

Curriculum Vitae—Dr. Charlotte M. Jones-Todd

Personal Details

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Education

- **PhD in statistics** **Scotland, UK**
University of St Andrews 2013–2017
- **MSc in statistics** **Scotland, UK**
University of St Andrews 2012–2013
- **BSc (Hons) in mathematics first class** **Wales, UK**
Aberystwyth University 2009–2012

Employment

- **Department of Statistics, University of Auckland** **Auckland, NZ**
Senior Lecturer 02/2023–present
- **Department of Statistics, University of Auckland** **Auckland, NZ**
Lecturer 07/2019–02/2023
- **National Institute of Water and Atmospheric Research** **Hamilton, NZ**
Statistician 01/2018–07/2019
- **University of St Andrews** **Scotland, UK**
Consultant, School of Mathematics and Statistics & Sea Mammal Research Unit 02/2017–12/2017
- **University of Auckland** **Auckland, NZ**
Consultant, School of Epidemiology & Biostatistics 02/2017–05/2017
- **University of St Andrews** **Scotland, UK**
Tutor, School of Mathematics and Statistics & CAPOD 2014–2016

Scholarships and Awards

- **Innovation in Teaching Award**
Department of Statistics, University of Auckland 2024
- **Worsley Early Career Award**
New Zealand Statistical Association 2021
- **Statistical Excellence Award for Early-Career Writing—Finalist**
Royal Statistical Society 2017
- **RSS 2015 Challenge—Finalist**
Royal Statistical Society 2015
- **School of Mathematics and Statistics PhD Scholarship**
University of St Andrews 2013–2016
- **EPSRC MSc Scholarship**
University of St Andrews 2012
- **Pennington Prize for Pure Mathematics**
Aberystwyth University, one per cohort 2012

Publications

- Clark, D. A., Kresin, C. J., & **Jones-Todd, C. M.** Network generating processes with self-exciting arrival times. *arXiv preprint arXiv:2505.22659*.
- Jones-Todd, C. M.**, & Renelle, A. (2025) A comparison of peer- and tutor-grading of an introductory R coding assessment. *Journal of Statistics and Data Science Education*, 1–19.
- van Helsdingen, A.B.M., Marques, T.A., & **Jones-Todd, C. M.** (2024) An Inhomogeneous Weibull–Hawkes Process to Model Underdispersed Acoustic Cues. *Journal of Agricultural, Biological and Environmental Statistics*, 1–24.
- Jones-Todd, C. M.**, & van Helsdingen, A. B. M. (2024). *stelfi*: An R package for fitting Hawkes and log-Gaussian Cox point process models. *Ecology and Evolution*, 14 (2), e11005.
- Hin, V., de Roos, A. M., Benoit-Bird, K. J., Claridge, D. E., DiMarzio, N., Durban, J. W., Falcone, E. A., Jacobson, E. A., **Jones-Todd, C. M.**, Pirota, E., Schorr G.S., Thomas, L., Watwood, S., & Harwood, J. (2023) Using individual-based bioenergetic models to predict the aggregate effects of disturbance on populations: a case study with beaked whales and Navy sonar. *PLOS ONE*, 18 (8), e02290819.
- Jones-Todd, C. M.**, & Renelle, A. (2022) Virtual experiments to teach experimental design: A web-based tool for biostatistics students bridging the gap between data collection and statistical analysis. In S. Peters (Ed.), *Bridging the Gap: Empowering and Educating Today's Learners in Statistics: Proceedings of the 11th International Conference on Teaching Statistics*.
- Jones-Todd, C. M.**, Pirota, E., Durban, J., Claridge, D., Baird, R., Falcone, E., Schorr, G., Watwood, S., & Thomas, L. (2022) Continuous-time discrete-space models of marine mammal exposure to Navy sonar. *Ecological Applications*, 32 (1), e02475.
- Semadeni-Davies, A., **Jones-Todd, C. M.**, Elliott, A., Shankar, U., Tanner, C., Srinivasan, M. S., & Muirhead, R. (2020) CLUES model calibration and its implications for estimating contaminant attenuation. *Agricultural Water Management*, 228 (1), 105853.
- Semadeni-Davies, A., **Jones-Todd, C. M.**, Srinivasan, M. S., Muirhead, R., Elliott, A., Shankar, U., & Tanner, C. (2020) CLUES model calibration: residual analysis to investigate potential sources of model error. *New Zealand Journal of Agricultural Research*, 64 (3), 320–343.
- Soriano-Redondo, A., **Jones-Todd, C. M.**, Bearhop, S., Hilton, G. M., Lock, L., Stanbury, A., Votier, S. C., & Illian, J. B. (2019) Understanding species distribution in dynamic populations: a new approach using spatio-temporal point process models. *Ecography*, 42 (6), 1092–1102.
- Jones-Todd, C. M.**, Caie, P., Illian, J. B., Stevenson, B. C., Savage, A., Harrison D, J., & Bown, J. (2019) Identifying prognostic structural features in tissue sections of colon cancer patients using point pattern analysis. *Statistics in Medicine*, 38 (8), 1421–1441.
- Python, A., Illian, J. B., **Jones-Todd, C. M.**, & Blángiardo, M. (2019) A Bayesian approach to modelling sub-national spatial dynamics of worldwide non-state terrorism, 2010–2016. *Journal of the Royal Statistical Society, Series A (Statistics in Society)*, 182 (1), 323–344.
- Kool, B., Buller, S., Kuriyan, R., **Jones-Todd, C. M.**, Newcombe, D., & Jones, P. (2018) Alcohol and injury among attendees at a busy inner city New Zealand emergency department. *Injury*, 49 (4), 798–805.
- Jones-Todd, C. M.**, Swallow, B., Illian, J. B., & Toms, M. (2018) A spatio-temporal multi-species model of a semi-continuous response. *Journal of the Royal Statistical Society, Series C (Applied Statistics)*, 67 (3), 705–722.
- Python, A., Illian, J. B., **Jones-Todd, C. M.**, & Blángiardo, M. (2016) Explaining the lethality of Boko Haram's terrorist attacks in Nigeria, 2009–2014: A hierarchical Bayesian approach. *Bayesian Statistics in Action: BAYSM 2016*, 231–239.
- ### Magazine Articles
- Python, A., Illian, J. B., **Jones-Todd, C. M.**, & Blángiardo, M. (2019) The Deadly Facets of Terrorism. *Significance*, 16 (4), 28–31.
- Jones-Todd, C. M.** A time to kill: Great British serial killers. *Significance*. December 2017. Award winning entry to the Royal Statistical Society's Statistical Excellence Award for Early-Career Writing.

Peer-reviewed Reports

Hatami, R., Lane, S., Robinson, A., Inglis, G., **Jones-Todd, C. M.**, & Seaward, K. Improving New Zealand's marine biosecurity surveillance programme. A statistical review of biosecurity vectors. Ministry for Primary Industries website. January 2021.

Python, A., Illian, J. B., **Jones-Todd, C. M.**, & Blángiardo, M. Statistics and Terrorism: Insights on terrorism lethality from Bayesian modeling. *Wiley StatsRef-Statistics Reference Online*. July 2020.

Dudley, B., & **Jones-Todd, C. M.** New Zealand coastal water quality assessment update. Ministry for the Environment. May 2018.

Graham, E., **Jones-Todd, C. M.**, Wadhwa, S., & Storey, R. Analysis of stream responses to riparian management on the Taranaki ring plain. Taranaki Regional Council. March 2018.

Manuscripts in Submission

Clark, D. A., Kresin, C. J., & **Jones-Todd, C. M.** Network generating processes with self-exciting arrival times. Submitted to *Journal of Computational and Graphical Statistics*.

van Helsdingen, A.B.M., & **Jones-Todd, C. M.** A Spatial capture-recapture model with Hawkes-inspired detection rates to account for animal movement. Submitted to the *Journal of Agricultural, Biological and Environmental Statistics*.

Manuscripts Invited for Submission

Patel, A., Bolton, L., & **Jones-Todd, C. M.** Principles in practice: Activities for developing students' ethical data dispositions. Contributing to *Main Topic 10. Growing society-wide statistical, data science and data technological literacy at the 12th International Conference on Teaching Statistics*.

Budgett, S., Boyle, L., Munn, N., & **Jones-Todd, C. M.** Interactive oral assessments as a tool to evaluate statistical interpretation. Contributing to *Main Topic 4. New technologies and paradigms in assessment at the 12th International Conference on Teaching Statistics*.

Software

R packages

stelfi: Hawkes and Log-Gaussian Cox Point Processes Using Template Model Builder. R package version 1.0.2, <https://cran.r-project.org/package=stelfi>.

mmre. Package to fit two-state continuous-time discrete-space Markov models with individual level random effects, <https://github.com/cmjt/mmre>.

Teaching-focused software

Farm Rescue, the Tomato Trials. A virtual experimental design platform as a cost- and hassle-free in-class data collection tool, <https://statbiscuit-tomato-trials.netlify.app/>.

vested. Implements the setting up of virtual experiments to teach experimental design, <https://cmjt.shinyapps.io/vested/>.

Teaching-focused applets

A selection of R-focussed mini games to use as lecture ice-breakers, https://statbiscuit.github.io/mini_games/.

penguin. Introduces linear modelling using the palmerpenguins data, <https://cmjt.shinyapps.io/penguin/>.

probable. Explores distributions and visualises the CLT in action, <https://cmjt.shinyapps.io/probable/>.

Major External Research Grants

- 2024
 - Marsden Fund Award, Royal Society of New Zealand (\$712,000) [AI] *Principled inference for spatial point processes: a unified toolkit*.
- 2022
 - Marsden Fund Fast-Start Grant, Royal Society of New Zealand (\$360,000) [sole PI] *Rejuvenating the role of random fields in modelling spatiotemporal point patterns: a new era of point process models*.
- 2021
 - Asian Office of Aerospace Research and Development (\$70,000) [sole PI] *Spatiotemporal dependency structures and network distances in point processes*.

Invited Conference Talks

- Plenary talk: **Modelling spatiotemporal point patterns: a new era of point process models**, November 22nd 2022
New Zealand Statistical Association Conference, Auckland, NZ
- **The role of random fields in modelling spatiotemporal point patterns**, October 8th 2021
International Conference on Advances in Interdisciplinary Statistics and Combinatorics, The University of North Carolina at Greensboro (via Zoom)
- **A time to kill: Great British serial killers**, September 5th 2017
Royal Statistical Society Conference, Glasgow, Scotland
- **Why spatial models are useful in ecology (understanding the mechanics of dots)**, September 15th 2015
Statistische Woche, Hamburg, Germany
- **Easy on the eyes: A spatio-temporal analysis of eye movement**, September 9th 2015
Royal Statistical Society Conference, Exeter, UK

Student supervision

- PhD
 - Keiko Hashiba, *The Role of Bird Dispersal in the Spread of Weeds from Residential Gardens to Urban Native Forest Patches*, 2025–ongoing.
 - Deborah Kakis, *Investigating Statistical Literacy among Health Care Professionals in Papua New Guinea*, 2023–ongoing.
 - Alec van Helsdingen, *Modelling Self-Excitement Inherent in Spatial and Spatio-Temporal Point Pattern Data*, 2022–ongoing.
- Completed supervision of Honours (x 6), Masters (x 8) & Summer Research Scholarship (x 5) students.

External Service

- **Associate Editor**
 - *Journal of Statistical Theory and Practice*
- **Conference local committee member**
 - International Conference on Teaching Statistics (ICOTS12), 2026.
 - virtual International Statistical Ecology Conference (vISEC), July 2020.
- **Conference session chair**
 - International Conference on Teaching Statistics (ICOTS12), 2026.
 - New Zealand Statistical Association (NZSA) Conference, December 2024.
 - virtual Australia and New Zealand Statistical Conference (vANZSC), July 2021.
 - virtual National Centre for Statistical Ecology v(NCSE), June 2021.
 - virtual International Statistical Ecology Conference (vISEC), July 2020.
 - Statistics in Ecology and Environmental Monitoring (SEEM) Conference, December 2019.
- **Student presentation judge**
 - New Zealand Statistical Association (NZSA) Conference, December 2023 & 2024.
 - virtual Australia and New Zealand Statistical Conference (vANZSC), July 2021.
 - virtual International Statistical Ecology Conference (vISEC), July 2020.
- **Manuscript reviewing**
- Judge at the Waikato Science and Technology Fair 2018

Memberships

- New Zealand Statistical Association (NZSA) & International Biometric Society (IBS), Australasian Region