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

2023 Buenafe KCV, Dunn DC, Everett JD, Brito-Morales I, Schoeman DS, **Hanson JO**, Dabalà A, Neubert S, Cannicci S, Kaschner K, & Richardson AJ (2023) A metric-based framework for climate-smart conservation planning. *Ecological Applications*, In press: DOI:10.1002/eap.2852.

Chowdhury S, Zalucki MP, **Hanson JO**, Tiatragul S, Green D, Watson JEM, & Fuller RA (2023) Three quarters of insects are insufficiently covered by protected areas. *One Earth*, 6: 1–8.

Justeau-Allaire D, **Hanson JO**, Lannuzel G, Vismara P, Lorca X & Birnbaum, P (2023) restoptr: an R package for ecological restoration planning. *Restoration Ecology*, In press: DOI:10.1111/rec.13910.

Schuster R, Buxton R, **Hanson JO**, Binley AD, Pittman J, Tulloch V, La Sorte FA, Roehrdanz PR, Verburg PH, Rodewald AD, Wilson S, Possingham HP, & Bennett JR (2022) Protected area planning to conserve biodiversity in an uncertain future. *Conservation Biology*, In press: DOI:10.1111/cobi.14048.

2022 **Hanson JO**, McCune JL, Chadès I, Proctor CA, Hudgins EJ & Bennett JR (2022) Optimizing ecological surveys for conservation. *Journal of Applied Ecology*, 60: 41–51.

Hanson JO, Vincent J, Schuster R, Fahrig L, Brennan A, Martin AE, Hughes JS, Pither R & Bennett JR (2022) A comparison of approaches for including connectivity in systematic conservation planning. *Journal of Applied Ecology*, 59: 2507–2519.

Hanson JO (2022) wdpar: Interface to the World Database on Protected Areas. *Journal of Open Source Software*, 7: 4594.

Carter ZT, **Hanson JO**, Perry GLW & Russell JC (2022) Incorporating management action suitability in conservation plans. *Journal of Applied Ecology*, 59: 2581–2592.

Marques AJD, **Hanson JO**, Camacho-Sanchez M, Martínez-Solano Í, Moritz C, Tarroso P, Velo-Antón G, Veríssimo A & Carvalho SB (2022) Range-wide genomic scans and tests for selection identify non-neutral spatial patterns of genetic variation in a non-model amphibian species (*Pelobates cultripes*). *Conservation Genetics*, 23: 387–400.

Nielsen ES, **Hanson JO**, Carvalho SB , Beger M, Henriques R, Kershaw F, von der Heyden S (2022) Molecular ecology meets systematic conservation planning. *Trends in Ecology & Evolution*, 38: 143–155.

2021 **Hanson JO**, Veríssimo A, Velo-Antón G, Marques A, Camacho-Sanchez M, Martínez-Solano Í, Gonçalves H, Sequeira F, Possingham HP & Carvalho SB (2021) Evaluating surrogates of genetic diversity for conservation planning. *Conservation Biology*, 35: 634–642.

Jung M, Arnell A, de Lamo X, García-Rangel S, Lewis M, Mark J, Merow C, Miles L, Ondo I, Pironon S, Ravilious C, Rivers M, Schepashenko D, Tallowin O, van Soesbergen A, Govaerts R, Boyle BL, Enquist BJ, Feng X, Gallagher R, Maitner B, Meiri S, Mulligan M, Ofer G, Roll U, **Hanson JO**, Jetz W, Di Marco M, McGowan J, Rinnan DS, Sachs JD, Lesiv M, Adams VM, Andrew SC, Burger JR, Hannah L, Marquet PA, McCarthy JK, Morueta-Holme N, Newman EA, Park DS, Roehrdanz PR, Svenning J-C, Violle C, Wieringa JJ, Wynne G, Fritz S, Strassburg BBN, Obersteiner M, Kapos V, Burgess N, Schmidt-Traub G & Visconti P (2021) Areas of global importance for conserving terrestrial biodiversity, carbon and water. *Nature Ecology & Evolution*, 5: 1499–1509.

Morelli F, Benedetti Y, **Hanson JO**, Fuller RA (2021) Global distribution and conservation of avian diet specialization. *Conservation Letters*, 14: e12795.

Naia M, Tarroso P, Sow AS, Liz AV, Gonçalves DV, Martínez-Freiría F, Santarém F, Yusefi GH, Velo-Antón G, Avella I, **Hanson JO**, Khalatbari L, Ferreira da Silva MJ, Camacho-Sanchez M, Boratyński Z, Carvalho SB & Brito JC (2021) Potential negative effects of the Green Wall on Sahel's biodiversity. *Conservation Biology.* 35: 1966–1968.

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, 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 planning. *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 Beher 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*, *Nature Ecology & Evolution* and *Proceedings of the Royal Society of London B: Biological Sciences*.

PRESENTATIONS

Conference presentations

2022 **Hanson JO**, Delsen DM, Binley A, Allan J, Jung M, Visconti P, Hermoso V, Schuster R, Chapman M, & Bennett JR (2022) *Optimally managing threats to biodiversity across large scales.* Oral presentation to New Zealand Ecological Society, Dunedin, New Zealand.

Hanson JO, McCune JL, Chadès I, Proctor CA, Hudgins EJ & Bennett JR (2022) *Optimizing ecological surveys for conservation.* Oral presentation to 2022 Annual Meeting of Ecological Society of America, Montreal, Canada.

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 intraspecific 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 Huettmann at the 28th International Congress for Conservation Biology (ICCB), Cartagena, Colombia.

2015 *Geospatial Analysis in R* coordinated by Hawthorne Beyer, Rebbecca Runting and Jutta Beher 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

2021 *Making better conservation decisions* presented online to members of the Center for Biodiversity and Global Change at Yale University, The United States of America.

Making better conservation decisions presented to members of the School of Agriculture and Environment at Massey University, New Zealand.

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).

surveyvoi An R package for optimizing survey design for conservation decision making (https://CRAN.R-project.org/package=surveyvoi)

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)