

# CURRICULUM VITAE

Jeffrey Hanson

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## RESEARCH INTERESTS

My research concerns the challenges involved in conserving biodiversity. I am interested in understanding how areas can be managed to achieve conservation objectives for minimal cost. In particular, I specialize in operationalizing ecological and evolutionary processes to develop plans for protected area systems that maximize the long-term persistence of biodiversity.

## EDUCATION

- 2013–2018 PhD, Biology, The University of Queensland, Australia (Advisors: Richard Fuller and Jonathan Rhodes, thesis: *Conserving evolutionary processes.*)
- 2011–2012 BSc (Hons), First Class, The University of Queensland, Australia (Advisors: Steve Salisbury, Craig Franklin, Hamish Campbell, and Ross Dwyer, thesis: *Using stable isotopes to assess the relationship between body-size, habitat use and diet in estuarine crocodiles (Crocodylus porosus)*)
- 2007–2010 BSc, Major in Ecology, The University of Queensland, Australia

## PROFESSIONAL POSITIONS

- 2019–present Postdoctoral researcher at Department of Biology, Carleton University, Ottawa, Canada
- 2018–2019 Postdoctoral researcher at CIBIO/InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto, Vairão, Portugal
- 2018 Freelance software developer contracted by Joe Bennett, University of Carleton
- 2012–2013 Research Assistant to Richard Fuller, The University of Queensland, Australia
- 2012–2013 Research Assistant to Jonathon Rhodes, The University of Queensland, Australia
- 2012 Casual Professional Staff, The School of Biological Sciences, The University of Queensland, Australia

## PUBLICATIONS

### *Journal articles*

- 2021 Morelli F, Benedetti Y, **Hanson JO**, Fuller RA (2021) Global distribution and conservation of avian diet specialization. *Conservation Letters*, In press: DOI:10.1111/conl.12795.
- 2020 **Hanson, JO**, Rhodes JR, Butchart SHM, Buchanan GM, Rondinini C, Ficetola GF & Fuller RA (2020) Global conservation of species' niches. *Nature*, 580: 232–234.
- Hanson JO**, Veríssimo A, Velo-Antón G, Marques A, Camacho-Sanchez M, Martínez-Solano Í, Gonçalves H, Sequeira F, Possingham HP & Carvalho SB (2020) Evaluating surrogates of genetic diversity for conservation planning. *Conservation Biology*, In press: DOI:10.1111/cobi.13602.
- Hanson JO**, Marques A, Veríssimo A, Camacho-Sanchez M, Velo-Antón G, Martínez-Solano Í & Carvalho SB (2020) Conservation planning for adaptive and neutral evolutionary processes. *Journal of Applied Ecology*, 57: 2159–2169.
- Camacho-Sanchez M, Velo-Antón G, **Hanson JO**, Veríssimo A, Martínez-Solano Í, Marques A, Moritz C & Carvalho SB (2020) Comparative assessment of range-wide patterns of genetic diversity and structure with SNPs and microsatellites: A case study with Iberian amphibians. *Ecology & Evolution*, 10: 10353–10363.
- Schuster R, **Hanson JO**, Strimas-Mackey M & Bennett JR (2020) Exact integer linear programming solvers outperform simulated annealing for solving conservation planning problems. *PeerJ*, 8: e9258.
- 2019 **Hanson JO**, Fuller RA & Rhodes JR (2019) Conventional methods for enhancing connectivity in conservation planning do not always maintain gene flow. *Journal of Applied Ecology*, 56: 913–922.
- Hanson JO**, Schuster R, Strimas-Mackey M & Bennett JR (2019) Optimality in prioritizing conservation projects. *Methods in Ecology & Evolution*, 10: 1655–1663.
- Ambrose L, **Hanson JO**, Riginos C, Xu W, Fordyce S, Cooper RD & Beebe NW (2019) Population genetics of *Anopheles koliensis* through Papua New Guinea: New cryptic species and landscape topography effects on genetic connectivity. *Ecology & Evolution*, 9: 13375–13388.
- 2018 **Hanson JO**, Rhodes JR, Possingham HP & Fuller RA (2018) raptr: Representative and Adequate Prioritization Toolkit in R. *Methods in Ecology & Evolution*, 9: 320–330.
- 2017 **Hanson JO**, Rhodes JR, Riginos C & Fuller RA (2017) Environmental and geographic variables are effective surrogates for genetic variation in conservation plan-

ning. *Proceedings of the National Academy of Sciences of the United States of America*, 114: 12755–12760.

Mather AT, **Hanson JO**, Pope LC & Riginos C (2017) Comparative phylogeography of two co-distributed but ecologically distinct rainbowfishes of far-northern Australia. *Journal of Biogeography*, 45: 127–141.

2016 Dudaniec RY, Worthington Wilmer J, **Hanson JO**, Warren M, Bell S & Rhodes JR (2016) Dealing with uncertainty in landscape genetic resistance models: a case of three co-occurring marsupials. *Molecular Ecology*, 25: 470–486.

Dhanjal-Adams KL, **Hanson JO**, Murray NJ, Phinn SR, Wingate VR, Mustin K, Lee JR, Allan JR, Cappadonna JL, Studds CE, Clemens RS, Roelfsema CM & Fuller RA (2016) Distribution and protection of intertidal habitats in Australia. *Emu*, 116: 208–214.

2015 **Hanson JO**, Salisbury SW, Campbell HA, Dwyer RG, Jardine TD & Franklin CE (2015) Feeding across the food web: the interaction between diet, movement and body size in estuarine crocodiles (*Crocodylus porosus*). *Austral Ecology*, 40: 275–286.

Runge CA, Watson JEM, Butchart HM, **Hanson JO**, Possingham HP & Fuller RA (2015) Protected areas and global conservation of migratory birds. *Science*, 350: 1255–1258.

Auerbach NA, Wilson KA, Tulloch AI, Rhodes JR, **Hanson JO** & Possingham HP (2015) Effects of threat management interactions on conservation priorities. *Conservation Biology*, 29: 1626–1635.

Bunton JD, Ernst AT, **Hanson JO**, Beyer HL, Hammill E, Runge CA, Venter O, Possingham HP & Rhodes JR (2015) Integrated planning of linear infrastructure and conservation offsets. In Weber, T, McPhee, MJ & Andersson RS (eds) *MODSIM 2015, 21st International Congress on Modelling and Simulation*. Modelling and Simulation Society of Australia and New Zealand, December 2015, pp. 1427–1433.

Rabeb D, Othman DS, Essilfie AT, Hansbro PM, **Hanson JO**, McEwan AG & Kappler U (2015) Maturation of molybdoenzymes and its influence on the pathogenesis of non-typeable *Haemophilus influenzae*. *Frontiers in Microbiology*, 6: 01219.

#### *Non-peer reviewed articles*

2020 **Hanson JO** (2020) Conserving species' niches. *Nature Ecology & Evolution Community*, <https://go.nature.com/2wCckAN>.

2015 Behr J & **Hanson JO** (2015) Welcome to the Mapotron. *Decision Point*, 86: 10–11.

## PEER REVIEW ACTIVITIES

I have reviewed submissions to following journals: *Austral Ecology*, *Conservation Letters*, *Diversity and Distributions*, *Ecological Applications*, *Global Change Biology*, *Journal of Applied Ecology*, *Methods in Ecology & Evolution*, *PLoS ONE*, and *Proceedings of the Royal Society of London B: Biological Sciences*.

## PRESENTATIONS

### *Conference presentations*

- 2019      **Hanson JO**, Camacho-Sanchez M, Marques A, Martínez-Solano Í, Velo-Antón G, Veríssimo A, Carvalho SB (2019) *Conserving evolutionary processes for three amphibian species in the Iberian Peninsula*. Oral presentation to European Ecological Federation 15th Congress, Lisbon, Portugal.
- 2018      **Hanson JO**, Schuster R, Morrell N, Strimas-Mackey M, Watts ME, Arcese P, Bennett JR, Possingham HP (2018) *prioritizr: Systematic conservation prioritization in R*. Oral presentation to UseR! 2018, Brisbane, Australia.
- 2016      **Hanson JO**, Rhodes JR, Possingham HP, Fuller RA (2016) *RAPR: Representative and Adequate Prioritizations in R*. Oral presentation to Society for Conservation Biology 4th Oceania Congress, Brisbane, Australia.
- 2014      **Hanson JO**, Rhodes JR, Fuller RA (2014) *Conservation planning for intra-specific biodiversity using surrogates*. Oral presentation to the Meeting of the Minds mini-conference at The University of Queensland, Brisbane, Australia.

## EDUCATIONAL ACTIVITIES

### *Classroom Instruction, The University of Queensland, Australia*

- 2013–2015    Professional tutor to the “Field Ecology” course, coordinated by Myron Zalucki

### *Workshop Instruction*

- 2019      *Spatial Conservation Prioritization: Concepts, Methods and Applications* coordinated by Silvia Carvalho, Virgilio Hermoso, and Jeffrey Hanson at CIBIO/InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto, Vairão, Portugal.
- 2017      *Use of Machine Learning in Conservation, Moving beyond just Maxent and SDMs* coordinated by Falk Huettemann at the 28th International Congress for Conservation Biology (ICCB), Cartagena, Colombia.

- 2015      *Geospatial Analysis in R* coordinated by Hawthorne Beyer, Rebbecca Runting and Jutta Behr at the Student Conference of Conservation Science, Australia.
- Smoothing the Marxan Flow with R* coordinated by Matthew Watts at the Student Conference of Conservation Science, Australia.
- 2013      *Introduction to Geospatial Analysis* coordinated by Hawthorne Beyer at The University of Queensland, Australia.
- Introduction to Spatial Data Analysis in R* workshop coordinated by Hawthorne Beyer at The University of Queensland, Australia.
- 2011      *Introducing R* coordinated by Simon Blomberg at The University of Queensland, Australia.

### *Seminars*

- 2017      *Systematic conservation prioritization in R* presented to members of the Center for Biodiversity and Conservation Science at The University of Queensland, Australia.
- 2016      *Biodiversity processes in reserve-selection* presented to members of the Center for Biodiversity and Conservation Science at The University of Queensland, Australia.

### *Scientific meetings and networking events*

- 2018      rOpenSci Unconference, Melbourne, Australia.
- 2017      R Unconference hosted by the Brisbane Users of R Group, Brisbane, Australia.
- 2016      rOpenSci Unconference, Brisbane, Australia.

## **SOFTWARE DEVELOPMENT**

- prioritizr    An R package for building and solving conservation planning problems (<https://CRAN.R-project.org/package=prioritizr>).
- oppr        An R package for prioritizing funding for threatened species recovery projects and pest management project (<https://CRAN.R-project.org/package=oppr>).
- wdpar       An R package for downloading and cleaning data from the World Database on Protected Areas (<https://CRAN.R-project.org/package=wdpar>).
- raptr        An R package for generating spatial prioritizations that secure intra-specific variation (<https://CRAN.R-project.org/package=raptr>).

## **SCHOLARSHIPS AND AWARDS**

- Compute resource allocation by the National eResearch Collaboration Tools and Resources (NeCTAR) project (2017–2019)
- Postgraduate Travel Award Scholarship, The School of Biological Sciences, The University of Queensland, Australia (2016)
- Australian Postgraduate Award (APA) Scholarship (2013)