

# Rebecca A. Senior

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## Professional Appointments

- 2022 – . . . . .    ♦ **Assistant Professor, Department of Biosciences, Durham University, UK.**
- 2019 – 2021    ♦ **Postdoctoral Researcher, Princeton University, USA. PI: Prof David Wilcove.**
- 2019    ♦ **Postdoctoral Researcher, University of Florida, USA. PI: Dr Brett Scheffers.**

## Education

- 2014 – 2018    ♦ **Ph.D., University of Sheffield, UK.**  
Supervisors: Prof David Edwards and Prof Jane Hill  
*The impacts of forest conversion and degradation on climate resilience in the tropics.*  
Investigating how loss and degradation of tropical forests affects species' exposure to climate change and their ability to respond, particularly by exploiting microclimates or shifts in distribution.
- 2010 – 2013    ♦ **B.A. (Hons) Natural Sciences, University of Cambridge, UK.**  
*First Class Honours*

## Research Experience

- 2020    ♦ **Consultant, Boreal Songbird Initiative, USA.**
  - ♦ Literature review of the impacts of anthropogenic change on carbon flux in the Canadian boreal zone
- 2016    ♦ **Knowledge Transfer Executive, Rewilding Britain, UK.**
  - ♦ Synthesising scientific & grey literature to produce guidelines for applying rewilding at small scale
  - ♦ Organising & reporting on a stakeholder workshop on rewilding in the English uplands (Sandom et al., 2019)
- 2014    ♦ **Research Assistant, University of Sheffield, UK.**  
Fieldwork in Bornean rainforest:
  - ♦ PI: Prof David Edwards
  - ♦ Tree-liana interaction networks (Magrach et al., 2016)
  - ♦ Quantifying microclimates using thermal cameras (Scheffers et al., 2017)
- 2013 – 2014    ♦ **Consultant, UNEP-WCMC, Cambridge, UK.**
  - ♦ Updating & analysing UNEP-WCMC Google Scholar profile
  - ♦ Incorporation of fisheries data into the Madingley model
- 2013    ♦ **Intern in the Science programme, UNEP-WCMC, Cambridge, UK.**
  - ♦ Custom Python code to create species richness maps using IUCN range data
  - ♦ Data collation & analysis for the PREDICTS project & associated publications (Hudson et al., 2017; Newbold et al., 2015; Hudson et al., 2014)

## Research Publications

I have **18 publications** in international peer-reviewed journals, including **6 first author** articles. My **h-index = 14**, **i10-index = 15**, and **total citations = 3971** (as per Google Scholar Citations).

- 1 Ma, L., Conradie, S. R., Crawford, C. L., Gardner, A. S., Kearney, M. R., Maclean, I. M. D., McKechnie, A. E., Mi, C.-R., ... Wilcove, D. S. (2023). Global patterns of climate change impacts on desert bird communities. *Nature Communications*, 14(1), 211. <https://doi.org/10.1038/s41467-023-35814-8>
- 2 Senior, R. A., Oliveira, B. F., Dale, J., & Scheffers, B. R. (2022). Wildlife trade targets colorful birds and threatens the aesthetic value of nature. *Current Biology*, 32(19), 4299–4305.e4. <https://doi.org/10.1016/j.cub.2022.07.066>
- 3 Lembrechts, J. J., van den Hoogen, J., Aalto, J., Ashcroft, M. B., De Frenne, P., Kemppinen, J., Kopecký, M., Luoto, M., ... Lenoir, J. (2021). Global maps of soil temperature. *Global Change Biology*, n/a(n/a). <https://doi.org/https://doi.org/10.1111/gcb.16060>
- 4 Lin, B., Dietrich, M. L., Senior, R. A., & Wilcove, D. S. (2021). A better classification of wet markets is key to safeguarding human health and biodiversity. *The Lancet Planetary Health*, 5(6), e386–e394. [https://doi.org/https://doi.org/10.1016/S2542-5196\(21\)00112-1](https://doi.org/https://doi.org/10.1016/S2542-5196(21)00112-1)
- 5 Lembrechts, J. J., Aalto, J., Ashcroft, M. B., Frenne, P. D., Kopecký, M., Lenoir, J., Luoto, M., Maclean, I. M. D., ... Nijs, I. (2020). SoilTemp: A global database of near-surface temperature. *Global Change Biology*, n/a(n/a). <https://doi.org/10.1111/gcb.15123>
- 6 Senior, R. A. (2020). Hot and bothered: The role of behaviour and microclimates in buffering species from rising temperatures. *Journal of Animal Ecology*, 89(11), 2392–2396. <https://doi.org/https://doi.org/10.1111/1365-2656.13363>
- 7 Borrell, J. S., Al Issaey, G., Lupton, D. A., Starnes, T., Al Hinai, A., Al Hatmi, S., Senior, R. A., Wilkinson, T., ... Patzelt, A. (2019). Islands in the desert: Environmental distribution modelling of endemic flora reveals the extent of Pleistocene tropical relict vegetation in southern Arabia. *Annals of Botany*, 124(3), 411–422. <https://doi.org/10.1093/aob/mcz085>
- 8 Senior, R. A., Hill, J. K., & Edwards, D. P. (2019a). Global loss of climate connectivity in tropical forests. *Nature Climate Change*, 9(8), 623–626. <https://doi.org/10.1038/s41558-019-0529-2>
- 9 Jucker, T., Jackson, T., Zellweger, F., Swinfield, T., Gregory, N., Williamson, J., Slade, E., Phillips, J. W., ... Coomes, D. A. (2019). A research agenda for microclimate ecology in human-modified tropical forests. *Frontiers in Forests and Global Change*, 2. <https://doi.org/10.3389/ffgc.2019.00092>
- 10 Sandom, C. J., Dempsey, B., Bullock, D., Ely, A., Jepson, P., Jimenez-Wisler, S., Newton, A., Pettorelli, N., & Senior, R. A. (2019). Rewilding in the English uplands: Policy and practice. *Journal of Applied Ecology*, 56(2), 266–273. <https://doi.org/10.1111/1365-2664.13276>
- 11 Senior, R. A., Hill, J. K., & Edwards, D. P. (2019b). ThermStats: An R package for quantifying surface thermal heterogeneity in assessments of microclimates. *Methods in Ecology and Evolution*, 10(9), 1606–1614. <https://doi.org/10.1111/2041-210X.13257>
- 12 Senior, R. A., Hill, J. K., Benedick, S., & Edwards, D. P. (2018). Tropical forests are thermally buffered despite intensive selective logging [**Cover article**]. *Global Change Biology*, 24(3), 1267–1278. <https://doi.org/10.1111/gcb.13914>
- 13 Hudson, L. N., Newbold, T., Contu, S., Hill, S. L. L., Lysenko, I., De Palma, A., Phillips, H. R. P., Alhusseini, T. I., ... Purvis, A. (2017). The database of the PREDICTS (Projecting Responses of

- Ecological Diversity In Changing Terrestrial Systems) project. *Ecology and Evolution*, 7(1), 145–188. <https://doi.org/10.1002/ece3.2579>
- 14 Scheffers, B. R., Edwards, D. P., Macdonald, S. L., **Senior, R. A.**, Andriamahohatra, L. R., Roslan, N., Rogers, A. M., Haugaasen, T., ... Williams, S. E. (2017). Extreme thermal heterogeneity in structurally complex tropical rain forests. *Biotropica*, 49(1), 35–44. <https://doi.org/10.1111/btp.12355>
  - 15 **Senior, R. A.**, Hill, J. K., González del Pliego, P., Goode, L. K., & Edwards, D. P. (2017). A pantropical analysis of the impacts of forest degradation and conversion on local temperature. *Ecology and Evolution*, 7(19), 7897–7908. <https://doi.org/10.1002/ece3.3262>
  - 16 Magrach, A., **Senior, R. A.**, Rogers, A., Nurdin, D., Benedick, S., Laurance, W. F., Santamaria, L., & Edwards, D. P. (2016). Selective logging in tropical forests decreases the robustness of liana–tree interaction networks to the loss of host tree species. *Proc. R. Soc. B*, 283(1826), 20153008. <https://doi.org/10.1098/rspb.2015.3008>
  - 17 Newbold, T., Hudson, L. N., Hill, S. L. L., Contu, S., Lysenko, I., **Senior, R. A.**, Börger, L., Bennett, D. J., ... Purvis, A. (2015). Global effects of land use on local terrestrial biodiversity. *Nature*, 520(7545), 45–50. <https://doi.org/10.1038/nature14324>
  - 18 Hudson, L. N., Newbold, T., Contu, S., Hill, S. L. L., Lysenko, I., De Palma, A., Phillips, H. R. P., **Senior, R. A.**, ... Purvis, A. (2014). The PREDICTS database: A global database of how local terrestrial biodiversity responds to human impacts. *Ecology and Evolution*, 4(24), 4701–4735. <https://doi.org/10.1002/ece3.1303>

## Grants and Awards

- |      |  |
|------|--|
| 2022 | <ul style="list-style-type: none"> <li>◇ Durham University Seedcorn Fund (£15,000), rewilding of microclimates</li> <li>◇ Royal Geographical Society (£2,960), fieldwork &amp; workshops with Oman Botanic Garden</li> <li>◇ Anglo-Omani Society (£6,000), fieldwork &amp; workshops with Oman Botanic Garden</li> </ul> |
| 2021 | <ul style="list-style-type: none"> <li>◇ HMEI internship funding (USD \$6,600), to host an intern in summer 2021</li> </ul>  |
| 2018 | <ul style="list-style-type: none"> <li>◇ ACCE Extension for Publication (£3,600), to prepare &amp; submit a high impact manuscript</li> <li>◇ British Ecological Society travel grant (£500), to attend ATBC Annual Meeting</li> </ul>   |
| 2016 | <ul style="list-style-type: none"> <li>◇ ACCE Placement Support (£1,500), 3-month placement at Rewilding Britain, UK</li> <li>◇ Departmental travel fund (£800), to attend Conservation Asia 2016</li> </ul>   |
| 2014 | <ul style="list-style-type: none"> <li>◇ NERC Doctoral Training Partnership studentship, including stipend (£55,452), research and training grant (£11,000) and fees (£17,484)</li> </ul>  |
| 2013 | <ul style="list-style-type: none"> <li>◇ Durham Fund (£1,000), for UNEP-WCMC internship</li> </ul>   |
| 2011 | <ul style="list-style-type: none"> <li>◇ £1,300 from various sources for Peruvian Amazon expedition</li> </ul>   |
| 2010 | <ul style="list-style-type: none"> <li>◇ Eliahou Dangoor Scholarship (£1,000), awarded on merit to STEM student</li> </ul>   |

## Invited Talks

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|------|---|
| 2023 | <ul style="list-style-type: none"> <li>◇ <i>The impacts of logging on tropical rainforest microclimates</i>, Alfred Wallace seminar series, Universidade de Évora, Portugal.</li> </ul>   |
| 2022 | <ul style="list-style-type: none"> <li>◇ <i>Forest loss and climate change in the tropics</i>, conservation seminar series, University of Sheffield, UK.</li> <li>◇ <i>Keynote Speaker</i>, Microclimate Ecology &amp; Biogeography Conference 2022, University of Antwerp, Belgium.</li> </ul> |

## Invited Talks (continued)

- ◇ *Global patterns of conservation action and inaction*, Cambridge Conservation Initiative, Cambridge, UK.
- 2021 ◇ *Using technology and open data to understand problems and provide solutions in conservation*, Yale University, USA.
- ◇ *Connectivity under climate change in tropical forests*, ESA 2020, Salt Lake City, USA\*.
- 2019 ◇ *Forest loss and climate change in the tropics*, University of Florida, USA.
- 2017 ◇ *Thermal Images in R*, Sheffield R Users Group, Sheffield, UK.
- 2016 ◇ *Are selectively logged forests climate change ready?*, Future Cities Laboratory, Singapore.

\*moved online due to COVID-19

## Conferences

- 1 Senior, R. A., & Wilcove, D. S. (2019). *Effectiveness of different conservation strategies for recovering threatened species*. Oral presentation at BES Annual Meeting.
- 2 Senior, R. A., Hill, J. K., & Edwards, D. P. (2018a). *Global loss of climate connectivity in tropical forests*. Oral presentation at ATBC Annual Meeting.
- 3 Senior, R. A., Hill, J. K., & Edwards, D. P. (2018b). *Global loss of climate connectivity in tropical forests*. Oral presentation at SCCS Europe.
- 4 Senior, R. A., Hill, J. K., & Edwards, D. P. (2017). *Microclimates in logged tropical forest*. Oral presentation at SCCS Cambridge.
- 5 Senior, R. A., Hill, J. K., & Edwards, D. P. (2016a). *Are degraded forests climate change ready?* [*Shortlisted for best student talk*]. Oral presentation at Conservation Asia 2016, joint meeting of the Society for Conservation Biology (SCB) Asia section; the Association for Tropical Biology; Conservation (ATBC) Asia-Pacific chapter. National University of Singapore, Singapore.
- 6 Senior, R. A., Hill, J. K., & Edwards, D. P. (2016b). *Are degraded forests climate change ready?* Oral presentation at ACCE Annual Meeting.
- 7 Senior, R. A., Hill, J. K., & Edwards, D. P. (2015). *Impacts of selective logging on thermal heterogeneity in a tropical rainforest* [*Shortlisted for best student poster*]. Poster presentation at BES Annual Meeting. Edinburgh, UK.

## Service

- Invited peer review ◇ Agricultural and Forest Meteorology ◇ Biological Conservation  
Current Landscape Ecology Reports ◇ Ecography  
Environmental Conservation ◇ Environmental Management  
Environmental Research Letters ◇ Forest Ecology and Management  
Frontiers in Forests and Global Change ◇ Global Change Biology  
Global Ecology and Biogeography ◇ Global Ecology and Conservation  
Global Environmental Change ◇ Journal of Animal Ecology  
The Lancet Planetary Health ◇ Landscape Ecology  
Methods in Ecology and Evolution ◇ Nature Ecology & Evolution  
PeerJ ◇ Plant Ecology & Diversity ◇ PLOS ONE  
Remote Sensing of Environment ◇ Thermal Biology
- Invited grant review ◇ Royal Geographical Society  
UKRI Future Leaders Fellowship

## Service (continued)

- Committee membership    ♦ NERC Liason Group, Durham University
- Conference Organisation   ♦ Organising and Scientific Steering Committee, 2023 Species on the Move conference
- Professional affiliations   ♦ British Ecological Society member (BES)  
    ♦ British Mycological Society member (BMS)  
    ♦ Royal Geographical Society fellow (RGS)

## Teaching and Mentoring

### Postgraduate

- 2022-present    ♦ **Kian Hayles-Cotton**, MBIol, expected graduation in 2023
- 2023-present    ♦ **Cameron Goodhead**, PhD, expected graduation in 2027

### Undergraduate

- 2022-present    ♦ **Durham University**  
    Level 3 Terrestrial Ecology Field Course  
    Level 3 Literature Review
- 2021               ♦ **HMEI Internship**  
    Sophia Richter, Princeton University
- 2019 – 2021    ♦ **Undergraduate Students (senior thesis advisees)**  
    Hana Jiang, Princeton University  
    Molly Muir, Princeton University, *winner of the senior thesis Conservation Prize*
- 2014 – 2018    ♦ **Graduate Teaching Assistant**, University of Sheffield, UK.  
    R and statistics course for postgraduate students ♦ Undergraduate field courses for modules: ‘Population and Community Ecology’ and ‘Tropical Forest Ecology and Conservation’
- 2013 – 2014    ♦ **Undergraduate Supervisor**, University of Cambridge, UK.  
    Up to 16 students for modules: ‘Evolution & Behaviour’ and ‘Ecology’

### Secondary school

- 2017 – 2021    ♦ **Brilliant Club Tutor**  
    Design, teach and assess courses in ecology & conservation for students aged 9–17, with weekly University-style tutorials and assignments.
- 2013 – 2014    ♦ **A-level Biology Tutor**, Cambridge, UK.





## Professional Development

- 2022-present    ♦ **Postgraduate Certificate in Academic Practice**, Durham University, UK.
- 2020               ♦ **Using Storytelling to Communicate Science**, science communication workshop with The Goodman Center, hosted by Princeton University, USA.
- 2014 – 2018    ♦ **Doctoral Development Programme**, ACCE Doctoral Training Partnership and the University of Sheffield, UK ♦ Research Ethics and Integrity ♦ Science in Policy  
    Quantitative Skills ♦ Data Management ♦ Careers and Policy ♦ Science & Media  
    ♦ **Attendance at Sheffield R Users Group**, Sheffield, UK.

## Professional Development (continued)

- 2016    ♦ **Bayesian Methods to Fit Statistical Models in Environmental Science**, NERC-funded training course, University of Strathclyde, UK.
- 2015    ♦ **Advanced Environmental Data Analysis using Geographical Information Systems**, NERC-funded training course, Newcastle University, UK.

## Skills

- Coding    ♦  = **advanced**, inc. package development and R Markdown  
              ♦  python™ = **moderate**, inc. spatial analyses  
              ♦  = **basic**, for spatial analyses in Google Earth Engine  
              ♦  $\text{\LaTeX}$  = **basic**  
              ♦  = experienced in using Git and GitHub for version control & collaboration
- Fieldwork    ♦ Extensive experience organising and leading fieldwork in remote locations, including **deserts and mountains of Oman** (9 weeks over 3 expeditions in 2017, 2018 and 2022) and total of **7 months** in **Borneo lowland rainforest**, over 2014 and 2015.
- Additional experience of assisting biodiversity surveys in **Peruvian Amazon** (5 weeks), and **various habitats across the UK**.
- Statistics    ♦ Experience of advanced statistical techniques including general and generalized linear models, additive models, mixed models and principal component analysis ♦ Familiarity with Bayesian methods.
- GIS    ♦ Spatial analyses using R, Google Earth Engine, QGIS and ArcGIS.
- Public Engagement    ♦ Invited panellist for University of Sheffield debate: “Visions of Nature in a World of 10 Billion” (2017) ♦ British Ecological Society (BES) “Roadie” at Wychwood Festival (2016) ♦ Talk & practical session with Earthwatch Institute in Malua, Borneo (2015) ♦ Designed and hosted ecology stall at Discovery Night, University of Sheffield, UK (2015).
- First Aid    ♦ Wilderness First Aid (valid to May 2025).
- Driving    ♦ Full, clean UK driving licence.

## Media Coverage

- 2022    ♦ Senior et al. (2022) “Wildlife trade targets colorful birds and threatens the aesthetic value of nature”, *Current Biology*, received widespread coverage in the media, including: **BBC News**, **Independent**, **Mongabay**, **South Africa Today** and **The Conversation**.
- ♦ **BBC Radio 4 Inside Science**, live radio interview discussing trade of colourful birds.
- 2019    ♦ *Thermal Images in R*, **Methods.blog**, 21 August.
- ♦ *Tropical biodiversity faces intersecting threats*, **Physics Today**, 25 July.
- ♦ *Deforestation + climate change = dead end for wildlife*, **Agence France Presse**.
- 2017    ♦ **BBC Radio Sheffield**, live radio interview discussing microclimates in logged forests.
- ♦ *Logged forests still offer refuge for endangered tropical species*, **Environmental Research Web**, 27 October.
- 2016    ♦ *Public engagement training & Wychwood*, **BES Bulletin**, Issue 15.