



FUNDAMENTALS OF SAMPLING AND MONITORING INSECT POLLINATORS



3rd to 7th June 2026

Course contact: ekioko@museums.or.ke; jaynemmacharia@gmail.com and alecksers@gmail.com

Brief course introduction:

Pollination is an essential ecosystem service contributing to food security and environmental health. Worldwide, there is an increasing concern about the decline of pollinators. Data on insect pollinators is however scarce limiting clear understanding and monitoring their changes over time. The pollinator crisis calls for efforts to bridge the information gap. Closing the information gap requires efforts in understanding the fundamentals of sampling and monitoring insect pollinators, their identification processes and management of the data in the development of accessible information resources to support conservation strategies.

Aim of the Course:

Participants will be trained on diverse sampling methods applicable to insect pollinators, Specimen sorting, identification, ecology and value of insect pollinators, management of a pollinator insect collection, data retrieval and management, application of modern technology in monitoring insect pollinators and management of insect pollinator data for wider accessibility.

Course Outline:

Day 1	Day 2	Day 3	Day 4	Day 5
Opening Ceremony (Louis Leakey Auditorium)	<ul style="list-style-type: none"> Field sampling Active and Passive sampling methodologies Recording insect pollinator visits/behavior 	<ul style="list-style-type: none"> Field sampling Recording insect pollinator visits/behavior Introduction to pollinating insects, bees, flies, butterflies, beetles etc 	<ul style="list-style-type: none"> Identification of field samples Use of Automated Machine for Monitoring Insect pollinators Taxonomy of pollinating insects 	<ul style="list-style-type: none"> Collection digitization Data management Insect Pollinator data application
Assemble sampling equipment	<ul style="list-style-type: none"> Field sampling Recording insect pollinator visits/behavior 	<ul style="list-style-type: none"> Sample sorting/curation Identification of field samples 	<ul style="list-style-type: none"> Specimen Cataloguing Insect collection management 	<ul style="list-style-type: none"> Design insect pollinator-friendly habitats Designing insect pollinator homes

		<ul style="list-style-type: none"> • Labelling and pinning of collected specimens 		
Introduction to Invertebrates Zoology Museum Collections Tour Bee exhibition	Field sample sorting and curation Labelling and pinning of collected specimens	Identification of field samples Use of various keys/Manuals for taxonomical identification	<ul style="list-style-type: none"> • Digitization of collections • Data management 	<ul style="list-style-type: none"> • Training survey • Awards & closing

Some resource materials for reference:

- www.nhm.ac.uk › research › projects › manual-afrotropical-diptera
- <https://abctaxa.naturalsciences.be/?s=ABC+TAXA+BEEES>
- [A-field-guide-to-Taita-Hills-butterflies-NMK-JRS-2021.pdf](#)
- <https://genent.cals.ncsu.edu/insect-identification/order-lepidoptera>
- <https://insect.kindwise.com/demo/>
- <https://www.inaturalist.org/>
- Global Biodiversity Information Facility; <https://www.gbif.org/>
- Emerging technologies for pollinator monitoring: <https://doi.org/10.1016/j.cois.2025.101367>
- www.pindip.org

What to bring:

- Lab coat
- Comfortable shoes for field work
- Lap top if available

Students will:

1. Be expected to fill a simple training survey form
2. Write and submit a training report

TRAINING WORKSHOP FACILITATOR PROFILES:



Esther N. Kioko
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Esther Kioko is an Entomologist/environmentalist working as a Principal Research Scientist in the invertebrate Zoology Section, at NMK and adjunct associate Professor, Biology Department, University of Nairobi. She holds a PhD and MSc in Agricultural Entomology and a second MSc in Environmental management with research experience in insect ecology focusing on butterflies and moths, biodiversity assessments, environmental assessments/audit and insect based enterprises. With a long-standing interest in museum collections, she has led a regional project on the assessment of Lepidoptera pollinator species diversity data in museum collections in East Africa. Passionate about the role of museums in sustainability, she has served as a jury member for the International Council of Museums award for sustainable development practice in museums.



Jane Macharia
mmuthoni@museums.or.ke

Jane Macharia is a Research Scientist at the National Museums of Kenya and PhD student at the University of Cambridge, United Kingdom. Ms Macharia is a member of the International Union for the Study of Social Insects (IUSI) and holds an MSc in Agriculture Entomology.

Her expertise lies in African bee taxonomy, bee ecology, pollination and beekeeping including stingless bees. Passionate about bees and environmental conservation, her current research explores the role of World Heritage Sites as refugia for insect pollinators.

Connect:

Research gate:- <https://www.researchgate.net/profile/Jane-Macharia-Kanyi-2>

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Alex Musyoka
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Research Scientist, Zoology Department. An entomologist with passion in pollination ecology, specialized in invertebrate assessment, taxonomy and conservation awareness creation.



Josiah Collins Achieng
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Josiah Collins Achieng, is based at the Zoology Department. A keen Dipterologist and has worked on Seven (7) families of pollinating flies which are published on Global Biodiversity Information Facility (GBIF).



Morris Mutua
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Morris Mutua serves as a Research Technologist in the Zoology Department at the National Museums of Kenya. With over twenty years of expertise in beetle taxonomy and ecology, his extensive experience has enabled him to partition beetle communities into various functional groups, such as pollinators.

Brief Introduction: The National Museums of Kenya

NMK is a State Cooperation established by the Museums and Heritage Act. It is a registered Multidisciplinary Research Institution and a center of excellence in heritage research, conservation and management. The Directorate of National Repository and Research (DNRR) coordinates research at NMK and manages the National Scientific Reference Collections. DNRR collaborates with National and International institutions in implementing its mandate, and has a mission to collect, preserve, study, document and present Kenya's past and present cultural and natural heritage. Affiliates from all over the world are accommodated at the NMK for collaborative research. The vision of DNRR is to be a center of excellence in heritage management and research for posterity. The directorate has various departments whose mandate is research dissemination through publications, exhibitions, industrial attachments and training. The Zoology Department has a rich archive of invertebrates collected over time. The collection is the second largest in Africa with some of the oldest collections dating back to the 18th century. It comprises of over 3 million invertebrate collections with about 60 % being from Kenya and the rest from other countries in Africa. This invertebrate zoology collection is still growing as researchers continue to undertake field expeditions in diverse ecosystems and deposit samples in the NMK.