

Dr Kevin Healy

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Research Interests

My research focuses on macroecological patterns in the life history and trophic ecology of animals. I use a range of comparative and theoretical approaches across various animal taxonomic groups to test predictions relating to the role of body mass on animal life history strategies and trophic interactions.

I am also interested in applying developing new methods within my field and have developed several the R packages.

Education and Academic Career

2017 - current: Marie Curie Research Fellow, The University of St Andrews, Scotland.

I am currently working on my SCAVENGER project which aims to develop agent based models to understand the role of body size and other drivers on the evolution and ecology of scavenging foraging.

2015 - 2017: Research Fellow in Zoology, Trinity College Dublin.

I tested questions regarding how body size, ancestral relationships and ecology determine species life history strategies in Prof. Yvonne Buckley's lab.

2011 - 2015: Ph.D. in Zoology, Trinity College Dublin.

Thesis title: Predator-prey allometry across body size and interaction dimensionality.

I showed how various ecological and physiological traits define predator-prey interactions. Supervised by Dr. Andrew Jackson and Dr. Andrew Parnell.

2007-2011: B.A. Mod in Zoology, First class honours (77%), Trinity College Dublin.

Revived a Gold Medal for my final year thesis.

2010: Ureka research position in SoMER program, National College of Ireland Maynooth.

Awards and Grants

2017: Marie Skłodowska-Curie Individual Fellowship (MSCA-IF). Funded by Horizon 2020 (€183,454.80).

2017: Government of Ireland Postdoctoral Fellowship. Funded by the Irish Research Council (€91,330) *I declined this award to accept the MSCA-IF.

2014: Gordon Research Seminar mentoring program position. Funded by Gordon Research Conferences and the National Science Foundation. (€1,300)

2016: Winner of the Postdoc category of the Trinity College Dublin, School of Natural Sciences lightning talks.

2014: Awarded runner up in both the TCD School of Natural Sciences postgraduate lightning talks and at the joint Zoology and Botany postgraduate symposium.

2014: Awarded runner up in the "I'm a scientist get me out of here" outreach competition

2014: Awarded prize of top contributor prize in the to research discussion group "NERD club".

2011: Awarded Gold medal for exceptional merit at degree examinations in final year of B.A Mod. Zoology by coming first in class and achieving an overall final year mark of 77%.

Publications

Healy, K., Guillaume, T., Kelly, S.B.A., Inger, R., Bearhop, S., Jackson, A.L. 2017. *SIDER*: an R package for predicting trophic discrimination factors of consumers based on their ecology and phylogenetic relatedness. *Ecography*. doi:10.1111/ecog.03371 Link to paper. 6 Google scholar citations.

Adam Kane, **Healy, K.**, Guillaume, T., Ruxton, G., and Jackson A.L. 2017. A recipe for scavenging and natural history. *Ecography*. doi:10.1111/ecog.02817 Link to paper. 4 Google scholar citations.

Kane, A., ***Healy, K.**, Ruxton, G.D., and Jackson, A.L. 2016. Body size drives importance of scavenging in theropods. *The American Naturalist*. **6** (187), 706-716. DOI: 10.1086/686094 Link to paper. *As Co-first author I co-conceived the idea and carried out the data collection, analysis and co-wrote of the paper. 4 Google scholar citations.

Donohue, I., Hillebrand, H., Montoya, J.M., Petchey, O.L., Pimm, S.L., Fowler, M.S., **Healy, K.**, Jackson, A.L., Lurgi, M., McClean, D., O'Connor, N.E., O'Gorman, E.J., Yang, Q. 2016 A., **Healy, K.**, Ruxton, G.D., and Jackson, A.L. 2016. Navigating the complexity of ecological stability. *Ecology Letters*. **19** (9), 1172-1185. doi:10.1111/ele.12648 Link to paper. I contributed by developing methods to calculate a stability score integrating across multiple ecological dimensions. 39 Google scholar citations.

Healy, K., Guillaume, T., Finlay, S., Kane, A., Kelly, S.B.A., McClean, D., Kelly, D.J., Donohue, I., Jackson, A.L. and Cooper, N., 2014. Ecology and mode-of-life explain lifespan variation in birds and mammals. *Proceedings of the Royal Society B*, **281**(1784), 20140298. DOI:10.1098/rspb.2014.0298. Link to paper. This publication received significant media attention both nationally (e.g. the Moncrieff show, Irish Independent) and internationally (Discovery Channel) and has 69 Google scholar citations.

Healy, K., McNally, L., Ruxton, G., Cooper, N. and Jackson, A.L. 2013. Metabolic rate and body size linked with perception of temporal information. *Animal Behaviour*. **86**, 685-696. DOI:10.1016/j.anbehav.2013.06.018. Link to paper. This was extensively covered in the media including coverage from The Guardian, The Economist, an appearance in BBC World News and has the forth highest ever alt-metric score for this journal. This publication has 64 Google scholar citations.

Donohue, I., Petchey, O.L., Montoya, J.M., Jackson, A.L., McNally, L., Viana, M., **Healy, K.**, Lurgi, M., O'Connor, N.E. and Emmerson, M.C. 2013. On the dimensionality of ecological stability. *Ecology Letters*. **16**, 421-429. DOI:10.1111/ele.12086. Link to paper. I co-developed the conceptual framework and statistical analysis used to produce the multidimensional ellipsoids and contributed to writing the manuscript. This publication has 108 Google scholar citations.

Comment response

Healy, K. 2015. Eusociality but not fossoriality drives longevity in small mammals. *Proceedings of the Royal Society B*, **282**, 20142917. DOI:10.1098/rspb.2014.2917. Link to paper. Single author. I carried out additional analysis in response to a comment on my 2014 paper where I show eusociality but not fossoriality is a driver of longevity in mammals. This publication has 5 Google scholar citations.

Statistical packages

Guillaume, T., **Healy, K.**, 2014. mulTree: a package for running MCMCglmm analysis on multiple trees. ZENODO. DOI: 10.5281/zenodo.12902 <https://github.com/TGuillaume/mulTree> Link to package. This package is hosted on GitHub and has been cited 8 times.

Forthcoming Papers

Healy, K., Ezard, T.H.G., and Jones, O.R., Salguero-Gmez, R., and Buckley, Y.M. Beyond the fast-slow continuum in animal life-histories. In review in *textitNature*.

I conceived the concept, collected the data, performed the analysis and wrote the manuscript.

Inger, R., Kelly, D.J., Bearhop, S., Guillerme, T., Hartley, I.R., **Healy, K.**, Jackson, A.L., Kelly, S.B.A., Mainwaring, M.C., Rowe, L., Sherley, R.B., and Grey, Jonathan. Swallows powered by natural gas? A novel carbon subsidy to terrestrial systems. In review in *textitNature*.

Healy, K., Carbone, C., and Jackson, A.L. Venom evolution in snakes is driven by body size, habitat dimensionality and a diet of eggs. In review in *textitEcology Letters*.

I show that the evolution of venom toxicity and volume are driven by snake body size, diet and the dimensionality of the habitat.

Outreach, teaching and academic service

Outreach

- Public speaking including a TEDxUCD talk on lifespan evolution, talks in Science Gallery Dublin on subjects including venom evolution and bioluminescence.
- I have co-organised three Discover Research Night events in the TCD Zoology Museum aimed at communicating research in evolution and ecology to the general public. These events have attracted a combined attendance of over 600.
- I have also contributed science communication pieces for the Journal of Animal Ecology ([link](#)) and to the EcoEvo blog, with one of my posts reaching the semifinal stages of the 3 quirks daily science blog awards.
- I also produce short videos and images as tools to communicate my research (see website).
- I have been involved in numerous outreach events including BioBlitz events, PubPhD, Soapbox Science and I was a finalist in the 2014 "I'm a scientist get me out of here" event.
- Postgraduate Representative for the Zoology Department 2014-15.

Professional society affiliation

- I am currently a committee member of the Irish Ecological Association (IEA) and the British Ecological Society (BES) Macroecology special interest group. I am also a member of the European Society for Evolutionary Biology (ESEB), and the American Society of naturalists

Reviewing

- I regularly act as a reviewer for major international academic journals including Ecology Letters, Current Biology, Journal of Animal Ecology, Perspectives in Plant Ecology, Scientific Reports, Evolution and Systematics, Animal Behaviour, Rapid Communications in Mass Spectrometry, the Journal of Biogeography, and Proceedings of the Royal Society B. See my publons reviewer profile for more information.
- I have also acted as a reviewer for research grants awarded by The German Israeli Foundation for Scientific Research and Development.

Teaching Experience

Teaching and Tutorials: I have taught courses and workshops for Undergraduate, Masters and Postgraduate level students. Classes include;
 Statistics for the TCD masters course in Biodiversity and Conservation;
 Comparative analysis for postgraduate students in University College Cork, Trinity College Dublin and the Max Plank institute in Rostock, Germany;
 Macroevolution as part of a final year Zoology evolution Module;
 Introduction to Evolution for 2nd year science students;
 Research comprehension for final year Zoology students.

- Field Course Assistant:* I was a field assistant for a week long ecology field course for 3rd year zoology students teaching field skills in small mammal trapping, insect and bird identification and other general ecology field skills.
- Project supervision:* I have supervised three final year TCD zoology student thesis projects and I am currently supervising a final year thesis student in St Andrews.

Conferences and invited presentations

- 11/08/2017:** Attended the annual ESA conference in Portland, Oregon, USA. I presented my talk "Mapping animal life-history strategies using the COMADRE database".
- 7/12/2016:** Invited seminar speaker to the Animal and Plant Sciences Department in The University of Sheffield. I presented my talk "Mapping animal life-history strategies using the COMADRE database".
- 14/12/2016:** Attended the British Ecological Society in Liverpool, UK. I presented my talk "Mapping animal life-history strategies using the COMADRE database".
- 3/10/2016:** Attended the EvoDemos conference at the University of Virginia US. I presented my talk "Mapping animal life-history strategies using the COMADRE database".
- 4/11/2015:** TEDxUCD invited speaker were I presented my talk "Listening to evolutionary oddities".
- 9/10/2015:** Invited speaker to the Dublin Science Gallery Cfe Dark Secrets event. I presented my talk "BIOLUMINESCE: How living organisms produce and emit light".
- 16/12/2015:** Attended the British Ecological Society Annual meeting in Edinburgh. Were I presented my talk "Venom evolution in snakes; body size, habitat dimensionality and a diet of eggs".
- 19/7/2014:** Attended the Gordon Research Seminar "Unifying Ecology Across Scales". were I gave a talk on my theropod research entitled "A tail of two extremes".
- 2014:** I was the keynote student speaker at the BES Macroecology meeting Nottingham. with my talk "Ecology and mode-of-life explain lifespan variation in birds and mammals".
- 2014:** I was an invited speaker for the Irish Longitudinal Study on Aging group (TILDA). With my talk "Ecology and mode-of-life explain lifespan variation in birds and mammals".
- 2014:** I was an invited speaker to the Dublin Science Gallery Cafe DEAD BEATS event. with my talk on my snake venom evolution research "Why so venomous?".
- 2013:** Attended the ESEB XIV Congress, Lisbon, Portugal. Were I presented my talk "Metabolic rate and body size linked with perception of temporal information".
- 2013:** Attended the British Ecological Society Macroecology SIG meeting in Sheffield. I presented my talk "Metabolic rate and body size linked with perception of temporal information".
- 2013:** Attended the TCD Zoology and Botany Postgraduate Symposium. Were I presented "Metabolic rate and body size linked with perception of temporal information".
- 2012:** Attended the IsoEcol: International Conference on Applications of Stable Isotope Techniques to Ecological Studies, Brest, France. I presented my talk entitled "Accounting for the process of foraging in source-level variation in isotopic mixing models".

Workshops

Workshops I have taught

- 2016:** Ran two day workshop on "Using Bayesian approaches in comparative analysis" University College Cork, Cork.
- 2016:** Taught course on "Phylogentic comparative methods using MCMCglmm". as part of the "Comparative Approaches in Ecology and Evolution" workshop. Max Planck Institute for Demographic Research (MPIDR), Rostock, Germany.
- 2015:** Teaching Assistant on "Using the COMPADRE Plant Matrix Database for comparative plant demography" workshop. BES annual meeting, Edinburgh.

Workshops I have attended

- 8-10/1/2018:** Royal Society Disparity workshop: Collaborative meeting developing ideas regarding morphological disparity. Chicheley Hall, UK.
- 30/3/2017:** Invited participant of the Royal Irish Academy Masterclass series with with Prof. Christian Stenseth.
- 05/10/2016:** Individual stochasticity: An introduction to demographic models and analysis, Hal Caswell, University of Virginia.
- 2015:** Methods in Ecology and Evolution Workshop on Open Science, Darwin House London.
- 2014:** Tansley Workshop: Collaborative meeting to develop metrics to measure ecosystem multistability, Silwood Park, Imperial College London.
- 2014:** Software Carpentry Workshop covering Unix, Git repositories and creating R packages, University of Nottingham.
- 2013:** Spatial Analysis in R Workshop, Barry Rowlingson, University of Sheffield.
- 2013:** Introduction to Morphometrics Workshop, Francois Gould, Trinity College Dublin.
- 2013:** IUCN Red List of Ecosystems Workshop, Edmund Barrow, Trinity College Dublin.
- 2012:** Introduction to Bayesian analysis using WinBugs, David Lund, University of Cambridge.
- 2012:** Innovation Academy Creative thinking workshop, Trinity College Dublin.
- 2012:** Innovation Academy Film production workshop, Trinity College Dublin.
- 2012:** Introduction to the website management software DreamWeaver, Trinity College Dublin.
- 2011:** Introduction to Stable Isotope Mixing models, Andrew Jackson, Trinity College Dublin.
- 2009:** Mayfly Identification workshop, Mary Kelly Quinn, National Biodiversity Data Centre.