

## *Dr Jacques Derek Charlwood*

**Profession** : Malariologist/Medical Entomologist  
**Date of Birth** : 13 September 1949  
**Nationality** : British  
**Contact** : jdcharlwood@gmail.com

---

### **Key Qualifications**

I am a medical entomologist with extensive experience (40 years, 100+ publications) of fieldwork on five Continents (South America, Oceania, Africa, Europe & Indo-China). I specialise in the ecology, control and surveillance of blood-sucking insects, in particular vectors of malaria. Although much of the science that I have been involved with has been esoteric (I am one of the very few entomologists able to do in-depth dissections on mosquitoes and one of the few to have worked on the mating behaviour of malaria vectors) I have also been involved in research leading to new control techniques (I was among the first to undertake critical in-depth studies of insecticide treated materials for malaria control) or new surveillance techniques (the Furvela tent-trap remains the best method for the collection of outdoor biting mosquitoes).

My work has often been integrated, to good effect, within National Malaria Control programs or international NGO's concerned with malaria control. I have worked extensively with malaria control programs in Brazil, São Tomé, Cambodia, Mozambique, Sudan and Eritrea.

I cut my teeth on fieldwork in the Amazon in the late '70s. After four years I moved on to Papua New Guinea. The work we did there in the early 1980's with insecticide impregnated mosquito nets helped the acceptance and establishment of the technique as an appropriate intervention, officially sanctioned by the WHO in 2000.

After a stint in Liverpool at the School of Tropical Medicine I moved to Ifakara, Tanzania, where I was responsible for the entomological component of the Kilombero Malaria Project, including the entomological aspects of the first African malaria vaccine trial.

After a period of navel gazing I went to the West African archipelago of São Tomé and Príncipe as the person responsible for an INCODC project. The malaria control agency subsequently adopted the interventions suggested by the project.

From 2001-2010 I worked for the Danish Bilharziasis Laboratory. For most of this time I lived in the village of Furvela in Mozambique, where I was responsible for the Mozambican-Danish Rural Malaria Initiative (MOZDAN), which examined aspects of the ecology of malaria vectors in Southern Africa. I also established a malaria elimination project on the peninsula of Linga Linga, (before Bill & Melinda mentioned the word), and was responsible for the SIMA project, Chockwe.

From 2010-2013 I was responsible for the entomological aspects of the DIFD funded project 'Tracking Resistance to Artemisinin Collaboration (TRAC) in Cambodia. We field tested novel methods to reduce outdoor biting of potential malaria vectors.

From 2014 -2016 I was the local PI of the Pan African Vector Control Consortium (PAMVERC) responsible for an MRC funded study in Kagera Region, northern Tanzania. The study testing the efficacy of novel mosquito nets with and without Indoor Residual Spray (IRS), covers an area of 150 sq kms with a population of 130,000.

In 2016 and 2017 I organized and taught three four-month long courses on the Ecology and Control of Malaria Vectors at the College of Health Sciences in Asmara. These courses are designed to produce a cadre of professionals capable of taking the country to malaria elimination in the future.

In 2008 I received the accolade of being the person most other entomologists wanted to attend the Gates funded, closed, meeting on 'Mosquito ecology and control' in Seattle.

---

**Educational Qualifications:**

September 1968 - July 1972 Birmingham University Bachelor of Science, Honours, 2:1. Biological Sciences

September 1973 - April 1976 University of Sussex. Ph.D. Mosquito Mating Behaviour

---

<b>Language Capabilities:</b>	<b>Speaking</b>	<b>Reading</b>	<b>Writing</b>
English (Mother tongue)	Excellent	Excellent	Excellent
Portuguese	Excellent	Very good	Good
French	Good	Good	Good
Kiswahili	Good	Moderate	Not good
Pidgin	Was Excellent	Good	Good

---

**Employment Record**

- 2016 - 2018 **Asmara College of Health Sciences, Lecturer** Responsible for the preparation and teaching of courses on the Ecology and Control of malaria vectors in collaboration with the National Malaria Control Program.
- 2014 – 2016 **London School of Hygiene and Tropical Medicine, Muleba, Tanzania. Research Fellow**  
Locally responsible for the Pan African Malaria Vector Research Consortium (PAMVERC) project Evaluation of a novel long lasting insecticidal net and indoor residual spray product, separately and together, against malaria transmitted by pyrethroid resistant mosquitoes.
- 2011-2014 **Liverpool School of Tropical Medicine, Senior Research Assistant.** Seconded to the Malaria Control Programme Cambodia. Responsible for implementation of the entomological aspects of the DIFID funded TRAC project
- 2000 -2010 **DBL Centre for Health Research & Development, Senior Research Fellow.**Responsible for the Danish Mozambican Rural Malaria initiative (MOZDAN), Morrumbene ([www.mozdan.net](http://www.mozdan.net)) and co-cordinator of the SIMA project, Chockwe
- 1997 – 2000 **Centro de Malaria e outras Doenças Tropicais, São Tomé Island. Research Fellow.**  
Seconded to the Centro Nacional de Malaria, São Tomé e Príncipe. Responsible for the INCO-DC project ‘Studies on West African Malaria Vectors’ in São Tomé, Príncipe and Bioko (Equatorial Guinea)
- 1990 - 1995 **Wageningen Agricultural University, Ifakara, Tanzania. Research Fellow**  
Responsible for inaugurating entomological studies in the Kilombero Malaria Project and the Ifakara Malaria Vaccine Trial
- 1986 - 1989 **Liverpool School of Tropical Medicine, Liverpool, UK. Research Fellow**  
Responsible for a variety of M.Sc. projects in Ness Woods, The Wirral
- 1981 - 1985 **Papua New Guinea Institute of Medical Research, Madang, Papua New Guinea. Research Fellow.** Responsible for establishing the entomological component of the PNG IMR malaria research effort
- 1976 – 1980 **Instituto Nacional de Pesquisas da Amazonia. Manaus, Amazonas, Brasil. Research Professor** Responsible for studies on the epidemiology of malaria in the Amazon

basin of Brazil. Awarded the Diploma of Honour and Merit by the Instituto Nacional de Pesquisas da Amazonia for contribution to scientific studies in Amazonia

### **Scientific Working Groups**

WHO Expert Committee on “Impregnated fabric for vector control’ Geneva.  
WHO Expert Committee on ‘Vector Control in the Primary Health Care System’ Geneva  
Expert Committee on ‘Transgenic technology, the ecological challenge’ Wageningen, 2002  
Member of the working group of the IAEA examining the possibilities of the Sterile Insect Technique (SIT) for malaria control, Vienna, 2008 and 2009  
Participant in the Bill & Melinda Gates closed meeting on mosquito ecology and disease control, Seattle, 2008

### **Publications**

#### **Submitted**

Mosha JF, Lukole E, Charlwood JD, Alexandra Wright A, Bullock O, Manjurano A, Kisinza W, Franklin W, Mosha FW, Kleinschmidt I, Rowland M, Protopopoff N. LLIN effectiveness on malaria infection and vectors density in Northern Tanzania four years after distribution. *Malaria Journal*

#### **In Press**

Protopopoff N, Mosha JF, Lukole E, Charlwood JD, Wright A, Mwalimu A, Alphaxard A, Mosha FW, Kisinza W, Kleinschmidt I, Rowland M Effectiveness of a long-lasting PBO treated insecticidal net and indoor residual spray interventions, separately and together, against malaria transmitted by pyrethroid resistant mosquitoes: A community randomised factorial design trial. *The Lancet*

#### **Published**

Benedict MQ, Charlwood JD, Harrington LC, Lounibos LP, Reisen WK, Tabachnick WJ Guidance for Evaluating the Safety of Experimental Releases of Mosquitoes, Emphasizing Mark-Release- Recapture Techniques *Vector-Borne and Zoonotic Diseases* 2018 18:39-48.

Charlwood JD, Rowland M, Protopopoff N, LeClair C. The Furvela tent-trap Mk 1.1 for the collection of, outdoor biting mosquitoes. *PeerJ* 2017 doi:10.7717/peerj.3848

Liverani M, Charlwood JD, Lawford H, Yeung S Field assessment of a novel spatial repellent for malaria control: a feasibility and acceptability study in Mondulkiri, Cambodia. *Malaria Journal* 2017 16:412

LeClair C, Cronery J, Kessy E, Tomás EVE, Rowland M, Protopopoff N, Charlwood JD. ‘Repel all borders’: Combination mosquito nets enhance collections of endophilic *Anopheles gambiae* and *An. arabiensis* in CDC light-traps. *Malaria Journal* 2017 16:336

Charlwood JD, Hall T, Nenhep S, Rippon E, Branca-Lopes A, Steen K, Arca B, Drakeley C. Spatial repellents and malaria transmission in an endemic area of Cambodia with high mosquito net usage. *Malaria World Journal* 2017, 8:11

Charlwood JD. Some like it hot: a differential response to changing temperatures by the malaria vectors *Anopheles funestus* and *An. gambiae* s.l. *PeerJ* 2017, 5:e3099 <https://doi.org/10.7717/peerj.3099>

Salgueiro P, Lopes AS, Mendes C, Charlwood JD, Arez AP, Pinto J, Silveira H. Molecular evolution and population genetics of a Gram-negative binding protein gene in the malaria vector *Anopheles gambiae* (*sensu lato*). *Parasites & Vectors* 2016, 9:515 doi: 10.1186/s13071-016-1800-2

- Charlwood JD, Nenhep S, Sovannaroeth S, Morgan JC, Hemingway J, Chitnis N, Briët OJT. 'Nature or nurture': survival rate, oviposition interval, and possible gonotrophic discordance among South East Asian anophelines *Malaria Journal* 2016, **15**:356 DOI: 10.1186/s12936-016-1389-0
- Charlwood JD, Nenhep S, Protopopoff N, Sovannaroeth S, Morgan JC, Hemingway J. The effect of the spatial repellent metofluthrin on landing rates of outdoor biting anophelines in Cambodia, S.E. Asia. *Medical & Veterinary Entomology* 2016, doi: 10.1111/mve.12168
- Charlwood JD, Tomás EVE, Bragança M, Cuamba N, Alifrangis M, Stanton M. Malaria prevalence and incidence in an isolated, meso-endemic area of Mozambique. *PeerJ* 2015, 3:e1370; DOI 10.7717/peerj.1370
- Charlwood JD, Tomás EVE, Cuamba N, Pinto J. Analysis of the sporozoite ELISA for estimating infection rates in Mozambican anophelines. *Medical and Veterinary Entomology* 2015, 29:10-16
- Charlwood J D, Tomás EVE, Kelly-Hope L, Briët OJT. Evidence of an 'invitation' effect in feeding sylvatic *Stegomyia albopicta* from Cambodia. *Parasites & Vectors* 2014, 7:324
- Lees RS, Knols B, Bellini R, Benedict MQ, Bheecarry A, Bossin HC, Chadee DD, Charlwood JD, Dabiré RK, Djogbenou L, Egyir-Yawson A, Gato R, Gouagna LC, Hassan MM, Khan SA, Koekemoer LL, Lemperiere G, Manoukis NC, Mozuraitis R, Pitts RJ, Simard F, Gilles JR. Improving our knowledge of male mosquito biology in relation to genetic control programmes. *Acta Tropica* 2014, 132 Suppl: S2-11.
- Charlwood JD, Cuamba N, Tomás EVE, Briët OJT. Living on the edge: a longitudinal study of *Anopheles funestus* in an isolated area of Mozambique. *Malaria Journal* 2013, 12:208
- Thomsen TT, Madsen LB, Hansson HH, Tomas EVE, Charlwood JD, Bygbjerg IC, Alifrangis M. Rapid Selection of Plasmodium falciparum Chloroquine Resistance Transporter Gene and Multidrug Resistance Gene-1 Haplotypes Associated with Past Chloroquine and Present Artemether-Lumefantrine Use in Inhambane District, Southern Mozambique. *American Journal of Tropical Medicine & Hygiene* 2013, 88, 536-541
- Charlwood JD, Macia GA, Manhaca M, Sousa B, Cuamba N, Bragança M. Population dynamics and spatial structure of human-biting mosquitoes, inside and outside of houses, in the Chockwe irrigation scheme, southern Mozambique. *Geospatial Health* 2013, 7:309-320
- Kampango A, Bragança M, de Sousa B, Charlwood JD. Netting barriers to prevent mosquito entry into houses in southern Mozambique: a pilot study. *Malaria Journal* 2013, 12:99
- Charlwood JD, Bragança M. Some like it cool: The effect of temperature on the size of *Anopheles funestus* from southern Mozambique. *Journal of Medical Entomology* 2012, 49: 1154-1158.
- Charlwood JD, Tomás EVE, Egyir-Yawson A, Kampango A, Pitts RJ. Feeding frequency and survival of *Anopheles gambiae* from a rice growing area of Ghana. *Medical & Veterinary Entomology* 2012, 26:263-70.
- Charlwood JD, Braganca M. The effect of rainstorms on adult *Anopheles funestus* behavior and survival. *Journal of Vector Ecology* 2012, 37: 1-5
- Charlwood JD. Studies on the biology of male *Anopheles gambiae* Giles and *Anopheles funestus* Giles from southern Mozambique. *Journal of Vector Ecology* 2011, 36: 382-394.
- Charlwood JD, Tomás EVE, Salgueiro P, Egyir-Yawson A, Pitts RJ, Pinto J. Studies on the behaviour of peridomestic and endophagic M form *Anopheles gambiae* from a rice growing area of Ghana. *Bulletin of Entomological Research* 2011, 101: 533-539.
- Charlwood JD, EVE Tomás. Do developing malaria parasites manipulate their mosquito host? – Evidence from infected *Anopheles funestus* (Giles) from Mozambique. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 2011, 105: 352-354.

- Kampango A, Cuamba N, Charlwood JD. Does moonlight influence the biting behaviour of *Anopheles funestus* (Diptera: Culicidae)? *Medical and Veterinary Entomology* 2011, 25: 240-246
- Sudomoa M, Ariantia Y, Wahidb I, Safruddinb D, Pedersen EM, Charlwood JD. Towards eradication: Three years after the tsunami has malaria transmission been eliminated from the island of Simeulue? *Transactions of the Royal Society of Tropical Medicine and Hygiene* 2010, 104:777-81.
- Russell TL, Lwetoijera DW, Maliti D, Chipwaza B, Kihonda J, Charlwood JD, Smith TA, Lengeler C, Mwanyangala MA, Nathan R, Knols BG, Takken W, Killeen GF. Impact of promoting longer-lasting insecticide treatment of bed nets upon malaria transmission in a rural Tanzanian setting with pre-existing high coverage of untreated nets. *Malaria Journal* 2010, 9:18.
- Mendes C, Félix R, Sousa A, Lamego J, Charlwood JD, do Rosário VE, Pinto J, Silveira H. Molecular evolution of the three short PGRPs of the malaria vectors *Anopheles gambiae* and *Anopheles arabiensis* in East Africa. *BMC Evolutionary Biology* 2010, 12;10:9.
- Govella NJ, Chaki PP, Geissbuehler Y, Kannady K, Okumu FO, Charlwood JD, Anderson RA, Killeen GF. A new tent trap for sampling exophagic and endophagic members of the *Anopheles gambiae* complex. *Malaria Journal* 2009, 14:8.
- Charlwood JD. Women's groups and the marketing of health interventions a Tanzanian experience. *PNG Medical Journal* 2008, 51: 102-104.
- Marshall JC, Pinto J, Charlwood JD, Gentile G, Santolamazza F, Simard F, della Torre A, Donnelly, MJ, Caccone A. Exploring the origin and degree of genetic isolation of *Anopheles gambiae* from the islands of São Tomé and Príncipe, potential sites for testing transgenic-based vector control. *Evolutionary Applications* 2008, 1: 631-644.
- Pinto J, Lynd A, Vicente JL, Santolamazza F, Randle NP, Gentile G, Moreno M, Simard F, Charlwood JD, do Rosário VE, Caccone A, della Torre A, Donnelly MJ. Multiple origins of knockdown resistance mutations in the Afrotropical mosquito vector *Anopheles gambiae*. *PloS ONE* 2007 11: e1243.
- Killeen GF, Tami A, Kihonda J, Okumu FO, Kotas ME, Grundmann H, Kasigudi N, Ngonyani H, Mayagaya V, Nathan R, Abdulla S, Charlwood JD, Smith TA, Lengeler C. Cost-sharing strategies combining targeted public subsidies with private-sector delivery achieve high bednet coverage and reduced malaria transmission in Kilombero Valley, southern Tanzania. *BMC infectious diseases* 2007; 7:121.
- O'Brochta DA, Subramanian RA, Orsetti J, Peckham E, Nolan N, Arensburger P, Atkinson PW, Charlwood JD. hAT element population genetics in *Anopheles gambiae* s.l. in Mozambique. *Genetica* 2006 127:185-98.
- Charlwood JD. Roll Back Malaria: a failing global health challenge Developing a market for bed nets and insecticides is problematic. *British Medical Journal* 2004 328:1378.
- Charlwood JD, Alcântara J, Pinto J, Sousa C, Rompão H, Gil V, de Rosário VE. Do bednets reduce malaria transmission by exophagic mosquitoes? *Transactions of the Royal Society of Tropical Medicine and Hygiene* 2005, 99: 901-904.
- Charlwood JD, Pinto J, Ferrara P, Sousa CA, Ferreira C, Gil V, de Rosario VE. Raised houses reduce mosquito bites. *Malaria Journal* 2003, 2: 45.
- Billingsley PF, Charlwood JD, Knols BGJ. Rapid assessment of malaria risk using entomological techniques: taking an epidemiological snapshot 2003 Chapter 6 in *Environmental Change and Malaria Risk: Global and Local Implications* (Wageningen Ur Frontis) Takken, Martens, Bogers (Eds)

Charlwood JD, Pinto J, Sousa CA, Ferreira C, Gil V, de Rosario V. Mating does not affect the biting behaviour of *Anopheles gambiae* from the islands of São Tomé and Príncipe, West Africa. *Annals of Tropical Medicine and Parasitology* 2003, 97: 751-756

Charlwood JD. Did Herodotus describe the first use of mosquito repellents? *Trends in Parasitology* 2003, 19: 555-556.

Pinto J, Donnelly MJ, Sousa CA, Gil V, Ferreira C, Elissa N, do Rosário VE, Charlwood JD. An island within an island: genetic structure of *Anopheles gambiae* populations on São Tomé. *Heredity* 2003, 91: 407-414.

Charlwood JD. May the force be with you: measuring mosquito fitness in the field. Chapter 5, In *Proceedings of a workshop on transgenic mosquitoes (Edited by Scott T and Takken W) Wageningen, The Netherlands* 2003,

Hagmann R, Charlwood JD, Gil V, do Rosario VE, Smith T. Malaria and its possible control on the island of Príncipe. *Malaria Journal* 2003, 2:9

Charlwood JD, Pinto J, Sousa CA, Ferreira C, Petrarca V, do Rosario VE. A mate or a meal' - Pre-gravid behaviour of female *Anopheles gambiae* from the islands of São Tomé and Príncipe, West Africa. *Malaria Journal* 2003, 2:7

Charlwood JD, Thompson R, Madsen H. Swarming and mating in *Anopheles funestus* from southern Mozambique. *Malaria Journal* 2003, 2:3

Charlwood JD. Getting a measure of nets in Africa. *Trends in Parasitology* 2002, 18: 386

Pinto J, Donnelly MJ, Sousa CA, Gil V, Ferreira C, Elissa N, do Rosário VE, Charlwood JD. Genetic structure of *Anopheles gambiae* (Diptera: Culicidae) in São Tomé and Príncipe (West Africa): Implications for malaria control. *Insect Molecular Biology* 2002, 11:2183-2187

Lindsay SW, Emerson MP, Charlwood JD. Professor Angelo Celli's forgotten experiments: reducing malaria by mosquito-proofing homes. *Trends in Parasitology* 2002, 18:510-514

Charlwood JD, Pinto J, Sousa CA, Ferreira C, do Rosário VE. The swarming and mating behaviour of *Anopheles gambiae* (Diptera: Culicidae) from São Tomé Island. *Journal of Vector Ecology* 2002, 27: 178-183.

Charlwood JD, Pinto J, Sousa CA, Ferreira C, do Rosario VE. Male size does not affect mating success (of *Anopheles gambiae* from São Tomé). *Medical and Veterinary Entomology* 2002, 16: 1-3.

Charlwood JD. Zooprophylaxis – are we in Plato's cave? *Trends in Parasitology* 2001, 17:517.

Charlwood JD, Qassim M, Elsnur EI, Donnelly M, Petrarca V, Billingsley PF, Pinto J, Smith T. The impact of indoor residual spraying with malathion on malaria in refugee camps in Eastern Sudan. *Acta Tropica* 2001, 80: 1-8.

Charlwood JD, Clarke SE, Bogh C. Costing vaccines versus bednets. *Trends in Parasitology* 2001, 17: 121.

Müller DA, Charlwood JD, Felger I, Ferreira C, do Rosario VE, Smith T. Prospective risk of morbidity in relation to multiplicity of infection with *Plasmodium falciparum* in São Tomé. *Acta Tropica*, 2001, 78: 155-162.

Sousa CA, Pinto J, Almeida PG, Ferreira C, do Rosario VE, Charlwood JD. Dogs as a favoured host of *Anopheles gambiae* sensu stricto (Diptera,Culicidae) of São Tomé, West Africa. *Journal of Medical Entomology* 2001, 38: 122-125.

Pinto J, Sousa CA, Gil V, Gonçalves D, do Rosario VE, Charlwood JD. Mixed-species malaria infections in the human population of São Tomé island, West Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 2000, 94: 256-257.

Pinto J, Sousa CA, Gil V, Ferreira C, Gonçalves L, Lopes D, Petraraca V, Charlwood JD, do Rosario V E. Malaria in São Tomé and Príncipe, Parasite prevalences and vector densities. *Acta Tropica* 2000, 76: 185-193.

Charlwood JD, Vij R, Billingsley PFB. Dry season refugia of malaria-transmitting mosquitoes in a dry savannah zone of East Africa. *American Journal of Tropical Medicine and Hygiene* 1999, 62: 726-732.

Donnelly MJ, Cuamba N, Charlwood JD, Collins FH, Townson H. Population structure in the malaria vector, *Anopheles arabiensis* Patton, in East Africa. *Heredity* 1999, 83: 408-417.

Utzinger J, Charlwood JD. Fishery methods and fish diversity in the Kilombero river in south-eastern Tanzania. *African Journal of Tropical Hydrobiology and Fisheries* 1999, 7: 55-62.

Charlwood JD. Close encounters on the Kilombero. *Miombo* 1988, 17: 9-12.

Charlwood JD, Smith T, Lyimo E, Kitua AY, Masanja H, Booth M, Alonso PL, Tanner M. Incidence of *Plasmodium falciparum* infections in relation to exposure to sporozoite infected anophelines. *American Journal of Tropical Medicine and Hygiene* 1998, 59: 243-251.

Smith T, Charlwood JD, Kitua AY, Masanja H, Mwankusye S, Alonso PL, Tanner M. Relationships of malaria morbidity with exposure to *Plasmodium falciparum* in young children in a highly endemic area. *American Journal of Tropical Medicine and Hygiene* 1998, 59: 252-257.

Takken W, Charlwood JD, Billingsley PF, Gort G. Dispersal and survival of *Anopheles funestus* and *A. gambiae* s.l. (Diptera, Culicidae) during the rainy season in southeast Tanzania. *Bulletin of Entomological Research* 1998, 88: 561-566.

Huber W, Haji H, Charlwood JD, Certa U, Walliker D, Tanner M. Genetic characterization of the malaria parasite *Plasmodium falciparum* in the transmission from the host to the vector. *Parasitology* 1998, 116: 95-101.

Charlwood JD, Mendis C, Thompson R, Begtrup K, Cuamba N, Dgedge M, Gamage-Mendis A, Hunt RH, Sinden RE, Høgh B. Cordon-sanitaire or laissez-faire, differential dispersal of young and old females of the malaria vector *Anopheles funestus* in southern Mozambique. *African Entomology* 1998, 6: 1-6.

Charlwood JD, Billingsley PF, Takken W, Lyimo EOK, Smith T, Meuwissen JME Th. Survival and infection probabilities of anthropophagic Anophelines from an area of high prevalence of *Plasmodium falciparum* in humans. *Bulletin of Entomological Research* 1997, 87:445-453.

Woolhouse ME, Dye C, Etard JF, Smith T, Charlwood JD, Garnett GP, Hagan P, Hii, JL, Ndhlovu PD, Quinnell RJ, Watts CH, Chandiwana SK, Anderson RM. Heterogeneities in the transmission of infectious agents, implications for the design of control programs. *Proceedings of the National Academy of Sciences* 1997, 94: 338-342.

Charlwood JD. Vectorial capacity, species diversity and population cycles of Anopheline mosquitoes from indoor light-trap collections from a house in south-eastern Tanzania. *African Entomology* 1997, 5: 93-101.

Charlwood JD. Slaughter on the Kilombero. *Miombo* 1997, 16: 4-5.

Wilkes TJ, Matola YG, Charlwood JD. *Anopheles rivulorum*, a vector of malaria in Africa *Medical and Veterinary Entomology* 1996, 10: 108-110.

Charlwood JD, Sama S. A note on the biology and biting cycle of *Stomoxys niger* from Ifakara, Tanzania. *African Entomology* 1996, 4: 274-277.

- Haji H, Smith T, Charlwood JD, Meuwissen JME Th. Absence of relationships between selected host factors and natural infectivity of *Plasmodium falciparum* in an area of high transmission. *Parasitology* 1996, 113: 425-431.
- Haji H, Smith T, Meuwissen JME Th, Charlwood JD. Estimation of the infectious reservoir for *Plasmodium falciparum* in natural vector populations using oocyst size. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1996, 90: 494-497.
- Charlwood JD. Biological variation in *Anopheles darlingi* Root. *Memorias do Instituto Oswaldo Cruz* 1996, 91: 391-398.
- Charlwood JD, Etoh D. Larval distribution of members of the *Anopheles gambiae* Giles complex (Diptera, Culicidae), identified by the PCR reaction, in the environs of Ifakara, Tanzania *Journal of Medical Entomology* 1996, 33: 202-204.
- Charlwood JD, Kihonda J, Sama S, Billingsley PF, Hadji H, Verhave JP, Lyimo E, Luttkhuizen PC, Smith T. The rise and fall of *Anopheles arabiensis* (Diptera, Culicidae) in a Tanzanian village. *Bulletin of Entomological Research* 1995, 85: 37-44.
- Charlwood JD, Smith T, Kihonda J, Billingsley PF, Takken W. Density independent feeding success of malaria vectors in Tanzania. *Bulletin of Entomological Research* 1995, 85: 29-35.
- Smith T, Charlwood JD, Takken W, Tanner M, Spiegelhalter M. Mapping the densities of malaria vectors within a single village. *Acta Tropica* 1995, 59: 1-18.
- Knols BGJ, Takken W, Charlwood JD, De Jong R. Species-specific attraction of *Anopheles* mosquitoes (Diptera, Culicidae) to different humans in South-east Tanzania. *Proceedings of Experimental and Applied Entomology (N.E.V.) Amsterdam* 1995, 6: 201-206.
- Charlwood JD. Bednets, A cautionary tale. *Parasitology Today* 1995, 11: 184-185.
- Babiker HA, Charlwood JD, Smith T, Walliker D. Gene flow and cross-mating in *Plasmodium falciparum* in households in a Tanzanian village. *Parasitology* 1995, 111: 433-442.
- Charlwood JD, Billingsley PF, Hoc TQ. Mosquito-mediated attraction of female European but not African mosquitoes to hosts. *Annals of Tropical Medicine and Parasitology* 1995, 89: 327-329.
- Charlwood JD, Alecrim WD, Fe'N, Mangabeira J, Martins J. A field trial with Lambda-cyhalothrin (ICON) for the intradomiciliary control of malaria transmitted by *Anopheles darlingi* Root in Rondonia, Brazil. *Acta Tropica* 1995, 60: 3-13.
- Charlwood JD. The control of *Culex quinquefasciatus* breeding in septic tanks using expanded polystyrene beads in southern Tanzania. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1994, 88: 380.
- Babiker HA, Randford-Cartwright LC, Currie D, Charlwood JD, Billingsley PF, Teuscher T, Walliker D. Random mating in a natural population of the malaria parasite *Plasmodium falciparum*. *Parasitology* 1994, 109: 413-421.
- Billingsley PF, Medley GF, Charlwood JD, Sinden RE. Relationship between prevalence and intensity of *Plasmodium falciparum* infection in natural populations of *Anopheles* mosquitoes. *American Journal of Tropical Medicine and Hygiene* 1994, 51: 260-270.
- Smith T, Charlwood JD, Kihonda J, Mwankusye S, Billingsley PF, Meuwissen J, Lyimo, E, Takken W, Teuscher T, Tanner M. Absence of seasonal variation in malaria parasitaemia in an area of intense seasonal transmission. *Acta Tropica* 1993, 54: 55-72.



Kilombero Malaria Project The level of anti-sporozoite antibodies in a highly endemic malaria area and its relationship with exposure to mosquitoes. Transactions of the Royal Society of Tropical Medicine and Hygiene 1992, 86, 499-504.

Hoc TQ, Charlwood JD. Age determination of *Aedes cantans* using the ovarian oil injection technique. Medical and Veterinary Entomology 1990, 4: 227-233.

Charlwood JD, Alecrim WD. Capture-recapture experiments with *Anopheles darlingi* in Rondonia, Brazil. Annals of Tropical Medicine and Parasitology 1989, 83: 601-603.

Charlwood JD, Graves PM, de C. Marshall TF. Evidence for a 'memorised' home range in *Anopheles farauti* females from Papua New Guinea. Medical and Veterinary Entomology 1988, 2: 101-108.

Charlwood JD, Bryan JH. A capture-recapture experiment with the filariasis vector *Anopheles punctulatus* in Papua New Guinea. Annals of Tropical Medicine and Parasitology 1987, 81: 429-436.

Charlwood JD, Dagoro H. Impregnated bed nets for the control of filariasis transmitted by *Anopheles punctulatus* in rural Papua New Guinea. PNG Medical Journal 1987, 30: 199-202.

Charlwood JD, Graves PM. The effect of Permethrin-impregnated bednets on a population of *Anopheles farauti* in coastal Papua New Guinea. Medical and Veterinary Entomology 1987, 1: 319-327.

Charlwood JD. Repellent 'soap' for malaria vector control in Papua New Guinea. PNG Medical Journal 1987, 30: 99-103.

Birley MH, Charlwood JD. Sporozoite rate and malaria prevalence. Parasitology Today 1987, 3: 231-232.

Charlwood JD, Paru R, Dagoro H, Lagog M. The influence of moonlight and gonotrophic age on the biting activity of *Anopheles farauti* (Diptera, Culicidae) from Papua New Guinea. Journal of Medical Entomology 1986, 23:132-135.

Charlwood JD. Survival rate variation of *Anopheles farauti* (Diptera, Culicidae) between neighbouring villages in coastal Papua New Guinea. Journal of Medical Entomology 1986, 23: 361-365.

Charlwood JD, Birley MH, Graves PM. Capture-recapture studies of females of the *Anopheles punctulatus* group of mosquitoes (Diptera, Culicidae) from Papua New Guinea. Bulletin of Entomological Research 1986, 76: 211-227.

Charlwood JD, Graves PM, Alpers M. The ecology of the *Anopheles punctulatus* group of mosquitoes from Papua New Guinea, A review of recent work. PNG Medical Journal 1986, 29: 19-27.

Charlwood JD. A differential response by *Anophelines* and *Culicines* to bed-nets. Transactions of the Royal Society of Tropical Medicine & Hygiene 1986, 80: 958-961.

Charlwood JD, Paru R, Dagoro H. A new light bed-net trap to sample anopheline vectors of malaria in Papua New Guinea. Journal of Vector Ecology 1986, 11: 281-283.

Crane G, Gibson D, Verral J, Barker-Hudson P, Barker-Hudson BET, Charlwood JD, Heywood P. Malaria and tropical splenomegaly syndrome in the Anga of Morobe Province. PNG Medical Journal 1985, 28: 27-34.

Charlwood JD. The influence of larval habitat on the ecology and behaviour of females of the *punctulatus* group of *Anopheles* mosquitoes in Mosquito Ecology, Proceedings of a workshop (ed. Lounibos, Rey & Frank) 1985 pp.399-407.

Charlwood JD, Birley MH, Dagoro H, Paru R, Holmes PR. Assessing survival rates of *Anopheles farauti* (Diptera, Culicidae) from Papua New Guinea. Journal of Animal Ecology 1985, 54: 1003-1016.

- Charlwood JD, Dagaró H, Paru R. Blood-feeding and resting behaviour in the *Anopheles punctulatus* Donitz complex (Diptera, Culicidae) from coastal Papua New Guinea. *Bulletin of Entomological Research* 1985, 75: 463-475.
- Charlwood JD, Galgal K. Observations on the biology behaviour of *Armigeres milnensis* Lee (Diptera, Culicidae) in Papua New Guinea. *Australian Journal of Entomology* 1985, 24: 313-320.
- Lopes J, Arias JR, Charlwood JD. Estudo ecologico de *Culicidae* (Diptera) silvestres criados em pequenos recipientes de agua em mata e em capoeira no municipio de Manaus - Am. Ciencia e Cultura 1985, 37: 1299-1311.
- Charlwood JD, Paru R, Dagaró H. Raised platforms reduce mosquito bites. *Transactions of the Royal Society of Tropical Medicine & Hygiene* 1984, 78: 141-142.
- Rajan CM, Charlwood JD. *Plasmodium vivax multinucleatum* in Papua New Guinea? *Transactions of the Royal Society of Tropical Medicine & Hygiene* 1984, 78: 422.
- Charlwood JD, Jolley DJ. The coil works (against mosquitoes in Papua New Guinea). *Transactions of the Royal Society of Tropical Medicine & Hygiene* 1984, 78: 678
- Charlwood JD. et al, Factors affecting the assessment of man-biting rates of malaria vectors. *In Proceeding of a conference to honour R.H. Black* 1984, pp. 143-152.
- Charlwood JD. Which way now for malaria control? *PNG Medical Journal* 1984, 27: 159-162.
- Charlwood JD, Lopes J, Whalley PC. Light intensity measurement and the biting behaviour of some sylvatic mosquitoes of the Amazon basin (Diptera, Culicidae). *Acta Amazonica* 1982, 12: 61-64.
- Charlwood JD, Wilkes TJ. Observations on the biting activity of *Anopheles triannulatus bachmanni* from the Mato Grosso, Brazil. *Acta Amazonica* 1981, 11: 411-413.
- Charlwood JD, Rafael JA. Autogeny in the River Negro horse fly, *Lepiselaga crassipes* and an undescribed species of *Stenotabanus* (Diptera, Tabanidae) from Amazonas, Brazil. *Journal of Medical Entomology* 1980, 17: 519-521.
- Charlwood JD, Jones MDR. Mating in the mosquito, *Anopheles gambiae* s.l. II Swarming behaviour. *Physiological Entomology* 1980, 5: 315 -320.
- Charlwood JD. Observations on the bionomics of *Anopheles darlingi* Root (Diptera, Culicidae) from Brazil. *Bulletin of Entomological Research* 1980, 70: 685-692.
- Lacey LA, Charlwood JD. On the biting activities of some anthropophilic amazonian Simuliidae (Diptera). *Bulletin of Entomological Research* 1980, 70: 495-509.
- Charlwood JD, Lopes J. The age-structure and biting behaviour of *Stomoxys calcitrans* (L.) (Diptera, Muscidae) from Manaus, Brazil. *Bulletin of Entomological Research* 1980, 70: 549-555.
- Rafael JA, Charlwood JD. Idade fisiologica, variacao sazonal e periodicidade diurna de quatro populações de Tabanidae (Diptera) no campus Universitario, Manaus, Brasil. *Acta Amazonica* 1980, 10: 907-927.
- Charlwood JD, Rafael JA, Wilkes TJ. Metodos de determinar a idade fisiologica em Diptera de importancia medica. Uma revisão com especial referencia aos vetores de doenças na America do Sul. *Acta Amazonica* 1980, 10: 311-333.
- Wilkes TJ, Charlwood JD. A rapid gonotrophic cycle in *Chagasia bonnea* from Brazil. *Mosquito News* 1979, 39: 137-139.
- Shelley AJ, Pinger RR, Roraes MAP, Charlwood JD, Hayes J. Vectors of *Onchocerca volvulus* at the river Toototobi, Brazil. *Journal of Helminthology* 1979, 53: 41-43.

Charlwood JD, Jones MDR. Mating behaviour in the mosquito, *Anopheles gambiae* s.l. 1. Close range and contact behaviour. *Physiological Entomology* 1979, 4: 111-120.

Charlwood JD, Wilkes TJ. Studies on the age composition of *Anopheles darlingi* Root from Brazil. *Bulletin of Entomological Research* 1979, 67: 337-342.

Charlwood JD. Estudos sobre a biologia e hábitos de *Culex quinquefasciatus* say em Manaus Amazonas Brasil. *Acta Amazonica* 1979, 9: 271-278.

Charlwood JD. Observações sobre o comportamento de acasalamento de *Culex quinquefasciatus* Say (Diptera, Culicidae). *Acta Amazonica* 1979, 9: 463-470.

Hayes J, Charlwood JD. Dinâmica estacional de uma população de *Anopheles darlingi*, numa área endêmica de malária no Amazonas. *Acta Amazonica* 1979, 9: 79-86.

Charlwood JD, Paralupi ND. O uso de caixas excito-replentes com *Anopheles darlingi* Root, *A. nuneztovari* Gabaldon e *Culex pipiens quinquefasciatus* Say obtidos em áreas perto de Manaus. *Acta Amazonica* 1978, 8: 605-611.

Charlwood JD, Hayes J. Variações geográficas no ciclo de picada do *Anopheles darlingi* Root no Brasil. *Acta Amazonica* 1978, 8: 6001-603.

Hayes J, Charlwood JD. *Anopheles darlingi* evita o DDT numa área de malária resistente à drogas. *Acta Amazonica* 1977, 7: 289.

Charlwood JD. Infra-red TV for watching mosquito behaviour in the 'dark'. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1974, 68: 264.