



ORCH ID: 0000-0001-8056-6001

POSITION: CHIEF RESEARCH SCIENTIST
(Forest Entomology, Insects and
invasive species management)

1. PERSONAL INFORMATION

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|------------|----------------------|--|
| 1.1 | NAME | ESTON K. MUTITU |
| 1.2 | ADDRESS | P. O. BOX 20412 – 00200, NAIROBI |
| 1.3 | PHONE NUMBER | +254 722 386 516 |
| 1.4 | EMAIL ADDRESS | estonmutitu@gmail.com or emutitu@kefri.org |
| 1.5 | NATIONALITY | KENYA |
| 1.6 | GENDER | MALE |

2. QUALIFICATION

2.1 ACADEMIC QUALIFICATION

- 2016 PhD in Entomology, University of Pretoria, South Africa
- 1997 Master of Science in Applied Entomology, University of London, Imperial College, UK
- 1997 Diploma in Pest Management, Imperial College, UK
- 1989 BSc. (Botany and Zoology), University of Nairobi, Kenya

2.2 Other Courses

- Dec 2019 Senior Management Course (SMC 320/2019)
- April 2010 ISO 19011 Course for Auditors to FSC® Standards
- April 2019 FSC® Forest Management Auditor course
- July 2009 Course on Public Procurement by Public Procurement Oversight Authority (PPOA)
- May 2009 Course on Pest Surveillance and Monitoring Methodologies
- 2008 Training course on Eucalyptus galls wasp and their management in Israel
- 2000 Course on Science writing, Editing and Oral Presentation
- 1998 Course on Introduction to Bryology and Tropical Cryptogams Ecology in Uganda
- 1997 Course on Biological Control of Arthropod Pests and Weeds
- 1992 Course on Scientific photography
- 1992 Course on Insect Classification and Identification for Agriculture and Forestry
- 1992 Training on tree climbing and seed harvesting

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| 1991 | Training on Micro-computers for Scientific and Technological Information Handling |
| 1990 | Training of Trainers course |

3. EMPLOYMENT HISTROY

- | | |
|------------|---|
| Sept. 2017 | Current Position – Chief Research Scientist (CRS), Integrated Pest Management (IPM), KEFRI |
| 2009-2017 | Principal Research Scientist – Forest Entomologist in IPM Section in KEFRI |
| 1996-2009 | Senior Research Officer - Forest Entomologist in IPM Section in KEFRI |
| 1992-1996 | Project Entomologist – Conifer Aphids Project, International Institute of Biological Control (IIBC), Africa Regional Office, Nairobi, Kenya |
| 1994-1996 | Research Officer – IPM Section, KEFRI Nairobi Kenya |
| 1989-1991 | Assistant Research Officer, Entomology and Zoology Section, KEFRI, Nairobi, Kenya. |

4. ADMINISTRATIVE RESPONSIBILITIES

- Dec. 2019 to date – Regional Director (RD), Central Highlands Eco-Region Research Programme (CHERP), Muguga, KEFRI.

5. PUBLICATIONS

5.1 Journal Papers

- Eston K. Mutitu**, Thierry B. Hoareau, Brett P. Hurley, Jeff R. Garnas, Michael J. Wingfield and Bernard Slippers (2020). Reconstructing early routes of invasion of the bronze bug *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae): cities as bridgeheads for global pest invasions. Biological Invasions. <https://doi.org/10.1007/s10530-020-02258-w>.
- Mesfin Wondafrash, Bernard Slippers, Alphonsine Nambazimana, Isaac Kayumba, Samuel Nibouche, Simon van der Lingen, Birhane A. Asfaw, Herbert Jenya, **Eston K. Mutitu**, Idea A. Makowe, Donald Chungu, Peter Kiwuso, Emmanuel Kulimushi, Andrianantenaina Razafindrakotomamonjy, Paul P. Bosu, Preaduth Sookar & Brett P. Hurley. (2020). Distribution and genetic diversity of five invasive pests of Eucalyptus in sub-Saharan Africa. Biological Invasions. ISSN 1387-3547, DOI 10.1007/s10530-020-02250-4, Pp 1-19.
- Mutitu, E. K.**, Garnas, J. R., Hurley, B. P., Wingfield, M. J., Harney, M., Bush, S. J., and Slippers B. (2013). Biology and Rearing of *Cleruchoides noackae* (Hymenoptera: Mymaridae), an Egg Parasitoid for the Biological Control of *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae). Journal of Economic Entomology, 106 (5), 1979-1985.
- Nyeko P., **Mutitu, E. K.** and Day, R.K. (2007). Farmers' knowledge, perceptions and management of the gall-forming wasp, *Leptocybe invasa* (Hymenoptera: Eulophidae), on Eucalyptus species in Uganda. International Journal of Pest management, 53(2): 111-119.

- Mutitu E. K.**, Otieno, B. Oeba, V., Nyeko, P. and Day, R.K. (2007). Spatial distribution of Blue Gum Chalcid, *Leptocybe invasa* on Eucalyptus species in Kenya. *Discovery and innovation*, 19(4): 369-394.
- Nyeko, P., **Mutitu E. K.**, Day, R.K., Otieno, B. and V. Oeba (2007). Farmers' experiences of the blue gum chalcid, *Leptocybe invasa* Fisher & LaSalle, on Eucalyptus species in East Africa. *Discovery and innovation*, 19(4): 382-388.
- Mutitu E. K.**, Otieno, B. Oeba, V., Nyeko, P. and Day, R.K. (2007). Farmers' knowledge and perceptions on management of *Leptocybe invasa* on Eucalyptus species in western Kenya. *Discovery and innovation*, 19(4): 287-293.
- Nyeko, P. **Mutitu K. E.**, and Day, R. K. (2009). Eucalyptus infestation by *Leptocybe invasa* in Uganda. *African Journal of Ecology*, Vol. 47, Pages 299 – 307.
- Otieno, B., **Mutitu K. E.**, Mwangi, L., and Minjire, M. (2009). Insect Pests and diseases associated with Eucalyptus hybrids clones in Kenya. A short Communication. *Journal of East African Natural Resources Management (JEANARM)*. Vol. 3. No. 1, 2009. Pages 252 – 256.
- Nyeko P., **Mutitu K. E.**, Otieno B., Ngae G., and Day R (2010). *Variations in Leptocybe invasa* (Hymenoptera: Eulophidae) population and infestation on eucalyptus germplasms in Uganda and Kenya. *International Journal of Pest Management (IJPM)* Vol. 56, No. 2 April – June 2010, Pages 137 - 144.

5.2 Book Chapters

- E. M. Mwanza and **K. E. Mutitu** (1992). Diseases and Insect Pests of Trees. In *A Dryland Forestry Handbook for Kenya*. Published by KEFRI. 95 pages.
- Day, R. K. Day, M. T. K. Kairo, Y, J. Abraham, T. Murphy, **K. E. Mutitu**, and C. Z. Chilima (2003). Biological Control of Homopteran Pests of Conifer in Africa. A Book Chapter In *Biological Control in IPM Systems in Africa*. Edited by P. Neuenschwander, C. Borgemeister and J. Langewald. Wallingford, Oxon, UK; Cambridge, MA, USA: CABI Pub. In association with the ACP-EU Technical Centre for Agricultural and Rural Co-operation and Swiss Agency for Development and Cooperation. ISBN 0851996396.DOI 10.1079/9780851996394.000.

5.3 Technical Notes/Research Note/Protocols/Guidelines/Bulletins/Proceedings

- Mutitu E.**, Njuguna J., Kimondo J., Amwata J., Mwangi L., Cheboiwo J., Gathogo M., and Kariuki B. (2020). Guidelines for Dodder weed management in Kenya. KEFRI, Muguga, Kenya.
- Mutitu K. E.**, L. Mwangi, B. Otieno, and M. Minjire (2008). Pests and Diseases Associated with Eucalyptus in Kenya. KEFRI Research Note No. 7. June 2008.
- Mutitu, K. E.**, R. K. Day, T. Cross, P. Chege, and M. Lusele (1992). Rearing of Cypress Aphids In IIBC Technical Bulletin Series, No. 1: Biological Control of Forest Aphids in Africa.
- R. K. Day, S. Atuahene, M. Gichora, **K. E. Mutitu**, and D. Chacha (1993). Sampling Cypress Aphids. In IIBC Technical Bulletin Series, No. 2: Biological Control of Forest Aphids in Africa.

- Oballa P., Chagala-Odera E., Wamalwa L., Oeba V., **Mutitu E.** and Mwangi L. (2005). The performance of Eucalyptus hybrid clones and local landraces in various agroecological zones in Kenya. A technical KEFRI Report. March 2005, Pp 1-13.
- Mutitu, K. E.**, R. K. Day, T. Cross, C. Chilima, and J. Agano (1994). Rearing Pine woolly Aphids. In IIBC Technical Bulletin Series, No. 3: Biological Control of Forest Aphids in Africa.
- Mutitu K. E.** Muchiri, M. N., Mwangi, L. (March 2007). Sensitization of Eucalyptus growers on status of Blue gum chalcid, *Leptocybe invasa* in Kenya. Proceedings of the Blue gum Chalcid, L. invasa workshop at Bungoma Kenya.
- Mwatika, N., Orinda B., Wairungu S., **Mutitu E.**, Mwangi L., and Kuria D., (2014): Guidelines for monitoring pests and diseases for on-farm tree species

6. Academic Thesis

- Mutitu, E. K (2016). Invasion history of *Thaumastocoris peregrinus* and development of a biological control agent. PhD Thesis. University of Pretoria. South Africa.
- Mutitu, K. E. (1997). Effect of Clonal and site factors on feeding behaviour of Large pine weevil, *Hylobius abietis*, (L.) (Col. Curculionidae). MSc. Thesis. Imperial College of Science, Technology and Medicine. University of London. UK.

7. Research Projects

7.1 Research Project Completed

- Search, identification and Export of Biological Control agents for *Acacia nilotica sub-species indica*.
- Biological Control Programme for Conifer aphids in Africa.
- Importation, mass-rearing and releases of Biological Control agents for Leucaena psyllid in Kenya.
- Search and Export of Biological control of agent for Scale Insects for Madeira – Portugal.
- Mass-rearing and release of Biological Control agent for Cypress aphid in Kenya and Uganda.
- Tree Biotechnology Project for Kenya.
- The distribution and impact of *Leptocybe invasa* (Hymenoptera: Eulophidae) on Eucalyptus species in East Africa. (2005 – 2007). A Kenya-Uganda AFORNET Project.
- Evaluation and assessment of the Establishment of *Pauesia juniperorum*: A biological management tool for cypress aphid. Ethiopia-Malawi-Kenya Project.
- Management of Blue gum Chalcid, *Leptocybe invasa* in Kenya – Applied Research Project Funded by National Council for Science and Technology (NSCT).
- Search, Exploration and Implementation of classical biological control programme of bronze bug, *Thaumastocoris peregrinus* in South Africa.
- KEFRI/ICRAF Germplasm Health Unit (GHU) Project.
- Research and development in support of commercial forestry in Kenya, Gatsby Africa Funded Project.

7.2 On-going Research Projects

- Population dynamics of Eucalyptus pests in Kenya and their management
- Development of Management technologies for Dodder in Kenya
- Biodiversity and Agriculture: addressing scale insect threats in Kenya. A multi-institutional project (KEFRI, KALRO, NMK, NHM-UK, CABI- Africa, KEPHIS). 2019 – 2021 (ONGOING PROJECT)

7.3. Mentorship and supervision

Master students supervision

- Miriam Gathogo, Reg. No: I56/35794/2019. MSc. Agricultural Entomology. Spatial Distribution of *Psyllaephagus bliteus* in Western and Eastern Kenya for Management of *Glycaspis brimblecombei*

8. CONFERENCES/SEMINARS/WORKSHOPS/CONGRESS/SYMPOSIUM

8.1. Presentation of Papers at Academic and Professional Conferences

Mutitu K. E., (2021). Mitigation Measures for Invasive Insect Pests on Eucalyptus Spp. in East Africa: A Review. A paper presented in the 3rd International Phytosanitary Conference. KEPHIS, Nairobi, Kenya.

Gathogo M. W. and Mutitu, E. K. (2021). Red gum lerp psyllid (*Glycaspis brimblecombei*) spread, host damage and host preference in Central Kenya Highlands. A paper presented in the 3rd International Phytosanitary Conference. KEPHIS, Nairobi, Kenya.

Mutitu K. E., J. Garnas, B. P. Hurley, M. J. Wingfield and B. Slippers (2013). Abiotic drivers of population growth and spread of the winter bronze bug, *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae) in Kenya. A paper presented in the XVIII Congress of the Entomological Society of Southern Africa (ESSA), 30 June – 3 July 2013 at North-West University, Potchefstroom, South Africa.

Mutitu K. E., J. Garnas, B. P. Hurley, M. J. Wingfield and B. Slippers (2012). Developing management options for *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae) in Africa. A paper presented in the 5th Forest Science Symposium held at Hilton College, Hilton, KwaZulu-Natal, 24th - 25th July 2012.

Garnas J. R., B. P. Hurley, Mutitu K. E., I. Greyling, B. Slippers and M. J. Wingfield (2012). Predicting forest pest abundance and distribution in a changing climate: An African perspective. A paper presented at the IUFRO-FORNESSA Regional Congress and ITTO/AFF Forest Policy Day, 25 – 29 June 2012, Nairobi, Kenya.

Hurley B. P., Mutitu K. E., J. Garnas, B. Slippers and M. J. Wingfield (2012). Biological control for the protection of Africa's plantation: Successes and Challenges. A paper presented at the IUFRO-FORNESSA Regional Congress and ITTO/AFF Forest Policy Day, 25 – 29 June 2012, Nairobi, Kenya.

Mutitu K. E., J. Garnas, B. P. Hurley, M. J. Wingfield and B. Slippers (2012). *Thaumastocoris peregrinus* (Heteroptera: Thaumastocoridae) invasion in Africa and possible options for

- management. A paper presented at the IUFRO-FORNESSA Regional Congress and ITTO/AFF Forest Policy Day, 25 – 29 June 2012, Nairobi, Kenya.
- Mutitu, K. E.**, J. Garnas, B. P. Hurley, M. J. Wingfield, and B. Slippers (2011). Invasion and subsequent decline of the *Thaumastocoris peregrinus* (Heteroptera: Thaumastocoridae) population in Kenya. A paper presented at Entomological Society of Southern Africa (ESSA) Conference at University of Free State, Bloemfontein. 3 – 6th July 2011.
- Day R. K, and **K. E. Mutitu** (1996). Assessing the impact of *Tetrableps raoi* on Pine woolly aphid. Paper presented at a workshop on Tree Pest Management in East, Central and Southern Africa. Nairobi, Kenya.
- Day R. K, M. Gichora, and **K. E. Mutitu** (1996). IPM in agroforestry: Challenges and Opportunities. Paper presented at the Kenya National Agroforestry Conference. Nairobi, Kenya.
- Mutitu K. E.**, R. K. Day and A. L. Owuor (1996). Pine woolly aphids and its natural enemies in Kenya. Paper presented at the KARI Crop protection Conference, Nairobi, Kenya.
- Phiri, G.S.N, J-C. Nsengimana, **K. E. Mutitu**, and R. K. Day (1996). Population studies of *Leucaena psyllid* and releases of its parasitoids in Machakos, Kenya. Paper presented at the workshop on Tree pest management In East, Central and Southern Africa, Nairobi, Kenya.
- Day R. K, B. T. Nyambo, G. S. N. Phiri, M. G. Hill, J-C. Nsengimana, **K. E. Mutitu**, and S. T. Murphy (1996). Introduction, screening and evaluation of natural enemies of *Leucaena psyllid*, *Heteropsylla cubana* for use in biological control programme in Africa. Paper presented at the workshop on Tree pest management in East, Central and Southern Africa, Nairobi, Kenya.
- Odee, D. W, M. Gichora and **K. E. Mutitu** (1998). Developing Management Strategies for Pests of *Moringa* species in Kenya. Paper presented at KARI 2nd Biennial Crop Protection Conference.
- Mutitu, K. E.**, (2002). Insect Pests of Timber. A paper presented to Timber Importers Consultative Workshop, 4th Sept. 2002.
- Mutitu, K. E.** (2002). Management of Cypress aphids in Kenya: An IPM Approach. A paper presented at the international conference on Integrated Pest Management conference for Sub-Saharan Africa. 8th -12th Sept. 2002. Kampala, Uganda.
- Nyeko, P., **Mutitu E.K.**, Day, R.K., Otieno, B. and V. Oeba (2007). Farmers' experiences of the blue gum chalcid, *Leptocybe invasa* Fisher & LaSalle, on Eucalyptus species in East Africa. In 3rd Kenya Forestry Research Institute (KEFRI) Scientific Conference Proceedings.
- Mutitu E. K.**, Otieno, B. Oeba, V., Nyeko, P. and Day, R.K. (2007). Spatial distribution of Blue Gum Chalcid, *Leptocybe invasa* on Eucalyptus species in Kenya. In 3rd Kenya Forestry Research Institute (KEFRI) Scientific Conference Proceedings.
- Mutitu K. E.**, B. O. Otieno, P. Nyeko and G. N. Ngae. (2008). Variability in the infestation of *Leptocybe invasa* (Hymenoptera: Eulophidae) on commercially grown Eucalyptus germplasm in Kenya. In, Imo M., Ipara H., Etiegni L., Mulewa C.M., Muisu F, Njiru J.M. and Kirongo, B. B. (eds.) 2010. Natural Resource Management for Improved Livelihoods: Proceedings of the 4th Annual Moi University International Scientific Conference, Eldoret, Kenya, July 29th – 2nd August 2008.
- Mwangi L., **Mutitu K. E.**, B. Oteino, S. Choge (Feb. 2009). Status of forest invasive species in Kenya. Paper presented in the 3rd FISNA meeting in Kumasi, Ghana.

- Roux, J., **Mutitu K. E.**, S. Mause-Sitoe, G. Nakabonge and M. J. Wingfield (2012). Plantation Tree Health in Africa. A paper presented at the IUFRO-FORNESSA Regional Congress and ITTO/AFF Forest Policy Day, 25 – 29 June 2012, Nairobi, Kenya.
- Njuguna J., Muchugi A., **Mutitu K. E.**, Omondi W. and Kinyanjui Z. (2016). Phytosanitary challenges in Tree Germplasm Exchanges Within and Among East African Countries. A paper presented at International Phytosanitary Conference 12th to 16th September 2016 at KEPHIS Headquarters, Karen, Nairobi, Kenya.
- Mutitu, E.K**, Graziosi, I., Hurley, B. P., Garnas, J. R., Wingfield, M. J., Sayah, A., Slippers, B. (2018): Tracking the bronze bug invasion in Kenya's Eucalyptus planted forests: a nation-wide survey. A Paper presented in 5th Kenya Forestry Research Institute (KEFRI) Scientific Conference. 17-19 April 2018, Nairobi, Kenya

8.2 Participation in Workshops/Conferences

- June 1990 Workshop on Exotic Aphid pest of Conifers "A crisis in African Forestry".
- May 1990 Dryland Forestry workshop*
- July 1994 Supporting Capacity Building in Forestry Research in Africa
- Nov. 1994 Third International Conference on Tropical Entomology
- Sept. 2001 National Agroforestry Strategy Workshop*
- Oct. 2001 Regional Training Course for the Promotion of Social Forestry in Africa*
- Sept. 2020 International conference on Integrated Pest Management (IPM) for Sub-Saharan Africa*
- Nov. 2006 Workshop on scientific writing by Africa Forest Research Network (AFORNET)*
- Aug. 2008 Co-Creating a farming Information Hub for the Next Decade
- Aug. 2008 4th Annual International Conference. Moi University*
- July 2011 Entomological Society of Southern Africa (ESSA) Conference at University of Free State, Bloemfontein, S. Africa*
- June 2012 IUFRO-FORNESSA Regional Congress and ITTO/AFF Forest Policy Day, Nairobi, Kenya*
- July 2012 5th Forest Science Symposium held at Hilton College, Hilton, KwaZulu-Natal, S. Africa*
- July 2013 Entomological Society of Southern Africa (ESSA) Congress at North-West University, Potchefstroom, South Africa
- Sept. 2016 International Phytosanitary Conference at KEPHIS Headquarters, Karen, Nairobi*

**Paper presented*

9. PROFESSIONAL ENGAGEMENT

9.1 Consultancies

- 2004- Impact of tree pest in Sao Hill Industries plantations in Tanzania. Consultancy for Sao Hill Industries. Tanzania

10. EXTERNAL AND INTERNAL RESEARCH GRANTS

- AFORNET (Africa Forest Research Network) – US \$ 12,500
- Darwin Initiative – UK – International collaborative Project – US \$ 307,655
- NCST – National Council for Science and Technology – US \$. 23,809

11. MEMBERSHIP TO PROFESSIONAL BODIES

- Forestry Society of Kenya (FSK)
- Entomology Society of Kenya (ESK)
- Forest Invasive species Network for Africa (FISNA)

12. REFEREES

1. Prof. Bernard Slippers
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