

STEPHEN D. GREGORY

I am a conservation biologist. I use population modelling to understand and propose management actions to conserve animal populations under global change, from native Galapagos rodents to Malaysian orangutans. My research has included fisheries metapopulation modelling, spatial population dynamics and effects of connectivity, susceptibility of social species (particularly bats) to Allee effects, and effects of Allee effects on population extinction dynamics. Please see my [website](#) for more details.

Relevant positions [Cefas](#) Senior Statistician (statistics); [GWCT](#) Research Scientist (fisheries); [GWCT](#) postdoc (fisheries & statistics); [Adelaide Uni](#) postdoc (ecology & statistics); [Paris Sud XI](#) PhD (ecology & statistics); [Oxford Uni](#) MSc by research (ecology); [WildCRU](#) research assistant; [UNEP-WCMC](#) information officer; [Swansea Uni](#) BSc (zoology)

Professional appointments ICES Working Group for North Atlantic Salmon ([WGNAS](#)); ICES Workshop for North Atlantic Salmon At-Sea Mortality ([WKSALMON](#)); National Centre for Statistical Ecology ([NCSE](#)) member; Royal Statistical Society ([RSS](#)) fellow

Professional outputs 38 publications (including 7 last year); 54 pre-publication reviews for 28 journals; 20 major presentations

Supervision 1 PhD; 3 MSc; 2 BSc

Grants Over 65K in grants for my own research

Census techniques Electro-fishing and aquatic biodiversity surveys (GWCT); biodiversity inventory in New Caledonia (ESE); radio-tracking and vegetation surveys in Galapagos (WildCRU); nocturnal primate surveys in Kenya (IoZ); littoral surveys in San Diego (UCSD); reedbed project in UK (RSPB)

Statistics Extensive programming & statistics (GLM, GLMM, GAM) in [R](#) & various Bayesian languages, including [JAGS](#), [Stan](#) and [Julia](#)

Public relations UNEP-WCMC information officer; English Nature volunteer

Transferable skills Conversant in French, basic Spanish; advanced computer use; Windows and *nix operating systems

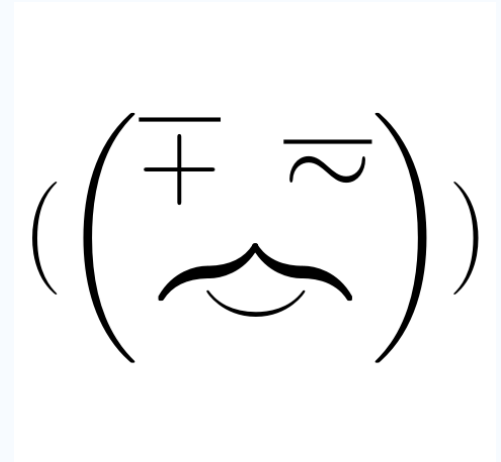
EDUCATION

2010
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2007

● **PhD., Ecology and Statistics**
Universit Paris-Sud XI

 France

- Thesis: *Detection of demographic Allee effects*
- Supervisor: Franck Courchamp

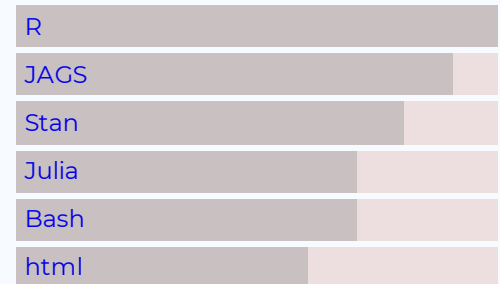


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CONTACT

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 stephen.d.gregory
 [stephen.d.gregory](https://twitter.com/stephendgregory)
 [@stephendgregory](https://twitter.com/stephendgregory)
 [stephendavidgregory](https://github.com/stephendavidgregory)
 [stephendavidgregory.github.io](https://github.com/stephendavidgregory)

LANGUAGE SKILLS



Made with the R package [pagedown](#).

Last updated on 2022-01-05.

2006
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2005



M.Res., Ecology

University of Oxford

📍 UK

- Thesis: *Interspecific overlap in resource and space use of the endemic Santiago Rice rat and the invasive Black rat on Santiago, Galapagos*
- Supervisor: David W. Macdonald

1999
|
1996



B.Sc., Zoology

University of Wales, Swansea

📍 UK

- Thesis: *The feeding behaviour of the Lesser Horseshoe Bat, Rhinolophus hipposideros*



RESEARCH EXPERIENCE

Current
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2021



Senior statistician

Centre for the Environment, Fisheries and Aquaculture Sciences

📍 UK

- Provision of robust and rapid statistical advice for proposed and existing research projects tackling contemporary issue in the aquatic environment around the UK and overseas. Requires extensive statistical knowledge, well-honed skills in organisation (e.g., IT skills, document management), planning (e.g., fieldwork, health and safety), time management (e.g., grant and publishing deadlines), communication (e.g., supervisor meetings, research presentations) and all the skills necessary to complete and publish high-impact peer-reviewed scientific research (statistical analysis, data and bibliography management and scientific writing).

2021
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2015



Fisheries scientist and statistician

Game and Wildlife Conservation Trust

📍 UK

- Involved developing, managing and completing projects with national and international government and non-government collaborators. Focused on population dynamics under environmental change and the mitigation of undesirable outcomes. Involved well-honed skills in organisation (e.g., IT skills, document management), planning (e.g., fieldwork, health and safety), time management (e.g., grant and publishing deadlines), communication (e.g., supervisor meetings, research presentations) and all the skills necessary to complete and publish high-impact peer-reviewed scientific research (statistical analysis, data and bibliography management and scientific writing).

2015
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2013



Postdoctoral fisheries research scientist

Game and Wildlife Conservation Trust

📍 UK

- Focused on Bayesian modelling of salmon population census using automatic fish counters and explaining long-term trends in UK and French juvenile salmon lengths from extrinsic factors, such as river flow and water temperature. Involves spatially- and temporally-explicit statistics, Bayesian MCMC, model selection, bibliography management and scientific writing.

2013
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2010



Postdoctoral fellow

Global Ecology Lab, University of Adelaide

📍 Australia

- Extending second generation species distribution models (those integrating spatially structured metapopulation demographic models and conventional species distribution models) to incorporate within range demographic variation caused by range limiting factors, such as species interactions and changing substrate. Involves spatially- and temporally-explicit statistics, Bayesian MCMC, model selection, bibliography management and scientific writing.

- 2010
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2007
- **PhD in Ecology & Statistics**
Ecologie, Systématique et Evolution, Université Paris-Sud XI 📍 France
 - Involved fitting population dynamical models to very large time series databases and huge spatio-temporal datasets. Skills learnt include: planning and organisation (Gantt & version control), teamwork (international collaborations), concise scientific writing (publishing & reports), data presentation techniques (boxplots, scatterplots, etc.), various statistical tests (univariate and multivariate GLM, GLMM and GAM, bootstrap, randomisation, PCA, AIC and derivatives), programming (mostly R, but also SQL and PHP), dynamic HTML markup and bibliography management.
- 2006
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2005
- **MSc by Research in Ecology**
Wildlife Conservation Research Centre, University of Oxford 📍 UK
 - Investigated overlap in resource and space use of sympatric native and invasive rats in their natural environment. Involved long and difficult fieldwork, night work, and spatial and statistical analysis using bootstrap and permutations.
- 2005
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2002
- **WildCRU and CDRS field assistant**
Charles Darwin Research Station, Galapagos Islands 📍 Galapagos Islands, Ecuador
 - Full time field assistant entailing long periods of remote work, radio telemetry, habitat surveying, live-trapping, blood, faeces and ectoparasite sampling, and Spanish.
- 2002
- **WildCRU volunteer**
Department of Zoology, University of Oxford 📍 UK
 - Part time volunteering on several projects from Grevys zebra censusing to organising a meeting to review UK preparations for RIO+10.
- 2001
- **Institute of Zoology & Oxford Brookes field assistant**
IoZ, London, and Colobus Conservation, Diani Beach 📍 Kenya
 - Nocturnal Galagos surveys for a study of *Colobus angolensis palliatus* metapopulation dynamics in Kenya requiring extensive orienteering and GPS use, working alone and Swahili.
- 2001
- **Volunteer Garden Watch Survey analysis**
Cambridge Wildlife Trust, Cambridge 📍 UK
 - Multivariate statistical analysis of over 500 public survey results.
- 2001
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2000
- **Assistant librarian & Information officer**
UNEP-WCMC, Cambridge 📍 UK
 - Entailed answering academic enquiries, providing research support to programmes and compiling databases of biodiversity data. Chaired Lunch-time Talks and managed a small team of office volunteers.
- 1996
- **Hadlow College of Agriculture and Horticulture course**
Hadlow College, Kent 📍 UK
 - Attended an agronomy course.
- 1995
- **English Nature volunteer**
English Nature, Kent 📍 UK
 - Work experience participating in biodiversity surveys, environmental management techniques and database management.

- 2020 ● **Grayling Research Trust & Piscatorial Society**
Awarded 24K for a Post-doc
- 2019 ● **Grayling Research Trust, Piscatorial Society & Wessex Water**
Awarded 12K for a Post-doc
- 2017 ● **Bournemouth University**
Awarded 25K for a PhD student
- 2016 ● **Grayling Research Trust**
Awarded 4K for a Post-doc
- 2011 ● **University of Adelaide**
Overseas Conference Scheme
- 2009 ● **British Ecological Society**
Travel grant
- 2001 ● **James Teacher Memorial Grant**
MRes research



TEACHING EXPERIENCE

- 2021 | 2020 ● **Josh Cook** 📍 University of Plymouth
MSc with Ben Ciotti and Martin Attrill
 - Effects of sea conditions and migration distance on population and individual characteristics of Atlantic salmon returning to European rivers
- 2021 | 2018 ● **Olivia Simmons** 📍 University of Bournemouth
PhD with Rob Britton and Pippa Gillingham
 - Predicting the implications of changes in migration phenology for the conservation of Atlantic salmon.
- 2019 | 2018 ● **Alexander Harris** 📍 Imperial College London
MSc with Guy Woodward
 - Size matters: Freshwater migration behaviour and loss rate of two Salmonids in a chalk stream.
- 2016 ● **Statistics in R course** 📍 Game and Wildlife Conservation Trust
2 x 1hr courses
 - Given to Game and Wildlife Conservation Trust Staff.
- 2015 | 2014 ● **Jacopo Cerri** 📍 Erasmus scheme
 - Factors influencing the overwinter survival of age 0 parr to age 1 smolts.

- 2015 ● **Elinor Parry**
 MSc with Sian Griffiths 📍 University of Wales, Cardiff
 · The effect of climate-driven low flow on Atlantic salmon (*Salmo salar*) redd distribution in a UK chalkstream.
- 2014 ● **Felicity Lowther**
 BSc with Paul Carling 📍 University of Southampton
 · A study of the effect of environmental factors on the size distribution of migrating Atlantic salmon smolts (*Salmo salar*) in the River Frome, Dorset.
- 2009 ● **Ecology in English course**
 1 x 45m course 📍 University of Paris XI
 · Given to BSc students.

SELECTED TALKS

- 2020 ● **Producing the next generation: Improving smolt output with examples from the R. Frome**
 Institute of Fisheries Management Festival of Fisheries 📍 Zoom
 · International Conference
 · Invited talk
- 2020 ● **What are we learning about the R. Frome salmon?**
 Game and Wildlife Conservation Trust Staff Conference 📍 Zoom
- 2019 ● **Likely Suspects Framework & GWCT research**
 Atlantic Salmon Trust and Game and Wildlife Conservation Trust 📍 Wareham, UK
- 2018 ● **Is bigger better? Longer Atlantic salmon smolts return as adults**
 International Workshop on Statistical Modelling 📍 University of Bristol, UK
 · International Conference
- 2017 ● **Length of Atlantic salmon smolt and their subsequent marine survival**
 Fisheries Society of the British Isles Annual Meeting 📍 University of Exeter, UK
 · International Conference
 · Talk and poster
- 2017 ● **Length of Atlantic salmon smolt and their subsequent marine survival**
 Atlantic Salmon Trust Headwaters to Headlands 📍 Berwick-upon-Tweed, UK
 · International Conference
 · In AST Blue Book
- 2016 ● **Length of Atlantic salmon smolt and their subsequent marine survival**
 ICES Annual Scientific Conference 📍 Riga, Latvia
 · International Conference

- 2016 ● **Wylde Grayling Study**
 Grayling Society Annual Symposium 📍 Wrexham, UK
 · Invited talk
- 2016 ● **Analyses of telemetry data from migrating fish**
 Institute of Fisheries Management 2nd Tagging and Telemetry Conference 📍 University of Edinburgh, UK
 · International Conference
- 2015 ● **Estimating returning salmon stocks**
 Wessex Conservation Forum 📍 University of Bournemouth, UK
 · Invited talk
- 2014 ● **Wylde Grayling Long-Term Study**
 Piscatorial Society Fly Day 📍 Salisbury, UK
 · Invited talk
- 2014 ● **Towards a 'standard' salmon stock monitoring programme**
 Institute of Fisheries Management Tagging and Telemetry Conference 📍 Leeds, UK
 · International Conference
- 2014 ● **Smolt counting with confidence (limits)**
 Scottish Fisheries Co-ordination Centre and IFM Smolt Monitoring Workshop 📍 Melrose, UK
 · Poster
- 2013 ● **Salmon Research at GWCT**
 Dorset Chalk Stream Club Christmas Meeting 📍 Dorset, UK
 · Public engagement
- 2011 ● **Orangutan persistence under global change - conservation needs**
 Society for Conservation Biology Annual Meeting 📍 Auckland, New Zealand
 · International Conference
- 2009 ● **Bat roost dynamics**
 Society for Conservation Biology Annual Meeting 📍 Beijing, China
 · International Conference
- 2009 ● **Bats and Allee effects**
 PhD Student Conference 📍 Universit Paris-Sud XI, France
 · Best talk prize
- 2009 ● **Demographic Allee effects: What are they and how common are they?**
 Student Conference for Conservation Science 📍 University of Cambridge, UK
 · International Conference

2007

● **A prickly case of coexistence? Or a blunt case of competition?**

Student Conference for Conservation Science

- International Conference
- Poster

📍 University of Cambridge, UK



SELECTED PUBLICATIONS

2022

● **Density dependence and environmental variability have stage-specific influences on European Grayling growth.**

Marsh, J. E., R. J. Cove, J. R. Britton, et al. *Oecologia*, p. accepted.

2021

● **Growth during the first summer at sea modulates sex-specific maturation schedule in Atlantic salmon**

Trehin, C., E. Rivot, L. Lamireau, et al. *Canadian Journal of Fisheries and Aquatic Sciences*, 78:659-669. DOI: 10.1139/cjfas-2020-0236.

· <https://doi.org/10.1139/cjfas-2020-0236>.

2021

● **Medium-term environmental changes impact age-specific survival in a salmonid population near its southern range limit**

Marsh, J. E., R. J. Cove, J. R. Britton, et al. *Freshwater Biology* 66.8, pp. 1530-1545. DOI: 10.1111/fwb.13736.

· <https://doi.org/10.1111/fwb.13736>.

2021

● **High summer macrophyte cover increases abundance, growth and feeding of juvenile Atlantic salmon**

Marsh, J. E., R. B. Lauridsen, S. D. Gregory, et al. *Ecological Applications*, p. in press. DOI: 10.1002/eap.2492.

· <https://doi.org/10.1002/eap.2492>.

2021

● **Biological and environmental influences on the migration phenology of Atlantic salmon *Salmo salar* smolts in a chalk stream in southern England**

Simmons, O. M., S. D. Gregory, P. K. Gillingham, et al. *Freshwater Biology* 66.8, pp. 1581-1594. DOI: 10.1111/fwb.13776.

· <https://doi.org/10.1111/fwb.13776>.

2021

● **Warm winters and cool springs negatively influence recruitment of Atlantic salmon (*Salmo salar* L.) in a southern England chalk stream**

Marsh, J. E., R. B. Lauridsen, W. D. Riley, et al. *Journal of Fish Biology* 99.3, pp. 1125-1129. ISSN: 1095-8649. DOI: 10.1111/fwb.13736.

· <https://doi.org/10.1111/fwb.13736>.

2021

● **Predicting how environmental conditions and smolt body length when entering the marine environment impact individual Atlantic salmon *Salmo salar* adult return rates**

Simmons, O. M., J. R. Britton, P. K. Gillingham, et al. *Journal of Fish Biology*, p. in press. DOI: 10.1111/jfb.14946.

· <https://doi.org/10.1111/jfb.14946>.

- 2020 ● **Can aspects of the discharge regime associated with juvenile Atlantic salmon (*Salmo salar* L.) and trout (*S. trutta* L.) densities be identified using historical monitoring data from five UK rivers?**
Gillson, J. P., D. L. Maxwell, S. D. Gregory, et al. *Fisheries Management and Ecology*, 27:567-579. DOI: 10.1111/fme.12456.
· <https://doi.org/10.1111/fme.12456>.
- 2020 ● **Environmental conditions modify density-dependent salmonid recruitment: Insights into the 2016 recruitment crash in Wales**
Gregory, S. D., V. E. Bewes, A. J. H. Davey, et al. *Freshwater Biology*, 65:2135-2153. DOI: 10.1111/fwb.13609.
· <https://doi.org/10.1111/fwb.13609>.
- 2020 ● **Above parr: Lowland river habitat characteristics associated with higher juvenile Atlantic salmon (*Salmo salar*) and brown trout (*S. trutta*) densities**
Marsh, J. E., R. B. Lauridsen, S. D. Gregory, et al. *Ecology of Freshwater Fish*, 29:542-556. DOI: 10.1111/eff.12529.
· <https://doi.org/10.1111/eff.12529>.
- 2020 ● **Influence of environmental and biological factors on the overwinter growth rate of Atlantic salmon *Salmo salar* parr in a UK chalk stream**
Simmons, O. M., J. R. Britton, P. K. Gillingham, et al. *Ecology of Freshwater Fish*, 29:665-678. DOI: 10.1111/eff.12542.
· <https://doi.org/10.1111/eff.12542>.
- 2019 ● **Atlantic salmon return rate increases with smolt length**
Gregory, S. D., A. T. Ibbotson, W. D. Riley, et al. *ICES Journal of Marine Science*, 76:1702-1712. DOI: 10.1093/icesjms/fsz066.
· <https://doi.org/10.1093/icesjms/fsz066>.
- 2019 ● **Working Group on North Atlantic Salmon (WGNAS).**
Ahlbeck-Bergendahl, I., J. April, H. Bardarson, et al.
· <https://doi.org/10.17895/ices.pub.4978>.
- 2018 ● **Allee Effects in Social Species**
Angulo, E., G. Luque, S. D. Gregory, et al. *Journal of Animal Ecology*, 87:47-58. DOI: 10.1111/1365-2656.12759.
· <https://doi.org/10.1111/1365-2656.12759>.
- 2018 ● **Roles of discharge and temperature in recruitment of a cold-water fish, the European grayling *Thymallus thymallus*, near its southern range limit**
Basic, T., J. R. Britton, R. J. Cove, et al. *Ecology Freshwater Fish*, 27:940-951. DOI: 10.1111/eff.12405.
· <https://doi.org/10.1111/eff.12405>.
- 2018 ● **Is bigger really better? Towards improved models for testing how Atlantic salmon *Salmo salar* smolt size affects marine survival**
Gregory, S. D., J. D. Armstrong, and J. R. Britton *Journal of Fish Biology*, 92:579-592. DOI: 10.1111/jfb.13550.
· <https://doi.org/10.1111/jfb.13550>.

- 2018 ● **Could bigger be better? Longer Atlantic salmon smolts seem more likely to return as adults**
Gregory, S. D. *IWSM 2018 Proceedings*. Vol. 1., :112-117.
- 2018 ● **The effects of flow on Atlantic salmon (*Salmo salar*) redd distribution in a UK chalk stream between 1980 and 2015**
Parry, E. S., S. D. Gregory, R. B. Lauridsen, et al. *Ecology Freshwater Fish*, 27:128-137. DOI: 10.1111/eff.12330.
· <https://doi.org/10.1111/eff.12330>.
- 2018 ● **Under what circumstances does the capture and tagging of wild Atlantic salmon *Salmo salar* smolts affect probability of return as adults?**
Riley, W. D., A. T. Ibbotson, S. D. Gregory, et al. *Journal of Fish Biology*, 93:477-489. DOI: 10.1111/jfb.13655.
· <https://doi.org/10.1111/jfb.13655>.
- 2017 ● **Patterns on a parr: Drivers of long-term salmon parr length in U.K. and French rivers depend on geographical scale**
Gregory, S. D., M. Nevoux, W. D. Riley, et al. *Freshwater Biology*, 62:1117-1129. DOI: 10.1111/fwb.12929.
· <https://doi.org/10.1111/fwb.12929>.
- 2017 ● **Migration behaviour and loss rate of trout smolts in the transitional zone between freshwater and saltwater**
Lauridsen, R. B., A. Moore, S. D. Gregory, et al. *Proceedings of the Second International Sea Trout Symposium*.
- 2014 ● **Forecasts of habitat suitability improve habitat corridor efficacy in rapidly changing environments**
Gregory, S. D., M. Ancrenaz, B. W. Brook, et al. *Diversity and Distributions*, 20:1044-1057. DOI: 10.1111/ddi.12208.
· <https://doi.org/10.1111/ddi.12208>.
- 2014 ● **Eradications of vertebrate pests in Australia: A review and guidelines for future best practice.**
Gregory, S. D., W. Henderson, E. Smee, et al.
- 2014 ● **Rapid deforestation threatens mid-elevational endemic birds but climate change is most important at higher elevations**
Harris, J. B. C., D. Dwi Putra, S. D. Gregory, et al. *Diversity and Distributions*, 20:773-785. DOI: 10.1111/ddi.12180.
· <https://doi.org/10.1111/ddi.12180>.
- 2014 ● **The influence of non-climate predictors at local and landscape resolutions depends on the autecology of the species**
Harris, D. B., S. D. Gregory, B. W. Brook, et al. *Austral Ecology*, 39:710-721. DOI: 10.1111/aec.12134.
· <https://doi.org/10.1111/aec.12134>.
- 2013 ● **Brave new green world – Consequences of a carbon economy for the conservation of Australian biodiversity**
Bradshaw, C. J., D. M. Bowman, N. R. Bond, et al. *Biological Conservation*, 161:71-90. DOI: 10.1016/j.biocon.2013.02.012.
· <https://doi.org/10.1016/j.biocon.2013.02.012>.

- 2013 ● **Scale dependency of metapopulation models used to predict climate change impacts on small mammals**
Haby, N. A., T. A. A. Prowse, S. D. Gregory, et al. *Ecography*, 36:832-841. DOI: 10.1111/j.1600-0587.2012.07749.x.
· <https://doi.org/10.1111/j.1600-0587.2012.07749.x>.
- 2012 ● **Applied Ecology**
Bertelsmeier, C., E. Bonnaud, S. D. Gregory, et al. *Encyclopedia of Theoretical Ecology*. Ed. by A. Hastings and L. Gross. University of California Press, California.
- 2012 ● **Long-term field data and climate-habitat models show that orangutan persistence depends on effective forest management and greenhouse gas mitigation**
Gregory, S. D., B. W. Brook, B. Goossens, et al. *PLoS ONE* 7, p. e43846. DOI: 10.1371/journal.pone.0043846.
· <https://doi.org/10.1371/journal.pone.0043846>.
- 2011 ● **Island prioritization for invasive rodent eradications with an emphasis on reinvasion risk**
Harris, D. B., S. D. Gregory, L. S. Bull, et al. *Biological Invasions*, 14:1251-1263. DOI: 10.1007/s10530-011-0153-1.
· <https://doi.org/10.1007/s10530-011-0153-1>.
- 2010 ● **Safety in numbers: extinction arising from predator-driven Allee effects**
Gregory, S. D. and F. Courchamp *Journal of Animal Ecology*, 79:511-514. DOI: 10.1111/j.1365-2656.2010.01676.x.
· <https://doi.org/10.1111/j.1365-2656.2010.01676.x>.
- 2010 ● **Limited evidence for the demographic Allee effect from numerous species across taxa**
Gregory, S. D., C. J. Bradshaw, B. W. Brook, et al. *Ecology*, 91:2151-2161. DOI: 10.1890/09-1128.1.
· <https://doi.org/10.1890/09-1128.1>.
- 2010 ● **Bats and Allee effects: When social behaviours go batty**
Gregory, S. D. and G. Jones *Biologist*, 57:195-205.
- 2010 ● **Demographic Allee effects: empirical evidence and detection.**
Gregory, S. D.
- 2009 ● **Dangerously few liaisons: a review of mate-finding Allee effects**
Gascoigne, J., L. Berec, S. D. Gregory, et al. *Population Ecology*, 51:355-372. DOI: 10.1007/s10144-009-0146-4.
· <https://doi.org/10.1007/s10144-009-0146-4>.
- 2009 ● **Prickly coexistence or blunt competition? *Opuntia* refugia in an invaded rodent community**
Gregory, S. D. and D. W. Macdonald *Oecologia*, 159:225-236. DOI: 10.1007/s00442-008-1196-6.
· <https://doi.org/10.1007/s00442-008-1196-6>.
- 2006 ● **Interspecific overlap in resource and space use of the endemic Santiago Rice rat and the invasive Black rat on Santiago, Galpagos.**
Gregory, S. D.
- 2006 ● **Space invaders? A search for patterns underlying the coexistence of alien black rats and Galapagos rice rats**
Harris, D. B., S. D. Gregory, and D. W. Macdonald *Oecologia*, 149:276-288. DOI: 10.1007/s00442-006-0447-7.
· <https://doi.org/10.1007/s00442-006-0447-7>.