ANTICA CULINA

Senior researcher at IRB; Honorary fellow at NIOO-KNAW

Meta-Science, Open Science, Evolutionary Ecology
https://www.linkedin.com/in/antica-culina-39296b63

I am an evolutionary ecologist and meta-scientist with expertise in informed decision-making, open science, and social bond dynamics. My research focuses on achieving two complementary goals: (1) understanding processes in natural populations, while at the same time developing tools to overcome issues of imperfect information; (2) enabling ecological research to reach its full potential by researching the scientific process itself, understanding and optimizing it. I developed this line of research in 2016 when I accepted a position to lead a project on the use of open data in ecological meta-analysis at NIOO-KNAW. I am one of the few pioneers of Open Science and meta-science in ecology. My extensive expertise in these areas has now been widely recognized, and has helped me to build an extensive and diverse network of collaborators

EXPERIENCE

2022 – ONGOING
SENIOR RESEARCHER, RUDER BOSKOVIC INSTITUTE (CROATIA)

2018 – 2022
RESEARCHER, NIOO-KNAW (NETHERLANDS)

- Leading research project: *Pair-bonds beyond the breeding season – a new approach to understanding divorce and fidelity using the power of Open Data*
- Executive director, co-founder & coordinator of SPI-Birds Network and Database where I oversee the activities in order to achieve FAIR data and meta-data within the community
- Supervising SPI-Birds team of 4 developers, two coordinators, website developers; coordinating network of 120+ members from academic and non-academic background
- Leading research on Open Science in Ecology
- Supervising one postdocs, co-supervising two PhDs and supervising two MSc projects

2016 – 2018
QUANTITATIVE ECOLOGIST, NIOO-KNAW

- Managed project on Open Science and Meta-analysis in Ecology
- Established Open Science research line at NIOO-KNAW
- Supervised two MSc projects

2015 – 2016
POSTDOC, UNIVERSITY OF OXFROD (*WILDLIFE RESEARCH CONSERVATION UNIT*)

- Established a research line as a pre-request for further (private) funding

EDUCATION

OCT 2010- JAN 2015
DPHIL IN ZOOLOGY, UNIVERSITY OF OXFORD (UK)

- Passed without corrections (20% of students)

2003-2008
BSC IN ECOLOGY, UNIVERSITY OF ZAGREB (CROATIA)

- Also worked for a nature conservation NGO as a project manager (until 2010)

SKILLS

- Presentation & outreach
- Project management
- Supervision of personnel & tasks
- Fundraising
- Open Science & Transparency
- Community engagement
- Scientific process
- Data management, FAIR data & code
- Analytical methods (e.g. meta-analysis, social networks)

GRANTS & AWARDS

My undergrad and PhD were fully funded by scholarships (~ 100 000 EUR sum)

After my PhD I have obtained ~ 275 000 EUR:

- NLBIF grants (Netherlands Biodiversity Information Facility), 30 000 EUR (2022-2023)
- VENI research fellowship, 250 000 EUR by NWO, (2018-2021)
- Workshop funding, 25 000 EUR by Lorentz Center, Netherlands
- Dutch Data Prize for SPI-Birds project (2020) – 5 000 EUR
- Open Science Use Case Award (2020) for SPI-Birds initiative
- NWO Cooperation and Exchange / Scientific Meetings Grant for organizing 2 day symposium & workshops on Open Science in Ecology (2017) – 10 000 EUR
- RDA EU Early Career support Programme for the RDA 9th Plenary (2017)
- Conference travel grant, Welcome Trust, to attend #scidata16 (2016)

AFFILIATIONS & BOARDS

1. Executive director of SPI-Birds Network & Database (www.spibirds.org)
2. Associate Editor, Journal of Animal Ecology
3. Executive Board, Society for Open, Reliable, and Transparent Ecology and Evolutionary biology (SORTEE) (www.sortee.org)
4. Honorary fellow at NIOO-KNAW (2022-ongoing)
5. Sounding board for the Development of the National Software Management plan, the Netherlands (2022)
6. Advisory Board & Champion of FAIRsFAIR EU project (https://www.fairsfair.eu) for Fostering Fair Data Practices in Europe
7. Open Knowledge Maps, Scientific advisor
8. Scientific Project Advisory Group of “Threatened Data for Threatened Species”, University of Greifswald, Germany
9. Co-chair of Education Committee, SORTEE
10. Co-chair of Awards Committee, SORTEE

PROFESIONAL MEMBERSHIP

1. UNESCO Open Science Working Group
2. Go Fair Implementation Network
3. European Society for Evolutionary Biology

4. British Ecological Society
5. Research Data Alliance Europe

REVIEW COMMITTEES

1. Dataworks! Prize of the National Institute of Health and FASEB (USA)
2. Programme committee CUC2022 (Carnet users conference), 2021/2022
2. Assessment committee of the Open science fund, NWO, 2020/2021 round
3. Reviewer for National Research, Development and Innovation Office, Hungary (the NRDI Office, the main organization in Hungary providing funds for R&D, including basic (discovery) research)
4. Review committee, CUC2022, 2021/2022

I act as a reviewer within areas of Open Science, Evolution, Ecology, and meta-analysis, and have reviewed close to 200 papers from over 30 journals (e.g. Nature, Ecology Letters, PLOS Biology, Nature Ecology and Evolution, eLife, Science Advances, Methods in Ecology and Evolution).

TEACHING

2022 - Guest Lecture, **Cognitive Sciences** MSc, University of Rijeka
2021/2022 Guest Lecturer, **Life History course** (MSc level): Wageningen University, Netherlands
2019/2020 Guest Lecturer, **Quantitative conservation ecology** (MSc level), Radboud University Nijmegen, Netherlands
2010-2015 College tutor, **Quantitative methods** (Undergrad in Biology), St Catherine's College, University of Oxford
2013-2015 Lecturer, **Introduction to Ornithology**, Oxford University Dept. for Continuing Education
2013-2015 Lecturer, **Vertebrate Zoology** & **Animal Behaviour**, Oxford Study Abroad Program
2015 Lecturer, Science Communication, Oxford Sparks

ACTIVITIES

SCIENTIFIC PUBLICATIONS (27)

1) Purgar, M., Klanjscek, T. & Culina, A. Quantifying research waste in ecology. Nat Ecol Evol 6, 1390–1397 (2022). (free read at rdcu.be/cR8PR) https://doi.org/10.1038/s41559-022-01820-0
2) Culina A, Brouwer, L. No evidence of immediate fitness benefits of within-season divorce in monogamous birds. Biology letters 18 (5), 20210671. https://doi.org/10.1098/rsbl.2021.0671
3) O'Dea, R.E., Parker, T.H., Chee, Y.E. *et al.* Towards open, reliable, and transparent ecology and evolutionary biology. *BMC Biol* **19,** 68 (2021)
4) Culina, A, Firth. J., Hinde C.A (2020): Familiarity breeds success: pairs that meet earlier experience increased breeding performance in a wild bird population. Proceedings of the Roy Soc – Biology. 20201554. https://doi.org/10.1098/rspb.2020.1554
5) Culina, A. et al. (2020). Connecting the data landscape of long-term ecological studies: the SPI-Birds data hub. Journal of Animal Ecology. https://doi.org/10.1111/1365-2656.13388
6) Culina, A., Evans, S., van den Berg, I., & Sánchez-Tójar, A. (2020): Low availability of code in ecology: a call for urgent action. PLOS Biology 18(7), e3000763. https://doi.org/10.1371/journal.pbio.3000763

7) Culina, A. & Garroway C.J. (2019): In Focus: Bats use social information within and across species. J. Anim. Ecol. 88 (10), 1444-1446. https://doi.org/10.1111/1365-2656.13093
8) Culina, A., Linton, D., Pradel, R., Bouwhuis, S. & Macdonald, D. (2019): Live fast, don't die young: survival reproduction trade-offs in long-lived income breeders. J. Anim. Ecol. Doi: 10.1111/1365-2656.12957
9) Ramakers, J.J.C., Culina, A., Visser, M.E. & Reply to & Gienapp P. (2019): More evidence is needed to show that heritability and selection are not associated. Nat Ecol Evol 3, 1408. https://doi.org/10.1038/s41559-019-0991-2
10) Firth, J. A., Cole, E. F., Ioannou, C. C., Quinn, J. L., Aplin, L. M., Culina, A., McMahon, K. & Sheldon, B. C. (2018): Personality shapes pair bonding in a wild bird social system. Nat. Ecol. & Evol. 2, 1696-1699. https://doi.org/10.1038/s41559-018-0670-8
11) Ngo, T. T. N., Senior, A. M., Culina, A., Santos, E. S. A., Vlak, J. M. & Zwart, M. (2018): Quantitative analysis of the dose–response of white spot syndrome virus in shrimp. J. Fish Dis. 41, 11, 1733-1744. https://doi.org/10.1111/jfd.12877
12) Culina, A., Baglioni M., Crowther T.W., Visser M.E, Woutersen S. & Manghi P. (2018): Navigating the unfolding open data landscape in ecology and evolution. Nat. Ecol. & Evol. 2, 420–426. https://doi.org/10.1038/s41559-017-0458-2
13) Culina, A., Crowther T., Ramakers J., Gienapp P. & Visser M.E (2018): How to do meta-analysis of open datasets. Nat. Ecol. & Evol. 2, 1053–1056. https://doi.org/10.1038/s41559-018-0579-2
14) Ramakers J., Culina, A., Visser M.E & Gienapp P. (2018): Environmental coupling of heritability and selection is rare and of minor evolutionary significance in wild populations. Nat. Ecol. & Evol. 2, 1093-1103. https://doi.org/10.1038/s41559-018-0577-4
15) Culina, A., Linton D.M & Macdonald D.W. (2017): Age, sex, and climate factors show different effects on survival of three different bat species in a woodland bat community. Glob. Ecol. & Cons. 12, 263-271. https://doi.org/10.1016/j.gecco.2017.11.009
16) Culina, A., Linton D.M. & Macdonald D.W. (2017): Testing for complex drivers of resource utilisation: A case-study of roost dynamics in bats. Basic Appl. Ecol. 25, 28-36. https://doi.org/10.1016/j.baae.2017.10.001
17) Crates R.A., Firth J.A., Farine D.R., Garroway C.J., Kidd, L.R., Aplin, L.M., Radersma, R., Milligan, N. D., Voelkl, B., Culina, A., Verhelst, B. L., Hinde, C. A. & Sheldon, B. C. (2016): Individual variation in winter supplementary food consumption and its consequences for reproduction in wild birds. J. Av. BIol. 47, 678-689. https://doi.org/10.1111/jav.00936
18) Aplin L., Firth J., Farine D., Voelkl B., Crates R., Culina A., Garroway C., Hinde C., Kidd L., Psorakis I., Milligan N., Radersma R., Verhelst B. & Sheldon B.C. (2015): Consistent individual differences in the social phenotypes of wild great tits (Parus major). Anim. Behav. 108, 117-127. https://doi.org/10.1016/j.anbehav.2015.07.016
19) Culina A., Hinde C.A & Sheldon B.C. (2015): Carry-over effects of the social environment on future divorce probability in great tits. P. Roy. Soc. B-Biol. Sci. 282, 2015092. https://doi.org/10.1098/rspb.2015.0920
20) Shoji, A., Aris-Brosou S., Culina A., Fayet A., Kirk H., Padget O., Juarez-Martinez I., Boyle D., Nakata T., Perrins C.M. & Guilford T. (2015): Breeding phenology and winter activity predict subsequent breeding success in a trans-global migratory seabird. Biol. Letters 11, 20150671. https://doi.org/10.1098/rsbl.2015.0671
21) Culina A., Lachish S. & Sheldon B.C. (2015): Evidence of a link between survival and pair fidelity across multiple tit populations. J. Avian Biol. 45, 507-515. https://doi.org/10.1111/jav.00661
22) Psorakis I., Voelkl B., Garroway C., Radersma R., Aplin L., Crates R., Culina A., Farine D., Firth J., Hinde C., Kidd L., Milligan N., Roberts S, Verhelst B. & Sheldon B.C (2015): Inferring social structure from temporal data. Behav. Ecol. Sociobiol. 69, 857-866. https://doi.org/10.1007/s00265-015-1906-0
23) Farine D.R., Firth J.A., Aplin L., Crates R.A, Culina A., Garroway C., Hinde C.A., Kidd L.R., Milligan N.D., Radersma R., Verhelst B., Voelkl B. & Sheldon B.C. (2015): The role of social and ecological

processes in structuring animal populations: a case study from automated tracking of wild birds. Roy. Soc. Open Sci. 2, 150057. https://doi.org/10.1098/rsos.150057
24) Culina A., Radersma R. & Sheldon B.C. (2014): Trading up: the fitness consequences of divorce in monogamous birds. Biol. Rev. 90, 1015-1034. https://doi.org/10.1111/brv.12143
25) Culina A., Lachish S., Pradel R., Choquet R. & Sheldon B.C (2013): A multievent approach to estimating pair fidelity and heterogeneity in state transitions. Ecol. & Evol. 3, 4326-4338. https://doi.org/10.1002/ece3.729
26) Mikulic K., Budinski I., Culina A., Jurinovic L. & Lucic V.(2013): The return of the Lesser Kestrel Falco naumanni as a breeding bird to Croatia. Acrocephalus 34: 71-74.
27) Budinski I., Culina A., Mikulić K. & Jurinović L. (2010): Bird species that have significantly changed breeding range on Croatian coastal area: comparison of 30 years old data and recent knowledge. Bird Census News 23: 49-58.

OTHER OUTPUT

1) Martinez-Ortiz, C., Martinez Lavanchy, P., Sesink, L., Olivier, B.G., Meakin, J., de Jong, M., & Cruz, M. Others: Akhmerov, A, Ancion, Z, de Bruin, J, Culina, A, Erdmann, C et al. (2022). Practical guide to Software Management Plans (1.0). Zenodo. https://doi.org/10.5281/zenodo.7248877
2) de Senerpont Domis, L.N., Başoğlu, D., Beklioglu, M. , Culina, A. et al (2017): Database Management Plan adhering to the H2020 Open Research Data Pilot. AQUACOSM Deliverable No4.2

I have also published 18 Datasets, 9 technical reports

ORGANIZATION OF MEETINGS (1) & WORKSHOPS (11)

1. Computational reproducibility in Ecology, Hachathon at the SORTEE conferences, 2021 and 2022
2. Pre-registration in Ecology and Evolution at the Ecology across Borders, British Ecological Society annual conference, 2021
3. Making your research reproducible and trustworthy, WEES workshop, online Nov 2021
4. FAIR Data for the 'Long Tail of Science', International Lorentz Center workshop (Sept 2021)
5. Designing a FAIR Data Discovery Ecosystem, International FAIR Convergence Symposium. Online (2020) https://vimeo.com/499270587
6. Data Lifecycles for Open Ecological & Biodiversity Research, Biodiversity Next Conference. Leiden (2019) https://biodiversitynext.org/list-of-symposia-and-workshops/
7. Open Science Tools, Data and Technologies for efficient Ecological and Evolutionary research. Amsterdam (2017) – initiated and organized 2-day symposia and workshops
8. Navigating the unfolding Open Data landscape in Ecology and Evolution. Workshop at the British Ecological Society Annual meeting, Ghent (2017)
9. Transparent meta-analysis: a powerful tool for the researchers' toolbox. Workshop at the NIOO research days (2017 & 2019)
10. Evolutionary biology and open science: practices, challenges and opportunities. ESEB meeting, Groningen (2017)
11. Symposium and workshops on Open Science Tools, Data and Technologies for efficient Ecological and Evolutionary research, Amsterdam (2017)
12. Transparent meta-analysis and use of open data workshop. Open Science Tools, Data and Technologies for efficient Ecological and Evolutionary research, Amsterdam (2017)

LECTURES, SEMINARS & TALKS

Invited (29)

1. Open Science Fund day, NWO, den Hague, June 2022, on the role of funders in transition to Open Science
2. 13th European Ornithological Union Congress, Giessen 2022: SPI-Birds data hub
3. AIMOS Association for Interdisciplinary Meta-research and Open science, Nov 2021, online: Computational reproducibility in Ecology at https://www.youtube.com/watch?v=YSKZRg1W0HA
4. WEES seminar, Nov 2021, 'Doing credible sciences – why would you care?'
5. FAIR Data – It takes a Village, a webinar to mark and celebrate the 5th anniversary of the NOW RDM Policy (listopad 2021), clan okruglog stola https://www.nwo.nl/en/meetings/webinar-fair-it-takes-village
6. Fledgling meeting of the European Ornithological Union meeting, Zagreb, Croatia, plenary talk on Transparency in Science (postponed until 2022)
7. Canadian Society for Ecology and Evolution Annual meeting 2021, Aug 2021: Establishing a research & data network: long-term studies in Ecology
8. Software Management Plans Workshop, June 2021, organized by Netherlands eScience Center and NWO: Computational reproducibility - how well are we doing https://zenodo.org/record/5024482#.YcmQZVko9EZ
9. Meta-Research Innovation Center at Stanford Seminar (2021, June): Unused potential of ecological research, and the role of reproducibility
10. Seminar of the Finnish Museum of Natural History LUOMUS (2021, 19.05):): Meta-science for ecology and evolution, why would we need it?
11. FAIRsFAIR National Roadshow, Netherlands (2021, March): FAIR vs Open: a researchers perspective. https://www.fairsfair.eu/events/fairsfair-roadshow-netherlands and https://www.fairsfair.eu/sites/default/files/06%20-%20FAIRsFAIR_Culina.pdf#overlay-context=events/fairsfair-roadshow-netherlands
12. Evolution Seminar, Bielefeld University (2021, 2 Feb): Open science & Meta-science for ecology & evolution. Why would we need it
13. Oxford Zoology Seminar Series (2020, 3. December, online): Meta-science for ecology and evolution, why would we need it?
14. Reproducible Science seminar Series, LMU Munich (2020, December, online): Open science & Meta-science for ecology & evolution. Why would we need it
15. Better Research Through Better Data Roundtable, (2020 Nov, Online): FAIR but not OPEN: getting researchers on board. https://bit.ly/2KqUPu5
16. National Open Science Festival, Netherlands (2020, online) on SPI-Birds data hub
17. Wildlife Research and Conservation 2019, Berlin (2019): Uncovering population dynamic, habitat use, and life-history trade offs in bats and birds using capture recapture models
18. Open Science Conference, Berlin (2019): Low availability of code in ecology: call for urgent action.
19. NVG PhD Workshop, Egmond aan Zee (2018): What is Open Science and why practice it?
20. Cutting-Edge Ecology: the science of the 21st century, NIOO-KNAW (2018): Think big: integrative approaches, open data and modern ecological research.
21. DANS Open Day on Open Science, Den Haag (2018): Open science and open data in ecological and evolutionary research.
22. Warsaw Seminar Series in Ecology & Evolution, University of Warsaw (2017): How can fast growing data-landscape help ecological and evolutionary synthesis?
23. Open Science fair, Athens (2017): An Ecology and Evolution view of Open Science.
24. NIOO seminar series (2017): Navigating the unfolding data landscape in ecology and evolution.
25. Seminar series, Institute for Biodiversity and Ecosystem Dynamics, UvA (2017): How can fast growing data-landscape help ecological and evolutionary synthesis?
26. Behavioural Ecology Group Seminar, Wageningen University (2016): How does divorce fit into the story of social monogamy - a bird's eye view.

27. Biological Anthropology Seminar Series, UCL Anthropology, University College London (2015): From meta-analysis to social networks: what have we learned about fidelity and divorce in socially monogamous species.
28. International Conference on Evolution and Behaviour, Zagreb, Croatia (2014): From meta-analysis to social networks: what have we learned about fidelity and divorce in socially monogamous species.
29. Wolfson college seminar series, Wolfson college, Oxford (2013): Social networks and divorce?

Non-invited (10) - SELECTED

1. Evolution 2017, Portland (2017): Predicting evolutionary responses when genetic variance and selection covary with the environment: a large-scale Open Access Data approach.
2. BES Annual Meeting, Liverpool (2016): From pedigrees, through divorce, to microbes and CO2: how can fast growing data-landscape help ecological and evolutionary synthesis?
3. Publishing Better Science through Better Data by Springer Nature, London (2016): FAIR data, Meta-Analysis, and Evolutionary Biology
4. DI4R Conference, Krakow (2016): Emerging trends in Meta-Analysis with the increased availability of datasets.

I have presented posters at 12 international conferences

INCLUSIVE SCIENCE & OUTREACH (SELECTED)

- Culina A. (2020): How I managed my work and personal life as a sole parent during the pandemic, Nature. doi: 10.1038/d41586-020-02329-x
- Culina A. (2018): Navigating the Open Data landscape in Ecology and Evolution – lets make it work. Nature Ecology & Evolution Community: Behind the paper.
- Culina A. (2018): How I opened up towards Open Science. Springer Nature: Data Dialogues. https://go.nature.com/2GWOIde
- Culina A. (2018): Open Science and the long-tail of scientists work: Let's bridge the gap. ZWB

Webcast and videos (selected)

- Nature Careers Webcast (2020): Tips from Nature Careers on managing time and childcare during the coronavirus pandemic https://www.nature.com/articles/d41586-021-00654-3
- D.A.N.C.E: Debunking sAme-sex aNimal prejudiCe and stereotypEs (2016) (https://vimeo.com/129345008; https://vimeo.com/131138049)
- Evolution Video contest by National Evolutionary Synthesis Center (winner 2012) http://vimeo.com/44808911

IN MEDIA (SELECTED)

- Interview za Vecernji List: https://www.vecernji.hr/techsci/neki-proucavaju-mozak-ili-molekule-a-ja-radim-na-izucavanju-same-znanosti-1614024
- Vecenji List: Koliko informacija gubimo tijekom znanstvenog procesa? https://www.vecernji.hr/techsci/koliko-informacija-gubimo-tijekom-znanstvenog-procesa-1603681
- Hrvatska za 5: NEBRUŠENI BISERI HRVATSKE BUDUĆNOSTI, gostovanje u emisiji HTV1 (HRT4) (2022)

- Saving your data together helps bird research, News and Opinions, by British ecological society press office https://www.britishecologicalsociety.org/saving-your-data-together-helps-bird-research/
- High time to open up ecological research, https://bioengineer.org/high-time-to-open-up-ecological-research/; https://scienmag.com/high-time-to-open-up-ecological-research/, https://phys.org/news/2020-07-high-ecological.amp,
- I cannot always be as productive as Id like to be, interview for the NWO magazine https://www.nwo.nl/en/cases/i-cannot-always-be-productive-id-be
- De hele wereld die over je schouder meekijkt: moet dat echt?; Het Financieele Dagblad
- Croatian national television hrt1 hrvatska za 5, 14/06/2022