Sara E. Hansen

Research Data Professional

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I am a research data professional specializing in the use and reuse of data to address scientific questions and inform real-world decisions. I have eight years of progressive experience engaging in data curation and sharing across organizations, conducting data-intensive research, coordinating cross-disciplinary projects, and communicating with diverse teams of stakeholders through publications, workshops, educational materials, and more.

ACADEMIC PREPARATION

Ph.D. Earth and Ecosystem Science, Central Michigan University — May 2025

For the Dissertation: **Integrating data science into applied ecology for the conservation of biodiversity**

B.S. Ecology, Evolution, and Biodiversity, University of Michigan — May 2019

KEY SKILLS

Research data management and curation
Data and metadata standardization
Open Science and Open Data implementation (e.g., data publication)
Open Educational Resource development and testing
Statistical analysis, including GIS analysis, machine learning, and human subjects research
Data visualization via graphs, tables, maps, and dashboards
Science communication, meeting facilitation, and report writing
Reproducible research data workflows
Project management, organization, and documentation

KEY TECHNOLOGIES

Data publication and discovery platforms (e.g., PURR, Open Science Framework, GitHub)
R programming language
Structured Query Language (e.g., MySQL)
ESRI ArcGIS
Tableau
Microsoft Office (Excel, Access, PowerPoint, Word)
Google Drive (Sheets, Slides, Docs, Forms)

PROFESSIONAL EXPERIENCE

Research Data Curator, Purdue University — 7/2025 – Present

Data Curation: I facilitate open data and information exchange within the Purdue University Research Repository (PURR). I review research data, metadata, documentation, and code to ensure they are high-quality, Findable, Accessible, Interoperable, and Reusable (FAIR), and meet institutional requirements.

Research Consultation: I communicate with researchers to address their questions about using the PURR system, recommend improvements to their submitted data and information, and troubleshoot technical issues. I am particularly interested in the integration of data management practices into all parts of the research life cycle.

Graduate Research Assistant, Central Michigan University — 8/2020 – 5/2025

Research: I was involved in the conceptualization, planning, and implementation of many collaborative, data-intensive research projects, which have resulted in published

papers, data sets, code sets, and graphics. I engineered a reproducible study that incorporated exploration of publicly available data sources into machine learning to improve model interpretability, demonstrating the value of large-scale data publication.
Database Management: I designed and maintained several databases housing over 160,000 relational records about species and ecosystems, standardized to Darwin Core. I streamlined data and metadata collection and integration, including establishing a field data collection protocol that reduced pre-processing errors by 50%.
Data Analytics: I employed exploratory data analysis and hypothesis testing techniques to transform data into information. I improved the efficiency and reproducibility of an endangered species modeling protocol, which has been applied and reported to local and federal agencies annually since 2021.
Science Communication: I presented my research at international conferences, facilitated meetings and workshops, developed training and outreach materials, and prepared technical and non-technical reports to engage with researchers and other stakeholders across broad audiences.
Education: I developed Open Educational Resources alongside instructors and researchers to teach core science and data concepts at the undergraduate level. My recent resource, *The Process of Science*, demonstrated statistically significant increases in test scores (2.5 points out of 10) at Central Michigan University.

Research Assistant, University of Michigan 10/2016 – 5/2017

Data Quality Control: I aggregated, cleaned, and visualized publicly available nutrient data to inform watershed modeling. My work was showcased at the Undergraduate Research Opportunity Program's Annual Research Symposium in 2017.

CERTIFICATIONS AND PROFESSIONAL DEVELOPMENT

NASA Open Science 101 Training, Don't Use This Code 2025
Data Science Professional Certification, DataCamp 2024
Faculty Mentoring Network, Ecological Society of America
and Biodiversity Literacy in Undergraduate Education 2023
Advanced Geospatial Analysis, IMCI, University of Idaho 2021

SELECTED WORKS

Hansen, S.E., R. Ewing, D.L. Linton, and A.K. Monfils. 2025. The Process of Science: Introduction to Ecosystems, Conservation, and Team Science (Version 1.0). Biodiversity Literacy in Undergraduate Education, QUBES Educational Resources. http://dx.doi.org/10.25334/B1EF-HM78 (523 total views; 193 total downloads)

Hansen, S.E., M.J. Monfils, R.A. Hackett, R.T. Goebel, and A.K. Monfils. 2024. Data-centric species distribution modeling: Impacts of modeler decisions in a case study of invasive European frog-bit. *Applications in Plant Sciences* 12: e11573. https://doi.org/10.1002/aps3.11573

Hansen, S.E., A.K. Monfils, and D.L. Linton. 2023. Building biodiversity datasets for invasive species. *Teaching Issues and Experiments in Ecology* 19: 3. https://tiee.esa.org/vol/v19/issues/data_sets/hansen/abstract.html

Hansen, S.E., B.C. Cahill, R.A. Hackett, M.J. Monfils, R.T. Goebel, J.A. Macklin, S. Asencio, and A.K. Monfils. 2022. Aggregated occurrence records of invasive European frog-bit (*Hydrocharis morsus-ranae* L.) across North America. *Biodiversity Data Journal* 10: e77492. https://doi.org/10.3897/BDJ.10.e77492

Hardisty, A., L. Ellwood, G. Nelson, B. Zimkus, J. Buschbom, W. Addink, R.K. Rabeler, J. Bates, A. Bentley, J. Fortes, **S.E. Hansen**, J. Macklin, A. Mast, J. Miller, A.K. Monfils, D.L. Paul, E. Wallis, and M. Webster. 2022. Digital Extended Specimens: Enabling an extensible network of biodiversity data records as integrated digital objects on the Internet. *BioScience*: biac060. https://doi.org/10.1093/biosci/biac060