**Dr. Anthony Caravaggi**

School of Biological Earth and Environmental Sciences, University College Cork, Ireland  
**E-mail**: ar.caravaggi@gmail.com | **Website**: http://arcaravaggi.github.io

CAREER HISTORY

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| --- | --- | --- | --- |
| **Date** | **Job Title** | **Department** | **Organisation** |
| 2017- | Postdoctoral Researcher | School of BEES | University College Cork |
| 2017-18 | Visiting Research Fellow | Biological Sciences | Queen’s University Belfast |
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EDUCATION

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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 |

***Professional activities***

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| Associate Editor | *Remote Sensing in Ecology and Conservation.* |
| Peer reviewer | *African Journal of Ecology; Austral Ecology; 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; PeerJ; PLOS One; Remote Sensing in Ecology and Conservation; The European Zoological Journal; Zoo Biology.* |
| Funding review | British Ecological Society Grant Review College; Croatian Science Foundation. |
| Consultation | The Hen Harrier Reintroduction Project; University of Exeter and Natural England. |

RESEARCH

I employ field and laboratory-based experiments, along with archival data, to answer specific questions relating to the ecology of species and ecological communities to inform conservation, management and policy-related processes. My current work is broadly interdisciplinary, highly collaborative and includes analyses of activity patterns, landscape-scale habitat and distribution modelling, quantification of the impacts of invasive species on islands and an assessment of wildlife management practises.

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| Research Interests | Conservation biology; urban ecology; invasive species; population & community ecology; movement & spatial ecology; rare and endangered species; sustainability; rewilding; citizen science; remote sensing. |

**PUBLICATIONS**

***Peer-reviewed journals***

|  |  |
| --- | --- |
| 2018 | **Caravaggi A**, Cuthbert RJ, Ryan RG, Cooper J, Bond AL. (*In press*). The cumulative impacts of introduced house mice on the breeding success of nesting seabirds on Gough Island. *Ibis*. doi: 10.1111/ibi.12664. |
|  | **Caravaggi A**, Plowman A, Wright D, Bishop C. (2018) 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 and Aquarium Research.* 6: 51-49. |
| 2017 | O'Halloran J, Kelly TC, Quinn JL, Irwin S, Fernández-Bellon D, **Caravaggi A**, Smiddy P. Current ornithological research in Ireland: seventh Ornithological Research Conference, UCC, November 2017. *Irish Birds*. 10: 598–638. |
|  | Havlin P, **Caravaggi A**, Montgomery WI. The diet and abundance of an introduced insular population of Red-Necked Wallabies, *Macropus rufogriseus*. *Canadian Journal of Zoology*. 96(4): 357-365. |
|  | **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. |
|  | Tennant JP, Graziotin D, Jacques DC, Waldner F, Dugan JM, Mietchen D, Elkhatib 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. |
|  | **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*. 3(3): 109-122. |
|  | **Caravaggi A**. remBoot: An R package for Random Encounter Modelling. *Journal of Open Source Software*. 2(10). |
|  | **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. Seasonal and predator-prey effects on circadian activity of free-ranging mammals revealed by camera traps. *PeerJ.*

**Caravaggi A,** Irwin S, Lusby J, Ruddock M, O'Toole L, Mee A, Nagle T, O'Neill S, Tierney D, O'Halloran J. Factors affecting territory site selection and breeding parameters of Hen Harriers, *Circus cyaneus*. *Ibis.*

**Caravaggi A,** Irwin S, Lusby J, Ruddock M, O'Toole L, Mee A, Nagle T, O'Neill S, Tierney D, O'Halloran J. A review of anthropogenic pressures within the breeding range of the Hen Harrier (*Circus cyaneus*) in Ireland. *Bird Conservation International.*

***Book chapters***

|  |  |
| --- | --- |
| 2018 | **Caravaggi A.** Lagomorpha Life History. In: Vonk J, Shackelford TK (eds.) *Encyclopedia of Animal Cognition and Behavior*. Springer. doi: 10.1007/978-3-319-47829-6\_1206-1 |
|  | **Caravaggi A.** Lagomorpha Navigation. In: Vonk J, Shackelford TK (eds.) *Encyclopedia of Animal Cognition and Behavior*. Springer. doi: 10.1007/978-3-319-47829-6\_1164-1 |

***Technical reports***

|  |  |
| --- | --- |
| 2018 | McGowan N, Dingerkus K, Stone R, **Caravaggi A**, *et al.* Hare Survey of Ireland 2018/2019: Interim Report (June) 2018. Report produced for the Department of Arts, Heritage and the Gaeltacht. |

***Other publications***

|  |  |
| --- | --- |
| 2017 | **Caravaggi A**, James K. Twittersphere: Conferencing in 140 characters. *Nature.* 549: 458. (*Letter*) |

TEACHING

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.

***Qualifications***

|  |  |
| --- | --- |
| 2018 | Postgraduate Certificate in Teaching and Learning in Higher Education, University of London (*ongoing*). |

***Module development***

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| --- | --- |
| 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. |

***Lecturing***

|  |  |
| --- | --- |
| 2018 | Quantitative skills for biologists using R. |
|  | Conservation biology. |
| 2017 | Quantitative skills for biologists using R. |
| 2015 | Introduction to GIS (*Teaching Assistant*) |
|  | Animal Biology (*Teaching Assistant*) |
|  | Undergraduate residential field course |
| 2014 | Undergraduate residential field course |

***Field-based teaching***

|  |  |
| --- | --- |
| 2016 | South American rainforest biodiversity and conservation (*Ecuador*). |
| 2015 | Undergraduate residential field course, Northern Ireland |
| 2014 | Undergraduate residential field course, Northern Ireland |
|  | Bird survey techniques |

***Student supervision***

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| **Date** | **Degree** | **Name** | **Organisation** |
| 2018-22 | PhD | Samantha Ball | University College Cork |
| 2018 | Erasmus+ | Enrique Da Paz | University College Cork/University of Barcelona |
| 2017-19 | MRes | Alan McCarthy | University College Cork |
| 2017 | BSc | Chloe O’Mahoney | University College Cork |
| 2015 | MSc | Ashley Irwin | Queen’s University Belfast |
|  | MSc | Lauren Finley | Queen’s University Belfast |
|  | BSc | Paige Havlin | Queen’s University Belfast |
|  | SWB\* | Lazaro Silva | Queen’s University Belfast |
| 2014 | BSc | Mengyi Liu | Queen’s University Belfast |
|  | BSc | Claire Molloy | Queen’s University Belfast |
| 2013 | BSc | Ashley Irwin | Queen’s University Belfast |
| \* Science Without Borders | | |  |

***External course delivery***

I have developed materials for and delivered courses in bird identification, camera trapping and social media for ecologists.

FIELDWORK EXPERIENCE

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| **Date** | **Activity and habitat(s)** |
| 2018 | Camera trapping, small mammal trapping, bird point counts. Upland habitats. |
| 2017 | Hen Harrier nest surveys. Upland areas. |
|  | Breeding Bird Survey (BTO). Upland areas; windfarm-adjacent. |
| 2016 | Bird, bat and reptile surveys and camera trapping. South American rainforest. |
| 2015 | Camera trapping for otters. Rivers and riparian areas. |
| 2014 | Badger sett surveys. Broadleaved woodlands. |
| 2012-15 | Hare surveys (distance sampling, camera traps, fecal). Uplands and agricultural. |
| 2013 | Coastal biodiversity surveys. Tidal pools. |
| 2012 | Wader and gull surveys. Tidal flats. |
| 2011 | Small mammal trapping. Agricultural fields. |
|  | Reptile surveys. Clearfell areas in coniferous forests. |
|  | Bird point count, reptile, mammal and invertebrate surveys. Marsh and fen. |
|  | Bat roost surveys (visual and detector). Urban areas. |
|  | Great crested newt surveys. Agricultural areas. |
|  | Bird surveys. Broadleaved woodland. |
| 2009-11 | Breeding Bird Surveys (BTO). Upland areas. |
| 2007-18 | Bird ringing (mist, whoosh and cannon nets and traps). Woodland, fen, marsh, grassland, coastal and agricultural areas. |
| 2007-09 | Pine marten surveys. Coniferous woodland. |
| 2007 | Passerine bird and invertebrate surveys. Shrub and broadleaved woodland. |
|  | Moth trapping. Botanic gardens. |
| 2006-08 | Bird surveys and nestbox monitoring. Broadleaved woodland. |

FELLOWSHIPS, FUNDING AND AWARDS

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| **Date** | **Award** | **Value** | **Organisation** |
| 2018 | Funded postgraduate programme (PhD) | €96,000 | Irish Research Council |
| 2017 | Project tender – *Hare Survey of Ireland* | €150,000 | National Parks and Wildlife Service |
|  | Postdoctoral research | €174,000 | National Parks and Wildlife Service |
|  | 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 |

PRESENTATIONS

***Conferences (oral presentations)***

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

***Invited seminars***

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| --- | --- |
| 2019 | Biological Sciences, Cardiff University (*scheduled*). |
|  | School of BEES Seminar Series, University College Cork (*scheduled*). |
|  | Bangor University Zoological Society, Bangor University (*scheduled*). |
| 2018 | Keynote, Mammal Society Student Conference, Worcester. |
| 2014 | Biological Sciences, Bangor University. |

CONFERENCE ORGANISATION

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| 2018 | 2nd Biotweeps Twitter Conference (*principal organiser*). |
| 2017 | 7th Irish Ornithological Congress, Cork (*scientific committee*). |
|  | Biotweeps Twitter Conference (*principal organiser*). |
| 2014-18 | Mammal Society Student Conferences, various (*principal organiser*). |
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PERSONAL DEVELOPMENT

***Training and workshops***

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| 2018 | Postgraduate Certificate in Teaching and Learning in Higher Education |
|  | Unconscious bias awareness |
|  | Developing Horizon 2020 grant applications |
| 2017 | Advanced Training in Systematic Review and Meta-Analysis |
|  | Level 3 Teaching Assistant |
|  | Engagement and Public Outreach |
|  | Remote mammal surveying (*workshop*) |
| 2016 | Mentorship for academic ecologists |
|  | Developments in conservation ecology (*workshop*) |
|  | Acoustic analysis of marine mammal vocalisations (*workshop*) |
| 2012 | Lagomorph systematics (*workshop*) |

***Licenses and certification***

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| 2018 | LAST Ireland (animal welfare in research; License no: 09-2018) |
| 2014 | ASPA laboratory animal handling license (TSA/47/14) |
|  | 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)***

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

***Organisational and working groups (since)***

|  |  |
| --- | --- |
| 2017 | SCB Participatory and Citizen Science working group |
| 2016-17 | South Wales Mammal Group (*committee*) |
| 2016 | Mammal Society Council |
| 2012 | SCB Urban Ecology working group |

***Additional roles***

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| --- | --- |
| 2018- | UCC BEES Education and Public Engagement Committee |
| 2016- | University Mammal Challenge coordinator, The Mammal Society |
| 2016 | Session chair, British Ecological Society Annual Meeting |
|  | British Ecological Society Women in Ecology (WIE) mentor |
| 2015-17 | Lagomorph consultant, The Mammal Society |
| 2016 | Community Ecology session chair, British Ecological Society Annual Meeting |
| 2013 | Wildlife consultant, Biological records for the North East of Scotland (NESBReC) |
| 2012-15 | EBEE postgraduate representative, Queen's University Belfast |
|  | SBS Athena SWAN committee, Queen's University Belfast |
| 2007-09 | Undergraduate student representative, Bangor University |
|  | Founding committee, Bangor University Zoological Society |

SCIENCE COMMUNICATION

I am a strong advocate of science communication and outreach and believe that it is important to encourage an interest in science and the natural world in people of all ages. I am the creator and sole curator of the Twitter-based science communication project, Biotweeps, that hosts a different biologist every week and has a current following of > 16,000. Biotweeps has also hosted two global virtual conferences featuring dozens of scientists from around the world and with audiences numbering in the millions. 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.

***Outreach***

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| 2018 | UCC BEES Committee for Education and Public Engagement |
|  | BBC Wildlife magazine feature on wallabies (*invited expert*) |
|  | I’m a Scientist Get Me Out of Here! Careers Zone expert |
| 2017 | Sanger Institute 25 Genomes (*species champion – St. Kilda wren*) |
|  | Culture Night, University College Cork |
|  | Blog post - A brief history of an Early Career Researcher, *Errant Science* |
|  | Conservation & ecology expert on the sub-reddit /r/AskScience |
|  | Blog post - Rejected by the Rainforest, *I F-ing Love Conservation* |
|  | Science communication article, CBS (*#bestcarcass, contributor*) |
|  | Rabaiotti D, Caruso N 2017. Quercus books, ISBN: 9781786488275 (*contributor*) |
|  | Student Science Partnerships, USA |
|  | Bird song workshop and ringing demonstration, Parc Slip Nature Reserve, Wales |
| 2016-18 | Skype a Scientist (*5 classrooms across the US*) |
| 2016 | Blog post - On closer inspection, it looks like a hare transplant, *QUBio* |
|  | Magazine article - Is there intelligent life on Earth? *Save our Souls* (*author*) |
|  | Letters to a Pre-scientist (*correspondent*) |
| 2015 | Blog post - Putting wildlife in the frame, *QUBio* |
|  | Blog post - Communities and conservation in developing countries, *QUBio* |
|  | Nature News (*invited comment*) |
|  | Bird ringing demonstration, Parc Slip Nature Reserve, Wales |
|  | Blog post - Dear Alice, the hare might be sane after all, *QUBio* |
|  | Blog post - What’s in a name? *QUBio* |
| 2014-16 | Local Mammal Group newsletters (*invited author*) |
| 2014 | Blog post - A receding hare line and a brown toupee. *QUBio* |
|  | Created @Biotweeps, a science communication Twitter project (>16k followers) |
|  | Multi-school careers advice and speed-networking event (*invited expert*) |
| 2013-17 | UK STEM Ambassador |
| 2013 | I'm a Scientist Get Me Out of Here! Enquiry Zone expert |
|  | Science outreach event, Techniquest, Cardiff (*presenter for RSPB*) |

MEDIA ENGAGEMENTS

***Radio and podcasts***

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| --- | --- |
| 2018 | BBC Radio Wales, UK |
|  | BBC Radio Derby, UK |
|  | MostlyScience live (*podcast*) |
| 2017 | BBC Coventry & Warwickshire, UK |
|  | The Edgar Ortega Radio Show, North America (*podcast*) |
| 2016 | SciComm with Dr. Mike, UK (*podcast; 2 shows*) |
| 2015 | BBC Radio Ulster, Northern Ireland |
|  | BBC Radio Ulster, *Good Morning Ulster*, UK |
| 2013 | RTE Radio 1, *Mooney Goes Wild*, UK |

***Television***

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

***Other media***

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| 2017 | The Washington Post (*interview*) |
| 2016 | National Geographic advisor (*mammal expert*) |
|  | Biotechin.asia (*interview*) |
|  | Featured research - Camera traps reveal a hare-raising situation, *RSEC blog*, ZSL |
| 2015 | ScienceNews (*interview*) |
|  | BBC News (*interview and featured article*)  Nature News (*interview*) |
|  | Crastine.se (*interview*) |
| 2014 | Species profiles: Mountain hare and Irish hare, The Mammal Society |
| 2013 | Mid-Ulster Mail (*interview*) |

SKILLS

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| Analytical software | R, SPSS, Minitab, Distance, MARK, ArcGIS, QGIS, MaxEnt, NetLogo, MAVIS NVC, Patch Analyst, GeneMapper, bespoke software. |
| Additional tools | Microsoft Office, GitHub, RMarkdown, graphics packages (e.g. Adobe creative suite), website creation. |
| 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 | Deputy President & Registrar's Office, University College Cork, Cork, Ireland Postdoctoral study Principal Investigator | |
|  | Email: j.ohalloran@ucc.ie | Telephone: +353 (0)21 490 2407 |
| Dr. Sandra Irwin | School of Biological Earth and Environmental Sciences, University College Cork, Distillery Field, N Mall, Cork, Ireland  Postdoctoral study Project Manager | |
|  | Email: s.irwin@ucc.ie | Telephone: +353 (0)21 490 4595 |
| Dr. Neil Reid | School of Biological Sciences, Medical Biology Centre, 97 Lisburn Road. Belfast BT9 7BL  PhD supervisor | |
|  | Email: neil.reid@qub.ac.uk | Telephone: +44 (0)28 9097 2746 |
| Prof. Ian Montgomery | School of Biological Sciences, Medical Biology Centre, 97 Lisburn Road. Belfast BT9 7BL  PhD supervisor | |
|  | Email: i.montgomery@qub.ac.uk | Telephone: +44 (0)28 9097 2214 |