KELLY KAPSAR

Michigan State University – Department of Fisheries & Wildlife

github.com/kellykapsar   ✉ kelly.kapsar@gmail.com   ☎ (314) 413-3271   🏠 Kellykapsar.netlify.app

EXECUTIVE STATEMENT

I am an interdisciplinary environmental scientist focused on collaborative, solutions-driven approaches to conservation challenges in coupled human and natural systems. I use spatial data analysis and statistics to better understand human-nature interactions across scales of space and time. My research interests also include community-engagement, knowledge synthesis, and reproducible research.

WORK EXPERIENCE

Postdoctoral Scientist (Spatial Data Analysis) *2022-present*
Center for Systems Integration & Sustainability, Michigan State University (MSU)   Remote

- Developed reproducible, version-controlled workflow to analyze over 1 billion Automatic Identification System (AIS) vessel traffic messages using a high-performance computer running in parallel.
- Led project management for team of 12 researchers spanning 4 time zones, 3 states, and 2 countries.
- Established collaborative partnerships with government organizations and NGOs.
- Supervised technical skills training in spatial data processing and open-source analysis for 2 graduate students.

Research Associate (Community Engagement) *2016-present*
Arctic Socio-Environmental WildCare Program, Saint Louis Zoo   Remote

- Traveled to remote parts of western Alaska twice per year to facilitate an ongoing community-engaged exhibit interpretation project collaboratively developed with Alaska Native communities.

Doctoral Researcher (Social-Ecological Systems) *2016-2022*
Center for Systems Integration & Sustainability, MSU   East Lansing, MI/Remote

- Used high performance computing to clean, integrate, and statistically model AIS data in conjunction with satellite imagery and marine wildlife telemetry.
- Led writing and development of $1.5 million, multi-institutional NSF proposal (awarded in 2021).
- Co-led team of 14 researchers from 5 countries in the development and publication of a peer-reviewed article.

Outreach Instructor (Science Communication) *2014-2016*
Education Department, Saint Louis Zoo   St. Louis, MO

- Taught conservation science-based lessons to diverse audiences, both in person and virtually

EDUCATION

2022   **Ph.D. in Fisheries & Wildlife**
Center for Systems Integration & Sustainability, Michigan State University
University Distinguished Fellow
Thesis: *The metacoupled Arctic and North Pacific: Analyzing the spatiotemporal patterns of marine vessel traffic in coupled human and natural systems*

2014   **B.A. in Biology, Certificate of Advanced Studies in Spanish**
Carleton College, Northfield, MN
Distinction in major, Magna Cum Laude

SELECTED PUBLICATIONS

Kapsar, K., Gunn, G., Brigham, L., and Liu, J. (2023). Measuring recent increases in vessel traffic in the ice-covered waters of the Pacific Arctic. *Climatic Change*, 176 (7), 94. https://doi.org/10.1007/s10584-023-03568-3

Waloven, S., **Kapsar, K.**, Schwoerer, T., Berman, M., Schmidt, J., Vina, A., and Liu, J. (2023). Global gateways as telecoupled human and natural systems: The emerging case of the Bering Strait. *Ambio*, 52, 1040-1055. https://doi.org/10.1007/s13280-023-01835-2.

Kapsar, K., Sullender, B., Liu, J., and Poe, A. (2022). North Pacific and Arctic marine traffic dataset (2015-2020). *Data in Brief*, 44, 108531. https://doi.org/10.1016/j.dib.2022.108531.

Kapsar, K., Frans, V., Brigham, L., and Liu, J. (2022). The metacoupled Arctic: Human-nature interactions across local to global scales as drivers of sustainability. *Ambio*, 51, 2061–2078. https://doi.org/10.1007/s13280-022-01729-9.

Sullender, B., **Kapsar, K.**, Poe, A., and Robards, M. (2021). Spatial management measures alter vessel behavior in the Aleutian Archipelago. *Frontiers in Marine Science*, 7, 579905. https://doi.org/10.3389/fmars.2020.579905.

Chung, M.G., **Kapsar, K.**, Frank, K., and Liu, J. (2020). The spatial and temporal dynamics of global meat trade networks. *Scientific Reports*, 10(1), 16657. https://doi.org/10.1038/s41598-020-73591-2.

Kapsar, K., Hovis, C., Bicudo da Silva, R., Buchholtz, E., Carlson, A., Dou, Y., … Liu, J. (2019). Telecoupling Research: The First Five Years. *Sustainability*, 11(4), 1033. https://doi.org/10.3390/su11041033.

SKILLS

Analytical Methods
- Geospatial data analysis & visualization
- Big data analysis
- High-performance & parallel computing
- Image processing & classification
- Bayesian data analysis
- Hierarchical modeling
- Time series analysis

Data Analytics & Version Control
R (sf, terra, tidyverse, shiny, leaflet); Python (numpy, pandas, geopandas, rasterio); Jupyter; RMarkdown; Bash; SQL; Slurm; Git; GitHub

GIS & Remote Sensing
ArcGIS, QGIS, Erdas Imagine, Google Earth Engine

Statistical Software
R, Stan, BUGS/WinBUGS, Stata

Misc. Software
Microsoft Office Suite, PowerDirector

Languages
English (native)
Spanish (proficient)

TEACHING & MENTORSHIP EXPERIENCE

2018-2020; 2022-present **Graduate & Undergraduate Student Mentor**
Center for Systems Integration & Sustainability; MSU

2019-2020 **Instructor**
Organismal & Population Biology Lab, Applications in Biological Science Lab; MSU

2013-2014 **Teaching Assistant**
Population Ecology, Climate Change Geology; Carleton College