CURRICULUM VITAE

Byron J.T. MORGAN

Date of CV: November 8, 2024

Career History

Positions held:

August 2017 – January 2023	Leverhulme Emeritus Fellow
October 2015 – present	Emeritus Professor, Kent
January 2014–September 2015	Emeritus Professor and Honorary Professorial Research Fellow, Kent
2009–2012	Head of Statistics, Kent.
October 2008–March, 2019	Co-Director, EPSRC/NERC National Centre for Statistical Ecology, (NCSE).
October 2005–September 2008	Director, NCSE.
2003–2004	Head of Statistics, Kent.
January 2000, December 1997 & December 1996	Honorary Visiting Professor, Australian Defence Force Academy, Canberra.
1993–1996	Head of Statistics and Director of the Institute of Mathematics and Statistics, Kent.
1987–2013	Professor of Applied Statistics, Kent.
February–March 1987	Honorary Visiting Professor, Royal Melbourne Institute of Technology, Melbourne.
1984–1986	Head of Statistics, Kent.
1983	Reader in Statistics, Kent.
1980–1981	Senior Research Scientist, Commonwealth Scientific and Industrial Research Organisation, Melbourne.
1978	Senior Lecturer in Statistics, Kent.
1972	Lecturer in Statistics, Kent.
1970–1972	Statistician, Medical Research Council, Applied Psychology Unit, Cambridge.
July–September 1968	Research Trainee, World Health Organisation, Cancer Research Centre, Lyon, France.

Degrees and Awards:

2023	Nominated as full member of Sigma Xi, the Scientific Research Honor Society (not taken up)
2020	Co-author of paper marked † below selected as one of 10 to celebrate the first 10 years of *Methods in Ecology and Evolution* (with E. Matechou, S. Pledger, M. Efford and D.L.Thomson)
2020	Barnett award of the Royal Statistical Society
2017- 2023	Leverhulme Emeritus Fellowship
2016	2014 Co-author of best paper in *JABES* by an IBS Member, paper marked **** below (with G. Guillera-Arroita and M.S. Ridout)
2014	Elected Honorary Life Member of the International Biometric Society
2013	Elected as Fellow of the Learned Society of Wales
2002	Leverhulme Research Fellowship
2000	Elected as Academician of the Academy of Learned Societies for the Social Sciences (not taken up)
1998	Distinguished Statistical Ecologist (award of the International Congress of Ecology).
1985	Elected Member of the International Statistical Institute
1982	George W. Snedecor award for best publication in Biometry, paper marked *** below
1972	PhD Cambridge.
1967	BSc (Mathematics) with 1st-class Honours, Imperial College, London.
1964–67	Open Scholarship at Imperial College.
1958	W. H. Evans prize, Aberdare Boys Grammar School.

Prizes of research students and postdocs :

Several research students and post-docs have won prizes and grants of various kinds, including eg:

Emily Dennis (multiple, including runner up, Robert May prize, the University of Kent Faculty
of Sciences Prize for Postgraduate Research, 2015 and Honourable Mention in the
British and Irish Region of the International Biometric Society: Young Biometrician's Award, 2017,
for paper * below.)
Nico Galvez (runner up, best student talk)
Gurutzeta Guillera-Arroita (multiple, including the RSPB Conservation Science award for an outstanding
PhD thesis, 2015, and 2014 winner of the competition for best paper in JABES by an IBS Member;
paper marked **** below)
José Lahoz-Monfort (multiple)
Rachel McCrea (Guy medal in Bronze of the Royal Statistical Society, British and Irish Region of the
International Biometric Society: Young Biometrician's Award, for paper ** below,
NERC fellowship and EPSRC New Investigator grant for her project
'Modelling removal and re-introduction data for improved conservation'.)
Eleni Matechou (multiple, including PI on a NERC grant in 2020, on modelling eDNA data, and a
Royal Society International Exchanges grant in 2019. Paper marked † below selected as one of 10 papers to
celebrate the first 10 years of *Methods in Ecology and Evolution*, with a Blog written for each.)
David Miller (best student talk)
Chen Yu (best student talk)

Publications

BOOKS:

2025	*Statistical Models for Wildlife Survey Data*
	Springer, to appear.
	(with S. T. Buckland and E. B. Dennis)
2014	*Analysis of Capture-Recapture Data*
	Chapman & Hall/CRC, London, ISBN 978 1439836590.
	(with R. S. McCrea)
2014	*Modelling Population Dynamics: model formulation, fitting and assessment*
	using state-space methods
	Springer, New York, ISBN 978 149390976 .
	(with K.B.Newman, S.T.Buckland, R.King, D.L. Borchers, D.J. Cole, P.T. Besbeas,
	O.Gimenez and L. Thomas.)
2010	*Bayesian Analysis for Population Ecology*
	Chapman & Hall/CRC, London, ISBN 978 1439811870.
	(with R. King, O. Gimenez and S. P. Brooks)
2008	Second edition of *Applied Stochastic Modelling*
	Chapman & Hall/CRC, London, ISBN 978 1584886662.
2000	Second edition of *Statistics: Problems and Solutions.* World Scientific
	(with E.E. Bassett, J.M. Bremner, I.T. Jolliffe, B. Jones and P.M. North)
	ISBN 981-02-4293-X
2000	*Applied Stochastic Modelling.* Arnold, London. ISBN 0 340 74041 8.
1992	*Analysis of Quantal Response Data.* Chapman & Hall, London.
	ISBN 0 412 31750 8.
1986	*Statistics: Problems and Solutions.* Edward Arnold (with E.E. Bassett,
	J.M. Bremner, I.T. Jolliffe, B. Jones and P.M. North). ISBN 07131 3568 9.
1984	*Elements of Simulation.* Chapman & Hall, London. ISBN 0 412 24590 6.

EDITIONS:

2016	*Special section on mark-recapture*: *Statistical Science*, **31**, No.2. (with S.T. Buckland)
2002	*Statistical analysis of data from marked bird populations*: special issue of
	J. Applied Statistics, **29**, Nos 1-4. (with D. Thomson). ISSN 0266-4763.
1996	*Statistics in Toxicology* (OUP). ISBN 0-19-852329-7.
1985	*Statistics in Ornithology.* Springer-Verlag, Berlin (with P.M. North).
	ISBN 3-540-96189-5.

PAPERS:

2024
- Efficient statistical inference methods for assessing changes in species' populations using citizen science data
  Journal of the Royal Statistical Society Series A, to appear
  with E. B. Dennis, A. Diana and E. Matechou.
- Incorporating phenology to estimate species' population trends from snapshot citizen-science data
  Journal of Agricultural, Biological and Environmental Statistics, to appear
  with E. B . Dennis, C. A. Harrower, Bourn, N. A. D. and R. Fox.

2023
- State-space models for ecological time series: practical model-fitting
  Methods in Ecology and Evolution, **14**, 1, 26–42. http://doi.org/10.1111/2041-210X.13833
  with K. Newman, R. King, V. Elvira, P. de Valpine, and R. S. McCrea.
- Fast Bayesian inference for large occupancy data sets
  Biometrics, **79**, 3, 2503–2515.
  with A. Diana, E. B. Dennis and E. Matechou

2022
- Selecting survival age structure in integrated population models
  Ecological Modelling. https://doi.org/10.1016/j.ecolmodel.2022.110111
  with P. T. Besbeas and R. S. McCrea
- rGAI: An R package for fitting the generalised abundance index to seasonal count data
  Ecology and Evolution. http://dx.doi.org/10.1002/ece3.9200
  with E. B. Dennis and C. Fagard-Jenkin

2021
- Integrated modelling of insect population dynamics at two temporal scales
  Ecological Modelling. https://doi.org/10.1016/j.ecolmodel.2020.109408
  with E. B. Dennis, M. Kéry, A. Coray, M. Schaub and B. Baur
- A generic method for estimating and smoothing multispecies biodiversity indicators using intermittent data. *JABES*, **26**, 71–89.
  https://link.springer.com/article/10.1007/s13253-020-00410-6.
  with S.N. Freeman, P. T. Besbeas, N. Isaac and E. B. Dennis

2020
- A general framework for modelling population abundance data
  Biometrics, **76**, 1, 281–292. https://doi.org/10.1111/biom.13120
  with P.T. Besbeas
- The score test for the two-sample occupancy model
  Australia & New Zealand Journal of Statistics, **62**, 95–115. https://doi: 10.1111/anzs.12288
  with N. Karavarsamis, G. Guillera-Arroita and R. M. Huggins

2019
- Exact inference for integrated population modelling
  Biometrics, DOI: 10.1111/biom.13045, **75**, 475–484.
  with P.T. Besbeas
- Trends and indicators for quantifying moth abundance and occupancy in Scotland
  Journal of Insect Conservation, DOI 10.1007/s10841-019-00135-z.
  with Emily Dennis, Tom Brereton, Richard Fox, Chris Shortall, Tom Prescott, and Simon Foster

- Functional data analysis of multi - species abundance and occupancy data sets
  Ecological Indicators, **104**, 156-165. https://doi.org/10.1016/j.ecolind.2019.04.070
  with E. B. Dennis, R. Fox, D.B. Roy and T. M. Brereton

2017
- Variance estimation for integrated population models
  AStA Advances in Statistical Analysis, **101**, 439–460.
  DOI 10.1007/s10182-017-0304-5
  with P.T. Besbeas
- Hidden Markov models for extended batch data
  Biometrics, **73**, 4, 1321–1331. DOI: 10.1111/biom.12701. Open Access.
  with L. Cowen, P.T. Besbeas and C. Schwarz.
- Using citizen science butterfly counts to predict species population trends
  Conservation Biology. DOI: 10.1111/cobi.12956. Open access
  with E.B. Dennis, T. M. Brereton, R. Fox, and D.B. Roy.
- Bringing it all together: multi-species Integrated Population Modelling of a breeding community
  JABES, **22**, 2, 140–160, Open Access.
  with J. J. Lahoz-Monfort, S.N. Freeman, M. P. Harris and S. Wanless.
- Efficient occupancy model-fitting for extensive citizen-science data
  PLoS ONE. Open Access at
  http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0174433
  with E.B. Dennis, S.N. Freeman, M.S. Ridout, T. M. Brereton, R. Fox, G. D. Powney and D.B. Roy.
- Urban indicators for UK butterflies
  Ecological Indicators, **76**, 184–193. Open access. Accompanied by press release.
  with E.B.Dennis, T. Brereton and D. B. Roy.

2016
- A new strategy for diagnostic model assessment in capture-recapture
  Applied Statistics, **66**, 815–831. DOI 10.1111/rssc.12197. Open access.
  with R.S. McCrea and O. Gimenez.
- Cost-efficient effort allocation for camera-trap occupancy surveys of territorial mammals
  Biological Conservation, **204** (Pt B), 350–359. DOI 10.1016/j.biocon.2016.10.019
  with N. Gálvez, G. Guillera-Arroita and Z. Davies.

- Bayesian analysis of Jolly-Seber type models; incorporating heterogeneity in arrival and departure
  Environmental and Ecological Statistics, **23**, 531–547, DOI 10.1007/s10651-016-0352-0
  with E. Matechou, G. Nicholls, J.A. Collazo, and J.E. Lyons.
  Open access at: http://link.springer.com/article/10.1007/s10651-016-0352-0
- Open models for removal data
  Annals of Applied Statistics, **10**, 3, 1572–1589.
  with E.Matechou, R.S. McCrea , D. Nash and R.A. Griffiths. Open Access.
- 50-Year Anniversary of Papers by Cormack, Jolly and Seber
  Statistical Science, **31**, 2, 141.
  with S. T. Buckland
* A generalised abundance index for seasonal invertebrates
  Biometrics, **72**, 4, 1305–1314. DOI: 10.1111/biom.12506.
  Open access at: http://onlinelibrary.wiley.com/doi/10.1111/biom.12506/abstract
  with E. B. Dennis, S. N. Freeman, D. B. Roy and T. Brereton
- Dynamic models for longitudinal butterfly data
  JABES, **21**,1, 1-21. Open Access.
  with E. B. Dennis, S. N. Freeman, D. B. Roy and T. Brereton

2015
- Computational aspects of N-mixture models
  Biometrics, **71**, 237–246. Open Access.
  with E. B. Dennis and M.S. Ridout

2014
- Statistical ecology comes of age
  Biology Letters, DOI: 10.1098/rsbl.2014.0698
  with O. Gimenez *et al.*
- A comparison of abundance estimates from extended batch-marking and Jolly-Seber type experiments
  Ecology and Evolution, **4**, 210–218. Open Access,
  with L.L.E. Cowen, P.T. Besbeas and C.J. Schwarz
- Does your species have memory? Analysing capture-recapture data with memory models
  Ecology and Evolution, **4**, 2124–2133. Open Access,
  with D.J. Cole, R. Choquet, O. Gimenez., McCrea, R.S. and Pradel, R.
- Parameter redundancy in capture-recapture-recovery models
  Statistical Methodology, **17**, 17–29.
  with B. Hubbard and D. J. Cole.
- Exploring the consequences of reducing survey effort for detecting individual and temporal variation in survival
  J. Appl. Ecology, **51**, 534–543.
  with J. J. Lahoz-Monfort, M. P. Harris, S.N. Freeman and S. Wanless.

	∗∗∗∗	Two-stage sequential Bayesian study design for species occupancy estimation

∗∗∗∗ Two-stage sequential Bayesian study design for species occupancy estimation
JABES, **19**, 278–291.
with G. Guillera-Arroita and M.S. Ridout.

• Diagnostic goodness-of-fit tests for joint recapture and recovery models
JABES, **19**, 338–356.
with R. S. McCrea and R. Pradel

• Goodness of fit of integrated population models using calibrated simulation
Methods in Ecology and Evolution, **5**, 1373–1382.
with P. T. Besbeas.

2013 • How closely do measures of mitochondrial DNA control region diversity reflect recent
trajectories of population decline in birds?
Conservation Genetics, **14**, 1291–1296.
with H. Jackson and J.J. Groombridge.

† Estimating age-specific survival when age is unknown:
open population capture-recapture models with age structure and heterogeneity.
Methods in Ecology and Evolution, **4**, 654–664.
with E. Matechou, S. Pledger, M. Efford and D.L.Thomson.

• Integrated analysis of capture-recapture-recovery data and counts of unmarked birds
at stop-over sites,
JABES, **18**, 1, 120–135.
with E. Matechou, S. Pledger, J.B. Collazo and J. E. Lyons.

• Breeding together: modelling synchrony in productivity in a seabird community,
Ecology, **94**, 1, 3–10. (Selected for front cover of issue).
with J.J. Lahoz-Monfort, M.P. Harris, F. Daunt, S. Wanless and S.N. Freeman.

• Age-dependent mixture models for recovery data on animals marked at unknown age,
Applied Statistics, **62**, 1, 101–113.
with R.S. McCrea and D.J. Cole.

• Ornithological data.
Encyclopedia of Environmetrics, 2nd edition,
A.-H. El-Shaarawi and W. Peigorsch (eds)., Wiley, Chichester, 1881–1886.
with A. Viallefont. DOI 10.1002/9780470057339 va0017.

2012 • Conditional modelling of ring-recovery data
Methods in Ecology and Evolution, **3**, 5, 823–831.
with R.S. McCrea, D. I. Brown and R.A. Robinson.

• Models for species-detection data collected along transects in the presence of
abundance-induced heterogeneity and clustering in the detection process,
Methods in Ecology and Evolution, **3**, 2, 358–367.
with G. Guillera-Arroita, M.S. Ridout and M. Linkie.

- Parameter redundancy in mark-recovery models,
  Biometrical Journal, **54**, 507–523
  with D.J. Cole, B, Hubbard and E.A. Catchpole.
- Kalman filter initialisation for integrated population modelling,
  Applied Statistics, **61**, 151–162, with P. Besbeas.
- A threshold model for heron productivity,
  JABES, **17**, 128–141, with P. Besbeas.
- Model comparison and assessment for multi-state capture-recapture models
  J. Ornithology, **152** (Suppl 2): S293–S303.
  With R.S. McCrea and T. Bregnballe.
- Estimating survival and transition rates from aggregate sightings of animals,
  J. Ornithology, **152** (Suppl 2): S381–S391.
  With A. Viallefont, R. McCrea and P. Besbeas.

2011 ∗∗ Multi-site mark-recapture model selection using score tests
  Biometrics, **67**, 234–241. With R. McCrea.

- Individual heterogeneity in recapture probability and survival estimates in cheetah,
  Ecological Modelling, **222**, 776–784. With N. Pettorelli, L. Oliver and S. N. Durant.
- Methods for exact perturbation analysis
  Methods in Ecology and Evolution, **2**, 3, 283–288.
  With D. Miller, M.S. Ridout, P. Carey and P. Rothery.
- A capture-recapture model for exploring multi-species synchrony in survival
  Methods in Ecology and Evolution, **2**, 1, 116–124.
  With J.J. Lahoz-Monfort, M.P. Harris, S. Wanless and S.N. Freeman.
- Kinetic models of guanidine hydrochloride-induced curing of the yeast [PSI$^+$] prion,
  J. Theor. Biol., **274**, 1-11. With K.J. Palmer and M.S. Ridout.
- Individual differences in reproductive costs examined using multi-state methods,
  J. Anim. Ecol., **80**, 456–465.
  With K. Moyes, T. Coulson, A. Donald, S.J. Morris, and T.H. Clutton-Brock.
- Species occupancy modelling for detection data collected along a transect,
  JABES, **16**, 301–317, With G. Guillera-Arroita, M.S. Ridout and M. Linkie.

2010 • The parametric structure of models,
  Mathematical Biosciences, **228**, 16–30.
  With D.J. Cole and D.M. Titterington.
- A note on determining parameter redundancy in age-dependent tag return models
  for estimating fishing mortality, natural mortality and selectivity,
  JABES, **15**, 4, 431–434. With D.J.Cole.

- Multi-site integrated population modelling
  JABES, **15**, 4, 539–561.
  With R.S.McCrea, O. Gimenez, P. Besbeas, T. Bregnballe, and J-D. Lebreton
- Parameter redundancy with covariates,
  Biometrika, **97**, 1002–1005. With D.J.Cole.
- Continuous covariates in mark-recapture-recovery analysis: A comparison of methods
  Biometrics, **66**, 4, 1256–1265. With S.J. Bonner and R.King.
- Design of occupancy studies with imperfect detection
  Methods in Ecology and Evolution, **1**, 2, 131–139.
  With G. Guillera-Arroita and M.S. Ridout.
- Expression of Neuregulin 4 splice variants in normal human tissues
  and prostate cancer and their effects on cell motility
  Endocrine-Related Cancer, **18**, 39–49.
  With N.V.L. Hayes, E. Blackburn, M.M. Boyle, G.A. Russell, T.M. Frost and W.J. Gullick.

2009
- The number and transmission of $[PSI^+]$ prion seeds (propagons) in the yeast
  Saccharomyces cerevisiae
  PLoS ONE, 4: e4670. doi:10.1371/journal.pone. 0004670.
  With L.J. Byrne, D.J. Cole, B.S. Cox, M.S. Ridout and M.F. Tuite.
- Exploring individual quality in a wild population of red deer
  J. Anim. Ecol., **78**, 2, 406–413. With K. Moyes, A. Morris, S.J. Morris,
  T.H. Clutton-Brock and T. Coulson.
- Estimating population size and hidden demographic parameters
  with state-space modelling.
  The American Naturalist, **173**, 6, 722–733.
  With G. Tavecchia, P.T. Besbeas and T. Coulson and T. H. Clutton-Brock.
- Estimating N: a robust approach to recapture heterogeneity.
  Modelling Demographic Processes in Marked Populations:
  Series: *Environmental and Ecological Statistics*, **3**, 1071–1082.
  Eds., D.L. Thomson, E.G. Cooch and M.J.Conroy.
  With M.S. Ridout.
- An integrated analysis of multisite recruitment, mark-recapture-recovery and multisite
  census data.
  Modelling Demographic Processes in Marked Populations:
  Series: *Environmental and Ecological Statistics*, **3**, 581–596.
  Eds., D.L. Thomson, E.G. Cooch and M.J.Conroy.
  With R.S. Borysiewicz, O. Gimenez, V. Hénaux, T. Begnballe and J.-D. Lebreton.

- Weak identifiability in models for mark-recapture-recovery data.
  Modelling Demographic Processes in Marked Populations:
  Series: *Environmental and Ecological Statistics*, **3**, 1057–1070.
  Eds., D.L. Thomson, E.G. Cooch and M.J.Conroy.
  With O. Gimenez and S.P. Brooks.
- WinBUGS for population ecologists: Bayesian modeling using Markov chain Monte Carlo.
  Modelling Demographic Processes in Marked Populations:
  Series: *Environmental and Ecological Statistics*, **3**, 885–918.
  Eds., D.L. Thomson, E.G. Cooch and M.J.Conroy.
  With O. Gimenez, S. Bonner, R. King, R.A. Parker, S.P.Brooks,
  L.E. Jamieson, V. Grosbois and L. Thomas.
- Completing the ecological jigsaw.
  Modelling Demographic Processes in Marked Populations:
  Series: *Environmental and Ecological Statistics*, **3**, 515–542.
  Eds., D.L. Thomson, E.G. Cooch and M.J.Conroy.
  With P. Besbeas and R. Borysiewicz.
- Standardising terminology and notation for the
  analysis of demographic processes in marked populations
  Modelling Demographic Processes in Marked Populations:
  Series: *Environmental and Ecological Statistics*, **3**, 1111–1119.
  Eds., D.L. Thomson, E.G. Cooch and M.J.Conroy.
  With D.L. Thomson, M.J. Conroy, D.R. Anderson, K.P. Burnham,
  E.G. Cooch, C.M. Francis, J.D. Lebreton, M.S. Lindberg, D. L. Otis and G.C White.
- Survival at multi-population scales using mark-recapture data
  Ecology, **90**, 10, 2922–2932. With V. Grosbois, M.P. Harris, T. Anker-Nilssen, R.H. McCleery, D.N. Shaw and O. Gimenez.

2008
- A new method for analysing discrete life-history data with missing covariate values.
  J. Roy. Statist. Soc., B., **70**, 2, 445–460.
  With E.A. Catchpole and G. Tavecchia.
- Improved estimation of the stable laws.
  Statistics and Computing, **18**, 219–231.
  With P. Besbeas.

- A new mixture model for recapture heterogeneity.
  Applied Statistics, **57** (4), 433–446.
  With M.S. Ridout. Paper selected by the Journal editors for presentation at the annual meeting of the Royal Statistical Society, Nottingham.

- Modelling cell generation times using the tempered stable distribution. *Applied Statistics*, **57** (4), 379–397.
  With K.J. Palmer and M.S. Ridout.

- Identifying and diagnosing population declines: A Bayesian assessment of lapwings in the UK.
  Applied Statistics, **57**, 609–632.
  With R. King, S.P. Brooks, C. Mazzetta and S.N. Freeman.

2007
- The role of cell division in elimination of the $[PSI^+]$ prion of yeast by Guanidine Hydrochloride.
  With L.J. Byrne, B.S. Cox, D.J. Cole, M.S. Ridout and M. F. Tuite.
  Proceedings of the National Academy of Sciences, **104**, 11688–11693.

- Identification and characterisation of novel spliced variants of NRG4 in prostate cancer.
  With N.V.L. Hayes, T.M. Frost, E. Blackburn, R. Graham, A, Baines, W.J. Gullick, M. Boyle, G. Russell and L.V. Smart.
  Clinical Cancer Research. **13**, 11, 3147–3155.

- Negative score test statistic.
  With K.S. Palmer and M.S. Ridout, **61**, 4, 285–288, *The American Statistician.*

- Population growth in Greater Snow Geese: a new modelling approach integrating demographic and census information.
  With G. Gauthier, P. Besbeas and J.-D. Lebreton.
  Ecology, **88**, 6, 1420–1429.

- Approximations for expected generation number.
  With D.J Cole, M.S. Ridout, L.J. Byrne and M.F. Tuite, *Biometrics*, **63**, 1023–1030.

- A note on simplifying likelihoods for site occupancy models.
  With S.N. Freeman and D. J. Revell, *Biometrics*, **63**, 618–621.

2006
- New approximations to the Malthusian parameter.
  With D.J. Cole, M.S. Ridout, L.J. Byrne and M.F. Tuite.
  Biometrics, **62**,1216–1223.

- Semiparametric regression in capture-recapture modelling.
  With O. Gimenez, C. Barbraud, C. Crainiceanu, and S. Jenouvrier.
  Biometrics. **62**, 691–698.

- Cumulative costs of reproduction in female red deer.
  With K. Moyes. T. Coulson, T.H. Clutton-Brock, A. Donald and S.J. Morris,
  Oikos, **115**, 241–252.
- Factors influencing Soay sheep survival: a Bayesian analysis.
  With R. King, S.P. Brooks and T. Coulson.
  Biometrics, **62**, 211–220.
- New methods for including covariates in models for the survival of wild animals.
  pp 50-61, In: IWSM2006. Proceedings of the 21st International
  Workshop on Statistical Modelling. ISBN 1-86220-180-3.

2005
- Models for strawberry inflorescence data.
  With D.J. Cole and M.S. Ridout. *JABES*, **10**, 4, 411–423
- Stimulus-response studies.
  pp 5217–5219, In: *Encyclopedia of Biostatistics* (2nd ed.)
  Eds. P. Armitage & T. Colton, Wiley, Chichester.
- The potential of integrated population modelling.
  With P.Besbeas and S.N.Freeman. *Australian & New Zealand J. Statistics*, **47**, 1, 35-48.
- Predictors of reproductive cost in Soay sheep.
  With G. Tavecchia, T.N. Coulson, J.M. Pemberton, J.C. Pilkington, F.M.D. Gulland
  and T. H.Clutton-Brock. *J. Anim. Ecol.*, **74**, 201–213.

2004
- Sexual dimorphism, survival and dispersal in red deer.
  With E.A. Catchpole, Y. Fan, T.N. Coulson and T.H. Clutton-Brock.
  JABES, **9**, 1, 1–26.
- A Bayesian approach to combining animal abundance and demographic data.
  With S.P.Brooks and R. King.
  Animal Biodiversity and Conservation, **27**, 515–529.
- Estimating the number of prions in yeast cells.
  With D.J. Cole, M.S. Ridout, L.J. Byrne and M.F. Tuite.
  Mathematical Medicine and Biology, **21**, 369-395.
- Efficient and robust estimation for the one-sided stable distribution of index 1/2.
  With P.Besbeas, *Statistics and Probability Letters*, **66**, 3, 251-257.
- Conditional methodology for individual case-history data. With
  E.A. Catchpole and T. Coulson. *Applied Statistics* , **53**, 1, 123-131.
- Methods for investigating parameter redundancy. With O. Gimenez, R. Choquet,
  E.A. Catchpole and A. Viallefont.
  Animal Biodiversity and Conservation, **27**, 561-572.

- Integrated squared error estimation of normal mixtures.
  with P. Besbeas, *Computational Statistics and Data Analysis*, **44**, 517-526.

2003
- Generalized linear mixed models for strawberry inflorescence data.
  With D.J.Cole and M.S.Ridout, *Statistical Modelling*, **3**, 273-290.
- Models for yeast prions. With M. S. Ridout and L. W. Ruddock.
  Biometrics, **59**, 562-569.
- The efficient integration of abundance and demographic data.
  with P. Besbeas and J-D. Lebreton. *Applied Statistics*, **52**,1,95–102.
- The analysis of ring-recovery data using random effects. With S.C. Barry.
  S.P. Brooks and E.A. Catchpole, *Biometrics*, **59**, 54–65.

2002
- Integrating mark-recapture-recovery and census data to estimate animal
  abundance and demographic parameters. With P. Besbeas, S.N. Freeman and
  E.A. Catchpole. *Biometrics*, **58**, 3, 540–547.
- Statistics for the Birds. *BBSRC Business* (3), 5–7.
- Ornithological data. with A. Viallefont. *Encyclopedia of Environmetrics*,
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- Solving problems in parameter redundancy using computer algebra.
  With E.A. Catchpole and A. Viallefont. *J.Appl.Stats,* **29**, 1-4, 625-636.
- Bayesian methods for analysing ringing data. With S.P. Brooks
  E.A. Catchpole and M.P. Harris. *J.Appl.Stats.* **29**, 1-4,187-206.

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- On the near-singularity of models for animal recovery data. With E.A. Catchpole
  and P.M. Kgosi. *Biometrics*, **57**, 3, 720-726.
- Integrated squared error estimation of Cauchy parameters. With P. Besbeas.
  Statistics and Probability Letters, **55**, 397-401.
- Age, sex, density, winter weather and population crashes in Soay sheep.
  With T.N. Coulson, E.A. Catchpole, S.D. Albon, B.T. Grenfell, J.M. Pemberton,
  M.J. Crawley and T.H. Clutton-Brock. *Science*, **292**, 5521, May 25, 1528–1531.
- New methodology for integrated monitoring of wild animal populations
  (with P. Besbeas and J-D. Lebreton).
  Bulletin of the 53rd Session of the ISI, Tome LIX, Book 1, pp 361-364.
- Deficiency of parameter-redundant models (with E.A. Catchpole).
  Biometrika, **88**, 2, 593-598.

- Abalone I: analysing mark-recapture-recovery data, incorporating growth and delayed recovery (with E.A. Catchpole, S.N. Freeman and W.J. Nash). *Biometrics*, **57**, 2, 469-477.

2000
- Animal survival methodology (with S.P. Brooks and E.A. Catchpole). Invited Paper proceedings XXth International Biometric Conference, San Francisco, 33-41.
- Factors influencing *Soay* sheep survival (with S.D. Albon, T.N. Coulson, S.N. Freeman and E.A. Catchpole). *Applied Statistics*, **49**, 4, 453-472.
- On the Bayesian analysis of ring-recovery data (with E.A. Catchpole, S.P. Brooks and S. Barry). *Biometrics*, **56**, 951-956.
- Bayesian animal survival estimation (with S.P. Brooks and E.A. Catchpole). *Statistical Science*, **15**, 4, 357–376.
- Response to Garren et al (with S.P. Brooks and M.S. Ridout). *Biometrics*, **56**, 950.

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- Modelling variability in the branching structure of strawberry inflorescenses. *Applied Statistics*, (with M.S. Ridout and D.R. Taylor), **48**, 2, 185-196.
- Empirical transform estimation for indexed stochastic models (with Q. Yao). *J.R.Statist.Soc., B*, **61**, 1, 127-141.
- Modelling the survival of British lapwings *Vanellus vanellus* using weather covariates (with E.A. Catchpole, S.N. Freeman and W.J. Peach). *Bird Study*, **46** (suppl.), 5-13.

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- Simulation. *Encyclopedia of Biostatistics*, Wiley, Chichester, **5**, 4110-4114.
- Antithetic variates. *Encyclopedia of Biostatistics*, Wiley, Chichester, **1**, 185-186.
- Quantal Response Model. *Encyclopedia of Biostatistics*, Wiley, Chichester, **5**, 3618-3625.
- Integrated recovery/recapture data analysis. *Biometrics*, **54**, 1, 33-46 (with E.A. Catchpole, S.N. Freeman and M.P. Harris).
- Estimation in parameter-redundant models (with E.A. Catchpole and S.N. Freeman). *Biometrika*, **85** , 462-468.

1997
- Score tests *The Ring*, **19**, 179-184 (with E.A. Catchpole and M. Boucher).
- Factors influencing the survival of Puffins (*Fratercula arctica*) at a North Sea colony over a 20-year period (with M.P. Harris, S.N. Freeman, C. Wernham and S. Wanless). *J.Avian Biology*, **28**, 287-295.
- Finite mixture models for proportions. *Biometrics*, **53**, 1097-1115 (with S.E. Pack, M.S. Ridout and S.P. Brooks).
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- A simulation study of the use of principal components in linear discriminant analysis. *J.Statist.Comp. & Simulation*, **55**, 353-366 (with I.T. Jolliffe and P.J. Young)
- Steps to parameter redundancy in age-dependent recovery models. *J.R.Statist.Soc., B*, **58**, 4,763-774 (with E.A. Catchpole and S.N. Freeman).
- MINITAB multivariate macros. *Applied Statistics*, **45**, 235-245 (with E.E. Bassett and S.P. Brooks)
- Model selection in ring-recovery models using score tests. *Biometrics*, **52**, 664-672 (with E.A. Catchpole).
- Developments in modelling avian survival. *Bull. ISI*, 50th Session. Book 3 of Proceedings, pp.1335-1348, (with S.N. Freeman and E.A. Catchpole).

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- Using a mixture model to predict the occurrence of diabetic retinopathy. *Statistics in Medicine*, **14**, 23, 2599-2608 (with P.J. Young, P. Sonksen, S. Till, C. Williams).
- Non-uniqueness and inversions in cluster analysis. *Applied Statistics*, **44**, 117-134 (with A. Ray).
- A simultaneous survival rate analysis of dead recovery and live recapture data. *Biometrics*, **51**, 4, 1418-1428, (with J.-D. Lebreton, R. Pradel and S.N. Freeman).
- Identifying influential observations in cluster analysis. *J.Applied Statistics*, **22**, 1, 61-80 (with I.T. Jolliffe and B. Jones)

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- Minitab macros for multivariate analysis. *Computational Statistics & Data Analysis* **17**, 1, 100-101 (with E.E. Bassett and S.P. Brooks).
- Boundary estimation in ring recovery models. *J.R.Statist.Soc. B*, **56**, 2, 385-391 (with E.A. Catchpole).
- Automatic starting point selection for function optimisation. *Statistics and Computing*, **4**, 173-177. (with S.P. Brooks).

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  •   On boundary estimation in ring recovery models and the effect of adding recapture information, pp.215-228. In: Marked Individuals in the Study of Bird Populations. (Eds. J-D. Lebreton and P.M. North), Birkhauser-Verlag, Basel (with E.A. Catchpole and S.N. Freeman).

1992   •   On the augmentation of ring-recovery data with field information. *J.Anim.Ecol.*, **61**, 649-657 (with E.A. Catchpole & S.N. Freeman).

  •   Principal component analysis and exploratory factor analysis. *Statistical Methods in Medical Research*, **1**, 69-95 (with I.T. Jolliffe).

  •   A modelling strategy for recovery data from birds ringed as nestlings. *Biometrics*, **48**, 1, 217-236 (with S.N. Freeman).

  •   A note on Wadley's problem with overdispersion. *Applied Statistics*, **41**, 2, 349-354 (with D.M. Smith).

1991   •   A note on Seber's model for ring-recovery data. *Biometrika*, **78**, 4, 917-919. (with E.A. Catchpole).

  •   Modelling digit preference in fecundability studies. *Biometrics*, **47**, 4, 1423-1434. (with M.S. Ridout).

1990   •   Studies in the analysis of ring-recovery data. *The Ring*, **13**, 271-287. (with S.N. Freeman).

  •   Aspects of the design and analysis of signal-detection experiments. *Br.J.Math. & Statist. Psychol.*, **42**, 7-14 (with C.C. Robertson).

  •   A mixture model for interval-censored time-to-response quantal assay data. *Biometrics*, **46**, 3, 749-758 (with S.E. Pack).

1989   •   Influence in cluster analysis. *Proceedings of Bull.I.S.I.*, Proceedings of 47th Session, Book 1 of Contributed Papers, pp.489-490 (with I.T. Jolliffe and B. Jones).

  •   QUAD: A computer package for the analysis of QUantal Assay Data. *Computer Methods and Programs in Biomedicine*, **30**, 265-278 (with S.E. Pack and D.M. Smith).

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  •   Extended models for Wadley's problem. *GLIM Newsletter* No. 18, 21-28 (with D.M. Smith)

  •   Observations on a stochastic model for quantal assay data (with A.F. Laurence). *Biometrics*, **45**, 3, 733-744.

  •   A model with first-year variation for ring-recovery data (with S.N. Freeman). *Biometrics*, **45**, 4, 1087-1102.

1988 • QUAD: A program for analysing quantal assay data. *Statistical Software Newsletter*, **13**, 3, 120 (with S.E. Pack).

• Stability and influence in cluster analysis. In: *Data Analysis and Informatics*, **5**, 507-514. Editors: E. Diday et al., North Holland (with B. Jones and I.T. Jolliffe).

• Extended models for quantal response data. *Statistica Neerlandica*, **42**, No. 4, 253-272.

• The influence of computers in statistics. pp. 187-206. In: *Computers in Mathematical Research*, N.M. Stephens and M.P. Thorne (eds.). The Institute of Mathematics and its Applications, Conference Series: Clarendon Press, Oxford.

• Influential observations in principal component analysis: a case study. *J.Appl.Statist.*, **15**, 1, 37-50 (with P. Pack and I.T. Jolliffe).

• Changes in species composition following recent shelterwood cutting in mixed eucalypt stands in the Wombat forest, Victoria. *Australian Forestry*, **51**, 2, 112-118 (with J.D. Kellas and R.G. Jarrett).

1987 • The occurrence and effects of *Armillaria luteobubalina* following partial cutting in mixed eucalypt stands in the wombat forest, Victoria. *Aust.For.Res.*, **17**, 263-276 (with J.D. Kellas, G.A. Kile and R.G. Jarrett).

• Modelling ant-insect interactions on flowerheads of *Helichrysum bracteatum. Biometrics*, **43**, 4, 767-782 (with E.A. Catchpole and D. O'Dowd).

• Selection of the transformation variable in the Laplace transform method of estimation. *Austr.J.Statist.*, **29**, 2, 113-127 (with A.F. Laurence).

1986 • Collaboration between University and Industry. In: *The Statistical Consultant in Action*, 134-152, edited by D.J. Hand and B.S. Everitt (with P.M. North and S.E. Pack).

• Comparison of cluster analyses of the English personal social services authorities. *J.R.Statist.Soc. A*, **48**, 253-270 (with I.T. Jolliffe and B. Jones).

• Linear and nonlinear modelling of ant-insect interaction data. *Proc.Pac.Stat.Cong.*, **85**, 349-352 (with E.A. Catchpole).

1985 • The cubic logistic model for quantal assay data. *Applied Statistics*, **34**, 2, 105-113.

• Density function approximation with particular reference to the distribution of overlap of circles. *Aust.J.Statistics*, **27**, 1, 36-43 (with R.G. Jarrett and S. Liow).

• A model for avian lung ventilation, and the effect of accelerating stimulation in Japanese quail embryos. *Biometrics*, **41**, 215-226 (with P.M. North).

• The general context of statistics in ornithology. In: *Statistics in Ornithology*, pp.1-9, B.J.T. Morgan and P.M. North (Eds.) (with P.M. North).

1984 • A critical evaluation of the patch-gap model. *Biometrics*, **40**, 1, 203-208 (with R.G. Jarrett).

1983	•	Observations on quantit analysis. *Biometrics*, **39**, 4, 879-886.

1983   •   Observations on quantit analysis. *Biometrics*, **39**, 4, 879-886.

       •   Building bridges between the academic and real worlds. pp.521-526. In: D.R. Grey et al. (Eds.) *Proceedings of the first international conference on teaching statistics.* Teaching Statistics Trust (with B. Jones and G.B. Wetherill).

       •   Illustrating three-dimensional figures. *B.I.A.S.* **10**, 2, 158-166.

       •   Comment on the paper by Fowlkes and Mallows. *J.Amer.Statist.Assoc.*, **78**, 383, 580-581 (with I.T. Jolliffe).

1982   ***   Modelling Polyspermy. *Biometrics*, **38**, 4, 885-898.

       •   Classifications of the elderly population. *Ageing and Society*, **2**, 3, 331-355 (with I.T. Jolliffe, B. Jones and M.R.J. Knapp).

       •   An approach to assessing the needs of the elderly. *Clearing House for Local Authority Social Services Research*, No. 2 , 2 April, 1-102, University of Birmingham (with I.T. Jolliffe and B. Jones).

       •   Cluster analysis of elderly populations: an aid to strategic planning. *Social Work Service*, **30**, 39-42 (with I.T. Jolliffe and B. Jones).

       •   Graphical Methods for illustrating data in the survey of English dialects. *Lore & Language*, **3**, 7, 14-29 (with D. Shaw).

       •   Utilising clusters – a case-study involving the elderly. *J.R.Statist.Soc. A*, **145**, 2, 224-236 (with I.T. Jolliffe and B. Jones)

       •   Parameter estimation via Laplace transform estimation. *Proceedings of COMPSTAT '82*, Part II, 195-196.

1981   •   Polyspermy: an example of mathematical modelling in biology. *Mathematical Spectrum*, **13**, 3, 84-89.

       •   Three applications of methods of cluster-analysis. *The Statistician*, **30**, 1, 1-19.

1980   •   On using cluster-analysis and multi-dimensional scaling for describing animal movements and bird territories. *Biometrical Journal*, **22**, 525-533 (with P.M. North).

       •   Cluster analysis of the elderly at home: a case study. In: *Data analysis and informatics*, pp. 745-757. Eds. E. Diday et al. (with I.T. Jolliffe and B. Jones).

       •   An approach to assessing the needs of the elderly. *Municipal Journal*, **88**, 1121-1122 (with I.T. Jolliffe and B. Jones).

       •   On finding the recurrence-time distributions of patterns in a sequence of Bernoulli trials. *Int.J.Math.Educ.Sci. & Technol.*, **11**, 256-268.

       •   Short-term memory models for choice behaviour. *J.Math.Psychol.*, **21**, 30-52 (with C.C. Robertson).

       •   On modelling microbial infections. *Biometrics*, **36**, 2, 317-321 (with S.A. Watts).

1979   •   Modelling heron survival using weather data. *Biometrics*, **35**, 3, 667-682 (with P.M. North)

      •   Four approaches to solving the linear birth-and-death (and similar) processes. *Int.J.Math.Educ.Sci. & Technol.*, **10**, 1, 51-64.

1978   •   A simple comparison of Newton-Raphson and the Method of Scoring. *Int.J.Math.Educ.Sci. & Technol.*, **9**, 3, 343-348.

      •   Some recent applications of the linear birth-and-death process in biology. *The Mathematical Scientist*, **3**, 103-116.

1977   •   A model for blue-green algae and gorillas. *J.Appl.Prob.*, **14**, 675-688 (with B. Leventhal).

      •   A comparison of iterative methods for obtaining maximum-likelihood estimates in contingency tables with a missing diagonal. *Biometrika*, **64**, 265-269 (with D.M. Titterington).

1976   •   Markov properties of sequences of behaviours. *Applied Statistics*, **25**, 31-36.

      •   Visualizing interaction and sequential data in animal behaviour: Theory and applications of cluster analysis methods. *Behaviour*, **LVI**, 1-43 (with M.J.A. Simpson, J.P. Hanby and J. Hall-Craggs).

      •   On an approximation made when analysing stochastic processes. *J.Appl.Prob.*, **13**, 672-683 (with J.P. Hinde)

      •   Stochastic models of grouping changes. *Advances in Applied Probability*, **8**, 30-57.

      •   On the recovery of physical dimensions of stimuli, using multidimensional scaling. *Journal of the Acoustical Society of America*, **69**, 186-189, (with M.M. Woodhead and J.C. Webster).

      •   The uniform distribution in signal detection theory. *Br.J.Math. & Statist.Psychol.*, **29**, 81-88.

1974   •   On Luce's Choice Axiom. *J.Math.Psychol.*, **11**, 107-123.

      •   On the distribution of inanimate marks over a linear birth-and-death process. *J.Appl.Prob.*, **11**, 423-436.

1973   •   Acoustic confusion of digits in memory and recognition. *Perception & Psychophysics*, **14**, 375-383 (with S.M. Chambers and J. Morton).

      •   Cluster analyses of two acoustic confusion matrices. *Perception & Psychophysics*, **13**, 13-24.

1972   •   Measurement of signal-detectability. *Nature*, **239**, 174.

      •   On subjective probability revision. *Br.J. Math. & Statist.Psychol.*, **25**, 292-304.

      •   Some aspects of ROC curve-fitting: normal and logistic models. *J.Math.Psychol.*, **9**, 128-139 (with D.R. Grey).

1971   •   On the solution of differential equations arising in some attachment models of virology. *J.Appl.Prob.*, **8**, 215-221.

Topics of supervised PhD students:

- Statistical methods in ornithology (P.M. North) (EPSRC)
- Compartment modelling (S.N. Watts) (EPSRC CASE: Shell: not submitted)
- Statistical applications in memory studies (C.C. Robertson)(EPSRC)
- Imputation and variance estimation in sample surveys (A.F. Laurence)(ESRC)
- The analysis of proportions from toxicological experiments (S.E. Pack) (EPSRC CASE: Wellcome)
- A statistical examination of British bird observatories data (K.V. Darby) (EPSRC CASE: British Trust for Ornithology)
- Statistical analysis of avian breeding and survival (S.N. Freeman)(EPSRC)
- Stochastic models for diabetes melitus (P.J. Young) (EPSRC CASE: St. Thomas' Hospital)
- An investigation of transform estimation methods (E. Campbell)(EPSRC Earmarked award)
- Stochastic models for insect movement (R. Alston) (EPSRC CASE: Rothamsted)
- Statistical models in the assessment of biological control of insect pests (P. Terrill) (EPSRC CASE: Horticulture Research International)
- Development and evaluation of a unifying home range model (J. Hardcastle) (EPSRC CASE: Institute of Terrestrial Ecology)
- Aspects of transform estimation (P.T. Besbeas)(EPSRC)
- Identifiability aspects of models for avian survival (P.M. Kgosi)
- Stochastic models of inflorescence structure in horticultural crops (D.J. Cole) (EPSRC CASE: Horticulture Research International) With M.S. Ridout.
- Stochastic modelling of wildlife populations (S. Eliott)(EPSRC project studentship: not completed)
- Statistical methods for the St. Thomas' diabetes data (Z. Mohd Khalid)
- Efficient modelling methods for mark-recapture-recovery data (D.J. Revell)(EPSRC Mathematics Special Award).
- Integrated population modelling for red deer (K. Moyes) (NERC EMS award)
- Stochastic modelling and analysis of Wetland Bird Survey Data. (T.M.Frost) (EPSRC CASE: Wildfowl and Wetlands Trust)
- The combined analysis of multi-site mark-recapture-recovery and census data (R. Borysiewicz)(NERC EMS award)
- Modelling the effects of weather and population processes on orchid population dynamics (D. Miller)(EPSRC CASE: Centre for Ecology and Hydrology) With M.S. Ridout.
- Climate models for prediction (D. Brown)(EPSRC Project studentship)
- Polymerisation models for prions (K. Palmer) (EPSRC, DTA) With M.S. Ridout.
- Demographic models for wild animal survival (E. Matechou)(Max Planck and Kent)
- Modelling individual heterogeneity in mark-recapture studies (L.Oliver) (EPSRC Project studentship)

- Statistical analysis and modelling of benthic data (B. Norris) (EPSRC CASE: Cefas) With M.S. Ridout.
- Integrated population models for colonial British seabirds (J. Lahoz-Monfort)
  (EPSRC Project studentship in collaboration with the *Centre for Ecology and Hydrology*)
- Modelling the spatio-temporal distribution of Sumatran tigers and their prey (G. Guillera-Arroita) (EPSRC Project studentship). With M.S. Ridout.
- Parameter redundancy (B. Hubbard) (EPSRC) With D. J. Cole
- Population genetics of invasive species: Characterising population genetic history and disease prevalence in the introduced population of ringneck parakeets (*Psittacula krameri*) in the UK. (H. Jackson) With J. Groombridge.
- Conservation of elusive carnivores: effects of fragmentation on the small felid guina or kodkod (*Leopardus guigna*) in the temperate forest of Southern Chile. (N. Galvez) With Z. Davies.
- Derivation of statistical methods for monitoring insect abundance (E. B. Dennis) (EPSRC studentship) With M.S. Ridout.
- Mixture models in capture-recapture (C. Yu) (EPSRC project studentship) With D.J. Cole.
- New methods of model-selection and assessment for complex capture-recapture models (A. Jeyam) With D.J. Cole, R. S. McCrea and R. Pradel
- Modelling butterfly abundance at varying spatial scales (J. Clarke) (ARIES CASE studentship, with Butterfly Conservation). With R. S. McCrea and E. B. Dennis.
- Deep learning methods for large citizen science data sets (C. De Bonis-Campbell) (with Butterfly Conservation). With D. Cole, E. B. Dennis, M Grsez and E. Matechou.

Supervised post-doctoral research associates:

P.T.Besbeas, R.S. Borysiewicz, D.J.Cole, E.B. Dennis, Y. Fan, S.N. Freeman, B.Jones, O. Gimenez, A.F. Laurence, R.S. McCrea, C. Mazzetta, P.Pack, S.E.Pack, G. Tavecchia.

TEACHING

Lecture Courses given at Kent: ∗∗ indicates a course devised entirely from scratch; ∗ indicates a course with 50% new material.

1.	Statistics	∗	(1st year)
2.	Statistics for biologists	∗	(2nd year)
3.	Statistics for Chemists		(2nd year)
4.	Statistics for ecologists	∗∗	(Diploma)
5.	Queuing Theory	∗∗	(2nd year)
6.	Probability & Inference		(2nd year)
7.	Nonparametric statistics	∗∗	(3rd year)
8.	Simulation	∗∗	(3rd year)
9.	Discrete data	∗∗	(3rd year)
10.	Time series		(3rd year)
11.	Stochastic processes	∗∗	(3rd year & M.Sc.)
12.	Probability theory	∗∗	(3rd year & M.Sc.)
13.	Probability models and statistical methods in psychology	∗∗	(3rd year & M.Sc.)
14.	Multivariate analysis	∗	(3rd year & M.Sc.)
15.	Analysis of quantal assay data	∗∗	(M.Sc.)
16.	Medical statistics – Survival analysis	∗∗	(M.Sc.)
17.	Applied Stochastic Modelling and Data Analysis	∗∗	(3rd year)
18.	Probability		(1st year)
19.	Computational Statistics	∗∗	(M.Sc.)
20.	Multidimensional scaling	∗∗	(Psychology M.Sc.)
21.	Ecological Statistics	∗∗	(M.Sc.)

Extra-mural Courses

Statistics at 'A'-Level; Multivariate Analysis (Kent, and TNO Delft); Time Series; Analysis of Quantal Response Data (Kent, Melbourne and Weesp, Holland); Discrete Data; Cluster Analysis; Ecological Statistics; Non-parametric Statistics (PSI and ASU Paris); Overdispersion; Applied Stochastic Modelling (RSS and Pfizer Central Research); The analysis of survival data from marked animal populations (Kent and St Andrews); Estimating Animal Abundance (St Andrews); Bayesian Computation for Population Ecology (Radolfzel, Dunedin and Cambridge); Statistical Methods for Ecology (Rostock); Bayesian Analysis for Population Ecology (St Andrews); Capture-recapture (Rothamsted and Piracicaba).

EXTERNAL

Editorial work

Editor   *JABES*: (2005–2007)

          Biometrics Shorter Communications: (1993–1996)

          Applied Statistics: (1985–1989)

Guest Editor   May issue of *Statistical Science*, 2016.

Associate Editor   *British Journal of Social Psychology* (1981–1983)

          IMA Journal of Mathematics Applied in Medicine and Biology (1984–2004)

          J.R. Statistical Soc. B (1984-1989)

          Biometrics Shorter Communications (1984-1992)

          J. Environmental and Ecological Statistics (1993–2003)

          Statistical Modelling(2000–2004)

          Biometrics(2002–2004)

Member, editorial board, Interdisciplinary Statistics, Chapman & Hall (1997–)

International Biometric Society

President/Vice President of the British and Irish Region, 2007/2011

President of the International Biometric Society, 1996/97

Vice-President of the International Biometric Society, 1995, 1998

Member of the Editorial Advisory Committee (1990-1996, 2005-2015); Member of the search committee for new *Biometrics* editor, 2012.

Member of the Council of the International Biometric Society (1988-1991)

Secretary of the British Region (1987-1991)

Royal Statistical Society

Chair of the Obituaries Commissioning Committee (2022-2025)

Member of the Obituaries Commissioning Committee (2018-2021)

Member of the Honours Committee (2006-2011)

Member of Council (1997-2002), and a Vice-President (1997-2001)

Member of President Nominating Committee (1999)

Spokesman on Biology (1997-1998)

Member of Programme Committee (1985-1989)

Member of Editorial Committee (1985-1989)

Member of the Research Section Committee (1983-1986)

Chairman of the Multivariate Study Group (1982-1984)

Member of the Multivariate Study Group Committee (1980-1982)

Member of the East Kent Local Group Committee (1979-1982)

Conference Organisation

Member of local organising committee for NCSE summer workshop in Kent, June, 2017.

Session Organiser: XXVIIth International Biometric Conference, Florence, Italy, July, 2014.

Session Organiser: XXVIth International Biometric Conference, Kobe, Japan, August, 2012.

Session Organiser: 58th Session of the ISI, Dublin, August 2011.

Chairman of Local Organising Committee: International Statistical Ecology Conference (ISEC), University of Kent, July, 2010.

Chairman of Scientific Program Committee: ISEC, University of St. Andrews, July, 2008.

Mamber of the Scientific Programme Committee: ISEC, Kent (2010), Oslo (2012), Montpellier (2014).

Session Organiser: XXVth International Biometric Conference, Brazil, December, 2010.

Session Organiser: XXIVth International Biometric Conference, Dublin, July, 2008.

Session Organiser: XXIIIth International Biometric Conference, Montreal, July, 2006.(two sessions)

Session Organiser: XXIIth International Biometric Conference, Cairns, July, 2004.(two sessions)

Session Organiser: XXth International Biometric Conference, San Francisco, July 2000.

Session Organiser: 51st Session of the ISI, Istanbul, August 1997.

Chairman of Scientific Program Committee: XVIIth International Biometric Conference, Hamilton, Ontario, 1994.

Session Organiser	EURING 2013 meeting: Georgia, USA, 2013.
	EURING 2009 meeting: Pescara, Italy, 2009.
	EURING 2000 meeting: Pt. Reyes, California, 2000.
	EURING 1994 meeting: Patuxent, Maryland, USA, 1994.
	EURING 1992 meeting: Montpellier, France, 1992
Joint Organiser:	Anglo-German Biometric meeting, Hamburg, 1991
	Anglo-Dutch Biometric workshop, Canterbury, 1990.

Member of the Scientific Program Committee, GENSTAT conference, Canterbury, 1993

Member of the Scientific Program Committee, British Biometric Conference, Sussex, 1993

Member of the Scientific Program Committee, XVth International Biometric Conference, Budapest, 1990

Member of the Scientific Program Committee, 4th European Meeting of the Psychometric Society and the Classification Societies, 1985

External Examiner

National University of Ireland, Galway (2009–2012)

Glasgow University (2002–2006)

Nottingham University (2000–2004)

Cambridge University (Diploma in Statistics, 1998; M.Phil, 1999–2000)

Cambridge University Tripos Part III (1999–2000)

Sheffield University (1997–1999)

St. Andrews University (1997–1999)

University of Bath (1994–1996)

LSE (M.Sc. 1991–1994);

University of Exeter (1991–1994);

Open University (MDST242, 1988–92);

University of Sussex (1988–1991);

University of Keele (1988–1990);

University of Reading (M.Sc. Biometry 1984–1987);

Wye College, University of London (1982–1985)

Christ Church College, Canterbury (1977–1980)

Stage III Examiner, Institute of Statisticians (1974–1986).

External examiner for research degrees:

Loughborough, Cardiff, Reading (3 Ph.D. + 1 D.Sc.), Bristol, Bradford (2), Nottingham, Glasgow, Imperial College, Dublin, St. Andrews (5), La Trobe (2), Sheffield (2), Exeter (3), Essex, Eindhoven, Cape Town, Montpellier (5 + 2 Habilitation), Paris, Wageningen, University of New South Wales (3), Toulouse (Habilitation), Rennes, Adelaide, Cambridge, Southampton, Bern, Nantes.

External Review

Member, advisory board of the Department of Mathematical Sciences at Essex, September, 2016–21.

Member, review committee, Mathematics, University of Otago, New Zealand, April, 2014.

REF external advisor, Universities of Cardiff and Newcastle, 2013; University of St Andrews, 2018

Member of EPSRC Mathematics Programme Grant and Prioritisation panels, September, 2012.

University of Glasgow, Statistics, February, 2010.

EPSRC Postdoctoral Fellowships Panel, December, 2009.

University of Sheffield, Statistics, November, 2009.

Chair, BioSS review committee, May, 2009.

EPSRC Basic Technology Transition Panel, 2009.

Member, review committee, Statistics, University of Victoria, New Zealand, September, 2008.

Chair, *Biometrics* editorial procedures Review Committee, 2004.

Member of NERC Environmental Mathematics and Statistics Panel, 2003–2005.

Member of Biometrics review panel, Plant Research International, Wageningen, The Netherlands, September 2001.

Chair of review committee of CMIS collaboration, CSIRO, Australia, November, 2001.

Chairman of the HEFCE Research Assessment Exercise Statistics Panel, 2001.

Member of BBSRC panel: BBSRC Initiative in Mathematics and Modelling of Agricultural and Food Systems, July 1999.

Quality assessor, Centre in Statistical Science and Industrial Mathematics, Queensland University of Technology, 1998.

Member of the BBSRC Rothamsted Experimental Station Visiting Group, February 1997 (Chair of Statistics Panel).

Member of EPSRC Mathematics College, January 1997–December 1999.

Member of EPSRC College (2000–2006)

Member of EPSRC SMST panel (May 1997 and March 1998).

Member of EPSRC Mathematics panel (May 1998).

Member of the HEFCE Research Assessment Exercise Statistics Panel, 1996

Member of the BBSRC Visiting Group, Biomathematics and Statistics, Scotland, January 1996.

Member of EPSRC M.Sc. course review panel, December 1994.

Reviewer of EPSRC Earmarked awards, November 1994.

Member of the AFRC Rothamsted Experimental Station Visiting Group, April, 1992.

Member of the SERC Post-doctoral Fellowship Panel, 1992.

Member of the AFRC Visiting Group, Scottish Agricultural Statistics Service, June 1991.

Member of the Civil Service Selection Board University Panel (1984-1997)

Other External Work

Reviewer: Mathematical Reviews (1974–1990)

Consultant, Pfizer Central Research, Sandwich (1980–2010)

Member of the International Statistical Institute Standing Committee for the promotion of statistics in the life sciences (1992–2012)

Committee member: British Classification Society (1992-1996)

RECENT GRANTS:

BBSRC/EPSRC Grant 96/E09745:New statistical methodology for evaluating animal
population dynamics: July 99-June 02, £121,744. Final report graded B.
EPSRC Grant GR/M76546: Stochastic modelling of wildlife populations:
October 99-September 02, £41,376. Final report graded Excellent.
BBSRC Grant 96/E14253: Historical data retrieval and imputation for Soay sheep.
19 Nov 00–19 July 01. £22,924 (with T. Clutton-Brock). Final report graded A.
BBSRC/EPSRC Grant 96/E18382: £305,980 (with M.F. Tuite and M.S. Ridout):
Stochastic models for yeast prion propagation. SMSAS component : £124,681. Final report graded A.
1 Jan 2003 - 31 Dec 2005.
Leverhulme Individual Research Fellowship : Statistics at the Life Sciences Interface.
£17,429. May 2004 – December 2004.
Marie Curie Fellowship for Olivier Gimenez. July 2005 –June 2006: 122,756 euros (with S.T. Buckland).
NERC EMS workshop, Estimating Animal Abundance: £19,152 (with D. Borchers).
NERC EMS workshop. Bayesian Computation for Population Ecology: £17,290
(with S.P. Brooks and R. King)
BBSRC Grant: BBS/B/01219: Linking ecological and evolutionary dynamics
(with T. Coulson): £149,915. Final report graded B.
EPSRC National Centre for Statistical Ecology: 2005–2010 (with S.P. Brooks and S.T. Buckland).
Over one million pounds. Kent component £485,904.
Royal Society International Joint Project with CNRS France: New Statistical Methodology for Wildlife
Population Demography. £11,446, 2010–2012.
BBSRC Grant BB/H012982/1: Modelling prion dynamics in the living yeast cell £598,289 (fec £736,611).
2010–2013. (with M. Tuite, M.S.Ridout and T. von der Haar).
SMSAS components: £255,057. (fec £318,821).
EPSRC/NERC grant EP/I000917/1 National Centre for Statistical Ecology - beyond 2010: 2010–2015.
Joint with several other universities; fec £1,171,828; Kent contribution £344,415.
NERC Development of standardised protocols for assessing reptile and amphibian populations;
NE/I008403/1: 2011–2013. CI; PI: Richard Griffiths (DICE). £83,963. (fec £104,954).
Pond Conservation: The Water Habitats Trust. Analytical and methodological development for
improved surveillance of the Great Crested Newt.
1/3/13-30/4/14. Amount £4491 (FEC = £6968). (with M.S. Ridout)
Defra: Development of models to predict the distribution of Great Crested Newts.
FEC=£2346; with M.S.Ridout.
Butterfly Conservation £50,000; with M.S. Ridout.
Leverhulme Emeritus Fellowship: Environmental modelling for moths and butterflies.
£15,920. August 2017–July 2019.
Science Faculty Impact Development Fund, University of Kent. £300. June–July, 2017.
University of Kent. £4,800, 20 December, 2018: New methods of analysing butterfly and moth Data.

RECENT TALKS:

- *Recent developments in statistical ecology.* General Applications Section, RSS General Applications Section, June, 2006.

- *New methods for including covariates in models for the survival of wild animals.* University of Galway, July, 2006.

- *A new approach to modelling case-history data with missing individual covariates* International Biometric Conference, Montreal, July, 2006.

- *Current problems in statistical ecology.* University of Exeter in Cornwall, November, 2006.

- *Individual variation in wild animals; A new way to perform exact perturbation analysis.* Max Planck, Rostock, December, 2006.

- *Intermediate Bayes*, University of Otago, Dunedin, January, 2007.

- *Completing the ecological jigsaw.* University of Otago, January, 2007.

- *Individual variation in wild animals; A new way to perform exact perturbation analysis.* CNRS, Chizé, May, 2007.

- *Score tests.* University of Kent, June, 2007.

- *New methods for including covariates in models for the survival of wild animals.* University of Reading, July, 2007.

- *And age shall not wither.* July 2007; Max Planck, Rostock, Germany.

- *Model identification, parameter redundancy and exhaustive summaries.* September 2007; RSS Environmental Statistics Section.

- *Incorporating age-dependence in models for mark-recapture-recovery data.* October, 2007; Rostock, Germany.

- *Modelling heterogeneity in the survival of wild animals*; November 2007, Kent.

- *Completing the ecological jigsaw.* November 2007; Reading

- *Determining parameter redundancy using symbolic algebra*; November 2007, Imperial College.

- *Recent developments in statistical ecology.* February, 2008; Bristol.

- *Estimating productivity.* February, 2008; Rostock, Germany.

- *New aspects of parameter redundancy.* April, 2008; RSS local group, Warwick.

- *Recent developments in statistical ecology.* July, 2008; Dublin.

- *Now you see them.* July, 2008, ISEC2008, St. Andrews

- *Estimating population size: dealing with heterogeneity.* September, 2008, RSS conference Nottingham. Paper selected by the editors of *Applied Statistics*.

- *New aspects of parameter redundancy.* October, 2008, University of Wellington, New Zealand.

- *Recent developments in statistical ecology.* October, 2008, University of Wellington, New Zealand.

- *Recent developments in statistical ecology.* October, 2008, University of Otago, Dunedin, New Zealand.

- *Determining the parametric structure of non-linear models.* February, 2009, Lancaster.

- *Determining the parametric structure of non-linear models.* April, 2009, Ghent, Belgium.

- *One size fits all?* September, 2009, Euring, Pescara, Italy.

- *Recent developments in statistical ecology*, April, 2010, Essex.

- *A threshold model for heron productivity.* July 2010, ISEC2010, Canterbury.

- *Presidential address*: British and Irish Region of the International Biometric Society, *Of mice and men: recent developments in capture-recapture*, Rothamsted, November, 2010.

- *Modelling the survival of adult birds of unknown age.* International Biometric Conference, Florianopolis, Brazil, December, 2010.

- *The use of mixtures in modelling the unknown arrival times of birds at stop-over sites.* International Biometric Conference, Florianopolis, Brazil, December, 2010.

- *Parameter redundancy.* May, 2011, Glasgow.

- *Covariates in capture-recapture*, May, 2011, Bordeaux.

- *Covariates in capture-recapture*, July, 2011, Bath.

- *Covariates in capture-recapture*, August, 2011, Dublin.

- *Score tests in capture recapture*, July, 2012, ISEC2012, Oslo.

- *Score tests in capture recapture*, August, 2012, Kobe, Japan.

- *Time-varying continuous individual covariates with multi-state missing data*, May, 2013, Euring, Athens, Georgia, USA.

- *Batch marking*, July, 2013, Lowestoft.

- *The Sinh-arcsinh distribution for bioassay*, July, 2013, St Andrews.

- *NCSE: the formation of a national research centre*, November, 2013, CNRS, Montpellier.

- *N-mixture models* July, 2014, International Biometric Conference, Florence.

- *New models for reptile and amphibian removal data* July, 2014, ISEC2014, Montpellier.

- *Three examples of ecological modelling* September, 2014, Piracicaba, Brazil.

- *Statistical ecology comes of age* October, 2014, Kent.

- *Modelling meerkats* June, 2015, Falmouth.

- *N-mixture models* September, 2015, RSS annual meeting, Exeter.

- *Canterbury Tales*, September, 2015, Memorial meeting for Donald Preece, Queen Mary.

- *Canterbury Tales*, November, 2015, Symposium in honour of Jean-Dominique Lebreton, CNRS Montpellier.

- *Integrated Population Modelling* March, 2016, DAGStat, Goettingen.

- *Modelling migrant butterfly species data*, March, 2016, Future-4-Butterflies congress,Wageningen.

- *Citizen Science: Trick or treat?* July, 2016, ISEC2016, Seattle.

- *A stochastic dynamic model for longitudinal butterfly data* June, 2017, Canterbury.

- Rob Kempton lecture: *Informing Bayesian modelling with lessons from classical statistics* November, 2017, Edinburgh

- *Functional data analysis of multi-species abundance and occupancy data sets* April, 2018, Southampton

- *Integrated population modelling of fuliginator beetle data with two temporal dynamic scales*, July, 2018: ISEC2018, St Andrews

- *Hidden Markov modelling for a multi-species indicator*, July, 2018: IBC2018, Barcelona.

- *Applications of hidden Markov models in ecology*, April, 2019, Swansea.

- *Forming multi-species indicators: behind the scenes*, April, 2019, Maynooth.

- *Occupancy models for large bodies of citizen science presence data*, June, 2019, Edinburgh.

- *Biodiversity matters*, September, 2020, keynote Barnett lecture, virtual Annual meeting of the Royal Statistical Society.

- *Biodiversity matters*, April, 2021, virtual seminar, University of Cape Town.

- *A new multispecies indicator*, June, 2021 vNCSE: virtual meeting of the NCSE.

- *Butterflies: using the power of statistics to increase understanding and enhance conservation*, June 2022, The Langton Grammar School for Boys, Canterbury.

- *Fitting occupancy models to very large occurrence datasets using hidden Markov models*, July 2022, ISEC2022, Cape Town (virtual).

- *A new model for fast analysis of large occupancy data sets*, April, 2023, Butterfly Conservation Symposium, Wyboston Lakes.

- *Bucking the trend*, June, 2023, Swansea.