

# DR. ANTHONY CARAVAGGI

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## ACADEMIC QUALIFICATIONS

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Date	Qualification	Topic	Organisation
2016	PhD	Conservation biology	Queen's University Belfast
2011	MRes	Biodiversity and conservation	University of Leeds
2009	BSc (Hons)	Zoology with conservation	Bangor University

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## CAREER HISTORY

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Date	Job Title	Department	Organisation
2017-	PhD	School of BEES	University College Cork

### *Professional activities*

Associate Editor	<i>Remote Sensing in Ecology and Conservation</i>
Peer reviewer	<i>Biological Conservation; Bird Study; Canadian Journal of Zoology; Diversity and Distributions; Global Change Biology; Journal of Natural History; Journal of Zoology; Mammal Communications; Mammal Research; Mammal Review; PLOS One; Remote Sensing in Ecology and Conservation; Zoo Biology.</i>
Funding review	British Ecological Society Grant Review College

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## RESEARCH

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I employ field and laboratory-based experiments, along with archival data, to answer specific questions relating to the ecology of species and communities to inform conservation, management and policy-related processes. My current work includes an analysis of mammal activity patterns, landscape-scale habitat and distribution modelling, quantification of the impacts of non-native rodents on insular seabirds and an assessment of wildlife management practises.

Research Interests	Conservation biology; urban ecology; invasive species; population & community ecology; movement & spatial ecology; rare and endangered species; sustainability; rewilding; citizen science
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## PUBLICATIONS

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### *Peer-reviewed journals*

2017	O'Halloran J, Kelly TC, Quinn JL, Irwin S, Fernández-Bellon D, <b>Caravaggi A</b> , Smiddy P. Current ornithological research in Ireland: seventh Ornithological Research Conference, UCC, November 2017. <i>Irish Birds</i> . 10: 598–638.
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- 2017 Havlin P, **Caravaggi A**, Montgomery WI. The diet and abundance of an introduced insular population of Red-Necked Wallabies, *Macropus rufogriseus*. *Canadian Journal of Mammalogy*. doi:10.1139/cjz-2017-0090.
- 2017 **Caravaggi A**, Montgomery WI, Reid N. Management and control of invasive brown hares (*Lepus europaeus*): contrasting attitudes of selected environmental stakeholders and the wider rural community. *Proceedings of the Royal Irish Academy: Biology & Environment*. 117B:1-11.
- 2017 Tennant JP, Graziotin D, Jacques DC, Waldner F, Dugan JM, Mietchen D, Elkhatab Y, Collister LB, Pikas CK, Crick T, Masuzzo P, **Caravaggi A**, et al. A multi-disciplinary perspective on emergent and future innovations in peer review. *F1000Research*. 6:1151.
- 2017 **Caravaggi A**, Banks P, Burton C, Finlay CMV, Hayward M, Haswell, PM, Rowcliffe JM, Wood M. A review of camera trapping for conservation behaviour research. *Remote Sensing in Ecology and Conservation*. doi: 10.1002/rse2.48.
- 2017 Caravaggi A. remBoot: An R package for Random Encounter Modelling. *Journal of Open Source Software*. 2(10).
- 2017 **Caravaggi A**, Leach K, Santilli F, Rintala J, Helle P, Tiainen J, Bisi F, Martinoli A, Montgomery WI, Reid N. Niche overlap of mountain hare subspecies and the vulnerability of their ranges to invasion by the European hare; the (bad) luck of the Irish. *Biological Invasions*. 19(2): 655-674.
- 2016 **Caravaggi A**, Zaccaroni M, Riga F, Schai-Braun SC, Dick JTA, Montgomery WI, Reid N. An invasive-native mammalian species replacement process captured by camera trap survey Random Encounter Models. *Remote Sensing in Ecology and Conservation*. 2: 45-58.
- 2015 **Caravaggi A**, Montgomery WI, Reid N. Range expansion and comparative habitat use of insular, congeneric lagomorphs: invasive European hares *Lepus europaeus* and endemic Irish hares *Lepus timidus hibernicus*. *Biological Invasions*. 17(2): 687-698.

#### *In review*

**Caravaggi A**, Vallely M-C, Hogg K, Freeman M, Fadaei E, Reid N, Dick JTA, Tosh D. Circadian activity, occurrence, and predator-prey relationships of free-ranging mammals revealed by camera traps. *PeerJ*.

**Caravaggi A**, Plowman A, Wright D, Bishop C. The composition of captive ruffed lemur (*Varecia* spp.) diets in UK zoological collections, with reference to the problems of obesity and iron storage disease. *Journal of Zoo Animal Research*.

**Caravaggi A**, Cuthbert RJ, Ryan RG, Cooper J, Bond AL. The cumulative impacts of introduced house mice on the breeding success of nesting seabirds on Gough Island. *Ibis*.

#### *In development (working titles)*

**Caravaggi A**, Irwin S, Lusby J, Ruddock M, Mee A, Nagle T, Tierney D, O'Toole L, O'Neill S, O'Halloran J. Right place, wrong time: Factors affecting Hen Harrier nesting locations and productivity in Ireland.

**Caravaggi A**, McCarthy A, Irwin S, O'Halloran J. A review of the conservation ecology of Hen Harriers, *Circus cyaneus*, in Ireland.

**Caravaggi A**, Middleton O, Robertson D, Broom C, Lockwood H, Irwin S, Smith C, Jones Z, Thompson R, Watts S, Cooper P. What's on your campus? Non-human mammals at UK Universities revealed via citizen science.

**Caravaggi A**, Turner D, Cameron T. I've got a bad feeling about this: a study into factors affecting reed-nesting birds.

English H, **Caravaggi A**. Tie me wallaby down; the historical and present distribution of wallabies in the UK.

### ***Book chapters***

**Caravaggi A** (*in review*) Lagomorpha Life History. In: Vonk J, Shackelford TK (eds.) *Encyclopedia of Animal Cognition and Behavior*. Springer.

**Caravaggi A** (*in review*) Lagomorpha Navigation. In: Vonk J, Shackelford TK (eds.) *Encyclopedia of Animal Cognition and Behavior*. Springer.

### ***Other publications***

2017 **Caravaggi A**, James K. Twittersphere: Conferencing in 140 characters. *Nature Correspondence*. 549: 458

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## **TEACHING**

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As a teacher I aim to provide my students with skills, knowledge and confidence critical to their academic and personal development. I take an inclusive approach, developing strong relationships and encouraging discussion. I am currently working towards a Postgraduate Certificate in Teaching and Learning in Higher Education qualification and intend to pursue a HEA Teaching Fellowship.

### ***Module development***

2017 *BL6024 Quantitative skills for biologists using R*.  
Quantitative skills required by postgraduate students to successfully conduct and publish their research, with a focus on data analysis and graphing, statistics, and basic modelling, as generally implemented by zoologists and ecologists.

### ***Teaching***

2017	BL6024 Quantitative skills for biologists using R.
2016	South American rainforest biodiversity and conservation.
2015	Introduction to GIS ( <i>Teaching Assistant</i> )
2015	Animal Biology ( <i>Teaching Assistant</i> )
2014-2015	Undergraduate residential field course
2014	Bird survey techniques

### ***Thesis supervision***

<b>Date</b>	<b>Degree</b>	<b>Organisation</b>
2017-	MRes	University College Cork
2017	BSc	University College Cork
2015	MSc	Queen's University Belfast
2015	MSc	Queen's University Belfast
2014	MSc	Queen's University Belfast
2013	MSc	Queen's University Belfast
2013	BSc	Queen's University Belfast

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### **FELLOWSHIPS, FUNDING AND AWARDS**

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<b>Date</b>	<b>Award</b>	<b>Value</b>	<b>Organisation</b>
2017	Project tender	£174,000	National Parks and Wildlife Service
2017	Visiting Research Fellow	-	Queen's University Belfast
2015	Training and Travel grant	£500	British Ecological Society
2014	Research grant	£2,000	People's Trust for Endangered Species
2012	PhD studentship	£82,720	Northern Ireland Environmental Agency
2010	Master's scholarship	£7,500	Natural Environment Research Council

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### **PRESENTATIONS**

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#### ***Conferences (talks)***

- 2017 International Congress for Conservation Biology, Cartagena.
- 2017 World Seabird Twitter Conference.
- 2017 The Mammal Society, Newcastle (*invited keynote*).
- 2017 Mammal Society Spring Conference, Cambridge.
- 2016 British Ecological Society Annual Meeting, Liverpool.
- 2016 North Wales Mammal Symposium, Bangor
- 2016 The Mammal Society, Lancaster (*invited keynote*).
- 2016 Mammal Society Spring Conference, Yarnfield
- 2015 7th European Congress of Mammalogy, Stockholm, Sweden.
- 2015 Vth International Wildlife Management Congress, Sapporo, Japan.
- 2015 Mammal Society Spring Conference, Lancaster.
- 2014 Mammal Society Spring Conference, Birmingham.
- 2013 11th International Mammal Congress, Belfast.
- 2013 Mammal Society Student Conference, Staffordshire.
- 2012 2nd All Ireland Mammal Symposium (AIMS), Dublin
- 2012 4th World Lagomorph Conference, BOKU, Vienna.
- 2009 11th BIAZA Research Symposium, Blackpool.

#### ***Invited seminars***

- 2014 Biological Sciences, Bangor University.

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## CONFERENCE ORGANISATION

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- 2017 7<sup>th</sup> Irish Ornithological Congress, Cork (*scientific committee*).  
2017 Biotweeps Twitter Conference (*principal organiser*).  
2014-17 Mammal Society Student Conferences, various (*principal organiser*).

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## PERSONAL DEVELOPMENT

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### *Training and workshops*

- 2017 Postgraduate Certificate in Teaching and Learning in Higher Education  
2017 Advanced Training in Systematic Review and Meta-Analysis  
2017 Level 3 Teaching Assistant  
2017 Engagement and Public Outreach  
2017 Remote mammal surveying (*workshop*)  
2016 Mentorship training  
2016 Developments in conservation ecology (*workshop*)  
2016 Acoustic analysis of marine mammal vocalisations (*workshop*)  
2012 Lagomorph systematics (*workshop*)

### *Licenses and certification*

- 2018 LAST Ireland  
2014 ASPA laboratory animal handling license (TSA/47/14)  
2014 Emergency first aid; field first aid  
2012 BTO bird ringing 'C' license  
2008 Marine mammal medic, BDMLR  
2002 Full manual UK driving license, held without incident or penalty

### *Societal memberships (since)*

- 2017 British Ornithologist's Union  
2015 South Wales Mammal Group  
2015 Welsh Ornithological Society  
2013 Society of Conservation Biology (SCB)  
2012 The Mammal Society  
2012 British Ecological Society  
2011 Royal Society of Biology  
2009 The British Trust for Ornithology

### *Organisational and working groups*

- 2017 SCB Participatory and Citizen Science working group  
2016 South Wales Mammal Group (*committee*)  
2016 Mammal Society Council (*Student Engagement Officer*)  
2012 SCB Urban Ecology working group

### ***Additional roles***

- 2016-18 University Mammal Challenge, The Mammal Society (*coordinator*)
- 2016 Session chair, British Ecological Society Annual Meeting
- 2016 National Geographic (*scientific advisor*)
- 2016 British Ecological Society Women in Ecology (WIE) mentor
- 2015-17 Lagomorph consultant, The Mammal Society
- 2013-17 UK STEM Ambassador
- 2013 Wildlife consultant, Biological records for the North East of Scotland (NESBReC)
- 2012-15 EBEE postgraduate representative, Queen's University Belfast
- 2012-15 SBS Athena SWAN committee, Queen's University Belfast
- 2007-09 Undergraduate student representative, Bangor University
- 2007-09 Founding committee, Bangor University Zoological Society

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## **SCIENCE COMMUNICATION**

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I am a strong supporter of science communication and outreach. I believe that it is important to encourage an interest in science and the natural world in people of all ages. Moreover, the success or failure of many modern conservation objectives increasingly require a connection with and understanding of the public. I have given talks to over 20 school, local interest, community and natural history groups in the UK, USA and Canada, in-person and via video calls.

### ***Contributions***

- 2017 Sanger Institute 25 Genomes (*species champion – St. Kilda wren*)
- 2017 Culture Night, University College Cork
- 2017 A brief history of an Early Career Researcher, *Errant Science*
- 2017 Rejected by the Rainforest, *I F-ing Love Conservation*
- 2017 Science communication article, CBS (*#bestcarcass, contributor*)
- 2017 Rabaiotti D, Caruso N 2017. Quercus books, ISBN: 9781786488275 (*contributor*)
- 2017 Student Science Partnerships, USA
- 2016-18 Skype a Scientist (*5 calls to date*)
- 2016 Is there intelligent life on Earth? Save our Souls magazine (*author*)
- 2016 Letters to a Pre-scientist (*correspondent*)
- 2015 Nature News (*invited comment*)
- 2015 Dear Alice, the hare might be sane after all, *QUBio*
- 2014-16 Various Local Mammal Group newsletters (*invited author*)
- 2014 Created @Biotweeps, a science communication Twitter project (>14.5k followers)
- 2014 Multi-school careers advice and speed-networking event (*invited expert*)
- 2013-18 I'm a Scientist Get Me Out of Here! Enquiry Zone & Careers Zone
- 2013 Science outreach event, Techniquet, Cardiff (*presenter for RSPB*)

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## **MEDIA ENGAGEMENTS**

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### ***Radio and podcasts***

- 2017 BBC Coventry & Warwickshire, UK
- 2017 The Edgar Ortega Radio Show, North America (*podcast*)

- 2016 SciComm with Dr. Mike, UK (*podcast; 2 shows*)
- 2015 BBC Radio Ulster, Northern Ireland
- 2015 BBC Radio Ulster, *Good Morning Ulster*, UK
- 2013 RTE Radio 1, *Mooney Goes Wild*, UK

### ***Television***

- 2015 Countryfile, BBC
- 2013 River Bann, RTE Television

### ***Other research-related media***

- 2017 The Washington Post (*interview*)
- 2016 Biotechnia.asia (*interview*)
- 2016 Camera traps reveal a hare-raising situation, *RSEC blog*, ZSL
- 2016 On closer inspection, it looks like a hare transplant, *QUBio*
- 2015 ScienceNews (*interview*)
- 2015 Communities and conservation in developing countries, *QUBio*
- 2015 Putting wildlife in the frame, *QUBio*
- 2015 BBC News (*interview and featured article*)
- 2014 Species profiles: Mountain hare and Irish hare, The Mammal Society
- 2014 A receding hare line and a brown toupee, *QUBio*

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## **SKILLS**

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Data analysis	R (packages include MuMIn, lme4, ggplot, remBoot, maptools, raster, SDMTTools, StatMatch, pdist, glmmulti, metafor), SPSS, Minitab, Distance, MARK, ArcGIS, QGIS, MaxEnt, MAVIS NVC, Patch Analyst, GeneMapper, Microsoft office, GitHub, RMarkdown, graphics packages (e.g. Photoshop, Illustrator), bespoke software.
Statistical	General linear and mixed-effects models, Principal Components Analysis, Species Distribution Modelling, Discriminant Function Analysis, diversity indices, Mahalanobis and Euclidean distance, cross-correlation functions, model averaging, Random Encounter Models, meta-analysis, other parametric and non-parametric tests
Field	Off-road driving (4x4), multi-taxa (mammal, bird, invertebrate, reptile, amphibian; UK coastal, marine and terrestrial) surveys (e.g. mark and recapture, distance sampling, camera traps, quadrats, scan/focal sampling;) and identification, habitat surveys, animal handling (amphibians, reptiles, invertebrates, and small-to-large birds and mammals), orienteering
Laboratory	Multi-taxa dissection (mammal, bird, amphibian, invertebrate), species identification via microscopy, ethological studies, tissue sampling, DNA manipulation, electrophoresis, atomic absorption and colourimetric spectroscopy, specimen preparation, soil chemical and biological analysis.

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## REFEREES

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- Prof. John O'Halloran School of Biological Earth and Environmental Sciences, University  
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