

Email: fiona@fmunderwood.com **Web:** www.fmunderwood.com **Skype:** f.m.underwood

Nationality: British

OVERVIEW

An applied statistician with over 20 years of consultancy, research and training experience in building strong practical data-driven methods for designing and analysing studies to address interdisciplinary problems in bioresource management, illegal wildlife trade, food security and climate change.

Worked within, or as a consultant to, international research institutes of the CGIAR, international NGOs and institutions such as UNEP, UK governmental and quasi-governmental organisations such as DfID and SNH and the UK university system.

Enjoys communicating statistical ideas, working with and advising scientists, policy makers and stakeholders. (Co-) authored publications for scientific peer review and to provide the evidence base for international policy making. (Co-) led research projects and successful grant proposals.

PROFESSIONAL EXPERIENCE

Independent Consultant/Researcher		May 2013 - present
Visiting Senior Research Fellow	<i>Department of Mathematics and Statistics, University of Reading, UK</i>	May 2013 – May 2016
Senior Research Fellow	<i>Department of Mathematics and Statistics, University of Reading, UK</i>	Oct 2011 – May 2013
	<ul style="list-style-type: none"> Project leader on Darwin Initiative Grant 17-020 <i>Enhancing the Elephant Trade Information System (ETIS) to guide CITES policy</i> 	
Lecturer	<i>Department of Mathematics and Statistics, University of Reading, UK.</i>	Sep 2007 – Sep 2011
	<ul style="list-style-type: none"> Provision of research methods support to undergraduates, postgraduates and research staff Led, co-led, contributed to, and developed interdisciplinary research projects Supervision of postgraduates (3 PhD and 8 MSc students), personal tutor to undergraduates Statistics module coordinator for statistics and life sciences under- and post-graduate students 	
Senior Statistician & Statistician (until 02/06)	<i>Statistical Services Centre, University of Reading, UK</i>	Feb 2004 – Aug 2007
	<ul style="list-style-type: none"> Statistical consultancy to scientists and policy makers in Europe & Africa – including MIKE & ETIS Co-designed and co-led training courses for scientists and government technicians 	
Teaching assistant & statistician	<i>Department of Applied Statistics, University of Reading, UK</i>	Jan 1998 – Sep 2000
	<ul style="list-style-type: none"> Course director for MSc Biometry and Post-experience diploma in statistics Developed statistics modules for undergraduate and postgraduate statistics and life sciences Consultancy and development of training courses 	
Associate Professional Officer for DfID & Stagière	<i>Institute for Crop Research in the Semi-Arid Tropics (ICRISAT), Niger and Mali</i>	Oct 1996 – Dec 1997 Jun 1995 – Jul 1995
	<ul style="list-style-type: none"> Statistical support and training to international and national researchers in Niger and Mali Data management and analysis of OPSCAR - a large complex multi-site field experiment 	
Statistician	<i>Scottish Natural Heritage, Edinburgh, UK</i>	Oct 1992 – May 1995
	<ul style="list-style-type: none"> Sole statistical support to over 100 scientists and policy advisors in the organisation 	

QUALIFICATIONS

PhD, *Design-based adaptive monitoring strategies for wildlife population assessment*. Centre for Research into Ecological and Environmental Modelling, School of Mathematics and Statistics, University of St Andrews, UK, 2004

MSc (with distinction) *Biometry*, Department of Applied Statistics, University of Reading, UK. Awarded the Chapman & Hall prize for best student, 1996

BSc (Hons) *Mathematics, Operational Research, Statistics and Economics*, 1st class, Department of Statistics, University of Warwick, UK, 1992

SELECTED RECENT PUBLICATIONS

Underwood FM, Parkes G, Swasey J (2016) Building Bayesian Belief Networks to investigate how fishery performance responds to management interventions. *Fisheries Research* doi:10.1016/j.fishres.2015.12.005

Milliken T, **Underwood FM**, Burn RW, Sangalakula L (2016). The Elephant Trade Information System (ETIS) and the illicit trade in ivory. A report to the 17th Conference of the Parties to CITES Proceedings of the Conference of the Parties to CITES (UNEP), Bangkok: 16, Doc 53.2.2 <http://www.cites.org/eng/cop/16/doc/E-CoP16-53-02-02.pdf>

Underwood FM, Burn RW, Milliken (2013) Dissecting the illegal ivory trade: an analysis of ivory seizures data. *PLOS One* 8(10): e76539 doi:10.1371/journal.pone.0076539

Underwood FM (2012) A framework for adapting survey design through time for wildlife population assessment. *Environmental and Ecological Statistics* 19(3) 413-436 doi: 10.1007/s10651-012-0193-4

Underwood FM (2012) Describing seasonal variability in the distribution of daily effective temperatures for 1986-2009 compared to 1904-1985 for De Bilt, Holland. *Meteorological Applications* doi: 10.1002/met.1297

EXTERNAL BODIES AND COMMITTEES

Co-opted member of the MIKE-ETIS Technical Advisory Group

Fellow (GradStat) of the Royal Statistical Society since 1992 (1997)

Committee member in various local and national sections of the Royal Statistical Society 2007 - present. Currently committee member of the International Development Section

Peer reviewer for several journals including: *Science*, *Applied Statistics*, *Biometrics*, *Biometrical Journal*, *Journal of Animal Ecology*, *Climate Research*, *Oryx*, *PLOS Neglected Tropical Diseases*

OTHER RELEVANT INFORMATION

Statistical Software packages R (excellent), Genstat (good), SPSS, Stata, Minitab (usable)

French (working knowledge)

UK Driving License

VOLUNTARY ROLES

Advocate: Action for Children, UK (2011- 2015)

Representing vulnerable young people at child protection and care reviews

Academic Mentor: Kids Company, UK (2012 – 2013)

Providing academic support to vulnerable young people in further education

Volunteer: Reading Borough Council Young Carers Youth Club, UK (2012 – 2013)

Supporting young people (12-17) with responsibilities for caring for other family members

SELECTED CONSULTANCY and RESEARCH PROJECTS

- Development of a model to infer survival rates of plaice from vitality information using existing captive observation data, CEFAS, 2016 - 2017
- Developing Bayesian statistical models to investigate the long-term impact of endocrine-disrupting chemicals on wild roach under a range of exposure scenarios, Co-statistician contracted by Brunel University for DEFRA, 2014 – 2017
- Statistical advice regarding the analysis of data in the global seizures database, TRAFFIC International, 2014 - 2017
- Development of an analytical framework to link the four global monitoring systems for African elephants and trade in elephant specimens, CITES MIKE, 2014 – 2015
- Developing methodologies to estimate poaching pressures on elephants under varying natural mortality, Wildlife Conservation Society, 2014 – 2015
- Investigating the effect of catch-share on Marine Stewardship Council Certification, MRAG Americas, 2013 – 2015
- Invited expert and presenter to *Expert Group Meeting, Indicators for Measuring Enforcement Response to Wildlife and Forest Crime*, United Nations Office on Drugs and Crime (UNODC), in partnership with the International Consortium on Combating Wildlife Crime (ICWC), Vienna, December 2013
- Project leader for Darwin Initiative Project 17-020 *Enhancing the Elephant Trade Information System (ETIS) to guide CITES policy* 2009 – 2012
- Co-lead on NERC Small Grant *Developing statistical climate forecasts for the coming decade*, 2011
- Analysis of anti-poaching patrol data from Africa and Asia, co-design of data analysis strategy, and contributing author to reports providing the evidence base for the UNEP project MIKE - *Monitoring the Illegal Killing of Elephants – the global monitoring system for the illegal killing of elephants*, 2002 – 2010
- Design of River Habitat Survey for the Environment Agency, UK, 2006
- Analysis of daily effective temperatures and extremes in Holland, Industrial Client, 2006
- Member of Biometrics content of ILRI projects review team for the International Livestock Research Institute (ILRI) Biometrics review, 2004
- Design of a monitoring strategy for Round Island reptiles, Mauritius, 2000-2001
- Adaptive sampling for forest inventory on Mount Cameron, DfID, 2000
- Analysis of daily rainfall data with the African Centre for Meteorological Applications for Development (ACMAD), 1998
- Design of the National Countryside Monitoring Scheme Accuracy Assessment, SNH, 1992-1995

SELECTED TRAINING COURSES

I have mainly trained biologists and statisticians, both professionals and students. This has included the development of new courses such as these examples listed below:

- Practical Bayesian Data Analysis – trained over 150 scientists from five continents, 2005 - 2008
- Statistical Thinking for Ecological Appraisal & Fisheries Officers of the Environment Agency, 1998 – 2001 and 2005-2006
- Statistical Modelling and Graphics using R, University of Reading, 2007 - 2010
- Capacity Building workshop on socio-economic surveys and data analysis for the regional initiative for dryland management multilateral working group on the environment, 2004
- Analysis of survey data for the Central Bureau of Statistics, Kenya, 2004
- Analysis of multi-site, multi-year and multi-variety trials – training course to ICRISAT Mali national researchers (1996) and an MSC Biometry module at the University of Reading, 1997