

Thomas Guillaume

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ORCID: [0000-0003-4325-1275](https://orcid.org/0000-0003-4325-1275) — ResearcherID: [G-9833-2014](https://www.researcherid.com/rid/G-9833-2014)

RESEARCH INTERESTS

I'm interested in evolutionary biology across different scales: the stories behind the history of life and the methodologies with which it is investigated. By combining classical methods such as descriptive palaeontology or field ecology with modern bioinformatics tools and mathematical modeling, I work on understanding how to use traits in evolutionary biology: from phylogenetic theory to macroevolution and macroecology.

ACADEMIC CAREER

- 2020 - present: Research Associate in **Gavin Thomas'** group
Department of Animal and Plant Sciences
University of Sheffield, Sheffield, UK
- 2017 - 2019: Postdoctoral Research Fellow in **Vera Weisbecker's** group
School of Biological Sciences
University of Queensland, St Lucia, Australia
- 2016 - 2017: Research Associate in **Martin Brazeau's** group
Faculty of Natural Sciences, Department of Life Sciences
Silwood Park Campus, Imperial College London, UK

EDUCATION

- 2012 - 2015: PhD in Zoology, Trinity College Dublin
Macroevolution with living and fossil species
Awarded as it stands.
<http://dx.doi.org/10.6084/m9.figshare.1583337>
- 2010 - 2012: MSc in Palaeontology (honours), Université de Montpellier
2nd year project: *Molecular clocks and evolutionary rates among primates: a palaeontological and genomic approach.*
1st year project: *Southern France Upper Cretaceous Theropod teeth variability.*
- 2007 - 2010: BSc in Biology, Université de Montpellier

PUBLICATIONS

My work has been published in **17 peer-reviewed papers** (including 7 as a first author) on macroevolution, macroecology and new statistics methods and implementations. My research has been published in high profile generalist journals such as *Nature ecology and evolution*, *The American Naturalist* or *Biology Letters* as well as specialist ones such as *Systematic Biology*, *Methods in Ecology and Evolution* or *Palaeontology*. This work has been **cited in over 800** publications with an **h-index of 15** and received a median attention score of 54 (95% CI: 16-609) corresponding to the top 5% of all research outputs tracked by altmetrics. The detailed list of my publications is available below.

AWARDS AND GRANTS

- 2017: Royal Society International Scientific Seminar Award (£5000)
co-awarded to Prof. Phillip Donoghue FRS and Dr Natalie Cooper
- 2017: Marie Skłodowska-Curie Action [Seal of Excellence](#)
- 2016: *Biology Letters* [Top reviewer](#).
- 2014: BES Photo Competition Student Prize (Ecology and Society)
- 2012: Trinity Postgraduate Research Studentship (€46800)

COMPUTER SKILLS

I mostly work on projects in R and C. You can find my list of current repositories and contributions on my [github profile](#). I am the main contributor on 6 different R packages, namely the **dispRity** package (2 100 citations - 37k downloads) and co-author on several other R packages namely **ape** (11k citations - 3.9M downloads). I am the co-main contributor on one C library **morphylib**.

Coding: **R***, **C***, **C++**, **Bash***, **HTML**, **L^AT_EX***, **git***

Phylogenetics: **PAUP**, **MrBayes***, **BEAST***, **R_AxML**, **PhyloBayes**, **CoEvol**, **MACSE**, **MAFFT**, **SEAvi**, **Tracer**, **Mesquite**, **R{ape}**, **R{phytools}**, **R{diversitree}**, **R{MCMCglmm}**, **R{caper}**, ...

Morphometrics: **R{geomorph}**, **MorphoJ**, **TPS**

Graphics: **Adobe Illustrator**, **Adobe Photoshop**, **Gimp**, **Inkscape**

* Skills taught at workshops or courses (see below)

Developed software:

R{ape}: Analyses of Phylogenetics and Evolution *Role: contributor*.
Project page: ape-package.ird.fr/

R{Claddis}: Measuring Morphological Diversity and Evolutionary Tempo *Role: contributor*.
GitHub page: github.com/graemetlloyd/Claddis

R{dispRity}: Measuring disparity in R. *Role: main author*.
GitHub page: github.com/TGuillerme/dispRity

R{landvR}: Tools for measuring landmark position variation. *Role: main author*.
GitHub page: github.com/TGuillerme/landvR

Morphy: A C library for phylogenetic analysis of morphological characters. *Role: co-author*.
Project page: www.morphoproject.org/

R{mulTree}: Performs MCMCglmm on multiple phylogenetic trees. *Role: main author*.
GitHub page: github.com/TGuillerme/mulTree

R{SIDER}: Stable Isotope Discrimination Estimation in R. *Role: co-author*.
GitHub page: github.com/healyke/SIDER

PRESENTATIONS

Invited seminars

2021: *Palaeobiology Discussion Group* - University of Bristol, UK
Talk: Why are there disparate ways to run disparity analysis?
Workshop: Disparity analyses in R with **dispRity**

2020: National University of Ireland, Galway, Ireland
online-talk: Using new multidimensional methods to understand what was the effect of the K-Pg extinction on mammalian evolution.

2020: *NERD Club* - Trinity College Dublin, Ireland
online-talk: From Dublin to Sheffield: trying to finish a quick paper.

2019: Paläontologisches Institut und Museum, ETH, Zürich, Switzerland
Talk: A big step through (morpho)space and time? The effect of the K-Pg extinction on mammalian morphological evolution.

2019: *Ecology and Evolution Seminar Series* – Australian National University, Australia
Talk: A big step through (morpho)space and time? The effect of the K-Pg extinction on mammalian morphological evolution.

2019: *Statistical Society of Australia* – University of Queensland, Australia
Talk: Shiny moms: interactive tool for measuring occupancy in multidimensional spaces

2018: *University of Bath seminar series* – University of Bath, UK
Talk: New approaches for measuring disparity and testing disparity hypothesis: a journey through mammalian morphological evolution.

2017: *ISEM seminar series* - Université de Montpellier, France
Talk: Disparate views on mammalian disparity at the K-Pg.

2017: *Silwood Social Seminars Series* - Imperial College London, UK
Talk: Multidimensionality in morphology.

2016: *Palaeobiology Discussion Group* - University of Bristol, UK
Talk: Do we still need morphological characters data?

International Conferences

2022: *ESEB 2022* - Prague, Czech Republic
Poster: Which bird has the most special beak?
Available here: <https://bit.ly/2Ot1sMf>

- 2019: *PalAss annual meeting* - Valencia, Spain
Talk: moms: how to measure occupancy in multidimensional space (disparity)?
Available here: <https://bit.ly/2Ot1sMf>
- 2019: *2019VP Redux* - Brisbane, Australia
Talk: How to summarise trait-space occupancy (disparity)? moms: a tool for measuring occupancy in multidimensional spaces
Available here: <https://bit.ly/2Ot1sMf>
- 2019: *ARC Boden conference: major transitions in vertebrates* - Melbourne, Australia
Talk: How to summarise trait-space occupancy (disparity)? moms: a tool for measuring occupancy in multidimensional spaces
Available here: <https://bit.ly/2Ot1sMf>
- 2018: *CPEG 2018* - Leeds, UK
Talk: Timespines: does predator-prey arms race interaction drives morphological adaptation through time?
- 2018: *Evolution 2018* - Montpellier, France
Talk: The Rise of the Age of Mammals? Total Evidence tip-dated trees and disparity models to assess the effect of the K-Pg extinction on mammalian evolution.
Available here: <https://bit.ly/2PFPIJQ>
- 2018: *Australian Mammal Society 2018* - Brisbane, Australia
Symposium presentation (**invited talk**): *Form, Function and Evolution of Australasian Mammals*
A major step through (morpho)space a time? The effect of the K-Pg extinction on mammalian morphological evolution.
- 2018: *Reconciling disparate perspectives on the evolution of disparity* - Royal Society International Scientific Meeting - Chicheley Hall, UK - **Organiser**
- 2017: *BES Macro SIG meeting 2017* - London, UK
conference co-organiser
- 2017: *Evolution 2017* - Portland OR, USA
Talk: Blue tail, red tail: a solution to inapplicable data in phylogenetics
Available here: goo.gl/g68NTZ
- 2016: *BES Macro SIG meeting 2016* - Oxford, UK
Talk: Moving away from the consensus in Phylogenetic Comparative Methods
Available here: goo.gl/1PsRfi
- 2016: *Evolution 2016* - Austin TX, USA
Palaeobiology/macroevolution session chair
Talk: New approaches to disparity-through-time analysis
Available here: goo.gl/nnSpVS
- 2015: *Systematics Association Biennial* - Oxford, UK
Talk: Total evidence phylogenies, the data issue
Available here: goo.gl/MVwMTY
- 2014: *SVP annual meeting* - Berlin, Germany
Symposium presentation (**invited talk**): *Putting fossils in trees*
Talk: Total evidence phylogenies and missing data
Available here: goo.gl/CBqSVJ
- 2014: *BES Macroecology SIG meeting* - University of Nottingham, UK
Talk: Trees with fossil and living species: the data issue
Available here: goo.gl/Sdcxon
- 2014: *Evolution 2014* - Raleigh NC, USA
Symposium presentation: *Ernst Mayr Symposium*
Talk: Total evidence phylogenies: the missing data issue
Available here: goo.gl/oPfHZE
- 2014: *Challenges in Macroecology: Scaling the Time Barrier* - Natural History Museum London, UK
Talk: Trees with fossil and living species: the missing data issue
Available here: goo.gl/c1RBER
- 2013: *European Society for Evolutionary Biology Congress* - Lisbon, Portugal
Poster: Combining fossils and molecular phylogenies
Available here: goo.gl/3HcRGH
- 2013: *11th International Mammalogy Congress* - Queen's University, Belfast, UK
Poster: Combining fossils and molecular phylogenies
Available here: goo.gl/3HcRGH

PROFESSIONAL SERVICE

Associate Editor for Ecology and Evolution.

Reviewer for: *American Naturalist*, *Biology Letters* ([Top reviewer for 2016](#)), *Communications Biology*, *Ecology and Evolution*, *Evolution*, *Journal of Evolutionary Biology*, *Journal of Biogeography*, *Lethaia*, *Methods in Ecology and Evolution*, *Molecular*

Phylogenetics and Evolution, Palaeontologica Electronica, Palaeontology, Peer Community In: Evol Biol, PLoS ONE, Proceedings of the Royal Society B: Biological Sciences, The R Journal, Science Advances, Scientific Reports, Systematic Biology.

Workshops:

- 2018: How to write a kick-ass DECRA fellowship — **co-organiser**
Invited speakers: Dr V. Weisbecker and Dr A. Niehaus
The University of Queensland - Brisbane, Australia
- 2018: Postdoc Q&A panel for PhD students — **panel member**
The University of Queensland - Brisbane, Australia
- 2018: Repeatability workshop: Organize your research from the get-go! — **organiser**
Australian Mammal Society Annual meeting - Brisbane, Australia
- 2014: Tip-Dating workshop — *helper*
Nicholas Matzke & April Wright, SVP Annual meeting - Berlin, Germany
- 2014: Software Carpentry Bootcamp - R and UNIX — *helper*
Devasena Inupakutika & Aur Saraf - Nottingham, UK

Conferences:

- 2022: *BES MacroFest 2022* - Sheffield — **main organiser**
- 2021: *BES Macro 2021 e-conference* - Online — **main organiser**
- 2018: *Reconciling disparate perspectives on the evolution of disparity* - Royal Society International Scientific Meeting - Chicheley Hall, UK — **main organiser**
- 2017: *BES Macro SIG meeting 2017* - London, UK — *co-organiser*

Academic memberships:

- 2018-present: Member of the Australian Mammal Society
- 2017-present: Member of the Society for the Study of Evolution
- 2015-present: Member of the Systematic Association
- 2014-present: Member of the Society of Vertebrate Palaeontology
- 2013-present: Member of Society of Systematic Biologists
- 2013-present: British Ecological Society (BES) including Macroecology Special Interest Group

Departmental services:

- 2019-2021: University of Sheffield, ecology and conservation seminars organiser.
- 2019: University of Queensland School of Biology Three minutes thesis competition organiser.
- 2019: Postdoc rep. on the UQ biology seminar committee.
- 2018-2019: UQ Bioinformatics coding and debates co-organiser.
- 2018-2019: UQ Biology Postdocs monthly meetings co-organiser.
- 2016-2017: Silwood [Ecology and Evolution Seminar Series](#) organiser
[Biweekly Silwood Park Campus computer workshops](#) organiser (L^AT_EX, version control, webpages, R packages, etc.)
- 2013-2015: Trinity Zoology Postgraduate student social committee chair

I am also active on the [Stack Overflow](#) community, regularly answering coding questions.

TEACHING

Academia

All my teaching material is available on the following [GitHub page](#).

- 2019-2021: 3rd year students: Disparity through time
Guest lecture, 2 hour, University of Sheffield - UK
- 2017: MSc students: C for biologists
Co-teacher, 30 hours, Imperial College - UK
- 2017: MSc students: Phylogenetic Comparative Methods
Teaching assistant, 6 hours, Natural History Museum - UK
- 2017: MSc students: morphometrics
Co-teacher, 6 hours, Natural History Museum - UK
- 2016: MSc students: Rocks 'n' clocks (including a MrBayes practical)
Teacher, 6 hours, Imperial College London - UK
- 2014: MSc students: Timing Evolution
Teacher, 6 hours, Trinity College Dublin - IE
- 2014: Software Carpentry Bootcamp - R and UNIX
Helper, full day, University of Nottingham - UK
- 2013-14: 2nd year MSc students: Statistics with R
Teaching assistant, full semester, Trinity College Dublin - IE
- 2013-14: 4th year undergraduate students: Evolution
Teaching assistant, full semester, Trinity College Dublin - IE

- 2012-13: 4th year undergraduate students: Statistics with R
Teaching assistant, full semester, Trinity College Dublin - IE
- 2012-13: 1st year undergraduate students: Introduction to Biodiversity Evolution and the Environment
Teaching assistant, full semester, Trinity College Dublin - IE

Student supervision

- 2017: Joe Craig (Imperial College London - MSc project) *How does adding data change node age estimation in morphological phylogenies?*
- 2017: Danielle Moraviec & Hayley Swalund (Imperial College London - MSc mini projects)
- 2016: Victoria Stanley Tsui (Imperial College London - MSc) *A preliminary study on the suture morphology of skull roofs in early gnathostomes and their ancestors.* - Co-supervised with Martin Brazeau.
- 2016: Asiem Sanyal (Imperial College London - MSc mini project)
- 2014-2015: Luke Hannon (Trinity College Dublin -4th year project) *Orbit size and nocturnality in living and fossil primates.* - Co-supervised with Natalie Cooper.
- 2013-2014: Maura Judge (Trinity College Dublin -4th year project) *Bite force and diet in mammals.* - Co-supervised with Natalie Cooper.

FIELDWORK AND DATA COLLECTION

- 2013-14: Museum data collection: Smithsonian Institute Natural History Museum (Washington DC), American Museum of Natural History (New York), Museum of Comparative Zoology (Cambridge, MA), Muséum National d'Histoire Naturelle (Paris)
- 2011-12: Excavations in Cruzy, France
 Southern France, Continental Cretaceous
- 2011: Excavations in Krasiejów, Poland
 Southern Poland, Continental Trias
- 2009-10: Excavations in Espéraza, France - Site fore-person
 Southern France, Continental Cretaceous

PUBLIC ENGAGEMENT AND OUTREACH

- Regular contributor to [EcoEvo@TCD](#) blog; rated [best Irish Science and Technology blog \(2014\)](#) and [Bronze Award Irish Blog \(2015\)](#).
- Complete list available here: goo.gl/MAq9oA
- Featured posts: [How do lego cars evolve?](#); [If you please – draw me a dino...](#); [The more the better?](#).
- [Threesis video](#) (early stage thesis project explained in three minutes – winner of the NERD club threesis award 2013).

Outreach Events

- 2015 & 2014 & 2013: Trinity College Dublin Zoology Department, Researcher's night – *participant*
- 2014: 1st Soapbox Science Ireland – *helper*
- 2014: "What can we learn from skeletons", comparative anatomy practical – *Co-organiser*
- 2013: Trinity College Zoology Museum guided tours – *tour guide*
- 2010: Introduction to palaeontological excavations, Musée des Dinosauriens (FR) – *animator*

PUBLICATIONS LIST

Peer reviewed - [Google Scholar profile: Thomas Guillaume](#) - 904 citations, h-index: 15, i10-index: 19.

17. 2021: Mammola S, Carmona CP, **Guillaume T**, Carmona CP. Concepts and applications in functional diversity. *Functional Ecology* DOI: [10.1111/1365-2435.13882](#)
16. 2020: Brazeau MD, Giles S, Dearden RP, Jerve A, Ariunchimeg Y, Zorig E, **Guillaume T**, Castiello M. Endochondral bone in an Early Devonian 'placoderm' from Mongolia. *Nature Ecology and Evolution* DOI: [10.1038/s41559-020-01290-2](#)
15. 2020: Marcy AE, **Guillaume T**, Sherratt E, Rowe KC, Phillips MJ, Weisbecker V. Australian rodents reveal conserved Cranial Evolutionary Allometry across 10 million years of murid evolution. *American Naturalist* DOI: [10.1086/711398](#).
14. 2020: Viacava P, Blomberg SP, Sansalone G, Phillips MJ, **Guillaume T**, Cameron SF, Wilson RS, Weisbecker V. Skull shape of a widely distributed, endangered marsupial reveals little evidence of local adaptation between fragmented populations. *Ecology and Evolution* DOI: [10.1002/ece3.6593](#)
13. 2020: Puttick MN, **Guillaume T**, Wills MA. The complex effects of mass extinctions on morphological disparity. *Evolution* DOI: [10.1111/evo.14078](#)

12. 2020: **Guillaume T**, Puttick MN, Marcy AE, Weisbecker V. Shifting spaces: which disparity or dissimilarity measurement best summarise occupancy in multidimensional spaces? *Ecology and Evolution* DOI: [10.1002/ece3.6452](https://doi.org/10.1002/ece3.6452)
11. 2020: **Guillaume T**, Cooper N, Brusatte SL, Davis KE, Jackson AL, Gerber S, Goswami A, Healy K, Hopkins MJ, Jones MEH, Lloyd GT, O'Reilly JE, Pate A, Puttick MN, Rayfield E, Saupe EE, Sherratt E, Slater GJ, Weisbecker V, Thomas GH and Donoghue PCJ. Disparities in the analysis of morphological disparity. *Biology Letters* DOI: [10.1098/rsbl.2020.0199](https://doi.org/10.1098/rsbl.2020.0199)
10. 2019: Weisbecker V, **Guillaume T**, Speck C, Sherratt E, Mehari Abraha H, Sharp A, Terhune CE, Collins S, Johnston S, and Panagiotopoulou O. Individual variation of the masticatory system dominates 3D skull shape in the herbivory-adapted marsupial wombats. *Frontiers in Zoology*, 16, 41 DOI: [10.1186/s12983-019-0338-5](https://doi.org/10.1186/s12983-019-0338-5)
9. 2018: Brazeau MD*,**Guillaume T***, Smith MR*. An algorithm for morphological phylogenetic analysis with inapplicable data. *Systematic Biology*, DOI: [10.1093/sysbio/syy083](https://doi.org/10.1093/sysbio/syy083)
* All authors contributed equally.
8. 2018: **Guillaume T**. dispRity: a modular R package for measuring disparity. *Methods in Ecology and Evolution*, DOI: [10.1111/2041-210X.13022](https://doi.org/10.1111/2041-210X.13022). Part of a Virtual Issue in Methods in Ecology and Evolution: [Phylogenetics and Comparative Methods: The Dark and Bright Sides](#).
7. 2018: **Guillaume T** and Cooper N. Time for a rethink: sub-sampling methods in disparity-through-time analysis. *Palaeontology*, DOI: [10.1111/pala.12364](https://doi.org/10.1111/pala.12364)
6. 2017: Healy K, **Guillaume T**, Kelly SBA, Inger R, Bearhop S, Jackson AL. SIDER: an R package for predicting trophic discrimination factors of consumers based on their ecology and phylogenetic relatedness. *Ecography*, DOI: [10.1111/ecog.03371](https://doi.org/10.1111/ecog.03371)
5. 2017: Turvey SA, Crees JJ, Hansford J, Jeffree TE, Crumpton N, Kurniawan I, Setiyabudi E, **Guillaume T**, Paranggarimu U, Dosseto A, van den Bergh GD. Quaternary vertebrate faunas from Sumba, Indonesia: implications for Wallacean biogeography and evolution *Proceedings of the Royal Society B*, 284 20171278, DOI: [10.1098/rspb.2017.1278](https://doi.org/10.1098/rspb.2017.1278)
4. 2016: Kane A, Healy K, **Guillaume T**, Ruxton G, and Jackson AL. A Recipe for Scavenging - the natural history of a behaviour. *Ecography*, 39:001–011, DOI: [10.1111/ecog.02817](https://doi.org/10.1111/ecog.02817)
3. 2016: **Guillaume T** and Cooper N. Assessment of available anatomical characters for linking living mammals to fossil taxa in phylogenetic analyses. *Biology Letters*, 12 20151003 DOI: [10.1098/rsbl.2015.1003](https://doi.org/10.1098/rsbl.2015.1003)
2. 2016: **Guillaume T** and Cooper N. Effects of missing data on topological inference using a Total Evidence approach. *Molecular Phylogenetics and Evolution* 94:146–158, DOI: [10.1016/j.ympev.2015.08.023](https://doi.org/10.1016/j.ympev.2015.08.023)
1. 2014: Healy K, **Guillaume T**, Finlay S, Kane A, Kelly SBA, McClean D, Kelly DJ, Donohue I, Jackson AL and Cooper N. Ecology and mode-of-life explain lifespan variation in birds and mammals. *Proceedings of the Royal Society B*, 281(1784). DOI: [10.1098/rspb.2014.0298](https://doi.org/10.1098/rspb.2014.0298)

In review/in press - see more details on my [publications](#) page.