

David Fletcher CV

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Areas of Expertise

Statistical modelling, Mark-recapture, Model averaging, Overdispersion, Population modelling

Education

- 1980 BSc Mathematics (1st Class), University of Southampton, UK
- 1982 MSc Applied Statistics (Distinction), University of Southampton, UK
- 1985 PhD Statistics, University of Southampton, UK

Employment

- 2019–present Director, David Fletcher Consulting Limited
- 2006–2019 Associate Professor, Department of Mathematics and Statistics, University of Otago
- 1997–2005 Senior Lecturer, Department of Mathematics and Statistics, University of Otago
- 1991–1996 Lecturer, Department of Mathematics and Statistics, University of Otago
- 1989–1991 Lecturer, Department of Biometry, University of Sydney
- 1985–1988 Lecturer, Department of Applied Statistics, University of Reading
- 1984–1985 Lecturer, Department of Mathematics, University of Texas at Austin
- 1983–1984 Lecturer, Department of Mathematics, Brunel University

Consulting Projects (since 2019)

- 2021-2026 Manaaki Whenua (Landcare Research): Statistical and population modelling work for Te We o te Kaitiaki (Indigenous Regeneration Pathways), funded by the New Zealand Ministry of Business, Innovation and Employment
- 2021-2022 Proteus Wildlife Research Consultants: Estimating r_{\max} for New Zealand marine mammal populations, funded by the New Zealand Ministry for Primary Industries
- 2021 Mammalian Corrections Unit: Power analysis for a new method of trapping mammalian pests
- 2020 Manaaki Whenua (Landcare Research): Modelling and projection of tūī population dynamics
- Stakeholders in Methyl Bromide Reduction Incorporated (STIMBR): Estimating percentiles in air-dispersion modelling
- Department of Conservation: Design of an experiment on sustainable mouse control
- University of Canterbury: Advice on population modelling of black swans
- University of Otago: Testing lack-of-fit of a model in phylogenetics
- University of Otago: R code for collating online assignment results
- 2019 University of Auckland: Power analysis for diabetes study

Publications and Talks (since 2010)

BOOKS

- 2018 [Model Averaging](#). Springer, Berlin. 2018 (104 pages)

ARTICLES AND REPORTS

- 2022 Darryl I MacKenzie, David Fletcher, Peter W Dillingham, Stefan Meyer, Heloise Pavanato. Updated Spatially Explicit Fisheries Risk Assessment for New Zealand Marine Mammal Populations. [New Zealand Aquatic Environment and Biodiversity Report No. 290. 218pp](#) (2022)
- Herse MR, PO'B Lyver, AM Gormley, NJ Scott, AR McIntosh, D Fletcher, J Tylianakis. A demographic model to support customary management of a culturally important waterfowl species. [Ecology and Society 27\(3\):14](#) (2022)
- David Fletcher, Tim Jowett Single-fit bootstrapping: A simple alternative to the delta method. [Methods in Ecology and Evolution 13: 1358–1367](#) (2022)

- 2021 David Fletcher, Jamie Newman, Sam McKechnie, Corey Bragg, Peter Dillingham, Rose Clucas, Darren Scott, Sebastian Uhlmann, Phil Lyver, Andrew Gormley, Stewart Bull, Kayne Davis, Renata Davis, Riki Davis, Tane Davis, Lania Edwards, Jane Kitson, Tina Nixon, Michael Skerrett, Henrik Moller. Projected impacts of climate change, bycatch, harvesting, and predation on the Aotearoa New Zealand tītī *Ardenna grisea* population. [Marine Ecology Progress Series 670: 223–238](#) (2021)
- 2020 Sam McKechnie, David Fletcher, Jamie Newman, Corey Bragg, Peter Dillingham, Rose Clucas, Darren Scott, Sebastian Uhlmann, Phil Lyver, Andrew Gormley, Rakiura Tītī Islands Administering Body, Henrik Moller. Separating the effects of climate, bycatch, predation and harvesting on tītī population dynamics in New Zealand: A model-based assessment. [PLoS ONE 15: e0243794](#) (2020)
- Farzana Afroz, Matt Parry and David Fletcher. Estimating overdispersion in sparse multinomial data. [Biometrics 76: 834–842](#) (2020)
- 2019 David Fletcher, Peter Dillingham and Jiaxu Zeng. Model-averaged confidence distributions. [Environmental and Ecological Statistics 26: 367–384](#) (2019)
- Jiaxu Zeng, David Fletcher, Peter Dillingham and Chris Cornwall. Studentized bootstrap model-averaged tail area intervals. [PLOS ONE 14: e0213715](#) (2019)
- 2016 Peter Dillingham, Jeffrey Moore, David Fletcher, Enric Cortés, Alexandra Curtis, Kelsey James and Rebecca Lewison. Improved estimation of intrinsic growth rmax: integrating matrix models and allometry. [Ecological Applications 26: 322–333](#) (2016)
- 2015 Michael Schaub and David Fletcher. Estimating immigration using a Bayesian integrated population model: choice of parametrisation and priors. [Environmental and Ecological Statistics 22:535–549](#) (2015)
- 2014 Jiaxu Zeng, Sheila Williams, David Fletcher, Claire Cameron, Jonathan Broadbent, Dara Shearer, Murray Thomson. Re-examining the association between smoking and periodontitis in the Dunedin Study with an enhanced analytical approach. [Journal of Periodontology 85:1390–1397](#) (2014)
- 2013 David Fletcher, Henrik Moller, Rosemary Clucas, Corey Bragg, Darren Scott, Paul Scofield, Christine Hunter, Ilka Win, Jamie Newman, Sam McKechnie, Justine de Cruz and Philip Lyver. Age at first return to the breeding colony and juvenile survival of Sooty Shearwaters. [The Condor 115:465–476](#) (2013)
- Stephen Dawson, David Fletcher and Elisabeth Slooten. Habitat use and conservation of an endangered dolphin. [Endangered Species Research 21:45–54](#) (2013)
- 2012 Daniel Turek and David Fletcher. Model-averaged Wald confidence intervals. [Computational Statistics and Data Analysis 56:2809–2815](#) (2012)
- David Fletcher. Estimating overdispersion when fitting a generalized linear model to sparse data. [Biometrika 99:230–237](#) (2012)

Claire Cameron, Kirsten Coppel, David Fletcher and Katrina Sharples. Capture-recapture using multiple data sources: estimating the prevalence of diabetes. *Australian and New Zealand Journal of Public Health* 36:223–228 (2012)

Rosemary Clucas, Henrik Moller, Corey Bragg, David Fletcher, Philip O’B. Lyver and Jamie Newman. Rakiura Māori muttonbirding diaries: monitoring trends in tītī (*puffinus griseus*) abundance in New Zealand. *New Zealand Journal of Zoology* 39:155–177 (2012)

David Fletcher and Daniel Turek. Model-averaged profile likelihood intervals. *Journal of Agricultural, Biological and Environmental Statistics* 17:38–51 (2012)

David Fletcher and Philip Dixon. Modelling data from different sites, times or studies: weighted vs. unweighted regression. *Methods in Ecology and Evolution* 3:168–176 (2012)

David Fletcher, Jean-Dominique Lebreton, Lucile Marescot, Michael Schaub, Olivier Gimenez, Steve Dawson and Elisabeth Slooten. Bias in estimation of adult survival and asymptotic population growth rate caused by undetected capture heterogeneity. *Methods in Ecology and Evolution* 3:206–216 (2012)

Peter Dillingham, Graeme Elliott, Kath Walker and David Fletcher. Adjusting age at first breeding of albatrosses and petrels for emigration and study duration. *Journal of Ornithology* 153:205–217 (2012)

2011 David Fletcher. Statistical Ecology. In *International Encyclopedia of Statistical Sciences*. Lovric, M. (Ed.), Springer, Volume 3, 1410–1404 (2011)

Chris Jones, H.Clifford, David Fletcher, P.Cuming and Phil Lyver. Survival and age-at-first-return estimates for grey-faced petrels (*Pterodroma macroptera gouldi*) breeding on Mauao and Motuotau Island in the Bay of Plenty, New Zealand. *Notornis* 58:71–80 (2011)

David Fletcher and Peter Dillingham. Model-averaged confidence intervals for factorial experiments. *Computational Statistics and Data Analysis* 55:3041–3048 (2011)

Peter Dillingham and David Fletcher. Potential biological removal of albatrosses and petrels with minimal demographic information. *Biological Conservation* 144:1885–1894 (2011)

TALKS

2022 Effects of Climate, Bycatch, Predation and Harvesting on the Population Dynamics of Tītī (*Ardeenna grisea*) in New Zealand. Swiss Ornithological Institute, Sempach.

2018 Confounding, pseudoreplication and split-plot designs in multi-factor global ocean change experiments. Ocean Global Change Biology Gordon Research Conference, USA (with Peter Dillingham, Chris Cornwall, Christina McGraw, Jiaxu Zeng)

- Model-averaged confidence distributions. 2018 International Symposium on Big Data and Applied Statistics, China (with Peter Dillingham and Jiaxu Zeng)
- Model-averaged confidence distributions. 40th Annual Conference of the International Society for Clinical Biostatistics, Belgium (with Peter Dillingham and Jiaxu Zeng)
- Confidence distributions. University of Otago and Massey University
- 2017 Model-averaged confidence distributions. SEEM 2017 Conference, Queenstown, New Zealand
What is n? University of Otago
- 2015 Focussed model averaging for generalised linear models. SEEM 2015 Conference, Queenstown, New Zealand
- Statistical guidelines for scientists. University of Otago
- Model averaging. University of Otago
- 2014 Statistical modelling in ecology. Ecology@Otago Symposium. Orokonui Ecosanctuary, Dunedin, New Zealand
- Measuring lack-of-fit of a Bayesian model. International Statistical Ecology Conference (France) and the International Biometric Society Conference (Italy)
- 2013 Invited talk: Model-averaged profile-likelihood intervals. Australasian Region of International Biometric Society Conference (Australia)
- Model-averaged confidence intervals. Hong Kong Baptist University
- Estimating overdispersion in sparse multinomial data. European Meeting of Statisticians (Hungary)
- 2012 Estimating immigration using a Bayesian integrated population model. International Statistical Ecology Conference (Norway)
- A new approach to model-averaged confidence intervals. International Statistical Ecology Conference (Norway)
- Bayes, asymptotics, simulation and the bootstrap. University of Otago
- 2011 A new method for estimating overdispersion in count data. University of Otago
- Modelling data from different sites, times or studies: weighted versus unweighted regression. University of Otago
- Bias in estimation of adult survival and asymptotic population growth rate caused by undetected capture heterogeneity. University of Otago

Service to the Profession (since 2010)

- 2019 Member of the Organising Committee, New Zealand Statistical Association Conference
- 2018–2020 Associate Editor, Environmental and Ecological Statistics
- 2014–2015 External examiner for honours, PGDip and MSc theses at Auckland University
- 2013–2015 Associate Editor, Biometrics
- 2012 Chair of the Organizing Committee, New Statistical Association Conference
- 2011–present External examiner for MSc and PhD theses in Australia and New Zealand
- Referee for a number of international statistical and ecological journals