Curriculum Vitae—Dr. Charlotte M. Jones-Todd

Personal Details

Email: c.jonestodd@auckland.ac.nz
Online: @cmjt @statbiscuit @statbiscuit cmjt.github.io

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 — *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.**, Pirotta, 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., Pirotta, 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, MS., & Muirhead , R. (2020) CLUES model calibration and its implications for estimating contaminant attenuation. *Agricultural Water Management*, 228, 105853.

Semadeni-Davies, A., **Jones-Todd, C. M.**, Srinivasan, MS., 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*, 1–24.

Soranio-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. A Bayesian approach to modelling subnational spatial dynamics of worldwide non-state terrorism, 2010–2016. (2019) *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.

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.

Software

R packages

`stelfi`: Hawkes and Log-Gaussian Cox Point Processes Using Template Model Builder. `R` package version 1.0.1, `https://cran.r-project.org/package=stelfi`.

`mmre`. Package to fit two-stare 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/`.

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.*

Major External Research Grants

- 2024
  - Marsden Fund Award, Royal Society of New Zealand ($712,000) [co-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 Lectures & Talks

- **We Are Never Getting Back to Normal** ***when your data refuses to be Gaussian***, October 22nd 2025
  Guest lecture TFCSTATS, University of Auckland, NZ
- **From cats to stats**, December 1st 2023
  New Zealand Mathematics and Statistics Postgraduate Conference, Wellington, NZ
- **Where the whales sing**, December 3rd 2022
  Statistics Teacher's Day, University of Auckland, NZ
- **Modelling spatiotemporal point patterns: a new era of point process models**, November 22nd 2022
  New Zealand Statistical Association Conference, Auckland, NZ
- **Where the whales sing**, August 10th 2022
  Guest lecture TFCSTATS, University of 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)
- **Making sense of patterns and connecting the dots in Area ΣI**, August 31st 2021
  Faculty of Science International Open Day, University of Auckland, NZ
- **Modelling latent phenomena in point referenced data**, June 24th 2021
  Department of Mathematics & Statistics, Australian National University (via Zoom)
- **Point patterns in a point pattern world**, November 17th 2020
  Research Showcase, School of Biological Sciences, University of Auckland, NZ
- **Getting to the point of log-Gaussian Cox processes**, October 24th 2020
  Department of Mathematics & Statistics, University of Glasgow (via Zoom)
- **Me, myself, and R**, July 21st 2020
  R-Ladies, Auckland, NZ
- **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
- **INLA & SPDEs: Using latent Gaussian models to infer the spatial structure inherent in point patterns**, April 1st 2015
  University of Lisbon, Portugal

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.
- Honours & Masters
  - Yan Liu, MSc, *Implementing reactive feedback in experimental design software*, 2025.
  - Bea Cooke, honours, *Simulation of point processes with clustering and repulsion*, 2025.
  - Amelia Holt, honsours, *Void process parameter estimation*, 2025.
  - Xinyan Cai, MProfStuds in Data Science, *Goodness of fit for log-Gaussian Cox processes*, 2024.

  - Bill Lu, honours, *Ignoring self-excitement, what happens?*, 2024.
  - Yifan Wang, MProfStuds in Data Science, *Visualisation of river networks*, 2024.
  - Chuyang Huang, MProfStuds in Data Science, *Gamification of statistical theory*, 2021.
  - Guoxiang Yu, MProfStuds in Data Science, *Gamification of statistical theory*, 2021.
  - Haiyi Shi, honours, *The role of the 'mesh' when using INLA to fit point process models*, 2021.
  - Alice Hankin, honours, *Modelling terrorism incidents as a log-Gaussian Cox process*, 2021.
  - Jenny Pullan, MSc, *RShiny application to aid in the calculation of site-adjusted water quality guidelines*, 2021.
  - Zhenyuan Zhang, MProfStuds in Data Science, *Data scraping and wrangling*, 2021.
  - Elvyna Tunggawan, MProfStuds in Data Science, *Analyzing activity data from rheumatoid arthritis patients*, 2020.
  - Anthony Timings (Charlie), honours, *Spatiotemporal modelling of NZ murders*, 2020.
- Summer Research Scholarships
  - Cris Escandor, *Procedurally generated CSS/JS R-focussed casual/puzzle games*, 2024/25
  - Caitlin Whiteman, *Gauging statistical literacy as students transition through university* (co-supervised with AP Stephanie Budgett), 2022/23
  - Daniel Heslop, *Flattening the curve* (*the steep `R` learning curve*), 2022/23
  - Hongjia Chen, *One thing leads to another: Modelling occurrence times of earthquakes*, 2020/21

External Service

- **Associate Editor**
  - *Journal of Statistical Theory and Practice*
- **Conference session chair**
  - Topic team member for ICOTS 12, 2026.
  - 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 paper judge**
  - virtual Australia and New Zealand Statistical Conference (vANZSC), July 2021.
  - virtual International Statistical Ecology Conference (vISEC), July 2020.
- **Manuscript reviewing**
  - *Methods in Ecology and Evolution*
  - *Spatial Statistics*
  - *Journal of Peace Research*
  - *Advances in Statistical Analysis*
  - *Scientific Reports*
  - *Ecology*
  - *Journal of the Royal Statistical Society, Series C*
  - *Ecology and Evolution*
  - *Ecological Research*
- Judge at the Waikato Science and Technology Fair 2018

Memberships

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