Kevin Healy

Zoology PhD Candidate at Trinity College Dublin

Theoretical evolutionary ecologist with diverse quantitative skills focusing on using comparative analysis and energetic modelling approaches to understand trophic interactions at ecological and evolutionary scales.

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Academic 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. Journal Impact Factor:5.68

My second full peer-reviewed paper as lead author. I developed and carried out the main analysis and was heavily involved in the initial conception, data collection and writing of the manuscript.

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. Journal Impact Factor:3.4

My first full peer-reviewed paper as lead author. I carried out the data collection, statistical analysis and writing of the paper. It was extensively covered in the media with the highest ever alt-metric score for this journal.

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. Journal Impact Factor:17.95

This was my first full peer-reviewed paper. I was involved in both the development of the conceptual framework during a three-day workshop and also in the development of the statistical analysis used to produce the multidimensional ellipsoids.

Education

2011-Present: PhD in Zoology, Trinity College Dublin. Title:"General scaling of predator-prey interactions". Supervised by Dr. Andrew Jackson and Dr. Andrew Parnell.

I investigated how various ecological and physiological traits such as sensory perception, manoeuvrability and lifespan define the ability of individuals to interact with one another. I focused on traits associated with scaling relationships such as mass and metabolic rates and how these traits link towards more complex structures across levels from individuals to ecosystem function.To date I have two peer-reviewed publications in international journals directly arising from my PhD project along with an addition publication on ecosystem stability arising form my involvement in several workshops.

2007-2011: B.A. Mod in Zoology, First class honours and Gold Medal, Trinity College Dublin Thesis: "Fractal structure of intestinal parasite communities in the field mouse".

Projected showing that the distribution of intestinal parasite body sizes follows a distribution predicted from the fractal structure of the mouse intestine. (Overall mark of 82%).

2010: Ureka research position in SoMER (Summer of Molecular Evolution Research) program, National College of Ireland Maynooth.

Ten week program under the supervision of Dr. Christen Griffen researching the evolutionary divergence of several morphs of the entomopathogenic nematode species by developing sequencing techniques to investigate the divergence of nematode morphs and their associated symbiotic bacteria strains.

Awards and Grants

2011: Ph.D. TCD in Theoretical Ecology. Funded by the HEA through the PRTLI-5 and co-funded by the ERDF. (€64,000)

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 presentations

2014: Trinity College Dublin Zoology and Botany Postgraduate Symposium.
Talk:"The evolution of Toxicity in Snakes, Quantity over Quality?".

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: Fifteen minute talk and poster presentation.
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

2014: Tansley Workshop: Collaborative meeting to develop metrics to measure ecosystem multistabilty. Silwood Park, Imperial College London.

2013: Spatial Analysis in R Workshop, Barry Rowlingson, University of Sheffield.

2013: Introduction to Morphometrics Workshop, François 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 Species Identification workshop , Mary Kelly Quinn, National Biodiversity Data Centre.

Skills

Quantitative

- Modelling and Statistical analysis in R, for example phylogenetic comparative analysis using both likelihoods (PGLS) and Bayesian based (MCMCglmm) approaches.
- Bayesian modelling using BUGS 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

- Version control and data sharing: GitHub and Figshare accounts
- Document creation and formatting with LaTex
- Graphics software Inkscape, GIMP and ImageJ
- Experience with broadcasting media, eg interviewed on BBC4 World News and RTE radio
- Experience with print media, eg covered in Guardian and Irish times
- Fieldwork experience in small mammal trapping, parasitic helminth identification archaeological excavation (2007-2009)
- Molecular techniques including PCR and AFLAP gained during UREKA program

Academic service and outreach

Outreach

- I Organised a Discover Research Night event in TCD Zoology Museum aimed at communicating and evolution research to the general public. Estimated attendance of 200.
- I regularly produce research Videos and Images aimed at both the scientific and the general public.
- Regular contributor of articles to the EcoEvo blog - http://www.ecoevoblog.com/
- Regularly involved in outreach events including BioBlitz (public cataloging of Biodiversity) GameJam (Welcome Trust), Soapbox Science and I'm a scientist get me out of here.

Professional society membership

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

Teaching Experience

Teaching and Toturials:	I have ran several external R and statistical help workshops and classes of research comprehension course for Senior Sophister Zoology class.
Field Course Assistant:	Field course assistant for week long intensive terrestrial course for Junior Sophister teaching field skills in small mammal trapping, insect and bird identification and general field skills
Project subervision:	Co-supervision of Senior Sophister Zoology student thesis project entitled "Fractal structure of intestinal parasite communities".
Demonstrating:	Demonstrating in Data Handling (Senior Sophister), Fundamentals in ecology (Junior Sophister), Physiology and Botany (Senior Freshman).

References

Contact for References