winged insects (PINDIP)

Background

Plant-pollinator networks - the webs of interactions among different types of pollinators and plants - are complex, and they can only be well understood if all the species are known. For insect pollinators, some groups are much better characterized than others; we know much more about butterflies, bees and beetles than we do about flies, for instance, even though some groups of flies are also very important pollinators. The PINDIP project, funded by the JRS Biodiversity Foundation, and headed by the Royal Museum for Central Africa (RCMA), will help redress that gap for sub-Saharan Africa, by partnering with museums in Africa to digitize and publish existing records on the group of insects known as Diptera (flies and mosquitoes), and increase the size and value of museum collections through field collections, and by documenting pollination interaction webs for the group. The Diptera families of interest are Bombyliidae, Calliphoridae, Mythicomyiidae, Nemestrinidae, Rhiniidae, Syrphidae and Tabanidae. The African institutions involved are: International Centre of Insect Physiology and Ecology (ICIPE, Nairobi, Kenya), National Museums of Kenya (NMK, Nairobi, Kenya), KwaZulu-Natal Museum (NMSA, Pietermaritzburg, South Africa), National Museum Bloemfontein (BMSA, Bloemfontein, South Africa), South African National Biodiversity Institute (SANBI, Pretoria, South Africa), and the International Institute of Tropical Agriculture (IITA, Cotonou, Benin).



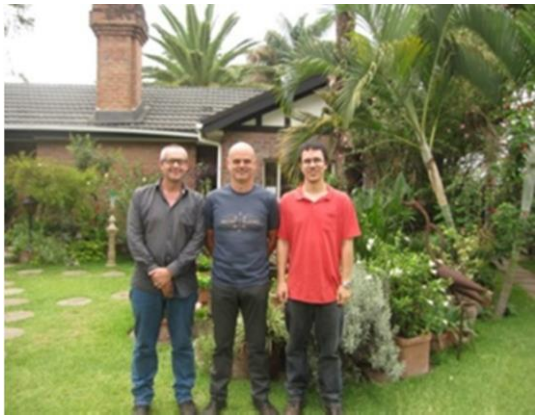
Kurt Jordaens (right) of the Royal Museum for Central Africa visiting Laban Njoroge (left) from the National Museums of Kenya in December 2016.

Key Objectives and Activities

Database five of the main sub-Saharan Diptera reference collections and make these data publicly available. Increase the numbers of Diptera reference specimens through collection of new material. Train researchers and collection curators with basic knowledge in taxonomy and ecology of Diptera (see further in this Issue).
Create an online resource that shares results with scientific community and public, and offers a platform for a network of African and global researchers, both taxonomists and ecologists, interested in Africa Diptera. Finally, this project will disseminate results in scientific community through peer-reviewed publications and conference presentations.

Planned Outputs

Digitization and publication (with GBIF) of 36,000 specimens of Afrotropical pollinating Diptera from six collections and seven taxonomic families.
Two field campaigns to collect new Diptera specimens (~1,500 – 2,000), which will be digitized and published.
Development and launch of African pollinator website, supporting a network of ecologists and taxonomists, as well as data sharing. UPCOMING!
Publication of digitized records of target groups in Global Biodiversity Information Facility (GBIF).
Development of additional tools for Afrotropical Syrphidae, a group sufficiently well known to support advances in taxonomic resources including: Lucid identification key for Syrphidae genera, checklist for Togo, Benin, and Nigeria, updated identification key for the syrphid genus *Eristalinus*, and a revised version of the *Catalogue of the Afrotropical Syrphidae*.



Ashley Kirk-Spriggs (left) and Burgert Muller (right) (both National Museum Bloemfontein) with Kurt Jordaens (middle) (Royal Museum for Central Africa) at the end of a two-week field trip in Malawi (November 2016).

Training for 30 African researchers and collection curators on Dipteran taxonomy and biodiversity informatics, including participation in training courses at the National Museums of Kenya, and SANBI (South Africa). SEE FURTHER IN THIS ISSUE FOR THE FIRST CALL.
Organization of a symposium: The role of Diptera in plant-pollinator networks, at the 9th International Congress of Dipterology (see further).
White paper on conservation status of Afrotropical Diptera.
Online quarterly newsletter on Diptera pollination biology.

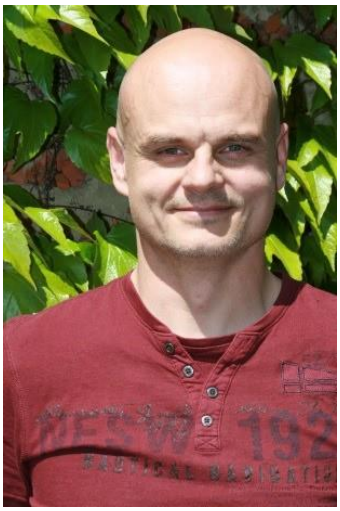
Planned Outcomes

The assembly and publication of primary biodiversity data on this understudied group, combined with field collections and ecological data will contribute to a baseline on status of Dipteran flies in the region. Through capacity building activities, and by creating a focus point for data and discussions, this project will foster a multi-disciplinary network of scientists and researchers that can collaborate to address knowledge gaps in taxonomy and ecology of pollinating flies. Improved knowledge of Dipteran flies in the region is needed to call attention to their important role as pollinators.

Partners

Kurt Jordaens (Royal Museum for Central Africa, Tervuren, Belgium)
Georg Goergen (International Institute of Tropical Agriculture, Cotonou, Benin)
Robert Copeland (International Centre of Insect Physiology and Ecology, Nairobi, Kenya)
Laban Njoroge (National Museums of Kenya, Nairobi, Kenya)
Ashley H. Kirk-Spriggs (National Museum, Bloemfontein, South Africa)
John Midgley (KwaZulu-Natal Museum, Pietermaritzburg, South Africa)
Michelle Hamer (South African National Biodiversity Institute, Pretoria, South Africa)
Steven Janssens (Botanical Garden, Meise, Belgium)

Contact: Kurt Jordaens (kurt.jordaens[at]africamuseum.be)



This project is financed by the JRS Biodiversity Foundation

Projects

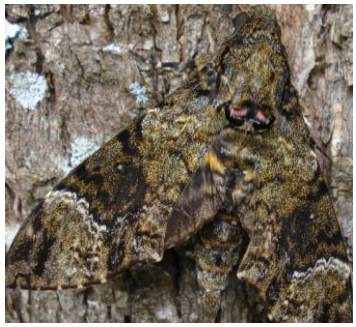
Assessment of Lepidoptera Pollinator Species Diversity in East Africa

NATIONAL MUSEUMS OF KENYA
WHERE HERITAGE LIVES ON

MAKERERE UNIVERSITY

Background

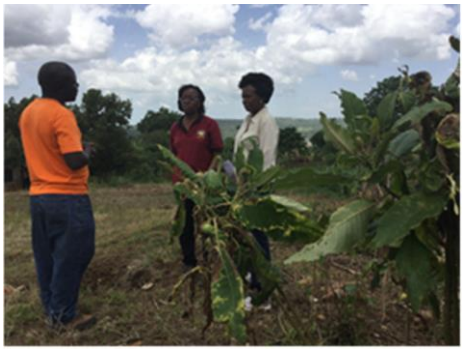
In East Africa, a majority of important food and cash crops rely on insect pollination, as do wild flora. Several groups of insects are important as pollinators, including bees, flies, butterflies, and beetles, yet nearly all available studies on insect pollination in Africa are focused solely on bees, particularly honey bees. Data on the diversity, abundance, distribution and trends of wild pollinators lags, which precludes assessment of their importance to agricultural production and maintenance of natural ecosystems. Indeed, no Red List assessments have been conducted for insect pollinators in East Africa. The need for this information is urgent, as recent studies in Europe and America have shown declines in wild pollinator abundance and diversity, suggesting East Africa might face similar conservation concerns.



Hawkmoth (Coelonia fulvinotata) well camouflaged on a tree trunk.

Key Objectives and Activities

This project is funded by the JRS Biodiversity Foundation, and will address these knowledge gaps focusing on three families of Lepidoptera: the hawkmoths (Sphingidae), the skipper butterflies (Hesperiidae), and the swallowtail butterflies (Papilionidae) in the Eastern Arc Mountains in Kenya and Tanzania, and the Mabira Forest in Uganda. In addition to field sampling of these key ecosystems, and surrounding agro-ecosystems, the project will digitize Lepidoptera collections in museums in the three countries.



Kurt, this looks a bit crowded, move the middle picture to below where the trap is and delete the trap. Thanks

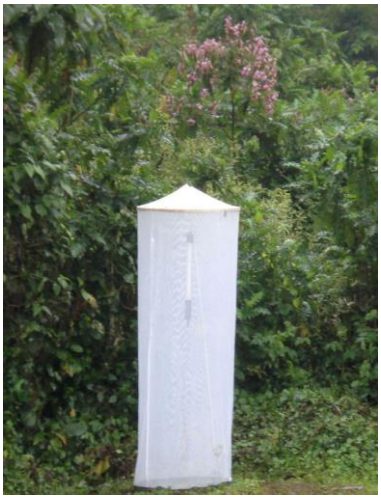
Left: Adelaide Sallema (National Museum of Tanzania), Anne Akol (~~Zollogogy Museum,~~ Makarere University, Uganda) and Esther Kioko (National Museums of Kenya) launching the JRS project at the NMK in Nairobi in March 2017. Middle: Farmlands in Uganda adjacent to Mabira forest. Right: Adelaide and ~~team~~ colleagues and project partner Bruno Nyundo of University of Dar es salaam (right) at the Museum & House of Culture, National Museum of Tanzania.

Planned Outputs

Three workshops, one in each of the project countries. The first, in Kenya, will build consensus with institutional partners on goals, protocols, and roles, the second and third, in Tanzania and Uganda, respectively, will facilitate exchange of knowledge and technology and build synergy among the teams in each country to achieve the project goal of conserving Lepidoptera pollinator species in the East Africa region.
Field sampling expeditions during multiple seasons resulting in 8,000 new records (to be digitized) and an inventory of plant-pollinator interactions observed during sampling.

Training for 20 technical staff (2 from each partner institution, and 14 from other institutions in each participating country) on data collection and digitization.

Digitization of 50,000 specimen records (22,600 from Kenya, 22,000 from Uganda, and 6,387 from Tanzania).
Publication of pollinator data through the Global Biodiversity Information Facility (GBIF).
Training and support for three Master's students.
A public exhibition in each country to disseminate information on pollinators, including brochures, checklists, etc.



Butterfly trap(This is a light trap not butterfly trap) but please remove it and bring here the photo above Middle: Farmlands in Uganda adjacent to Mabira forest (the people in are Jimy of Mabira Ecotourism Centre(left) Anne Akol (middle) and Esther (right)

Planned Outcomes

The networks established during the project facilitate future opportunities for collaboration on other projects.
Update and increased use of regional reference collections of Lepidoptera.
Applied use of improved understanding of plant-pollinator interactions, for instance in decision making about pesticide application.
Inclusion of pollinators as a component of biological diversity by wildlife and environmental agencies.
Increased regional technical capacity in digitization and Lepidoptera taxonomy.
Web resources for sharing information on regional Lepidoptera pollinator species diversity and importance.

Partners:

Anne Akol (~~Zoology Museum,~~ Department of Zoology, Entomology and Fisheries Sciences, Makerere University, Kampala ~~Makarere,~~ Uganda)

Adelaide Sallema (Museum and House of Culture in Dar es Salaam, a branch of the National

Museum of Tanzania, ~~Dar es Salaam,~~ Tanzania)

Contact: Esther Kioko (e.kioko[at]museums.or.ke)

This project is financed by the JRS Biodiversity Foundation

Projects

Understanding and managing insect pollinators for improved vegetable production in arid and semi-arid counties of Kenya

Background

The National Museums of Kenya (NMK, Nairobi) ~~and~~ financed by the Bee Care Centre, Bayer (Germany) has initiated a project, the first of its kind ~~in~~ supported by the Bee Care Centre in Africa.

The project ~~is funded by Bayer AG, Bee Care Centre, Germany and~~ will be implemented for a period of two years starting May 2017 by the Zoology and Botany Departments, National Museums of Kenya.

Agriculture plays a key role in the Kenyan economy with horticulture contributing 33% of total GDP and 38.5% of exports. About 96% of the total horticultural production is consumed locally but the export market also earns the country substantial revenue in terms of foreign exchange. The horticulture ~~the~~ value consists of vegetables (48%), fruits (28%), flowers (18%), nuts (3%) and medicinal and aromatic plants (2%). Despite the importance of vegetables in the economy of Kenya, the understanding of pollinators related to vegetable production is poorly known more so in the 80% of Kenya that is made up arid and semiarid areas (ASALS). The future of the pollinators in the ASALS is closely tied to management policies and capacity which requires biodiversity information which is majorly lacking.

The focus of this project is on the insect pollinators which play a critical role in the pollination of African indigenous vegetables and other vegetables grown by small scale farmers (mostly women) in Machakos and Makueni Counties in Kenya.

The results will include information packages filling in the current knowledge gaps and empowering the population especially those closest to the resources to utilize the existing natural resources, vegetables and insect pollinators for sustainable livelihoods and a healthier environment.



Left: carpenter bee on flower of climbing bean. Middle: cowpea. Right: eggplant.

Key Objectives and Activities

Specifically, the project aims to:

- determine the seasonal diversity and abundance of insect pollinators of key vegetables in small scale farms
- assess the effect farm surrounding habitats on the composition and abundance of vegetable insect pollinators
- determine the effect of local insect pest management strategies on the insect pollinators associated with key vegetables
- assess the influence of pollinators on vegetable yield quantity and quality
- initiate capacity building and outreach pathways for supporting the conservation of pollinators at landscape level in Machakos and Makueni Counties in Eastern Kenya.

Contact: Esther Kioko (e.kioko[at]museums.or.ke) add here attached picture of the Botany department contact person Patrick Muthoka (pmuthoka(at)museums.or.ke

Projects

FlyHigh: Insect-plant relationships: insights into biodiversity and new applications

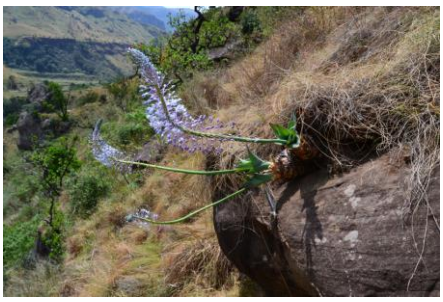
Background

FlyHigh studies the life cycles of underexplored phytophagous and saprophagous flies aiming to obtaining ecological and evolutionary data. It will be used to elucidate evolutionary features of fly species and geophyte plants and useful information that could be exploited for mass rearing of insects. Artificial rearing of flies produces beneficial end products, the flies themselves or their larval stages that could be applied for different services as animal feeding, valorisation of agri-food by-products or as bio-agents for e.g. complementary pollination services in natural or greenhouse environments.

Fly of the family Calliphoridae

Key Objectives and Activities

The main aim of the FlyHigh project is to facilitate cross-sectorial transfer of knowledge and training of researchers as well as technical staff in bridging the gap between scientific results and their application into novel business ideas and high level research. The exchange program involves researchers, students, laboratory and technical staff of scientific collections from Finland (University of Helsinki), Spain (University of Alicante, company Bioflytech), Serbia (University of Novi Sad), and South Africa (company Agriprotein).

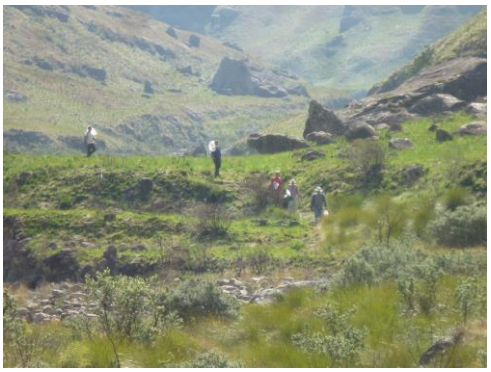


Merwillea natalensis at the Royal Natal National Park (South Africa

More specifically, the project will study:

- the relationships between geophytes (bulb-plants) and hoverflies with phyto-saprophagous larvae
- the biodiversity of some families that have significant pollinators (Syrphidae, Calliphoridae, Rhiniidae)
- methodologies of artificial rearing conditions of flies as protein source, biodecomposers and pollinators
- the biodiversity and phylogeny of bulb-plants
- the biodiversity and phylogeny of hoverflies of the genus *Merodon*
- the co-evolution between geophythes and hoverflies

More information on this project can be found on the FlyHigh project-website:
https://www.luomus.fi/en/flyhigh



Henry Väre and Gunillla Ståhls (both university of Helsinki), Santos Rojo (University of Alicante), Andrea Aracil (Bioflytech) and Andres Campoy (University of Alicante) during field work in South Africa. Photo: Ximo Mengual.

Partners:

Aino Juslén (University of Helsinki & Finnish Museum of Natural History, Helsinki, Finland)
Gunilla Ståhls-Mäkelä (University of Helsinki & Finnish Museum of Natural History, Helsinki, Finland)
Henry Väre (University of Helsinki & Finnish Museum of Natural History, Helsinki, Finland)
Santos Rojo (University of Alicante, Spain)
Celeste Pérez-Bañón (University of Alicante, Spain)
Ana Isabel Martínez-Sánchez (University of Alicante, Spain)
Maria Angeles Alonso (University of Alicante, Spain)
Manuel B. Crespo (University of Alicante, Spain)
Mario Martínez Azorín (University of Alicante, Spain)
Ante Vujić (University of Novi Sad, Serbia)
Snežana Radenković (University of Novi Sad, Serbia)
Dragana Obreht Vidaković (University of Novi Sad, Serbia)
Mihajla Đan (University of Novi Sad, Serbia)
David Drew (Agriprotein, South Africa)
Cameron Richards (Agriprotein, South Africa)
Berta Pastor (Production Manager Bioflytech, Spain)
Karen Alonso (Chief Executive Officer Bioflytech, Spain)

Contact:
Aino Juslén (aino.juslen[at]helsinki.fi)
Gunilla Ståhls (gunilla.stahls[at]helsinki.fi)

Feature

Mission

The mission of the JRS Biodiversity Foundation is to increase access to and use of information that will lead to greater biodiversity conservation and more sustainable development in sub-Saharan Africa. Founded in 2004, the JRS Biodiversity Foundation works to increase the capacity of the institutions and people who collect, manage, and disseminate biodiversity data and information in sub-Saharan Africa, and to connect this knowledge to stakeholders who make and influence decisions that are crucial to supporting biodiversity. The foundation has awarded more than $13.5M in grants since 2007. Visit us online at http://www.jrsbiodiversity.org

Vision

Our foundation's vision is a world in which greater access to knowledge substantially contributes to conserving the Earth's biodiversity for the benefit of society. Our mission is to increase the access to and the use of information for biodiversity conservation and sustainable development in sub-Saharan Africa. Since 2007, the foundation has invested more than $15M in biodiversity informatics projects that focus on: (1) collecting and enhancing data, (2) aggregating, synthesizing, and publishing data, (3) making data more widely available to potential end users, and (4) interpreting and gaining insights from biodiversity data to inform policy and conservation of biodiversity.

Strategy

The JRS strategy to advance biodiversity informatics in sub-Saharan Africa is to connect data to knowledge use in critical domains of conservation and sustainable development where the demand for information can sustain investment in knowledge, technology, people, and institutions. Our goal is to expand biodiversity informatics capacity in sub-Saharan Africa as evidenced by increases in access to and use of biodiversity data, investment in biodiversity information resources, and human and institutional capacity to generate and use biodiversity data and information services. This call for proposals supports our grantmaking programs in Freshwater Biodiversity and Resources and in Pollinator Biodiversity and Services. Please see http://jrsbiodiversity.org to learn more about our work.

Feature

Types of Proposals

JRS will accept two types of proposal: 1) proposals for multi-year projects, and 2) proposals for planning grants for multi-year projects. Project proposals deemed to need additional time for technical planning and partnership development may be offered the opportunity to receive a planning grant.

Project ideas outside of the scope of this RFP as defined below should use the foundation's Funding Inquiry Form and upload utility at http://jrsbiodiversity.org/how-to-apply/funding-inquiries/.

Pollinator-program:

http://jrsbiodiversity.org/our-programs/pollinators/

Contact: Don S. Doering (ddoering[at]jrsbiodiversity.org)

Congress

Important dates

Early registration: November 2017–1st June 2018
Regular registration: until 1st November 2018
Abstract submission deadline: 1st September 2018

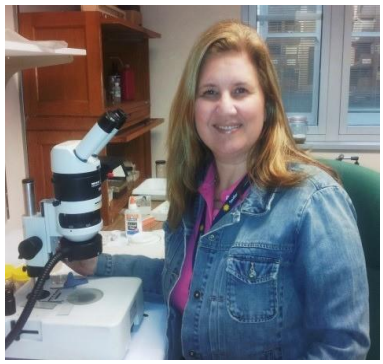
Registration and submission of abstract will be electronic and all payments for registration fees must be made at the time of registration.

Taking place for the first time in the Neotropical Region, the ISS9 will be held in Curitiba (Brazil) from 28th August to 1st September 2017. We are sure it will be an excellent opportunity to establish new research collaborations and share experiences on Syrphidae.

Organizing Committee (contacts):

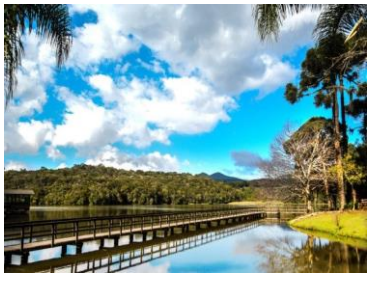
Dr. Mírian N. Morales (chair)
Federal University of Lavras (Brasil)
syrphidae9(at)gmail.com

Dr. Luciane Marinoni (secretary)
Federal University of Curitiba (Brasil)



International Scientific Committee :

Dr. Gunilla Ståhls (University of Helsinki and Museum of Natural History, Helsinki, Finland)
Dr. Menno Reemer (Naturalis, The Netherlands)
Dr. Santos Rojo (University of Alicante, Spain)
Dr. Snezana Radenkovic (University of Novi Sad, Serbia)
Dr. Ximo Mengual (Germany)



The Congress venue in Curitiba

Congress website:
http://syrphidaesymposium.wixsite.com/iss9-curitibabrazil

Congress

9th International Congress of Dipterology

25–30 November 2018

Windhoek, Namibia

Important dates

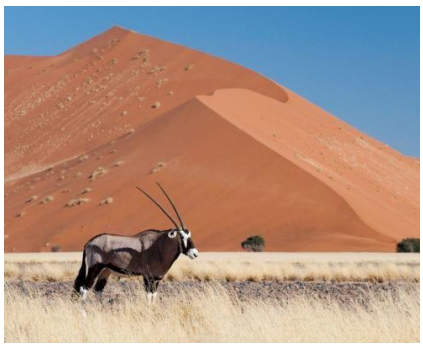
Early registration: November 2017–1st June 2018
Regular registration: until 1st November 2018
Abstract submission deadline: 1st September 2018

Registration and submission of abstract will be electronic and all payments for registration fees must be made at the time of registration.

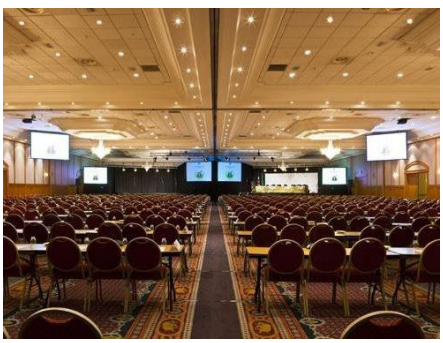
Organizing committee:

Dr. Ashley H. Kirk-Spriggs (Chair & ICD representative), National Museum, Bloemfontein, South Africa, ashley.kirk-spriggs(at)nasmus.co.za

Ms. Esther Moombolah-/Goagoses, National Museum of Namibia, Namibia
Dr. Josiane Etang, L'Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale (OCEAC), Cameroon
Dr. Michael Osae, Biotechnology & Nuclear Agriculture Research Institute, Ghana
Dr. Sunday Ekesi, International Centre for Insect Physiology & Ecology (ICIPE), Kenya
Mrs. Mary Kirk-Spriggs, Namibian Coordinator, South Africa
Mr. Kenneth Uiseb, Scientific Services, Ministry of Environment & Tourism, Namibia
Ms. Waltraut Fritzsche, Namibia Scientific Society, Namibia
Dr. Seth Eiseb, University of Namibia, Namibia
Dr. Candice-Lee Lyons, Plant Protection Research Institute (PPRI),
Dr. Vaughn Swart, University of the Free State, South Africa
Mr. Burgert Muller, National Museum, Bloemfontein, South Africa



Oryx in Namibia.



The Congress venue: Safari hotels and Conference Centre in Windhoek.

Scientific programme:

The overall theme of the Congress will be "Afrotropical Dipterology" and specific symposia are planned that have special relevance to African delegates, but the scientific programme will include other general thematic and taxon-based symposia and poster sessions, and all major aspects of dipterology, including systematics, morphology, physiology, evolution, biodiversity and conservation, ecology, agriculture and forensics will be covered.

Plenary speakers:

The five plenary speakers have now been finalized (see below) and the names, biographies and plenary titles of speakers are available on the official website http://icd9.co.za/plenaries/

Michelle Trautwein - Plenary title: Resolving the Fly Tree of Life
Brian V. Brown - Plenary title: Phorid fly diversity – frontiers in species richness, structure and behaviour
Netta Dorchin - Plenary title: Unmitigated gallers – specialisation leads to diversification in the Cecidomyiidae
Rudolf Meiswinkel - Plenary title: Culicoides as vectors for viruses causing disease in livestock
Martin Hall - Plenary title: The research-casework continuum in forensic dipterology

Symposia sessions:

Twelve symposia titles have been submitted to date and posted on the official website http://icd9.co.za/symposia-titles/ and instructions for other on-line title submissions and an online submission form are available online. Note that two symposia titles submitted thus far related specifically to Diptera pollinators: " The importance of Diptera in plant-pollinator networks" [contact: Kurt Jordaens, kurt.jordaens(at)africamuseum.be] and "Systematics and taxonomy of lower Cyclorrhapha" [contact: Andrew D. Young, adyoung(at)gmail.com]. Delegates wishing to submit oral presentations to these symposia are initially asked to contact the symposia convenors.

The venue:

The Congress venue will be the Safari Hotels and Conference Centre in central Windhoek. The Hotels offers modern, world class conference facilities, including a large reception area, suitable for functions, space for the erection of poster boards and three adjoining Congress rooms, the largest of which seats over 400 delegates and is suitable for plenary sessions. The Conference Centre has two restaurants, a bar and several smaller sites for beverages. Top-range accommodation and low-end affordable accommodation for students is available at a short distance from the Congress venue.

Contact:

All general e-mail enquiries should be directed to: icd9(at)nasmus.co.za

Training

Training course in taxonomy and systematics of African pollinatingflies

Organized at the National Museums of Kenya and the International Centre of Insect Physiology and Ecology, Kenya
Session 2017
Call for applications for 15 scholarships

Opening and closing date of the applications:
01/06/17 till 31/08/17
Training:
20/11/2017- 01/12/2015

Organisation:

The training is organized by three institutions: the Entomology Section of the Royal Museum for Central Africa (RMCA, Tervuren) in Belgium, and the National Museums of Kenya (NMK, Nairobi) and the International Centre of Insect Physiology and Ecology (ICIPE, Nairobi) in Kenya.

Background:

The objective of this group training is to ensure, for the sake of the African scientists or the persons confronted with the problem, a basic training on the identification and ecology of African Diptera that have a significant role in plant-pollinator networks. The target families are Bombyliidae, Calliphoridae, Mythicomyiidae, Nemestrinidae, Rhiniidae, Syrphidae, and pangonine Tabanidae.

It shall consist of ex-cathedra courses on morphology, classification, identification, identification methods, collection methods, and conservation methods of Diptera, with a special focus on the target families listed above. Practical exercises will be used to comment on and test the topics presented in the courses.

Participants shall be asked to bring material they collected so it can be identified during practical work sessions. Likewise, should they have large datasets at their disposal, these may also be analysed.

When?:

The course will take place over 10 working days (20/11 – 01/12) at NMK and ICIPE (Kenya) and be taught in English.

Training

Participant profile and admission requirement:

The training can receive 15 participants, among whom researchers and employees who are confronted with pollinating flies on a professional level. They may be employees from agricultural institutes, professors of agricultural faculties, researchers from national or international institutions, etc.

Participants must have a minimum level of knowledge in basic Diptera ecology.

The candidates' maximum age at the moment of their application is not to exceed 45 years.

Only applications from people with residence in Sub-Saharan Africa and working for an institution, ministry, research institute or university can be taken into consideration. Applications from consultants or individuals cannot be accepted.

Candidates must be citizens of one of the following countries: Benin, Burundi, Burkina Faso, Côte d'Ivoire, Cameroon, Democratic Republic of Congo, Ethiopia, Guinea, Kenya, Madagascar, Mali, Mozambique, Niger, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe.

Scientists with a diploma other than MSc or PhD. should demonstrate a record of substantial work related to the subject that is presented (Diptera of the target families; plant-pollinator networks, etc.).

All applications will be subject to an evaluation by internal experts.

More information :

More information and instructions for application can be found on:
http://www.africamuseum.be/research/collaborations/training

or by contacting Kurt Jordaens (see below).

Contact:

Dr. Kurt Jordaens, Work Leader and training organizer, kurt.jordaens(at)africamuseum.be

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Royal Museum for Central Africa
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PhD Position

PhD position: Systematics and evolution of keystone pollinators in South Africa's biodiversity hotspots (University of KwaZulu-Natal)

ONLY OPEN TO PEOPLE WITH A SOUTH AFRICAN NATIONALITY

Southern Africa is renowned for its tremendous plant diversity contained in three biodiversity hotspots of global significance. Over the past decades, concerted research effort has brought about understanding into the drivers of plant divergence. It is now well-established that interactions with pollinators have played a pivotal role in the evolution of both functional diversity and species richness. This paradigm rests on viewing of pollinators as niches to which plants can adapt. These niches comprise few, highly diverse and unique pollination guilds such as oil-collecting bees, sunbirds, wasps, and long tongued flies.

Unlike abiotic niches, pollinators represent dynamic niches because they also evolve and adapt. Pollinator evolution may have important implications for plant evolution. However, virtually nothing is known about the evolution of the major pollinator groups of Southern Africa. Our current understanding suggests that local specialized plant-pollinator interactions are represented by a highly asymmetrical network, in which multiple plant species rely on a single pollinator species for reproduction and that local coevolution may explain trait matching between plants and pollinator species. In contrast, evidence from macroevolutionary studies suggests that plant species adapt to pre-existing pollinator traits.

A PhD project is available which focuses on the evolution of long-tongued flies, a group of charismatic and keystone pollinators in the Southern African flora. The aim of the project is to increase understanding of systematics and evolution in the Southern African endemic genus *Prosoeca* (Nemestrinidae), as a means to gain insight into the processes that may drive codiversification and coevolution between plants and pollinators, ultimately giving rise to the tremendous biodiversity of the region. The scope of the project includes diversity at two geographical and taxonomic scales: diversity within *Prosoeca peringueyi* in the Succulent Karoo biodiversity hotspot, and the genus *Prosoeca* across southern Africa.

The following three broad objectives are to be addressed:

1) To assess whether the extensive morphological diversity of *Prosoeca peringueyi* within sites across the Succulent Karoo represents different evolutionary fly lineages or intra-population variation (e.g. gender polymorphism, age-related polymorphism). This will be evaluated using DNA barcoding techniques.

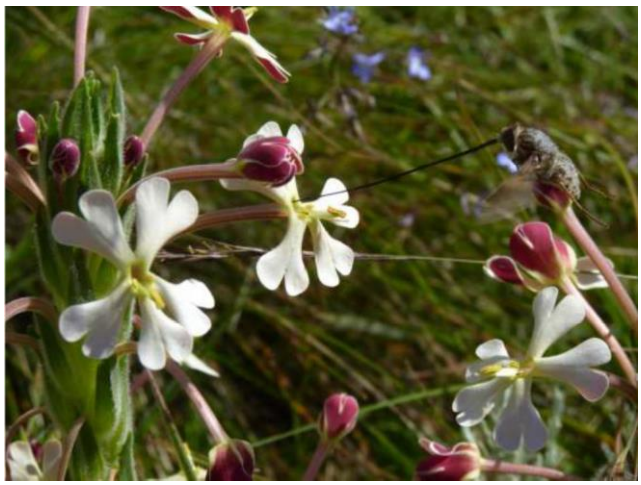
2) To distinguish between alternative explanations for extant patterns of diversity, particularly whether sympatric divergence or allopatric divergence followed by ecological sorting underlie co-evolutionary mosaics, molecular and morphometric tools will be used to identify and investigate evolutionary and geographical lineages within *Prosoeca peringueyi*.

3) Scaling up to southern Africa, to understand whether local pollination guilds evolved independently, or are the result of migrations of preadapted lineages, a phylogeny of

PhD Position

Prosoeca will be reconstructed using molecular markers. With this phylogeny, the *Prosoeca* radiation will be dated and combined with ancestral character state reconstruction (in particular of tongue length) and biogeographical analyses to assess whether the evolution of long tongues predates the evolution of plants that rely on them, and to assess whether long tongues evolved multiple times in situ, or only few times, followed by migration to different biomes in their current ranges.

We are looking for an enthusiastic student with an MSc degree in Biological Sciences or a related field, and a strong interest in evolutionary biology to execute this project. Experience with molecular and phylogenetic techniques is an advantage. The project will be based at the University of KwaZulu-Natal (Pietermaritzburg) under supervision of Dr Timo van der Niet (main supervisor) and Prof Steve Johnson (co-supervisor), but will be done in close collaboration with partners at Stellenbosch University (Prof Bruce Anderson, Prof Allan Ellis). Opportunities for fieldwork exist, especially with a focus on collecting *Prosoeca* flies in previously under-collected areas.



Prosoeca ganglbaueri probing its 50 mm long tongue into the long nectar tube of Zaluzianskya microsiphon (Matatiele) © Harro De Moor

We offer a student bursary for three years at the value of 100,000 ZAR per annum and all running expenses are covered. The pollination laboratory of UKZN is well-equipped, including facilities for molecular systematics and a fleet of vehicles for fieldwork. Furthermore, the Natal Museum in Pietermaritzburg harbors one of the world's most important collections of Nemestrinidae.

For more information contact Dr Timo van der Niet (vanderNiett[at]ukzn.ac.za), or send your application for this position to this email address before 15 July. Include your CV with contact details of two referees, and a cover letter in which you explain why you are interested in this position.

Literature

Newest literature: In this section, we will list some, but not all, of the newest publications on pollinators. If you want to receive a pdf of any of these papers, send an email to kurt.jordaens(at)africamuseum.be.

April 2017

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