

Christopher L. Crawford

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SUMMARY

Postdoctoral researcher and conservation scientist aiming to apply my interdisciplinary expertise in **biodiversity metrics, nature-based climate solutions, and agricultural land use change**, quantitative and technical skills in **geospatial analysis and data visualization**, and practical experience translating across disciplines and **collaborating with the business, agricultural, and environmental communities** in order to make durable progress across a range of environmental and sustainability challenges.

EDUCATION

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| Princeton University | PhD in Science, Technology, & Environmental Policy
School of Public and International Affairs | <i>Princeton, NJ 2016 – 2022</i> |
| <ul style="list-style-type: none">- Dissertation: “Agriculture in flux, biodiversity in the balance: conservation implications of agricultural expansion and abandonment.”- Adviser: David S. Wilcove, Professor of Ecology and Evolutionary Biology and Public Affairs, Princeton University- Dean’s Completion Fellowship 2022; Princeton Energy & Climate Scholar; GPA: 3.95; GRE: 169/170 verbal, 167/170 quantitative | | |
| University of Michigan | BS (with distinction) in Ecology & Evolutionary Biology, Minor in Physics | <i>Ann Arbor, MI 2008 – 2012</i> |
| <ul style="list-style-type: none">- GPA: 3.82; Phi Beta Kappa Society; University Honors for Academic Excellence: 2008-2012; James B. Angell Scholar: 2012 | | |

RESEARCH AND PROFESSIONAL EXPERIENCE

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| Princeton University | Postdoctoral Research Associate
Postgraduate Research Associate
Graduate Researcher & PhD Candidate | <i>Princeton, NJ January 2023 - present
June 2022 – Dec. 2022
Sep. 2016 – May 2022</i> |
| <ul style="list-style-type: none">- Developed expertise in biodiversity metrics by showing that commonly used methods for measuring biodiversity produce radically different land-use recommendations for both biodiversity protection and agricultural conversion, resulting in a peer-reviewed article informing how biodiversity is incorporated into spatial land use prioritization and planning decisions.- Evaluated the environmental impacts of the emerging agricultural land use trend of cropland abandonment, producing quantitative assessments of the impact of cropland abandonment and recultivation on carbon storage and biodiversity by leveraging a high-resolution land cover time series alongside biodiversity and carbon accumulation datasets.- Developed R and shell scripts to process hundreds of millions of pixels of data on Princeton’s computing clusters and quantify the persistence of cropland abandonment through time, producing a high-impact peer-reviewed article illuminating the potential for abandonment to help meet carbon and biodiversity goals.- Combined high-resolution land cover data with distribution and habitat data for over 2000 bird and mammal species to produce the first detailed analysis of how cropland abandonment, secondary succession, and recultivation affect the amount of habitat available for individual mammal and bird species through time.- Conducted ecological field research to investigate methods to increase the sustainability of livestock grazing in Kenya’s savanna ecosystems, producing one of the first quantifications of the behavioral and environmental consequences of planned grazing.- Served as an Assistant in Instruction (TA) for two semesters of SPI/ENV 350 – The Environment: Science and Policy (2019, 2020), leading three weekly discussion sections on environmental policy issues including natural resource management, biodiversity, wildlife trade, climate change, and ecosystem services, contributing to lesson planning, and grading student papers and exams. | | |
| Sustainable Conservation | Project Manager
Project Associate | <i>San Francisco, CA Jan. – May 2016
July 2013 – 2015</i> |
| <ul style="list-style-type: none">- Mapped all restorable areas along California’s Mokelumne River and quantified the corresponding costs and ecosystem service benefits of restoration, producing a cost-benefit analysis and report informing watershed-wide conservation planning.- Managed PlantRight’s annual Spring Nursery Survey to track the retail market for invasive plants in California, coordinating and training more than 150 volunteers each year to survey more than 250 stores.- Led annual process to update PlantRight’s list of commonly sold invasive plants, leveraging data on horticultural prevalence (from annual survey), invasion risk, geographic range, and expert recommendations on non-invasive alternatives.- Developed strong collaborations across diverse sectors and industries in order to solve environmental problems and facilitate restoration projects, including businesses (e.g., retail garden centers recruited as “PlantRight Partners”), landowners, farmers, public utilities, industry groups, volunteer groups, academics, and conservation NGOs. | | |

- Trained, supervised, and managed survey teams as part of the 2012 Rural Agricultural Livelihoods Survey, a nationally representative economic survey of 8,500 Zambian farm households.

- Designed and conducted two-month research project studying patterns of song interaction in two migratory populations of birds in northern Michigan, establishing baseline data to inform further science and co-authoring a [peer-reviewed journal article](#).

TECHNICAL SKILLS

- Geospatial analysis in R, Google Earth Engine, ArcGIS, and QGIS.
- Programming languages: R (advanced), linux/unix/bash (moderate), Python (beginner), JavaScript (beginner); skills in data visualization with ggplot2, cluster computing with SLURM, version control with Github, reproducible research with Markdown.
- R package expertise: tidyverse, data.table, terra, raster, sf, arrow.

LEADERSHIP, TEAMWORK, AND OUTREACH

- Communicated research findings to academic and public audiences, presenting at 4 academic and industry conferences, giving 2 invited undergraduate course lectures, and getting press coverage from [BioScience](#), [Bloomberg](#), and [The Hill](#).
- Served as Associate Editor (2018, 2019) for the student-run *Journal of Public and International Affairs*, published by the Association of Professional Schools of International Affairs and Princeton's School of Public & International Affairs (SPIA).
- Conducted outreach on environmental issues such as climate change (meeting with congressional staff and providing 2 lectures to local high schoolers) and invasive plants (including 7 presentations to garden groups in California and 6 [online webinars](#)).
- Provided invited peer reviews for academic journals such as *Science*, *BioScience*, and *International Journal of Ecology*

PUBLICATIONS

Peer-reviewed (see [Google Scholar](#))

1. Zeng Y, Senior RA, **Crawford CL**, & Wilcove DS. (In Press). Gaps and weaknesses in the global protected area network for safeguarding at-risk species. *Science Advances*.
2. Ma L, Conradie SR, **Crawford CL**, Gardner AS, Kearney MR, Maclean IMD, McKechnie AE, Mi CR, Senior RA, & Wilcove DS. (2023). Global Patterns of Climate Change Impacts to Desert Bird Communities. *Nature Communications*, 14, 211. <https://doi.org/10.1038/s41467-023-35814-8>
3. **Crawford CL**, Yin H, Radeloff VC, & Wilcove DS. (2022). Rural land abandonment is too ephemeral to provide major benefits for biodiversity and climate. *Science Advances*, 8(21). <https://doi.org/10.1126/sciadv.abm8999>
4. **Crawford CL**, Estes LD, Searchinger TD, & Wilcove DS. (2021). Consequences of under-explored variation in biodiversity indices used for land-use prioritization. *Ecological Applications*, 31(7): e02396. <https://doi.org/10.1002/eap.2396>
5. **Crawford CL***, Volenec ZM*, Sisanya M, Kibet R, & Rubenstein DI. (2018). Behavioral and Ecological Implications of Bunched, Rotational Cattle Grazing in East African Savanna Ecosystem. *Rangeland Ecology & Management*, 72(1):204-209. <https://doi.org/10.1016/j.rama.2018.07.016> (*Co-lead author.)
6. Price JJ, & **Crawford CL**. (2013). Use and characteristics of two singing modes in Pine Warblers. *The Wilson Journal of Ornithology*, 125(3):552-561. <https://doi.org/10.1676/13-006.1>

Manuscripts in prep

1. **Crawford CL**, Wiebe RA, Yin H, Radeloff VC, & Wilcove DS. Cropland abandonment benefits more birds and mammals than it harms but rarely compensates for habitat loss.
2. **Crawford CL**, Wiebe RA, Yin H, Radeloff V, & Wilcove DS. Spatial determinants of durable cropland abandonment reveal conservation opportunities.

Reports

1. Sustainable Conservation. (2015). Lower Mokelumne River Restoration Assessment. <http://suscon.org/mokelumne-river-restoration-assessment/> (Lead author of report.)
2. **Crawford, CL**. (2011). Bird diversity and abundance at Maungatautari Ecological Island: regeneration after a landmark mainland restoration project. *Unpublished*. EcoQuest Education Foundation, New Zealand.

INTERESTS

- Perfecting my sourdough technique, looking for birds, listening to Swedish music, taking photos of clouds, & cooking spicy food.