Dr Kevin Healy

Research Fellow in Zoology at Trinity College Dublin

Theoretical evolutionary ecologist with diverse quantitative skills including comparative analysis and metabolic modelling approaches and an interest in life-history and trophic interactions at ecological and evolutionary scales.

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Education and Academic Career

2015 - Present Reserch Fellow in Zoology, Trinity College Dublin.

My current position focuses on using quantitative techniques to study variation across species life-history traits using the animal and plant demography datasets COMADRE and COMPADRE.
Supervised by Prof. Yvonne Buckley (Trinity College Dublin) and Dr Salguero-Gomez (University of Sheffield).

2011 - 2015: Ph.D. in Zoology, Trinity College Dublin. Title: Predator-prey allometry across body size and interaction dimensionality. Supervised by Dr. Andrew Jackson and Dr. Andrew Parnell.

I investigated how various ecological and physiological traits, including visual perception, species lifespan and venom production, define predator-prey interactions. I focused on how these traits scale with size and habitat dimensionality and how this approach can link these processes across ecological and evolutionary scales.

2007-2011: B.A. Mod in Zoology, First class honours and Gold Medal, Trinity College Dublin Thesis: ”Fractal structure of intestinal parasite communities in field mice”. (Overall mark of 82%).

2010: Ureka research position in SoMER program, National College of Ireland Maynooth.
Ten week program under the supervision of Dr. Christen Griffen investigating the evolutionary divergence of entomopathogenic nematodes.

Publications

Healy, K., Guillerme 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.

Lead author. Developed and carried out the main analysis along with data collection and writing of the manuscript. This publication has 14 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.

Lead author. Developed and carried out the main analysis along with data collection and writing of the manuscript. Extensively covered in the media with the highest ever alt-metric score for this journal. This publication has 14 google scholar citations.

Donohue, I., Petchey, O.L., Montoya, J.M., Jackson, A.L., McNally, L., Viana, M., **Healy, K**., Lurgi, M., OConnor, 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 30 google scholar citations.

Other Publications

In review

Kane, A., Ruxton, G.D., Jackson, A.L., and **Healy, K**. 2015. Body size drives importance of scavenging in theropods. *In review AmNat*.

Senior author. Showed that theropod dinosaurs of intermediate body size are more efficient scavengers than individuals of extreme body sizes by using agent based modelling. I carried out the data collection, analysis and writing of the paper.

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 carrying out additional analysis in response to a comment on my Healy et al 2014 paper where I show eusociality but not fossoriality is a driver of longevity in mammals.

Skills

Quantitative skills

- Modelling and Statistical analysis in R, for example phylogenetic comparative analysis using both likelihood (PGLS) and Bayesian (MCMCglmm) approaches.
- Bayesian modelling using JAGS software and High performance computing using UNIX based parallel computing in the Trinity Centre for High performance Clusters.
- Individual based modelling using Netlogo software.

Field, Communication and Laboratory skills

- Typesetting using LaTex.
- Version control and data sharing: GitHub and Figshare accounts.
- Graphics software; including Inkscape, GIMP and ImageJ.
- Public speaking; including radio, television and public events.
- Fieldwork experience in small mammal trapping, parasitic helminth identification and archaeological excavation.
- Molecular techniques including PCR and AFLAP gained during UREKA program.

Awards and Grants

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

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

2014: Named top contributer to TCD ecology and evolution discussion group "NERD club".

2011: Ph.D. TCD in Theoretical Ecology. Funded by the HEA through the PRTLI-5 and co-funded by the ERDF. (€90,000)

2011: Awarded Gold medal by TCD 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%.

2010: Ureka research position in SoMER (Summer of Molecular Evolution Research) program National College of Ireland Maynooth. Funded by Science Foundation Ireland. (€3000)

Conference and invited presentations

2015: Invited speaker to the Dublin Science Gallery Caf Dark Secrets event.
Talk: "BIOLUMINESCE: How living organisms produce and emit light"

2014: Gordon Research Seminar "Unifying Ecology Across Scales".
Talk: "A tail of two extremes".
Poster: "Ecology and mode-of-life explain lifespan variation in birds and mammals".

2014: Keynote student talk at BES Macroecology meeting Nottingham.
Talk: "Ecology and mode-of-life explain lifespan variation in birds and mammals".

2014: Invited speaker for the Irish Longitudinal Study on Aging (TILDA).
Talk: "Ecology and mode-of-life explain lifespan variation in birds and mammals".

2014: Invited speaker to the Dublin Science Gallery Caf DEAD BEATS event.
Talk: "Why so venomous?"

2014: University College Dublin Earth Institute Industry and enterprise showcase.
Poster: "Ecology and mode-of-life explain lifespan variation in birds and mammals".

2013: ESEB XIV Congress, Lisbon, Portugal
Talk: "Metabolic rate and body size linked with perception of temporal information"
Poster: "Ecology and mode-of-life explain lifespan variation in birds and mammals".

2013: British Ecological Society Macroecology SIG meeting.
Talk: "Metabolic rate and body size linked with perception of temporal information".

2013: University College Dublin Earth Institute Industry and enterprise showcase.
Poster: "Metabolic rate and body size linked with perception of temporal information".

2013: Trinity College Dublin Zoology and Botany Postgraduate Symposium.
Talk: "Metabolic rate and body size linked with perception of temporal information".

2012: IsoEcol: International Conference on Applications of Stable Isotope Techniques to Ecological Studies, Brest, France.
Talk: "Accounting for the process of foraging in source-level variation in isotopic mixing models".

Workshops

2015: Methods in Ecology and Evolution Workshop on Open Science
BES, Darwin House London.
2014: Tansley Workshop: Collaborative meeting to develop metrics to measure ecosystem multistabilty, Silwood Park, Imperial College London.
2014: Software Carpentry Workshop covering Unix, Git repositories and creating R packages, University of Nottingham.
2014: Integral Projection Models for ecoogical demography, Rob Salguero-Gmez and Yvonne Buckley, Trinity College Dublin.
2013: Spatial Analysis in R Workshop, Barry Rowlingson, University of Sheffield.
2013: Introduction to Morphometrics Workshop, Franois 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.

Academic service and outreach

Outreach

- 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 given several public talks, such as in the Science Gallery Dublin, and I produce videos and images relating to my research (see website).
- I am a regular contributor to the EcoEvo blog with one of my posts reaching the semifinal stages of the 3 quirks daily science blog awards.
- I have been involved in numerous outreach events including BioBlitz events, PubPhD, Soapbox Science and I was a finalist in the "I'm a scientist get me out of here" event in 2014.
- Postgraduate Representative for the Zoology Department 2014-15.

Professional society membership

- European Society for Evolutionary Biology (ESEB) and British Ecological Society (BES)

Reviewing

- I regularly act as a reviewer for several international academic journals including the Journal of Animal Ecology, the Journal of Biogeography, Scientific Reports and Proceedings of the Royal Society B.

Teaching Experience

Teaching and Tutorials:	I have lectured on both Undergraduate (Evolution) and Masters (Statistics) level courses as well as running several statistics help workshops and research comprehension courses for Zoology Senior Sophisters.
Field Course Assistant:	Field assistant for week long intensive course on ecology for Junior Sophister; teaching field skills in small mammal trapping, insect and bird identification and ecology field skills.
Project supervision:	Co-supervision of Senior Sophister Zoology student thesis project entitled Fractal structure of intestinal parasite communities.

References

Contact for References