

# DR NATALIE COOPER

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## RESEARCH INTERESTS

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My research sits at the interface between macroecology and macroevolution, and aims to understand broad-scale patterns of biodiversity. I use cutting-edge phylogenetic comparative methods, morphological data collected from museum specimens, phylogenies, ecological data, species geographic range maps, fossils and various larger databases, to investigate a variety of questions including the influence of competition on macroevolutionary patterns, rates and modes of evolution, and the evolutionary ecology of zoonotic diseases.

## ACADEMIC CAREER

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|--------------|--|
| 2015-present | Researcher<br>Life Sciences, Natural History Museum, London.                 |
| 2012-2015    | Assistant Professor<br>School of Natural Sciences, Trinity College Dublin.   |
| 2010-2011    | Postdoctoral Fellow<br>Human Evolutionary Biology, Harvard University.       |
| 2009-2010    | Postdoctoral Associate<br>Ecology and Evolutionary Biology, Yale University. |

## EDUCATION

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|-----------|--|
| 2005-2009 | Ph.D, <a href="#">Phylogenetic approaches for studying competition in mammals</a><br>Imperial College London & Institute of Zoology.<br>Supervisor: Prof. Andy Purvis; Co-supervisor: Prof. Kate Jones |
| 2004-2005 | M.Sc. (Distinction), Advanced Methods in Taxonomy and Biodiversity<br>Imperial College London & Natural History Museum.  |
| 2001-2004 | B.Sc. (1st class honours), Biological Sciences<br>University of Exeter.  |

## GRANTS AND AWARDS

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|      |  |          |
|------|--|----------|
| 2014 | Society of Systematic Biologists (SSB) funding for symposium at Evolution 2014 on <i>The Dark Side of Phylogenetic Comparative Methods</i> .   | \$4,000  |
| 2012 | Marie Curie Career Integration Grant (CIG) for project <i>Evolutionary Ecology and Fossil Primates</i> .                                       | €100,000 |
| 2012 | Irish Research Council Embark Initiative Postgraduate Scholarship for project <i>Convergent Evolution in Malagasy Tenrecs</i> for Sive Finlay. | €72,000  |
| 2009 | Seessel Postdoctoral Fellowship for <i>Innovative Research in Biological Sciences</i> .  | \$37,000 |

#### INTERNATIONAL CONFERENCE PRESENTATIONS

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|      |                  |  |
|------|------------------|--|
| 2014 | Linnaean Society | Radiations & Extinctions meeting: Reproducibility in macroevolution (invited). |
| 2014 | Evolution        | The “Dark Side” of phylogenetic comparative methods (symposium).               |
| 2013 | ESEB             | Ecological correlates of extrinsic mortality in mammals and birds (poster).    |
| 2013 | Evolution        | Ecological correlates of extrinsic mortality in mammals and birds.             |
| 2012 | Evolution        | Host phylospecificity and parasite sharing in primates and humans.             |
| 2011 | EEID             | Methods for detecting phylogenetic host specificity in parasites (poster).     |
| 2010 | Evolution        | Phylogenetic niche conservatism in mammals.                                    |
| 2008 | Evolution        | A common pattern of overdispersion in mammalian assemblages.                   |

#### INVITED SEMINARS

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|      |   |
|------|---|
| 2014 | Biosciences Seminar Series, Swansea University.   |
| 2014 | Centre for Ecology & Conservation Seminar Series, University of Exeter.                             |
| 2014 | Ecology, Evolution, Behaviour & Environmental Economics Seminar Series, Queens University, Belfast. |
| 2014 | Biology & Environmental Science Seminar Series, University College Dublin.                          |
| 2013 | Ecology & Environment Seminar Series, University of Southampton.                                    |
| 2013 | Ecology, Evolution & Environment Seminar Series, University of Sheffield.                           |
| 2013 | Biological Sciences Seminar Series, University of Liverpool.  |
| 2013 | Evolutionary Morphology (EvMorph) Seminar Series, University of Chicago.                            |
| 2013 | Earth & Environment Seminar Series, Trinity College Dublin.   |
| 2011 | Museum of Comparative Zoology Seminar Series, Harvard University.                                   |

#### PROFESSIONAL SERVICE

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|--------------|--|
| 2014-present | Member of BES Publications Committee.  |
| 2014         | Assistant at BES Macroecology Software Carpentry workshop.   |
| 2013-present | Organiser of #MacroJC, a tri-continental online macroevolution journal club.   |
| 2013-2015    | Member of School of Natural Sciences <a href="#">INTEGER</a> committee on Gender Equality (and website maintainer).                                    |
| 2013-2015    | Evolutionary Biology & Ecology seminar series organiser at TCD.  |
| 2012-2015    | Staff administrator and developer of the <a href="#">EcoEvo@TCD</a> blog at TCD.   |
| 2012-2015    | Organiser of NERD club, a weekly Ecology and Evolution research group meeting for staff and PhD students across the School of Natural Sciences at TCD. |
| 2013         | Organiser of “Spatial Analysis in R” workshop for BES Macroecology and Computational Ecology Special Interest Groups.                                  |
| 2013-present | Grant reviewer for UK Natural Environment Research Council (NERC).   |
| 2013-present | Grant reviewer for Canadian National Science Foundation (NSERC).   |
| 2012-present | Member of British Ecological Society (BES) including Macroecology Group.   |
| 2013-present | Member of Society of Systematic Biologists.  |

## PUBLIC ENGAGEMENT AND OUTREACH

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|--------------|---|
| 2014         | Organiser of <a href="#">SoapBox Science Ireland</a> - an outreach event featuring women in science explaining their research in an interactive way.                            |
| 2014         | Talk for Dublin University Zoological Society on <i>Gender Inequality in Science &amp; the Media</i> .  |
| 2014         | Interviewed on “The Morning Edition” on RTE1 and “FutureProof” on NewsTalk FM about our paper <a href="#">Dying without wings</a> . See press release <a href="#">here</a> .    |
| 2013         | Arranged filming of <a href="#">Research Profiles</a> for female staff and students as part of the INTEGER Gender Equality project. My video is on my <a href="#">website</a> . |
| 2013         | Organised a <a href="#">Three Minute Thesis</a> video competition for PhD students.   |
| 2013 & 2014  | Organiser and tour guide for <a href="#">Discover Research Dublin</a> at the TCD Zoology Museum, as part of European Researcher’s Night.  |
| 2013 & 2014  | Presented a session on <i>What can we learn from skeletons?</i> for Transition Year students (16-17 years).   |
| 2013-2015    | <a href="#">EcoEvo@TCD blog</a> developer and contributor. The blog has had over 44,300 views and won Best Science & Technology blog in 2014 at the Irish Blog Awards.          |
| 2012-present | Active Twitter user ( <a href="#">@nhcooper123</a> ) with over 1200 followers and over 6000 tweets.   |
| 2013 & 2014  | Blog post contributor at <a href="#">SoapBoxScience</a> and <a href="#">Science Policy and Outreach Online</a> .  |

## TEACHING EXPERIENCE

### POSTGRADUATE STUDENT SUPERVISION

|      |           |                  |                                    |          |
|------|-----------|------------------|------------------------------------|----------|
| PhD  | 2012-2015 | Thomas Guillerme | Evolutionary ecology and primates  | TCD      |
| MRes | 2012-2015 | Sive Finlay      | Morphological disparity in tenrecs | TCD      |
| MSc  | 2013      | Marta Capolei    | Host phylospecificity in parasites | TCD      |
| MSc  | 2008      | Paddy Brock      | Co-supervised with Andy Purvis     | Imperial |
| MSc  | 2007      | Peter Hayward    | Co-supervised with Andy Purvis     | Imperial |
| MSc  | 2007      | Jack Lighten     | Co-supervised with Andy Purvis     | Imperial |

### UNDERGRADUATE AND TAUGHT POSTGRADUATE

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|-----------|--|--------|----------|
| 2012-2015 | Intro to Biodiversity, Evolution & the Environment | Year 1 | TCD      |
| 2012-2015 | Comparative Physiology (Vertebrate Biomechanics)   | Year 3 | TCD      |
| 2013-2015 | Research Comprehension (module coordinator)        | Year 4 | TCD      |
| 2013-2014 | Tropical Ecology Field Course                      | Year 4 | TCD      |
| 2012-2015 | Final Year Research Projects                       | Year 4 | TCD      |
| 2009      | Biodiversity & Conservation                        | Year 3 | Imperial |
| 2012-2014 | Taxonomy & Systematics                             | MSc    | TCD      |

# POSTGRADUATE, POSTDOCS AND STAFF

|           |  |       |         |
|-----------|--|-------|---------|
| 2014      | Linnaean Society Radiations & Extinctions workshop   | All   | -       |
| 2013-2015 | Computer Skills (LaTeX, R, git etc.)                 | All   | TCD     |
| 2013      | Introduction to R for the terrified!                 | Staff | TCD     |
| 2012-2015 | Transferable Skills at NERD club                     | All   | TCD     |
| 2010-2012 | AnthroTree Phylogenetic Comparative Methods workshop | All   | -       |
| 2010-2011 | R (& Statistics) Help Hour                           | All   | Harvard |

# JOURNAL REVIEWING

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The American Naturalist, Animal Conservation, BMC Evolutionary Biology, Conservation Biology, Ecology, Ecology and Evolution, Ecology Letters, Evolution, Global Ecology & Biogeography, International Journal of Primatology, Journal of Animal Ecology, Journal of Biogeography, Journal of Evolutionary Biology, Methods in Ecology & Evolution, Oecologia, Philosophical Transactions of the Royal Society: B, PLoS One, Proceedings of the National Academy of Sciences USA, Proceedings of the Royal Society: B, Trends in Ecology & Evolution.

## PUBLICATIONS LIST

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I have 21 peer-reviewed papers in internationally recognised journals (10 first authored, one joint first authored, one last/senior authored and 13 without my PhD supervisor Andy Purvis), with a mean 2013 impact factor of 5.01. My h-index is 13 on [Google Scholar](#) and 12 on [ISI Web of Science](#). My papers have been cited 639 times on Google Scholar and 438 times on ISI Web of Science (average cites per article = 25.76).

## PEER-REVIEWED PUBLICATIONS

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### In press and in review

Thomas, G.H., **Cooper, N.**, Venditti, C., Meade, A. & Freckleton, R.P. Bias and measurement error in comparative analyses: a case study with the Ornstein Uhlenbeck model. **In review at Systematic Biology**. Preprint on bioRxiv, doi: [10.1101/004036](https://doi.org/10.1101/004036).

Nunn, C.L., & **Cooper, N.** 2014. Investigating evolutionary lag using the species-pairs evolutionary lag test (SPELT). *Evolution*. **In press**.

### 2014

Healy, K., Guillerme, T., Finlay, S., Kane, A., Kelly, S.B.A., McClean, D., Kelly, D.J., Donohue, I., Jackson, A.L., & **Cooper, N.** 2014. Ecology and mode-of-life explain lifespan variation in birds and mammals. *Proceedings of the Royal Society of London Series B: Biological Sciences*. **281**, 20140298. doi: [10.1098/rspb.2014.0298](https://doi.org/10.1098/rspb.2014.0298). See summary [here](#).

Kelly, S.B.A, Kelly, D.J., **Cooper, N.**, Bahrn, A., Analuddin, K. & Marples, N. 2014. Molecular and phenotypic data reveal a cryptic species (Aves: *Dicaeum*) from the unique and understudied Sulawesi region. *PLoS ONE*. **9**, e98694. doi: [10.1371/journal.pone.0098694](https://doi.org/10.1371/journal.pone.0098694). See summary [here](#).

### 2013

**Cooper, N.**, & Nunn, C.L. 2013. Identifying future zoonotic disease threats: Where are the gaps in our understanding of primate infectious diseases? *Evolution, Medicine and Public Health*. **2013**, 26-37. doi: [10.1093/emph/eoto01](https://doi.org/10.1093/emph/eoto01). See summary [here](#).

Kamilar, J.M. & **Cooper, N.** 2013. Phylogenetic signal in primate behaviour, ecology, and life history. *Philosophical Transactions of the Royal Society of London Series B: Biological Sciences*. **368**, 20120341. doi: [10.1098/rstb.2012.0341](https://doi.org/10.1098/rstb.2012.0341).

Healy, K., McNally, L., Ruxton, G.D., **Cooper, N.**, & Jackson, A.L. 2013. Metabolic rate and body size are linked with perception of temporal information. *Animal Behaviour*. **86**, 685-696. doi: [10.1016/j.anbehav.2013.06.018](https://doi.org/10.1016/j.anbehav.2013.06.018). **F1000 recommended**.

## 2012

**Cooper, N.**, Griffin, R., Franz, M., Omotayo, M., & Nunn, C.L. 2012. Phylogenetic host specificity and understanding parasite sharing in primates. *Ecology Letters*. **15**, 1370-1377. doi: [10.1111/j.1461-0248.2012.01858.x](https://doi.org/10.1111/j.1461-0248.2012.01858.x). **F1000 recommended**.

**Cooper, N.**, Kamilar, J.M., & Nunn, C.L. 2012. Host longevity and parasite species richness in mammals. *PLoS ONE*. **7**, e42190. doi: [10.1371/journal.pone.0042190](https://doi.org/10.1371/journal.pone.0042190).

Davies, T.J., **Cooper, N.**, Diniz Filho, J.A.F, Thomas, G.H. & Meiri, S. 2012. Using phylogenetic trees to test for character displacement: a model and an empirical example from a desert mammal community. *Ecology*. **93**, S44-S51. doi: [10.1890/11-0400.1](https://doi.org/10.1890/11-0400.1).

## 2011

**Cooper, N.**, Freckleton, R.P. & Jetz, W. 2011. Phylogenetic conservatism of environmental niches in mammals. *Proceedings of the Royal Society of London Series B: Biological Sciences*. **278**, 2384-2391. doi: [10.1098/rspb.2010.2207](https://doi.org/10.1098/rspb.2010.2207).

Freckleton, R.P., **Cooper, N.** & Jetz, W. 2011. Comparative methods as a statistical fix: the dangers of ignoring an evolutionary model. *The American Naturalist*. **178**, E10-E17. doi: [10.1086/660272](https://doi.org/10.1086/660272).

Collen, B., McRae, L., Deinet, S., De Palma, A., Carranza, T., **Cooper, N.**, Loh, J. & Baillie, J.E.M. 2011. Predicting how populations decline to extinction. *Philosophical Transactions of the Royal Society of London Series B: Biological Sciences*. **366**, 2577-2586. doi: [10.1098/rstb.2011.0015](https://doi.org/10.1098/rstb.2011.0015).

## 2010

**Cooper, N.**, Jetz, W. & Freckleton, R.P. 2010. Phylogenetic comparative approaches for studying niche conservatism. *Journal of Evolutionary Biology*. **23**, 2529-2539. doi: [10.1111/j.1420-9101.2010.02144.x](https://doi.org/10.1111/j.1420-9101.2010.02144.x).

**Cooper, N.** & Purvis, A. 2010. Body size evolution in mammals: complexity in tempo and mode. *The American Naturalist*. **175**, 727-738. doi: [10.1111/j.1420-9101.2009.01714.x](https://doi.org/10.1111/j.1420-9101.2009.01714.x).

Belmaker, J., **Cooper, N.**, Lee, T.M. & Wilman, H. 2010. Specialization and the road to academic success. *Frontiers in Ecology and the Environment*. **8**, 514-515. All authors contributed equally. doi: [10.1890/10.WB.25](https://doi.org/10.1890/10.WB.25).

## 2009

**Cooper, N.** & Purvis, A. 2009. What factors shape rates of phenotypic evolution? A comparative study of cranial morphology of four mammalian clades. *Journal of Evolutionary Biology*.

22, 1024-1035. doi: [10.1111/j.1420-9101.2009.01714.x](https://doi.org/10.1111/j.1420-9101.2009.01714.x).

Bielby, J., Cardillo, M. **Cooper, N.**, & Purvis, A. 2009. Modeling extinction risk in multispecies data sets: phylogenetically independent contrasts versus decision trees. *Biodiversity and Conservation*. **19**, 113-127. doi: [10.1007/s10531-009-9709-0](https://doi.org/10.1007/s10531-009-9709-0).

2008

**Cooper, N.**, Rodriguez, J. & Purvis, A. 2008. A common tendency for phylogenetic overdispersion in mammalian assemblages. *Proceedings of the Royal Society of London Series B: Biological Sciences*. **275**, 2031-2037. doi: [10.1098/rspb.2008.0420](https://doi.org/10.1098/rspb.2008.0420).

**Cooper, N.**, Bielby, J., Thomas, G.H. & Purvis, A. 2008. Macroecology and extinction risk correlates of frogs. *Global Ecology and Biogeography*. **17**, 211-221. doi: [10.1111/j.1466-8238.2007.00355.x](https://doi.org/10.1111/j.1466-8238.2007.00355.x).

Meiri, S., **Cooper, N.** & Purvis, A. 2008. The island rule: made to be broken? *Proceedings of the Royal Society of London Series B: Biological Sciences*. **275**, 141-148. doi: [0.1098/rspb.2007.1056](https://doi.org/10.1098/rspb.2007.1056).

Bielby, J., **Cooper, N.**, Cunningham, A., Garner, T. & Purvis, A. 2008. Predicting susceptibility to future declines in the world's frogs. *Conservation Letters*. **1**, 82-90. doi: [10.1111/j.1755-263X.2008.00015.x](https://doi.org/10.1111/j.1755-263X.2008.00015.x).

#### NON PEER-REVIEWED PUBLICATIONS

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**Cooper, N.** & Belmaker, J. 2010. Opinion: Habitat data resolution and the detection of species interactions. *Frontiers of Biogeography*. **2**, 46.