

# Théo Michelot

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## EDUCATION

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

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

## EXPERIENCE

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

**Research placement** July-December 2015  
University of St Andrews  
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  
Analysis of ecological and financial data with hidden Markov models

## PUBLICATIONS

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**Michelot, T.**, Étienne, M.P., Gloaguen, P., Blackwell, P.G. (in press)  
The Langevin diffusion as a continuous-time model of animal movement and habitat selection  
*Methods in Ecology and Evolution*, DOI: 10.1111/2041-210X.13275.

Bachelor, 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, 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, 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

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Antinori P., **Michelot T.**, Lescuyer P., Müller 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.

## SUBMITTED

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**Michelot, T.**, Blackwell, P.G., Chamaillé-Jammes, S., Matthiopoulos, J.  
Inference in MCMC step selection models  
Preprint available on arXiv: *arXiv:1810.10930*.  
Resubmitted to *Biometrics* on 4th July 2019 after revision.

## TEACHING

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<b>Tutorial demonstrator at the University of Sheffield</b>	<i>2016-2018</i>
Introduction to Probability and Statistics (first year course)	
Probability Modelling (second year course)	
Statistical Inference and Modelling (second year course)	
Statistical Laboratory (MSc course)	

## WORKSHOPS

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<b>Demonstrator for two workshops</b>	
<i>Topic: Hidden Markov models for animal movement and other ecological data.</i>	
Two-day workshop in St Andrews, UK.	<i>August 2017</i>
Three-day workshop in Mossel Bay, South Africa.	<i>March 2016</i>

## PRESENTATIONS

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*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*

Seminar at the School of Biosciences of the University of Cardiff, UK. March 2019.

*Analysing telemetry data with hidden Markov models*

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.

## PEER REVIEW

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Reviewer for the following journals: *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).

## OTHER SKILLS

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