

Curriculum vitae: Tom Tregenza

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Qualifications and career history

Honours degree: BSc Hons Zoology, (2:1). University of Bristol, 1988-1991.

Honours project: Mate choice in the freshwater amphipod, *Gammarus*.

PhD: 'On the ideal free distribution', University of Liverpool, 1991-1994:

Theoretical work developing new models and examining the explicit predictions of existing models. Experimental work investigating the predictions and assumptions of interference and unequal competitor ideal free distribution models using parasitoid wasps and cichlid fish. Supervised by G.A. Parker and D.J.Thompson.

NERC postdoctoral researcher: University of Leeds, 1994-1997. Testing competing hypotheses for the origins of reproductive isolation in the meadow grasshopper, *Chorthippus parallelus*. With R.K. Butlin.

Royal Society travelling fellow: University of Melbourne, 1997-1998. Chemical communication and co-evolution between Lycaenid butterflies and ants.

NERC postdoctoral fellow: University of Leeds, 1998-2001. Genetic benefits of multiple mates - Examining the evolution of polyandry and genetic benefits to polyandrous females.

Current position and research interests

Royal Society University Research Fellow: 2001 – 2009 (extension awarded)

Genetic benefits of multiple mates - Examining the evolution of polyandry and genetic benefits to polyandrous females, particularly in relation to genetic compatibility between mates. Predominantly empirical approach using insect model systems, including the field cricket *Gryllus bimaculatus* and the flour beetle *Tribolium castaneum*.

Speciation - Using insect model systems to examine patterns of divergence and pre- and post-mating isolation between populations of the same species. Collaborative work with R.K. Butlin (Sheffield).

Sexual selection - Condition dependence and immunity; heritability of sexually selected traits and co-inheritance of female choice and male traits,. Collaborative work with N. Wedell and D.J. Hosken (University of Exeter in Cornwall), Leigh Simmons (University of Western Australia) and Marlene Zuk (University of California).

Sexual conflict – Costs of matings to females and male adaptations to increase fertilisation success studied in insect model systems including bruchid beetles.

Behavioural plasticity in cephalopods – Newly discovered behaviours in cuttlefish and octopuses may throw light on mating strategies and the evolution of mimicry. Collaborative work with M. Norman (Melbourne) and J. Finn (Hobart).

Grants and Awards (excluding previous fellowships)

Runner up in British Association Young Science Writer competition, 1991.

Association for the Study of Animal Behaviour, Outstanding New Investigator Prize, 2002.

Royal Society, Short visit grant: 'Polyandry as a defence against costs of inbreeding in the field cricket *Teleogryllus oceanicus*' £1530. PI. Jan-Feb 2002.

Awards from NERC (Sheffield Molecular Genetics Facility) to develop microsatellite markers for crickets, and subsequently to use these experimentally. 2001-2003. PI.

Association for the Study of Animal Behaviour grant: 'A new apparatus for measuring phonotaxis in insects' £4858. November 2003. PI.

Leverhulme Trust research grant: 'Is multiple mating a female strategy to avoid inbreeding?' £104,423. October 2004-2007. PI.

Royal Society, funding for discussion meeting: 'Sexual conflict, a new paradigm?' Access to facilities and approx £8000 funding. May 2005. PI.

National Centre for Ecological Analysis and Synthesis (NCEAS) working group: 'A quantitative exploration of the role of publication-related biases in ecology' \$44,706. May 2005-June 2008. PI.

Leverhulme Trust research grant: 'Parasitic bacteria, sexual selection and population dynamics?' £101,151. October 2005-2008. Co-PI.

European Union European Social Fund Grant from Research and Development Framework fund £67,853 May 2005-June 2007. PI.

Australian Research Council grant: *Evolution of insect genitalia: phallic reversal in Australian praying mantids* £110,000. Co-PI. January 2006- 2009.

Royal Society, University Research Fellowship: 'Multiple mates, genetic compatibility and sexual conflict' £129,829 Extended October 2006-2009. PI.

NERC standard grant: *Sexual conflict coevolution - population size, divergence and the emergence of new variation* £411,228. PI. December 2006-2009.

NERC standard grant: *Natural and Sexual selection in a wild insect population* £431,000. PI. November 2007-2010.

Royal Society, Short visit grant: 'Utilising new monitoring techniques to understand signalling in crickets' £3790. PI. Dec 2007- Feb 2008.

Teaching experience

Demonstrated in numerous undergraduate practicals and field courses in the UK and abroad, on evolutionary biology, ecology and statistics.

1st year undergraduate course on Evolution (10 lectures, 250 students), all lectures written from scratch, (handouts available). Set exams.

2nd year undergraduate course on Behavioural Ecology (140 students), 2 lectures.

MSc and PhD courses on data analysis and experimental design.

MSc field course in Kenya - one of two members of staff running course.

I have supervised two successful PhD graduates working on sexual selection, polyandry and sexual conflict in insect model systems. I am main supervisor of 2 current PhD students and joint supervisor of a 3rd. I have supervised numerous undergraduate honours projects and MSc research projects.

Other relevant experience

Editorial board member for Public Library of Science journal PLoS one 2006-

Associate editor for *Evolution* 2003-2006

Consulting editor for *Animal Behaviour* 2003-2006

Edited an issue of *Philosophical Transactions of the Royal Society B* 2005

Member of Council of *European Society for Evolutionary Biology* 2005-

Member of *Royal Society Soirées* committee 2006-

Member of *Royal Society* summer grants committee 2004

Presented talks and posters at numerous international conferences. **Invited speaker to:** European society for evolutionary biology conference, Krakow, Poland, 2005; Finnish graduate school of evolutionary ecology, Oulanka, Finland 2002; ASAB Easter conference, Bristol, 2002; International entomology congress, Foz do Iguacu, Brazil, 2000; European Society for Evolutionary Biology conference, Arnhem, Netherlands, 1997; International entomology congress, Firenze, Italy, 1996.

Invited seminars at Universities: Bonn, Bristol (x2), Cambridge, Edinburgh, Harvard, Helsinki, Leeds, Lausanne, Liverpool, Melbourne, Newcastle, Nottingham, Queen Mary, Reading, Sheffield (x2), Stirling, Seewiesen, Toronto, Tuebingen, University College London, Umeå, Uppsala, Vienna and Zurich.

Referee for: *Am. Nat.*, *Anim. Behav.*, *Behav. Ecol.*, *Behav. Ecol. Sociobiol.*, *Biol. J. Linn. Soc.*, *Biol. Reprod.*, *Ecol. Ent.*, *Ecol. Let.*, *Ethology*, *Ent. Exp. Appl.*, *Evolution*, *Evol. Ecol.*, *Evol. Ecol. Res.*, *Genetica*, *Heredity*, *J. Anim. Ecol.*, *J. Evol. Biol.*, *J. Ins. Behav.*, *J. Zool.*, *Nature*, *Naturwissenschaften*, *Oikos*, *Proc. Roy. Soc. B.*, *Science*, *Trends Ecol. Evol.*, *BBSRC*, *NERC*, *The Leverhulme Trust*, *DFG (The German Research Foundation)* and *The Swiss National Science Foundation*.

External examiner for PhD theses in Australia (1), Finland (3) and the UK (3).

Co-organiser of Royal Society Discussion meeting: *Sexual conflict: a new paradigm?* London 2005.

Sole organiser of Association for the Study of Animal Behaviour PhD student workshop, Leeds 2003. Main organiser ASAB Easter Meeting, CEC Cornwall, 2007.

Sole organiser of Northern Yorkshire universities evolutionary ecology meeting 2001.

Member of organising committee and designer for European Population Genetics Group Meeting 2002, and European Society for the Study of Evolution Conference 2003.

Elected postgraduate representative on staff council, Liverpool 1993-94 and Postdoctoral representative to staff council and research sub-committee Leeds 1997.

Expertise in: Gas chromatography, automated sound and video recording and analysis, insect rearing, statistical data analysis and manipulation, pointing out the shortcomings in other people's work, whilst glossing over those in my own.

All Refereed Publications

- Edvardsson, M. Rodríguez-Muñoz, R. Tregenza, T. 2008 No evidence that female *Callosobruchus maculatus* use remating to reduce costs of inbreeding ***Anim. Behav. In Press.***
- Smallegange, I.M. Tregenza, T. 2008 Local competition between foraging relatives: growth and survival of bruchid beetle larvae ***J. Ins. Behav. In Press.***
- Wright, L.I. Tregenza, T. Hosken, D.J. 2008. Inbreeding, inbreeding depression and extinction. ***Cons. Gen. In Press.***
- Rodríguez-Muñoz, R. Ojanguren, A.F. Tregenza, T. 2008 Comment on "International Conservation Policy Delivers Benefits for Birds in Europe". ***Science* 319.** 1042b
- Pincheira-Donoso, D. Hodgson D. J. Tregenza, T. 2008 The evolution of body size under environmental gradients in ectotherms: why should Bergmann's rule apply to lizards? ***BMC Evol. Biol.* 8,** 68
- Pincheira-Donoso, D. Hodgson D. J. Tregenza, T. 2008 Comparative evidence for strong phylogenetic inertia in precloacal signalling glands in a species-rich lizard clade ***Evol. Ecol. Res.* 10,** 11-28
- Budden, A.E. Tregenza, T, Aarssen, W. Koricheva, J.K. Leimu, R. Lortie, C. J. 2008 Double-blind review favours increased representation of female authors. ***Trends in Ecol. Evol.* 23,** 4-6
- Cornell, S. Tregenza, T. 2007 A new theory for the evolution of polyandry as a means of inbreeding avoidance. ***Proc. Roy. Soc. B* 274,** 2873-2879
- Pincheira-Donoso, D. Tregenza, T. Hodgson D. J. 2007 Body size evolution in South American *Liolaemus* lizards of the *boulengeri* clade: A contrasting reassessment. ***J. Evol. Biol.* 20,** 2067-2071.
- Rodríguez-Muñoz, R. Bretman, A. Hadfield, J.D. Tregenza, T. 2007 Sexual selection in the cricket *Gryllus bimaculatus*: No good genes? ***Genetica* 132,** 287-294
- Lortie, C.J. Aarssen, L.W. Budden, A.E. Koricheva, J.K. Leimu, R. Tregenza, T. 2007. Publication bias and merit in ecology ***Oikos* 116,** 1247-1253
- Rodríguez-Muñoz, R. Mirol, P.M. Segelbacher, G. Fernández, A. Tregenza, T. 2007 Genetic differentiation of an endangered capercaillie (*Tetrao urogallus*) population at the Southern edge of the species range ***Cons. Gen.* 8,** 659-670.
- Norman, M & Tregenza, T 2007 Mimicry as deceptive resemblance: beyond the one-trick ponies. 441-453 In: ***Imitation and Social Learning in Robots, Humans and Animals: Behavioural, Social and Communicative Dimensions.*** Edited by K. Dautenhahn and C.L. Nehaniv, Cambridge University Press. Cambridge.
- Simmons, L.W. Wedell, N. Beveridge, M. Tregenza, T. 2006 Post-copulatory inbreeding avoidance by female crickets only revealed by molecular markers. ***Mol. Ecol.* 15,** 3817-3824.
- Bretman A. Rodríguez-Muñoz, R. Tregenza, T. 2006 Male dominance determines female egg laying rate in crickets. ***Biol. Lett.* 2,** 409-411.
- Tregenza, T. Simmons, L.W. Wedell, N. Zuk, M. 2006 Female preference for male courtship song and its role as a signal of immune function and condition. ***Anim. Behav.* 72,** 809-118.
- Wedell, N. Kvarnemo, L. Lessells, C.M. Tregenza, T. 2006 Sexual conflict and life histories. ***Anim. Behav.* 71.** 999-1011.

- Tregenza, T. Wedell, N. Chapman, T.C. 2006 Sexual conflict - a new paradigm? *Phil. Trans. Roy. Soc. B* **361**. 229-234.
- Butlin, R. K. & Tregenza, T. 2005 The way the world might be. *J. Evol. Biol.* **18**. 1205-1208.
- Bretman A. & Tregenza, T. 2005 Measuring polyandry in wild populations: a case study using promiscuous crickets. *Mol. Ecol.* **14**. 2169-2179.
- Edvardsson, M. & Tregenza, T. 2005 Why do male *Callosobruchus maculatus* harm their mates? *Behav. Ecol.* **16**. 788-793.
- Attia, F.A. & Tregenza, T. 2004 Divergence revealed by population crosses in the red flour beetle *Tribolium castaneum*. *Evol. Ecol. Res.* **6**. 927-935.
- Tomkins, J.L. Radwan, J. Kotiaho, J.S. Tregenza, T. 2004 Genic capture and resolving the lek paradox. *Trends in Ecol. Evol.* **19**. 323-328.
- Bretman A. Wedell, N. Tregenza, T. 2004 Molecular evidence of post-copulatory inbreeding avoidance in the field cricket *Gryllus bimaculatus*. *Proc. Roy. Soc. B* **271**. 159-164.
- Hosken, D.J. Garner, T.W.J. Tregenza, T. Wedell, N., Ward, P.I. 2003 Superior sperm competitors sire higher quality young *Proc. Roy. Soc. B* **270**. 1933-1938.
- Tregenza, T., Wedell, N. Hosken, D.J., Ward, P.I. 2003 Maternal effects on offspring depend on female mating pattern and offspring environment in yellow dung flies. *Evolution* **57**. 297-304.
- Dawson, D.A. Bretman A.J. Tregenza, T. 2003 Microsatellite loci for the field cricket, *Gryllus bimaculatus* and their cross-utility in other species of Orthoptera. *Mol. Ecol. Notes* **3**. 191-195.
- Buckley, S.H. Tregenza, T. Butlin, R.K. 2003 Transitions in cuticular composition across a hybrid zone – historical accident or environmental adaptation? *Biol. J. Linn. Soc.* **78**. 193-201.
- Tregenza, T. Pritchard, V.L. Butlin, R.K. 2002 The origins of postmating reproductive isolation: testing hypotheses in the grasshopper *Chorthippus parallelus*. *Pop. Ecol.* **44**. 137-144.
- Ward, P.I. Wedell, N. Hosken, D.J. Tregenza, T. 2002 Measuring the sperm competition successes of field males. *Ecol. Ent.* **27**. 763-765.
- Norman, M.D. Finn, J. Paul, D. Tregenza, T. 2002 Extreme sexual size dimorphism. *N. Z. J. Fresh. Mar. Biol.* **36**. 733-736.
- Tregenza, T. 2002 Divergence and reproductive isolation in the early stages of speciation. *Genetica* **116**. 291-300.
- Fraser, A.M. Tregenza, T. Wedell, N. Elgar, M.A. Pierce, N.E. 2002 Oviposition preference and geographic specialization by the myrmecophilous butterfly *Jalmenus evagoras* (Lepidoptera: Lycaenidae) in response to attendant ants. *J. Evol. Biol.* **15**. 861-870.
- Tregenza, T. 2002 Gender bias in the refereeing process? *Trends in Ecol. Evol.* **17**. 349-350.
- Tregenza, T. & Wedell, N. 2002 Polyandrous females avoid costs of inbreeding. *Nature* **415**. 71-73.
- Norman, M.D. Finn, J. Tregenza, T. 2001 Dynamic mimicry in an Indo-Malayan octopus. *Proc. Roy. Soc. B* **268**. 1755-1758.

- Panhuis, T.M. Butlin, R.K. Zuk, M. Tregenza, T. 2001 Sexual selection and speciation ***Trends in Ecol. Evol.* 16.** 364-371.
- Tregenza, T. Pritchard, V.L. Butlin, R.K. 2000 The origins of premating reproductive isolation: testing hypotheses in the grasshopper *Chorthippus parallelus*. ***Evolution* 54.** 1687-1698.
- Tregenza, T. Butlin, R.K. Wedell, N. 2000 Speciation and sexual conflict. ***Nature* 407.** 149-150.
- Bridle, J.R. Jiggins, C. Tregenza, T. 2000 Reply to Payne et al. ***Trends in Ecol. Evol.* 15.** 420.
- Tregenza, T. & Wedell, N. 2000 Genetic compatibility, mate choice and patterns of parentage. ***Mol. Ecol.* 9.** 1013-1027.
- Suvanto, L. Liimatainen, J.O. Tregenza, T. Hoikkala, A. 2000 Courtship signals and mate choice of the flies of inbred *Drosophila montana* strains. ***J. Evol. Biol.* 13.** 583-592.
- Tregenza, T. Pritchard, V.L. Butlin, R.K. 2000 Patterns of trait divergence between populations of the Meadow Grasshopper, *Chorthippus parallelus*. ***Evolution* 54.** 574-585.
- Tregenza, T. Buckley, S.H. Pritchard, V.L. Butlin, R.K. 2000 Inter- and intrapopulation effects of sex and age on epicuticular composition of meadow grasshopper, *Chorthippus parallelus*. ***J. Chem. Ecol.* 26.** 257-278.
- Tregenza, T. 2000 Evolutionarily dynamic sperm. ***Trends in Ecol. Evol.* 15.** 85-86.
- Norman, M.D. Finn, J. Tregenza, T. 1999 Female impersonation as an alternative reproductive strategy in giant cuttlefish. ***Proc. Roy. Soc. B.* 266.** 1347-1349.
- Wedell, N. & Tregenza, T. 1999 Successful fathers sire successful sons. ***Evolution* 53.** 620-625.
- Tregenza, T. & Wedell, N. 1998 Benefits of multiple mates in the cricket *Gryllus bimaculatus*. ***Evolution* 52.** 1726-1730.
- Butlin, R.K. & Tregenza, T. 1998 Levels of genetic polymorphism: marker loci versus quantitative traits. ***Phil. Trans. Roy. Soc. B* 353.** 187-198.
- Tregenza, T. & Thompson, D.J. 1998 Unequal competitor ideal free distribution in fish? ***Evol. Ecol.* 12.** 655-666.
- Tregenza, T. & Bridle, J.R. 1997 The diversity of speciation. ***Trends in Ecol. Evol.* 12.** 382-383.
- Tregenza, T. & Wedell, N. 1997 Definitive evidence for cuticular pheromones in a cricket. ***Anim. Behav.* 54.** 979-984.
- Tregenza, T. 1997 Alphabetical orders. ***Nature* 388.** 511.
- Buckley, S.H. Tregenza, T. Butlin, R.K. 1997 Speciation and signal trait genetics. ***Trends in Ecol. Evol.* 12.** 299-301.
- Tregenza, T. & Wedell, N. 1997 Natural selection bias? ***Nature* 386.** 234.
- Tregenza, T. 1997 Darwin a better name than Wallace? ***Nature* 385.** 480.
- Tregenza, T. Thompson, D.J. Parker, G.A. 1996 Interference and the ideal free distribution: Oviposition in a parasitoid wasp. ***Behav. Ecol.* 7.** 387-394.
- Tregenza, T. Parker, G.A. Thompson, D.J. 1996 Interference and the ideal free distribution: Models and tests. ***Behav. Ecol.* 7.** 379-386.
- Tregenza, T. Hack, M.A. Thompson, D.J. 1996 Relative success of unequal competitors changes with overall density. ***Oikos* 77.** 158-162.

- Tregenza, T. Shaw, J.J. Thompson, D.J. 1996 An experimental investigation of a new ideal free distribution model. *Evol. Ecol.* **10**. 45-49.
- Shaw, J.J. Tregenza, T. Parker, G.A. Harvey, I.F. 1995 Evolutionarily stable foraging speeds in feeding scrambles: a model and an experimental test. *Proc. Roy. Soc. B.* **260**. 273-277.
- Tregenza, T. 1995 Building on the ideal free distribution. *Adv. Ecol. Res.* **26**. 253-302.
- Tregenza, T. 1994 Common misconceptions in applying the ideal free distribution. *Anim. Behav.* **47**. 485-487.

Non-refereed academic publications

- Tregenza, T. 2007 Model Answers *Trends in Ecol. Evol.* In Press
- Bretman, A. Tregenza, T. 2007 Strong, silent types: the rapid, adaptive disappearance of a sexual signal *Trends in Ecol. Evol.* **22**, 226-228
- Edvardsson, M. Champion de Crespigny, F.E. Tregenza, T. 2006 Mating Behaviour: Promiscuous mothers have healthier young *Curr. Biol.* **17**. R66-R77.
- Shuker, D. Tregenza, T. 2006 Reply to Roughgarden - Sexual selection happens *Science* **312**. 693-694.
- Hosken, D.J. Tregenza, T. 2006 Evolution: Inbreeding, multiple mating and embryonic aid *Curr. Biol.* **16**. R202-R203.
- Tregenza, T. Hosken, D.J. 2005 Mate choice: Been there, done that. *Curr. Biol.* **15**. R959-R961
- Hosken, D.J. Tregenza, T. 2005 Sexual selection: Do bad husbands make good fathers? *Curr. Biol.* **15**. R836-R838.
- Tregenza, T. 2003 The battle between the sexes. *Nature* **423**. 929-930.
- Tregenza, T. & Butlin, R.K. 1999 Genetic diversity: Do marker genes tell us the whole story? pp. 37-55. In: *Evolution of Biological Diversity*. Edited by A.E. Magurran and R.M. May. Oxford Scientific Press, Oxford.
- Tregenza, T. & Butlin, R.K. 1999 Speciation without isolation. *Nature* **400**. 311-312.
- Butlin, R.K. & Tregenza, T. 1997 Is speciation no accident? *Nature* **387**. 551-552.
- Tregenza, T. 1997 Review of 'Phylogenies and the Comparative Method in Animal Behaviour'. Ed. by E.P. Martins.' *J. Anim. Ecol.* **66**. 776.

Publications related to the public understanding of science

- Tregenza, T. 1999 Spiders see the light. *BBC Wildlife Magazine* September
- Tregenza, T. 1997 Just Ant Cricket. *BBC Wildlife Magazine* June
- Tregenza, T. 1997 What's up Doc? *New Scientist* **155**. No. 2097 p.52
- Tregenza, T. 1995 Dream Teams. *New Scientist* **148**. No. 2000 p.59
- Tregenza, T. 1991 Cuckoo arms races. *Daily Telegraph* July 6th

Most recent appearances on TV, Radio, Magazines, Newspapers etc.

- Radio 4 Science magazine programme: 'Leading Edge' 19/5/05
- Radio 4 Science feature programme: 'Swinging for Survival' 23/4/07

Reprints available from my web site: <http://www.selfishgene.org/Tom/>