

Dr. Toby Alan Gardner

CURRENT INSTITUTIONAL AFFILIATIONS

NERC Fellow, Department of Zoology, University of Cambridge, United Kingdom

Research Associate, Biology Department, Federal University of Lavras, MG, Brazil

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Website: <http://www.tropicalforestresearch.org/People/tgardner.aspx>

Date and Place of Birth: York, United Kingdom (29 May 1978)

Nationality: British

Marital Status: Single

EDUCATION

2004-2007: PhD, School of Environmental Sciences "Understanding the consequences of habitat change for tropical forest biodiversity" Conferred 5th October 2007.

2001-2002: MSc Applied Ecology and Conservation (Distinction), University of East Anglia: Thesis "Coral reefs of the tropical western Atlantic: a quantitative survey of recent temporal change and the relative importance of hurricane impacts".

1997-2001: Ecological Science (Ecology) BSc 1st Class (Hons), University of Edinburgh. Thesis: "Tree-grass coexistence in the Brazilian cerrado: a modeling approach".

ACADEMIC AWARDS

July 2007: First Place Award Student Presentation; Society for Conservation Biology Annual Meeting, Port Elizabeth, South Africa.

June 2001: Elizabeth Sinclair Irvine Prize (Most Distinguished Ecologist, University of Edinburgh 2001 Honours Class)

June 2001: Botanical Society Scotland Prize (Most Distinguished Botanical Thesis, Scotland)

PAST POSITIONS

April 08 – Dec 09. Postdoctorate Research Fellow. Setor de Ecologia, Departamento de Biologia, Universidade de Lavras, Brazil

Jan 08 – April 08. Visiting Scholar, Ecology Centre, University of Queensland, Australia.

August 2007 – December 2007: Senior Research Associate, University of East Anglia. UK Government Darwin Initiative: "Devising strategies to integrate biodiversity conservation into plantation dominated

landscapes". Currently coordinating a 10-year ecological monitoring program of the largest managed forest landscape in the neotropics (Jari, Brazilian Amazonia).

August 2003 – December 2003: Research Associate, Tyndall Centre for Climate Change, University of East Anglia: "Vulnerability of the Caribbean coastal zone to climate change"

ADDITIONAL RESEARCH EXPERIENCE

April 2008 – present. Scientific member of the Business for Biodiversity Offsets Advisory Group. Forest Trends, Washington.

August 2002 – June 2003: Principle Investigator, Katavi Conservation Project, Western Tanzania, East Africa. Responsible for coordinating biodiversity surveys for five taxonomic groups across a 2 million hectare multiple-use woodland-savannah mosaic landscape. This was the first multi-taxa assessment of protected area performance in East Africa.

June-August 2000 & 2001: Expedition Leader, Project Anuran, Chiquibul Forest, Belize. A five-year research project focused on monitoring neo-tropical amphibian populations. Work conducted with the Declining Amphibian Population Task Force (IUCN).

LANGUAGES

Swahili (fluent), Portuguese (fluent)

PROFESSIONAL DUTIES

I regularly review scientific manuscripts for a wide range of journals, including; *Biological Conservation*, *Biotropica*, *Journal of Applied Geography*, *Global Change Biology*, *Ecology*, *Coral Reefs*, *Insect Diversity and Conservation*, *Journal of Applied Ecology*, *Environmental Management*, *Conservation Letters*, *Global Ecology and Biogeography*, *PLoS ONE*, *Diversity and Distributions*, *South American Journal of Herpetology*, *African Journal of Ecology*, and *Zoological Science*

I have also reviewed for the *Convention on Biological Diversity (CBD)*, the *Caribbean Coral Reef Research Institute*, and *IUCN*.

PUBLICATIONS

IN PRESS

Fischer, J., G. D. Peterson, T. A. **GARDNER**, L. J. Gordon, I. Fazey, T. Elmqvist, A. Felton, C. Folke, and S. Dovers. in press. Integrating resilience thinking and optimisation for conservation. *Trends in Ecology and Evolution*

GARDNER, T. A., J. Barlow, R. L. Chazdon, R. Ewers, C. A. Harvey, C. A. Peres, and N. S. Sodhi. in press. Prospects for tropical forest biodiversity in a human-modified world. *Ecology Letters*.

Koh, L. P., and T. A. **GARDNER**. in press. Conservation in human modified landscapes in N. S. Sodhi, and P. E. Ehrlich, editors. *Conservation Biology*. Oxford University Press.

Hawes, J., C. da Silva Motta, W. L. Overal, J. Barlow, T. A. **GARDNER**, and C. Peres. in press. The value of primary, secondary and plantation forests for Amazonian moths. *Journal of Tropical Ecology*.

Caro, T., T. A. **GARDNER**, C. Stoner, E. B. Fitzherbert, and T. R. B. Davenport. in press. Assessing the effectiveness of protected areas: paradoxes call for pluralism in evaluating conservation performance *Diversity and Distributions*.

Hawes, J., J. Barlow, T. A. **GARDNER**, and C. Peres. in press. The value of forest strips for understory birds in an Amazonian plantation landscape *Biological Conservation*.

Leite, R. N., M. N. F. da Silva, and T. A. **GARDNER**. in press. New records of *Neusticomys oyapocki* (Ichthyomyini, Sigmodontinae) from a human-dominated forest landscape in northeastern Brazilian Amazonia. *Mastozoologia Neotropical*.

IN PRINT

Lo-Man-Hung, N. F., T. A. **GARDNER**, M. A. Ribeiro Jr, J. Barlow, and A. B. Bonaldo. 2009. The value of primary, secondary and plantation forests for Neotropical epigeic arachnids. *Journal of Arachnology* 36: 394-401

Nichols, E., T. A. **GARDNER**, C. A. Peres, and S. Spector. 2009. Co-declining mammals and dung beetles: an impending ecological cascade. *Oikos* 118: 481-487

Ribeiro Jr, M. A., T. A. **GARDNER**, and T. C. S. Avila-Pires. 2008. Evaluating the effectiveness of herpetofaunal sampling techniques across a habitat change gradient in a neotropical forest landscape. *Journal of Herpetology* 42: 733-749

J. Jones and T.A. **GARDNER**. 2008. An unprecedented opportunity for biodiversity conservation: Hopes and fears surrounding international payments for ecosystem services. *Oryx* 42: 5

Barlow, J., I. S. Araujo, W. L. Overal, T. A. **GARDNER**, F. da Silva Mendes, I. Lake, and C. A. Peres. 2008. Factors affecting abundance and richness of fruit-feeding butterflies in tropical Eucalyptus plantations. *Biodiversity and Conservation* 17: 1089-1104.

GARDNER, T. A., M. M. I. Hernández, J. Barlow, and C. Peres. 2008. Understanding the biodiversity consequences of habitat change: the value of regenerating and planted forests for neotropical dung beetles. *Journal of Applied Ecology* 45: 883-893.

GARDNER, T. A., J. Barlow, C. Peres and 22 others. 2008. The cost-effectiveness of biodiversity surveys in tropical forests. *Ecology Letters* 11: 139-150.

GARDNER, T. A., T. Caro, E. B. Fitzherbert, T. Banda, and P. Lalbhai. in press. Conservation value of multiple-use areas in East Africa. *Conservation Biology*. 21: 1516-1525.

GARDNER, T. A., J. Barlow, L. T. W. Parry, and C. A. Peres. 2007. Predicting the Uncertain Future of Tropical Forest Species in a Data Vacuum. *Biotropica* 39:25-30.

GARDNER, T. A., J. Barlow, and C. A. Peres. 2007. Paradox, presumption and pitfalls in conservation biology: consequences of habitat change for amphibians and reptiles. *Biological Conservation* 138:166-179.

GARDNER, T. A., E. B. Fitzherbert, R. C. Drewes, K. M. Howell, and T. Caro. 2007. Spatial and temporal patterns of abundance and diversity of an East African amphibian fauna. *Biotropica* 39:105-113.

GARDNER, T. A., M. A. Ribeiro Jr, J. Barlow, T. A. S. Ávila-Pires, M. Hoogmoed, and C. A. Peres. 2007. The value of primary, secondary and plantation forests for a neotropical herpetofauna *Conservation Biology* 21:775-787.

- Barlow, J., T. A. **GARDNER**, C. Peres. and 22 others. 2007. Quantifying the biodiversity value of tropical primary, secondary and plantation forests. *Proceedings of the National Academy of Sciences of the United States of America* 104: 18555-18560.
- Barlow, J., T. A. **GARDNER**, L. V. Ferreira, and C. A. Peres. 2007. Litter fall and decomposition in primary, secondary and plantation forests in the Brazilian Amazon. *Forest Ecology and Management* 247:91-97.
- Barlow, J., L. A. M. Mestre, T. A. **GARDNER**, and C. A. Peres. 2007. The value of primary, secondary and plantation forests for Amazonian birds. *Biological Conservation* 126:212-231.
- Barlow, J., W. L. Overal, I. S. Araujo, T. A. **GARDNER**, and C. A. Peres. 2007. The value of primary, secondary and plantation forests for fruit-feeding butterflies in the Brazilian Amazon. *Journal of Applied Ecology* 44:1001-1012.
- Bonaldo, A. B., M. A. L. Marques, R. Pinto de Rocha, and T. A. **GARDNER**. 2007. Species richness and community structure of arboreal spider assemblages in fragments of three forest types at Banhado Grande wet plain, Gravataí River, Rio Grande do Sul, Brazil. *Iheringia* 97:143-151.
- Fitzherbert, E. B., T. A. **GARDNER**, T. Caro, and P. Jenkins. 2007. Habitat preferences of small mammals in the Katavi ecosystem of western Tanzania. *African Journal of Ecology* 45:249-257.
- GARDNER**, T. A. 2006. Tree-grass coexistence in the Brazilian cerrado: demographic consequences of environmental instability. *Journal of Biogeography* 33:448-463.
- Ribeiro-Junior, M. A., T. A. **GARDNER**, and T. C. S. Avila-Pires. 2006. The effectiveness of glue traps to sample lizards in a tropical rainforest. *South American Journal of Herpetology* 1:131-137.
- Côté, I. M., T. A. **GARDNER**, J. A. Gill, D. J. Hutchinson, and A. R. Watkinson. 2006. New approaches to estimating recent ecological change on coral reefs. Pages 293-313 in I. M. Cote, and J. R. Reynolds, editors. *Coral Reef Conservation*. Cambridge University Press, Cambridge.
- Côté, I. M., J. A. Gill, T. A. **GARDNER**, and A. R. Watkinson. 2005. Measuring coral reef decline through meta-analyses. *Philosophical Transactions of the Royal Society B-Biological Sciences* 360:385-395.
- GARDNER**, T. A., J. A. Gill, A. Grant, A. R. Watkinson, and I. M. Côté? 2005. Hurricanes and Caribbean coral reefs: immediate impacts, recovery trajectories and contribution to long-term decline. *Ecology* 86:174-184.
- Fitzherbert, E. B., T. A. **GARDNER**, T. R. B. Davenport, and T. Caro. 2006. Butterfly species richness and abundance in the Katavi ecosystem of western Tanzania. *African Journal of Ecology* 44:353-362.
- GARDNER**, T. A. 2004. Limits to growth? - a perspective on the perpetual debate. *Environmental Sciences* 1:121-138.
- Caro, T. M., A. Engilis, E. B. Fitzherbert, and T. A. **GARDNER**. 2004. Preliminary assessment of the flagship species concept at a small scale. *Animal Conservation* 7:1-8.
- GARDNER**, T. A., I. M. Côté?, J. A. Gill, A. Grant, and A. R. Watkinson. 2003. Coral reef decline in the Caribbean: Response to Buddemeir and Ware. *Science* 302:392-393.
- GARDNER**, T. A., I. M. Côté?, J. A. Gill, A. Grant, and A. R. Watkinson. 2003. Long-term region wide declines in Caribbean coral reefs. *Science* 301:958-960.
- GARDNER**, T. A. 2001. Amphibian population declines: a global issue in conservation biology. *Animal Biodiversity and Conservation*. *Animal Biodiversity and Conservation* 24.2:25-44.
- GARDNER**, T. A., and E. B. Fitzherbert. 2001. Project Anuran: A multi-species monitoring project at the tropical lowland site of Las Cuevas, Chiquibul Forest Reserve, Belize. *Herpetological Bulletin* 78:7-15.

BOOK REVIEWS

GARDNER, T. A. 2001. A field guide to the amphibians and reptiles of the Mayan World. L. Lee. *Biological Conservation* 99:394.

GARDNER, T. A. 2004. Capturing carbon and conserving biodiversity: the market approach. Ed. I. Swingland. *Biological Conservation* 120:599-600.

GARDNER, T. A. 2008. The Ecology and Behaviour of Amphibians. Kentwood D. Wells. . *Biological Conservation* 141:1161-1166.

NATIONAL AND INTERNATIONAL PRESENTATIONS (LEAD AUTHOR)

November 2008. Trade-offs in conservation and economic development in tropical forests. Invited presentation, 3-day workshop on "A framework for linking ecological and economic systems". Imperial College, Silwood Park, London.

October 2008. Trade-offs in conservation and economic development in the Amazon. Invited presentation. One-day symposium on Integrating UK-Amazon research community. Natural History Museum, London.

April 2008. GARDNER, T.A. Challenges and opportunities for biodiversity conservation in the human-dominated tropics. Invited seminar. Imperial College, Silwood Park, London.

February-April 2008. GARDNER, T.A. Quantifying biodiversity patterns in human-dominated tropical forests: challenges and opportunities for conservation science. Invited seminar circuit in Australia and Singapore, including: Ecology Centre, University of Queensland; Fenner School of Forestry, National University of Australia; School of Botany, University of Melbourne; Australian Centre for Biodiversity, Monash University; National University of Singapore, Singapore.

November 2007. GARDNER, T.A. Triage in conservation: overview of a three-day symposium. Invited. Institute of Zoology, London.

September 2007. GARDNER, T.A. Biodiversity assessments in tropical forest landscapes. Invited seminar for the MSc in Biodiversity, Conservation and Management at the Oxford University Centre for the Environment (OUCE).

August 2007. GARDNER, T.A., J. Barlow, C.A. Peres. Eficiencia de levantamentos de biodiversidade em florestas tropicais (in Portuguese). Invited seminar presentation, University of Sao Paulo, 8th August 2007.

July 2007. GARDNER, T.A. Amostrando a herpetofauna nas florestas tropicais: desafios frente a avaliacos das mudancas da estrutura de habitat (in Portuguese). Invited speaker, Round Table discussion on Rapid Biodiversity Assessments, 3rd Brazilian Conference of Herpetology, Belem, Brazil 15-18th July 2007.

July 2007. GARDNER, T.A, J. Barlow, and C.A. Peres. The cost-effectiveness of biodiversity research in tropical forests. Society for Conservation Biology Annual Meeting, Student Awards Finalist (First Place), Port Elizabeth, South Africa, 1-6th July 2007.

March 2007. GARDNER, T.A, J. Barlow, and C.A. Peres. The cost-effectiveness of biodiversity research in tropical forests. Student Conference for Conservation Science, Cambridge, 28-29th March 2007.

Oct 2006. GARDNER, T.A. and 23 others. Evaluating the effectiveness of biodiversity sampling in tropical forest landscapes: a cost benefit analysis from a multi-taxa project in the Brazilian Amazon. International Congress on Cultivated Forests: Symposium on Ecosystem Goods and Services. Bilbao, Spain 3rd-7th October 2006.

July 2006. GARDNER, T.A., T. Caro, E.B. Fitzherbert, T. Banda, and P. Lalbhai. Are national parks enough? Conservation value of lightly protected areas in East Africa. Society for Conservation Biology, San Jose, USA.

Nov 2005. GARDNER, T.A., M.I.M. Hernández, J. Barlow, and C.A. Peres. Dung beetle communities of primary, secondary and plantation forests in the Brazilian Amazon: a preliminary analysis. Invited presentation. Scarabaeinae Research Network, Fort Lauderdale, USA.

July 2005. GARDNER, T.A., M.A.R. Riberio, T.C.S. Avila-Pires, J. Barlow, M. Hoogmoed, and C. Peres. The herpetofauna of primary, secondary and plantation forests in the Brazilian Amazon. Association for Tropical Biology and Conservation, Uberlandia, Brazil.

Sept 2003. GARDNER, T.A. Tree-grass coexistence in the Brazilian cerrado: a modelling approach. Invited presentation. International Conference on Tropical Savannas and Seasonally Dry Forests – Royal Botanic Gardens Edinburgh.

Sept 2003. GARDNER, T.A., I.M. Côté, J.A. Gill, A. Grant, and A.R. Watkinson. Long-term region-wide declines in Caribbean corals. British Ecological Society Winter Meeting – Manchester Metropolitan University.

GRANTS AWARDED POST 2002 (> £5000 in value)

Nov 2007. British Council. £5000. Lead-investigator. 3-day symposium: Biodiversity conservation in human-modified tropical forest landscapes in Brazil. Belém, Brazil.

May 2006. UK Government Darwin Initiative. £50,004. Co-investigator: Devising strategies to integrate biodiversity conservation in plantation dominated landscapes.

May 2005. Conservation Food and Health Foundation. \$12,000. Co-investigator: Land-use change and biodiversity in the Amazon

May 2005. National Geographical Society. \$15,000. Co-investigator: Biodiversity and functional value of primary, secondary and plantation forests in the Brazilian Amazon

Jan 2004. Natural Environment Research Council (UK). £16, 515. Lead-investigator (PhD Studentship Award): Biodiversity value of carbon sequestration projects in tropical forests.