

# *Curriculum Vitae*

## MARK OTIENO

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### EDUCATIONAL BACKGROUND

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- 2006 – 2011 **Ph.D.**, Agroecology  
*University of Reading, United Kingdom*  
Thesis title: “Assessing the drivers of pollinator and natural pest enemy communities in pigeon pea and field beans crops.”
- 2002 – 2005 **M.Sc.**, Animal Ecology  
*Kenyatta University, Kenya*  
Thesis title: “The effects of herbivory on interactions of pollinators and flowers in *Acacia* spp. (Fabaceae, Mimosoideae) in Laikipia District of Kenya.”
- 1998 – 2002 **B.Ed. (Sc)**, Biological Sciences  
*Kenyatta University, Kenya*

#### Short Courses

Agroecological approaches for sustainable intensive Agriculture, pedagogy, bee course, wildlife management and conservation, GIS applications, statistical modelling, systematic review, research methods in savannah ecology.

### EMPLOYMENT HISTORY

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- 2022 to date** *Senior Lecturer, University of Embu, Kenya*
- Serving as Academic and Program Leader for Crop protection and Range Management programs
  - Teaching courses and supervising postgraduate students research in Agroecology, entomology, agroecosystem management and environmental biology
- 2013 to 2021** *Lecturer, University of Embu, Kenya*
- Taught courses in:
    - General and applied entomology and ecology and agroecosystem management.
    - Environmental biology, biodiversity and conservation science.
  - Developed MSc (Entomology) and BSc (Range Management) curricula.
  - Achieved above 95% aggregate score in student-lecturer evaluation from 2014 to 2019.
- 2019 to 2021** *Alexander von Humboldt - Georg Forster Experienced Research Fellow, University of Würzburg, Germany*  
Researching crop pollination and pest control services in Germany designed to promote the transfer of knowledge and methods to advance research development in Kenya.
- 2013 - 2014** *Postdoctoral Research Associate, Pennsylvania State University, USA*  
Coordinated the USDA-SCRI funded project on Integrated Crop Pollination for apple and pumpkin crops in the State of Pennsylvania, USA.
- 2012 - 2013** *Training Coordinator, Tropical Biology Association, East and West Africa*  
Coordinated an EU –ACP funded DRECA programme (Developing Research Capacity among African Scientists) on proposal writing, designing projects, and publishing.
- 2009 - 2012** *Research Scientist, University of Reading, UK*
- Wrote reviews on ecosystem services for poverty alleviation.
  - Developed protocols for the ESPA project on managing ecosystem services to reduce poverty and vulnerability in East African coffee landscapes.
  - Investigated the diversity and interactions of pollinator communities and crop flowers in England’s urban habitats.
- 2007** *Consultant Ecologist, National Museums of Kenya, Kenya*  
Developed conservation and management tools for pollinator communities underpinning crop production in smallholder farmlands through an ecosystem approach to enhance sustainable agriculture.

- 2004 - 2006 **Course Coordinator, Tropical Biology Association, Africa and Madagascar**  
Coordinated tropical ecology and conservation field courses in Kenya, Uganda, Tanzania and Madagascar.
- 2004 **Consultant Ecologist, Biodiversity Conservation Programme, CDTF, EU**  
Conducted an ecological baseline survey in LUMO Community Wildlife Sanctuary and evaluated the project impact on local livelihoods.

#### UNIVERSITY ADMINISTRATIVE AND MANAGERIAL RESPONSIBILITIES

- 2021 to date **External linkages Liaison Officer**, University of Embu
- 2021 **Ag. Director of Research and Extension**, University of Embu
- 2015 - 2019 **Dean of Students**, University of Embu
- 2015 - 2019 **Secretary**, Student Welfare Committee, University of Embu.  
**Member**, University Senate and over **twenty-five committees** at University of Embu.
- 2014 – to date **Academic Leader**, Crop protection & Range Mgt. programs, University of Embu.
- 2014 **Ag. Chairman**, Department of Agricultural Resource Management, University of Embu.
- 2010 - 2011 **Students Mentor**, Center for Agri-Environmental Research, University of Reading.
- 2000 to 2002 **Academic Representative**, Department of Botany, Kenyatta University.

#### SCHOLARSHIPS

- 2022 DAAD Alumni scholarship to attend a seminar in **Germany** on creating global change (\$4,000).
- 2019 Alexander von Humboldt language course scholarship to study the German language at Did Deutsch Institute – Frankfurt, **Germany** (\$3,000).
- 2018 Israel - MASHAV Scholarship for a course in Agroecological approaches for sustainable intensive Agriculture at MATC Shefayim, **Israel** (\$3,000).
- 2013 - 2014 USDA – SCRI Postdoctoral Research Scholarship to study integrated crop pollination in the **USA** (\$120,000).
- 2006 - 2010 Felix Trust Scholarship to pursue PhD studies in the **United Kingdom** (\$150,000).
- 2002 - 2005 Tropical Biology Association and St. Andrews University scholarships to pursue MSc Studies in **Kenya** (\$20,000).
- 2007 American Museum of Natural History scholarship to undertake Bee Course training in **USA** (\$1,200).
- 2002 Earthwatch Institute research fellowship to study wildlife management in **Ghana** (\$1,000).
- 2001 Tropical Biology Association scholarship to study field ecology course in **Uganda** (\$600).

#### HONORS AND AWARDS

- 2022 Italian Cultural Institute in Nairobi **Letter of Commendation** for exceptional entrepreneurship seminar organisation during the **Italian Design Day**
- 2008 Zoological Society of London **Book Award** for best poster presentation at the Society of Conservation Biology (SCB) Convention in Chattanooga, Tennessee, USA (**\$200**).
- 2003 Kenyatta University **Vice-Chancellor’s Research Award** to present fourth year undergraduate project findings at the SCB Convention in Duluth, Minnesota, USA (**\$450**).

#### RESEARCH GRANTS

- 2022 – 2025 JRS Biodiversity Foundation grant for capacity building to conduct baseline wildlife surveys of invertebrates in Alpine and Montane forests ecosystems in the highest mountains in East Africa (**\$148,377**).
- 2022 – 2023 Centre of Excellence for Global Food Security and Defense, USA grant for a project on leveraging on lessons learned from COVID-19 among smallholder farmers to build resilience for future shocks in Embu county, Kenya (**\$3,500**).
- 2022 Alexander von Humboldt Foundation research travel grant for networking and project idea development meetings in Germany (**\$3,300**)
- 2022 - 2023 American Orchid Society conservation fund to study the pollination biology of the African Leopard orchid in Kerio Valley in Kenya (**\$3,850**)
- 2022 - 2023 Harper Adams University QR funding to study mutualists and antagonists of wild coffee in coastal Kenya and the Taita Hills (**£5,000**)
- 2021 - 2022 Alexander von Humboldt Foundation Alumni Return Fellowship to assess the importance of pollinators in orphan legume production in Kenya (**\$15,000**).

2019 - 2021	Alexander von Humboldt Foundation grant to assess the local and landscape factors driving field beans ( <i>Vicia faba</i> ) pollination and pest regulation in Germany ( <b>\$100,000</b> ).
2019 - 2020	British Ecological Society - Ecologists in Africa grant to investigate wild coffee pollination in biodiversity hotspots of south-eastern Kenya ( <b>\$10,400</b> ).
2019 - 2020	The Mohamed bin Zayed Species Conservation Fund to study African violet pollination in Taita Hills, Kenya ( <b>\$8,500</b> ).
2014 - 2016	National Resource Conservation Service - Conservation Innovation Grant ( <b>\$30,000</b> )
2012 - 2013	British Ecological Society Small Ecological Project Grant ( <b>\$4,000</b> ).
2010	University of Reading Alumni Grant to present PhD work at the INTECOL Conference in Brisbane, Australia ( <b>\$2,000</b> ).
2008 & 2009	British Ecological Society Student Grant ( <b>\$1,700</b> ).
2003 & 2008	Society for Conservation Biology Travel Grant ( <b>\$3,000</b> ).

## MAJOR RESEARCH/SCIENTIFIC COLLABORATIONS

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2022 - 2023	<b><i>Collaborator, University of Würzburg, Germany</i></b> Understanding the mechanisms underlying the control of aggressiveness in honey bees in high and low highland areas of Kenya.
2022 - 2023	<b><i>Collaborator, Ulm University, Germany</i></b> Collaborating on a worldwide project assessing landscape effects on bee communities pollinating basil herb flowers.
2022 - 2023	<b><i>Collaborator, University of Turku, Finland</i></b> Collaborating on a project measuring the predation rates on live and artificial insect prey to determine if they follow similar latitudinal patterns.
2021 - 2022	<b><i>Collaborator, University of Arkansas Pine Bluff, USA</i></b> Collaborating on a project aimed at promoting the resiliency of the Agriculture sector in developing economies in the context of COVID-19 pandemic.
2020 - 2022	<b><i>Collaborator, Universidad Nacional de Río Negro, Argentina</i></b> Contributing to a global project exploring the predictive ability of data-driven, statistical and mechanistic models on crop pollination.
2020 - 2021	<b><i>Collaborator, Agroscope, Switzerland</i></b> Collaborating on the “ <i>Poshbee</i> ” project by contributing data on the effect of pesticide use on bee community composition aimed at understanding how much pesticide exposure in bees is modulated by their functional traits such as body size or phenology.
2020	<b><i>Stakeholder, icipe, Kenya</i></b> Developing a database for plant-pollinator interactions in diverse habitats in Kenya for the African Plant-Pollinator Interactions (APPI) project.
2019-2020	<b><i>Collaborator, University of Cambridge, UK</i></b> Engaged in the “ <i>Nudging for Nature</i> ” project aimed at identifying behaviourally informed interventions for effective biodiversity conservation.
2014 - 2017	<b><i>Collaborator, University of Washington, USA</i></b> Contributed data to a global synthesis on the effects of diversified farming systems on arthropod diversity within fields and across agricultural landscapes.
2012 - 2013	<b><i>Collaborator, Universidad Nacional de Río Negro, Argentina</i></b> Contributed to a project focusing on the role of wild pollinators in setting fruits in a set of crops across the planet.
2011 - 2013	<b><i>Collaborator, National Center for Ecological Analysis and Synthesis, USA</i></b> Contributed to a project on global quantitative synthesis of the effects of local and landscape elements on wild bee pollinators in agroecosystems.

## TEACHING COLLABORATIONS

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1. Teaching field courses in Tropical Cropping Systems, Soils and livelihoods in Kenya in collaboration with ETH Zürich, Switzerland.
2. Teaching field courses in animal ecology and tropical biology in Kenya in collaboration with the Biocenter, University of Würzburg, Germany.
3. Facilitating workshops on proposal writing and conducting field ecology and conservation projects in Kenya in collaboration with the Tropical Biology Association, UK.

## CONFERENCES

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1. **Otieno, M.** The making of a career in insect mediated ecosystem services research, DAAD Alumni Forum “Creating change”, 1 - 7 July **2022, Wuerzburg, Germany.**
2. **Otieno, M.** Conservation of a critically endangered African violet species through management of its pollinators and habitat in Taita Hills, Kenya, 30<sup>th</sup> International Congress for Conservation Biology – **virtual event** –December, **2021.**
3. **Otieno, M.** Global native bee declines threat chains. Nudging for Nature workshop, 6-10 January, **2020**, University of Cambridge, **Cambridge, UK.**
4. **Otieno, M. & Steffan-Dewenter, I.** Factors driving legume pollination in lower Franconia, Germany. Alexander von Humboldt networking meeting, November, 6-8, **2019, Hamburg, Germany.**
5. Alexander von Humboldt Award Winners Meeting, October 16 – 20, **2019, Bonn, Germany.**
6. **Otieno, M.,** Sheena C.S., Woodcock, B.A., Wilby, A., Vogiatzakis, I.N., Mauchline, A.L., Gikungu, M.W. and Potts S.G. Local management and landscape drivers of bee functional guilds in pigeon pea crop in Kenya. 2018 ESA, ESC, and ESBC Joint Annual Meeting (Entomology 2018), 11-14 November **2018, Vancouver, British Columbia, Canada.**
7. **Otieno, M.,** Fleischer, S.J. and Watrous, K. Ecosystem service delivery in diverse tropical and temperate agricultural systems: the role of landscape context and farm management. 62<sup>nd</sup> ESA Annual Meeting, November 16–19, **2014. Portland, Oregon. U S A .**
8. **Otieno, M.,** Biddinger, J.B., Joshi, K.J., Fleischer, S.J., Rajotte, E.G. The role of landscape heterogeneity surrounding uniformly managed orchards in enhancing apple pollination. Eastern Branch 2014 Annual Meeting, March 15–18, **2014, Williamsburg, Virginia, USA.**
9. **Otieno, M.,** Biddinger, D. J., Fleischer, S. J. Joshi, N. K. and Rajotte E. The uniqueness of Pennsylvania landscape in determining the community composition of native bees delivering pollination services to apples. 61<sup>st</sup> ESA Annual Meeting, November 10–13, **2013, Austin, Texas, USA.**
10. **Otieno, M.,** Woodcock, B.A., Wilby, A., Vogiatzakis, N.G., Mauchline, A.L., Gikungu, M and Potts, S.G. (2013) Local management and landscape structure drive pollinator community and crop pollination in East Africa. International Conference on Pollinator Biology, Health and Policy August 14-17, **2013, University Park, Pennsylvania, USA.**
11. **Otieno, M.,** Woodcock, B.A., Wilby, A., Vogiatzakis, N.G., Mauchline, A.L., Gikungu, M. and Potts, S.G. Functional responses of bee communities to local management and landscape structure in pigeon pea cropping system in Kenya. 50<sup>th</sup> Anniversary of the Association of Tropical Biodiversity and Conservation and the Organization for Tropical Studies, June 23 – 27, **2013. San Jose, Costa Rica.**
12. **Otieno, M.,** Woodcock, B.A., Wilby, A., Vogiatzakis, N.G., Mauchline, A.L., Gikungu, M and Potts, S.G. Linking landscape context and local habitat management to insect pollination and pest control in pigeon pea. 10<sup>th</sup> INTECOL Conference, August 16 - 21, **2009. Brisbane, Australia.**
13. **Otieno, M.** The interactive effects of landscape context and farm management on pollinators and natural enemies of pests in pigeon pea. Poster presentation: Society for Conservation Biology Global Meeting, July 13-18, **2008, Chattanooga, Tennessee., USA.**
14. **Otieno, M.** The role of pro-poor nature-based businesses in promoting wildlife conservation in wildlife migratory corridors of Kenya. Student Conference for Conservation Science, March, 21-23, **2005, Cambridge, UK.**
15. **Otieno, M.** The ecological impact of the invasive water hyacinth (*Eichhornia crassipes*) on the phytoplankton community diversity in wastewater habitats in Kenya. Society for Conservation Biology Conference, July, **2003, Minnesota, USA.**

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### PROFESSIONAL MEMBERSHIP

- British Ecological Society
- Entomological Society of America
- Society for Conservation Biology
- Entomological Society of Kenya

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### PEER REVIEWER (SELECTED JOURNALS)

- Journal of Animal Ecology
- Agriculture Ecosystems and Environment
- Journal of Pollination Biology
- Journal of Agriculture and Forest Entomology

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## STUDENT SUPERVISION

### PhD students

- 2017** Dr. Mehmet Ali Döke - PhD project on ecophysiology of overwintering in honey bees (*Apis Mellifera*, L.) – **Graduated**

- 2020 Dr. Peris Nderitu - PhD project on management of tomato leaf miner (*Tuta absoluta*) in Kirinyaga County, Kenya – **Graduated**
- 2021 to date Mr. Ken Mwathe – PhD project on promoting the diversity and abundance of bees and birds on smallholder farms in Embu county, Kenya: the role of policy interventions – **ongoing**

#### Masters students

- 2018 to date Mr Peter Njeru – MSc Project on pollination of cucurbit crops in Murang'a and Makueni Counties, Kenya – **Writing thesis**
- 2019 to date Mr Kevin Kiplimo Toroitich – MSc Project on pollination efficiency of stingless bees in watermelon crop under greenhouse environment – **Writing thesis**
- 2021 to date Ms. Catherine Mumo – MSc Project on increasing the performance of green maize through management of fall army worm using climate smart technology and selected biopesticides in Embu county, Kenya – **ongoing**
- 2022 to date Ms. Evalyn Kariuki - MSc Project on ecology and control of false codling moth in lower eastern Kenya – **proposal development**
- 2022 to date Ms. Angeline Mwova - MSc Project on mutualists and antagonists of wild coffee in coastal Kenyan forests and the Taita Hills – **proposal development**

#### Undergraduate students

Supervised eight undergraduate projects successfully.

#### LIST OF PUBLICATIONS

1. Nderitu, W.P., Jonsson, M., Arunga, E., **Otieno, M.**, Muturi, J.J. and Wafula, G.O. (2022) Tomato leaf miner (*Tuta absoluta*) incidence and severity in Kirinyaga County, Kenya. East African Agricultural and Forestry Journal. Accepted Article ID: TEAF-2019-0020R1.
2. Allen-Perkins, A., **Otieno M.** et al. (2021). CropPol: a dynamic, open and global database on crop pollination. *Ecology*. <https://doi.org/10.1002/ecy.3614>
3. Balmford, A., Bradbury, R.B. Otieno, M. et al. (2021). Making more effective use of human behavioural science in conservation interventions. *Biological Conservation*. Volume 261, 109256. <https://doi.org/10.1016/j.biocon.2021.109256>
4. Nielsen, K.S., Bauer, J.M., **Otieno, M.** et al. (2021). Biodiversity conservation as a promising frontier for behavioural science. *Nature Human Behaviour* 5, 550–556 (2021). <https://doi.org/10.1038/s41562-021-01109-5>
5. **Otieno, M.**, Joshi, N., Rutschmann, B. (2021). Flower visitors of *Streptocarpus teitensis*: implications for conservation of a critically endangered African violet species in Kenya. PeerJ 9:e10473, <https://doi.org/10.7717/peerj.10473>.
6. **Otieno, M.**, Steffan-Dewenter, I., Potts, G. S., Kinuthia, W., Kasina, M.J., Garratt, P.D.M. (2020). Enhancing legume crop pollination and natural pest regulation for improved food security in changing African landscapes. *Global Food Security*. Volume 26, 100394 <https://doi.org/10.1016/j.gfs.2020.100394>
7. Nderitu, W.P., Jonsson, M., Arunga, E., **Otieno, M.**, Muturi, J.J. and Wafula, G.O. (2020) Combining Host Plant Resistance, Selective Insecticides, and Biological Control Agents for Integrated Management of *Tuta absoluta*. *Advances in Agriculture*. Vol. 2020, Article ID 6239491, <https://doi.org/10.1155/2020/6239491>.
8. Döke, A.M., McGrady, C.M., **Otieno, M.**, Grozinger, C.M. and Frazier, M. (2019) Colony Size, Rather Than Geographic Origin of Stocks, Predicts Overwintering Success in Honey Bees (Hymenoptera: Apidae) in the Northeastern United States. *Journal of Economic Entomology*. doi.org/10.1093/jee/toy377.
9. Nderitu, W.P., Muturi, J.J., **Otieno M.**, Arunga, E. and Jonsson, M. (2018) Tomato Leaf miner (*Tuta absoluta*) (Meyrick 1917) (Lepidoptera: Gelechiidae) prevalence and farmer management practices in Kirinyaga County, Kenya. *Journal of Entomology and Nematology*, doi.org/10.5897/JEN2018.0208.
10. Lichtenberg E., **Otieno, M.**, et al. (2017) A global synthesis of the effects of diversified farming systems on arthropod diversity within fields and across agricultural landscapes. *Global Change Biology*: DOI: 10.1111/gcb.13714.
11. **Otieno, M.**, Joshi, N.K., Rajotte, E.G., Fleischer, S.J. and Biddinger D.J. (2016) Proximity to Woodland and Landscape Structure Drives Pollinator Visitation in Apple Orchard Ecosystem. *Frontiers of Ecology and Evolution*. DOI: [dx.doi.org/10.3389/fevo.2016.00038](https://doi.org/10.3389/fevo.2016.00038).
12. Stanley, D. **Otieno, M.**, Steijven, K., Piironen, T., Willmer, P. and Nuttman, C. (2016) Pollination ecology of *Desmodium setigerum* (Fabaceae) in Uganda; Do big bees do it better? *Journal of Pollination Ecology*. Vol. 18.

13. **Otieno M.**, Sheena C.S., Woodcock, B.A., Wilby, A., Vogiatzakis, I.N., Mauchline, A.L., Gikungu, M.W. and Potts S.G. (2015). Local and landscape effects on bee functional guilds in pigeon pea crops in Kenya. *Journal of Insect Conservation*. 19(4); 647-658. DOI: 10.1007/s10841-015-9788-z.
14. Garibaldi, L.A., **Otieno, M. et al.** (2015) Trait matching of flower visitors and crops predicts fruit set better than trait diversity. *Journal of Applied Ecology*. 52 (6); 1436-1444. DOI: 10.1111/1365-2664.12530.
15. Joshi N. K., Leslie, T., Rajotte, E.G., Kammerer, M.A., **Otieno M.** and Biddinger, B.J. (2015). Comparative trapping efficiency to characterize bee abundance, diversity, and community composition in apple orchards. *Annals of the Entomological Society of America*. 108(5):785-799. DOI: 10.1093/aesa/sav057.
16. Garibaldi, L.A., **Otieno, M. et al.** (2013). Wild insects enhance global crop pollination even when honey bees are abundant. *Science*. 339(6127); 1608-1611.
17. Kennedy, C., **Otieno, M.** et al. (2013). A global quantitative synthesis of local and landscape effects on native bee pollinators across heterogeneous agricultural systems. *Ecology Letters*. 16(5); 584-599.
18. Norfolk, O., Sadiki, L., Broughton, B., **Otieno, M.** and Nuttman, C. (2013) Tea breaks: how flower-visitors can benefit from un-planned floral buffer-strips in a Tanzanian tea plantation. *African Journal of Ecology*. 51; 380–384.
19. **Otieno, M.**, Woodcock, B.A., Wilby, A., Vogiatzakis, N.G., Mauchline, A.L., Gikungu, M and Potts, S.G. (2011) Local management and landscape drivers of pollination and biological control services in a Kenyan agro-ecosystem. *Biological Conservation*. 144 (10); 2424-2431.
20. Nuttman, C.V., **Otieno, M.**, Kwapong, P.K., Combey, R., Willmer, P.G. and Potts, S.G. (2011) Aerial pan-trapping: a method for assessing insect pollinators in tree canopies. *Kansas Journal of Insect Science*. 84(4); 260 - 270.