Théo Michelot

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EDUCATION

PhD in Statistics *2016-2019*
University of Sheffield, UK
Thesis: Stochastic models of animal movement and habitat selection

MSc in Mathematical and Software Engineering *2010-2015*
INSA de Rouen, France

EXPERIENCE

Postdoctoral research fellow *Since February 2019*
University of St Andrews, UK
Development of continuous-time stochastic processes for the analysis of animal telemetry data

Research placement *July-December 2015*
University of St Andrews, UK
Development of an R package for the analysis of animal movement data with hidden Markov models

Research placement *June-September 2013*
University of St Andrews, UK
Analysis of ecological and financial data with hidden Markov models

PUBLICATIONS

Michelot, T., Blackwell, P.G., Chamaillé-Jammes, S., Matthiopoulos, J. (in press)
Inference in MCMC step selection models
Biometrics, DOI: 10.1111/biom.13170.

Spangenberg, M., Serrouya, R., Dickie, M., DeMars, C., **Michelot, T.**, et al. (in press)
Slowing down wolves to protect boreal caribou populations: a spatial simulation model of linear feature restoration
Ecosphere, DOI: 10.1002/ecs2.2904.

Michelot, T., Gloaguen, P., Blackwell, P.G., Étienne, M.P. (2019)
The Langevin diffusion as a continuous-time model of animal movement and habitat selection
Methods in Ecology and Evolution, 10 (11), pp. 1894-1907.

Bacheler, N. M., **Michelot, T.**, Cheshire, R. T., Shertzer, K. W. (2019)
Fine-scale movement patterns and behavioral states of gray triggerfish Balistes capriscus determined from acoustic telemetry and hidden Markov models
Fisheries Research, 215, pp. 76-89.

Michelot, T., Blackwell, P.G. (2019)
State-switching continuous-time correlated random walks
Methods in Ecology and Evolution, 10 (5), pp. 637–649.

Michelot, T., Blackwell, P.G., Matthiopoulos, J. (2019)
Linking resource selection and step selection models for habitat preferences in animals
Ecology, 100 (1), DOI: 10.1002/ecy.2452.

Grecian, W.J., Lane, J., **Michelot, T.**, Wade, H., Hamer, K.C. (2018)
Understanding the ontogeny of foraging behaviour: insights from combining marine predator bio-logging with satellite-derived oceanography in hidden Markov models
Journal of the Royal Society Interface, 15 (143), DOI: 10.1098/rsif.2018.0084.

McClintock, B., **Michelot, T.** (2018)
momentuHMM: R package for generalized hidden Markov models of animal movement
Methods in Ecology and Evolution, 9 (6), pp. 1518-1530.

Michelot, T., Langrock, R., Bestley, S., Jonsen, I.D., Photopoulou, T., Patterson, T.A. (2017)
Estimation and simulation of foraging trips in land-based marine predators
Ecology. 98 (7), pp. 1932–1944.

Langrock, R., Kneib, T., Glennie, R., **Michelot, T.** (2017)
Markov-switching generalized additive models
Statistics and Computing. 27 (1), pp. 259–270.

Michelot, T., Langrock, R., Patterson, T.A. (2016)
moveHMM: An R package for analysing animal movement data using hidden Markov models
Methods in Ecology and Evolution, 7 (11), pp. 1308–1315.

Michelot, T., Langrock, R., Kneib, T., King, R. (2016)
Maximum penalized likelihood estimation in semiparametric capture-recapture models
Biometrical Journal, 58, pp. 223–239.

Langrock, R., **Michelot, T.**, Sohn, A., Kneib, T. (2015)
Semiparametric stochastic volatility modelling using penalized splines
Computational Statistics, 30, pp. 517–537.

BOOK CHAPTERS

Antinori P., **Michelot T.**, Lescuyer P., Mller M., Acosta-Martin A.E. (2019)
Detection of unknown chemical adduct modifications on proteins: from wet to dry laboratory
In: Evans C., Wright P., Noirel J. (eds), Mass Spectrometry of Proteins
Methods in Molecular Biology, vol 1977. Humana Press, New York, NY.

TEACHING

Guest lecturer and demonstrator at the University of St Andrews *Fall 2019*

MT4113 Computing in Statistics

Lecturer and demonstrator for two workshops
Topic: Hidden Markov models for animal movement and other ecological data.

Two-day workshop in St Andrews, UK. *August 2017*

Three-day workshop in Mossel Bay, South Africa. *March 2016*

Tutorial demonstrator at the University of Sheffield *2016-2018*

MAS113 Introduction to Probability and Statistics (first year)

MAS275 Probability Modelling (second year)

MAS223 Statistical Inference and Modelling (second year)

MAS6002 Statistical Laboratory (MSc)

Student supervision

Mairi McHale (with David Borchers) *2019-2020*
Honours project: *Analysis of snow leopard movement data using hidden Markov models*

Carlina Feldmann (with Theoni Photopoulou) *October-November 2019*
MSc research placement: *Spatially-explicit models of animal movement for acoustic detection data*

Hugo Hervé (with Len Thomas and Richard Glennie) *June-August 2019*
MSc research placement: *Simulation study of multiple imputation techniques for the application of hidden Markov models to irregular and noisy telemetry data*

Student examination

Bantu Halam (University of Cape Town, Department of Statistical Sciences) *September 2019*
External examiner for MSc thesis: *Mining a large shopping database to predict where, when, and what consumers will buy next*

PRESENTATIONS

Modelling animal movement and habitat selection across scales
Invited talk at the annual meeting of the BES movement ecology group, Sheffield, UK. July 2019.

The Langevin diffusion as a model of animal movement and habitat selection
Talk at the meeting of the National Centre for Statistical Ecology, Edinburgh, UK. June 2019.

Modelling animal movement and habitat selection across scales
Invited seminar at the School of Biosciences of the University of Cardiff, UK. March 2019.

Analysing telemetry data with hidden Markov models
Invited seminar at the Duke University Marine Lab, Beaufort, USA. March 2019.

Do animals move like statistical samplers?
Talk at the Research Students' Conference in Statistics and Probability, Sheffield, UK. July 2018.

Markov chain Monte Carlo as a model of animal movement and space use
Talk at the International Statistical Ecology Conference, St Andrews, UK. July 2018.

moveHMM and momentuHMM – Analysing animal movement in R
Tutorial at the moving2gather meeting, Montpellier, France. December 2017.

Can animals do MCMC? Linking resource selection and step selection models
Poster at the Bio-logging symposium, Konstanz, Germany. September 2017.

From movement to space use
Flash talk at the BES movement ecology group meeting, London, UK. July 2017.

momentuHMM: an R package for the analysis of general telemetry data using hidden Markov models
Talk at the EURING meeting, Barcelona, Spain. July 2017.

Can animals do MCMC? Integrating resource selection and step selection
Talk at the meeting of the National Centre for Statistical Ecology, Canterbury, UK. June 2017.

Analysing animal movement data with moveHMM – Conservation action plan for the wild haggis
Talk at the International Statistical Ecology Conference, Seattle, USA. June 2016.
Best student talk award.

Multistate Ornstein-Uhlenbeck processes for modelling animal movement
Talk at the Research Students' Conference in Probability and Statistics, Dublin, Ireland. June 2016.

moveHMM: an R package for modelling animal movement with hidden Markov models
Seminar at the Australian Antarctic Division, Hobart, Australia. June 2016.

moveHMM: an R package for modelling animal movement with hidden Markov models
Seminar at the Sea Mammal Research Unit, St Andrews, UK. November 2015.

A statistical introduction to animal movement modelling
Talk at the German Statistical Week, Hamburg, Germany. September 2015.

COMMUNITY INVOLVMENT

Early career researcher representative *2019*
Executive committee of the National Centre for Statistical Ecology, UK

Reviewer
Animals (2019), *Ecography* (2018), *Ecological Applications* (2017), *Ecological Monographs* (2019), *Ecology and Evolution* (2016, 2017), *Ecology Letters* (2019), *Emu - Austral Ornithology* (2018), *Journal of Agricultural, Biological, and Ecological Statistics* (2017, 2018), *Journal of Animal Ecology* (2019), *Journal of Mammalogy* (2018), *Journal of Zoology* (2019), *Methods in Ecology and Evolution* (2016, 2017×3, 2018), *Movement Ecology* (2016×3, 2019), *Plos One* (2018), *Scientific Reports* (2018, 2019).

OTHER SKILLS

Programming	R (including Rcpp, Stan, TMB), C++
Tools	git, Latex, R development tools (devtools, unit testing, profiling, documentation)
Languages	French, English