

Melissa Chapman

✉ mchapman@nceas.ucsb.edu

🌐 <http://milliechapman.info>

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Education

- 2018 – 2023 📖 **Ph.D., UC Berkeley** Environmental Science, Policy, and Management.
Dissertation: *From individual decisions to international agreements: Addressing biodiversity loss in an age of algorithms*
- 2010 – 2014 📖 **B.Sc. Yale University** Ecology and evolutionary biology.
Thesis: *Assessing patterns of malaria risk: Environmental and social determinants of endemicity across Burkina Faso and Kenya.*

Positions

- 2023-present 📖 **National Center for Ecological Analysis and Synthesis (NCEAS)**
Director's Postdoctoral Fellow
- 📖 **Climate Change AI (CCAI)** Core team
- 2022 – 2023 📖 **International Institute of Applied Systems Analysis (IIASA)** Visiting
Research Scholar
- 2021 – 2023 📖 **Data Intensive Social Science Lab** Teaching Fellow
- 2020 – 2023 📖 **Resources Legacy Fund** Lead scientific writer for California's Pathways to
30x30 Initiative
- 2015 – 2018 📖 **Woodwell Climate Research Center** Research Assistant II

Peer-reviewed Publications

[Google Scholar] | [ORCID]

In review

- 1 Chapman, M., Jung, M., Boettiger, C., Ringwald, L., Leclère, D., Gusti, M., Augustynczyk, A., & Visconti, P. (n.d.). *Meeting European conservation and restoration targets under future land-use demands (in review at Nature Sustainability)*.
🔗 <https://doi.org/10.31219/osf.io/ynqfx>
- 2 Jung, M., Alagador, D. A., Chapman, M., Hermoso, V., Kujala, H., O'Connor, L., Schinegger, R., Verburg, P., & Visconti, P. (n.d.). *An assessment of the state of conservation planning in europe (in review at Philosophical Transactions of the Royal Society B)*. 🔗 <https://doi.org/10.31219/osf.io/8x2ug>
- 3 Oestreich, W., Mckenna, M., Go, M., Chapman, M., & Oliver, R. (n.d.). *Listening to animal behavior to understand changing ecosystems (in review at TREE)*.
- 4 Sprenkle-Hyppolite, S., Griscom, B., Griffey, V., Munshi, E., & Chapman, M. (n.d.). *Expert-informed leakage-free global carbon dioxide removal potential of trees in agriculture. (in review at Carbon Balance and Management)*.

Peer-reviewed articles

- 1 Chapman, M., Goldstein, B., Schell, C., Brashares, J. S., Carter, N. H., Ellis-Soto, D., Faxon, H. O., Goldstein, J. E., Halpern, B. S., Longdon, J., Norman, K. E., O'Rourke, D., Scoville, C., Xu, L., & Boettiger, C. (2024). Biodiversity monitoring for a just planetary future. *Science (In press)*.

- 2 Oliver, R., **Chapman, M.**, Emery, N., Gillespie, L., Gownaris, N., Leiker, S., Nisi, A., Ayers, D., Breckheimer, I., Blondin, H., Hoffman, A., Pagniello, C., Raisle, M., & Zimmerman, N. (2024). Opening a conversation on responsible environmental data science in the age of generative AI. *Environmental Data Science (Accepted)*.
- 3 **Chapman, M.**, Boettiger, C., & Brashares, J. S. (2023). Leveraging private lands to meet 2030 biodiversity targets in the United States. *Conservation Science and Practice*.
<https://doi.org/0.1111/csp2.12897>
- 4 **Chapman, M.**, Xu, L., Lapeyrolerie, M., & Boettiger, C. (2023). Bridging adaptive management and reinforcement learning for more robust decisions. *Philosophical Transactions of the Royal Society B*. <https://doi.org/10.1098/rstb.2022.0195>
- 5 Hasting, Z., **Chapman, M.**, Ocloo, X., Stenger, K., & Hunt, L. (2023). Trends in agroforestry research over four decades *co-first author. *Elementa: Science of the Anthropocene*. <https://doi.org/10.1525/elementa.2022.0015>
- 6 Kurz, D., Middleton, A. D., **Chapman, M.**, Van Houtan, K. S., Wilkinson, C., Withey, L., & Brashares, J. (2023). Including rural america in academic conservation science. *Frontiers in Conservation Science*. <https://doi.org/10.3389/fcosc.2023.1227227/full>
- 7 Moravek, J., Andrews, L. R., Serota, M. W., Dorcy, J. A., **Chapman, M.**, Wilkinson, C. E., Parker-Shames, P., Van Scoyoc, A., Verta, G., & Brashares, J. S. (2023). Centering 30x30 conservation initiatives on freshwater ecosystems. *Frontiers in Ecology and the Environment*. <https://doi.org/10.1002/fee.2573>
- 8 Scoville, C., Faxon, H., **Chapman, M.**, & et al. (2023). Environment, society and machine learning. *Handbook on the Sociology of Machine Learning*.
<https://doi.org/10.1093/oxfordhb/9780197653609.013.8>
- 9 Ellis-Soto, D., **Chapman, M.**, & Locke, D. (2023). Uneven biodiversity sampling across redlined urban areas in the united states. *Nature Human Behavior (In press)*.
<https://doi.org/10.1038/s41562-023-01688-5>
- 10 Montealegre-Mora, F., Laperlerie, M., **Chapman, M.**, Keller, A., & Boettiger, C. (2023). Pretty darn good control: When are approximate solutions better than approximate models? *Bulletin of Mathematical Biology*. <https://doi.org/10.1007/s11538-023-01198-5>
- 11 Calhoun, K. L., **Chapman, M.**, Tubbesing, C., McInturff, A., Gaynor, K. M., Van Scoyoc, A., Wilkinson, C. E., Parker-Shames, P., Kurz, D., & Brashares, J. (2022). Spatial overlap of wildfire and biodiversity in california highlights gap in non-conifer fire research and management. *Diversity and Distributions*, 28(3), 529–541.
<https://doi.org/10.1111/ddi.13394>
- 12 **Chapman, M.**, Wiltshire, S., Baur, P., Bowles, T., Carlisle, L., Castillo, F., Esquivel, K., Gennet, S., Iles, A., Karp, D. et al. (2022). Social-ecological feedbacks drive tipping points in farming system diversification. *One Earth*, 5(3), 283–292.
<https://doi.org/10.1016/j.oneear.2022.02.007>
- 13 Dowd, S., **Chapman, M.**, Koehn, L. E., & Hoagland, P. (2022). The economic tradeoffs and ecological impacts associated with a potential mesopelagic fishery in the california current. *Ecological Applications*, e2578. <https://doi.org/10.1002/eap.2578>
- 14 Lapeyrolerie, M., **Chapman, M.**, Norman, K. E., & Boettiger, C. (2022). Deep reinforcement learning for conservation decisions. *Methods in Ecology and Evolution*.
<https://doi.org/10.48550/arXiv.2106.08272>

- 15 Estein, C., **Chapman, M.**, Schell, C., Lowy, N., & Gerson, J. (2022). Demystifying the graduate school application process. *Bulletin of the Ecological Society of America*.
<https://doi.org/10.1002/bes2.2029>
- 16 **Chapman, M.**, Oestreich, W. K., Frawley, T. H., Boettiger, C., Diver, S., Santos, B. S., Scoville, C., Armstrong, K., Blondin, H., Chand, K. et al. (2021). Promoting equity in the use of algorithms for high-seas conservation. *One Earth*, 4(6), 790–794.
<https://doi.org/10.1016/j.oneear.2021.05.011>
- 17 **Chapman, M.**, Scoville, C., Lapeyrolerie, M., & Boettiger, C. (2021). Power and accountability in reinforcement learning applications to environmental policy. *The Thirty-Sixth Annual Conference on Neural Information Processing Systems (NeurIPS 2021)*. <https://doi.org/10.48550/arXiv.2205.10911>
- 18 Kitzes, J., Blake, R., Bombaci, S., **Chapman, M.**, Duran, S. M., Huang, T., Joseph, M. B., Lapp, S., Marconi, S., Oestreich, W. K. et al. (2021). Expanding neon biodiversity surveys with new instrumentation and machine learning approaches. *Ecosphere*, 12(11), e03795.
<https://doi.org/10.1002/ecs2.3795>
- 19 Nagy, R. C., Balch, J. K., Bissell, E. K., Cattau, M. E., Glenn, N. F., Halpern, B. S., Ilankakoon, N., Johnson, B., Joseph, M. B., **Chapman, M.** et al. (2021). Harnessing the neon data revolution to advance open environmental science with a diverse and data-capable community. *Ecosphere*, 12(12), e03833. <https://doi.org/10.1002/ecs2.3833>
- 20 Ordway, E. M., Elmore, A. J., Kolstoe, S., Quinn, J. E., Swanwick, R., Cattau, M., Taillie, D., Guinn, S. M., Chadwick, K. D., **Chapman, M.** et al. (2021). Leveraging the neon airborne observation platform for socio-environmental systems research. *Ecosphere*, 12(6), e03640. <https://doi.org/10.1002/ecs2.3640>
- 21 Roe, S., Streck, C., Beach, R., Busch, J., **Chapman, M.**, Daioglou, V., Deppermann, A., Doelman, J., Emmet-Booth, J., Engelmann, J. et al. (2021). Land-based measures to mitigate climate change: Potential and feasibility by country. *Global Change Biology*, 27(23), 6025–6058. <https://doi.org/10.1111/gcb.15873>
- 22 Scoville, C., **Chapman, M.**, Amironesei, R., & Boettiger, C. (2021). Algorithmic conservation in a changing climate. *Current Opinion in Environmental Sustainability*, 51, 30–35. <https://doi.org/10.1016/j.cosust.2021.01.009>
- 23 **Chapman, M.**, Walker, W. S., Cook-Patton, S. C., Ellis, P. W., Farina, M., Griscom, B. W., & Baccini, A. (2020). Large climate mitigation potential from adding trees to agricultural lands. *Global Change Biology*, 26(8), 4357–4365.
<https://doi.org/10.1111/gcb.15121>
- 24 Griscom, B. W., Busch, J., Cook-Patton, S. C., Ellis, P. W., Funk, J., Leavitt, S. M., Lomax, G., Turner, W. R., **Chapman, M.** et al. (2020). National mitigation potential from natural climate solutions in the tropics. *Philosophical Transactions of the Royal Society B*, 375(1794), 20190126. <https://doi.org/10.1098/rstb.2019.0126>
- 25 Oestreich, W. K., **Chapman, M.**, & Crowder, L. B. (2020). A comparative analysis of dynamic management in marine and terrestrial systems. *Frontiers in Ecology and the Environment*, 18(9), 496–504. <https://doi.org/10.1002/fee.2243>
- 26 Samndong, R. A., Bush, G., Vatn, A., & **Chapman, M.** (2018). Institutional analysis of causes of deforestation in redd+ pilot sites in the equateur province: Implication for redd+ in the democratic republic of congo. *Land Use Policy*, 76, 664–674.
<https://doi.org/10.1016/j.landusepol.2018.02.048>
- 27 Cunningham, C., Chen, W. C., Shorten, A., McClurkin, M., Choezom, T., Schmidt, C. P., Chu, V., Bozik, A., Best, C., **Chapman, M.** et al. (2014). Impaired consciousness in partial

seizures is bimodally distributed. *Neurology*, 82(19), 1736–1744.

🔗 <https://doi.org/10.1212/FWNL.0000000000000404>

- 28 Galvin, B. D., Li, Z., Villemaine, E., Poole, C. B., **Chapman, M.**, Pollastri, M. P., Wyatt, P. G., & Carlow, C. K. (2014). A target repurposing approach identifies n-myristoyltransferase as a new candidate drug target in filarial nematodes. *PLoS neglected tropical diseases*, 8(9), e3145. 🔗 <https://doi.org/10.1371/journal.pntd.0003145>

White papers

- 1 Xu, L., Rolf, E., Beery, S., Bennett, J. R., Berger-Wolf, T., Birch, T., Bondi-Kelly, E., Brashares, J., **Chapman, M.**, Corso, A. et al. (2023). *Reflections from the workshop on AI-assisted decision making for conservation*. 🔗 <https://doi.org/10.48550/arXiv.2307.08774>

Fellowships and Grants

- 2023 📖 **Peccei Award**, International Institute of Applied Systems Analysis (IIASA) (approx. \$7,000)
- 📖 **Moore Foundation**, (research funding written into larger grant) (approx. \$7,000)
- 📖 **Departmental Research Fellowship**, University of California Berkeley (\$17,000)
- 2022 📖 **International Institute of Applied Systems Analysis (IIASA) Summer Fellowship**, Funded through the National Academy of Science (\$7,000)
- 📖 **Data Science Teaching Fellowship**, Funded through the UC Berkeley Social Science Data-Lab (\$5,000)
- 📖 **Artificial Intelligence, Ethics, and Society (AIES-22) Conference Student Award**, Funded through the National Science Foundation (\$1500)
- 📖 **Environmental Data Science Summit travel grant** (\$800), NCEAS (delayed to 2023 due to COVID)
- 2021 📖 **SESYNC Graduate Student Pursuit: Co- PI** (project link) (approx. \$35,000)
- 2020 📖 **Berkeley Center For Technology, Society, and Policy Fellowship** (project link) (\$4,000)
- 2018 📖 **NSF National Research Traineeship** Environment and Society: Data sciences for the 21st Century (\$32,000)
- 📖 **NSF Graduate Research Fellowship Program** Honorable Mention.
- 2014 📖 **Foreign Language Area Studies (FLAS) Fellowship: Kiswahili** (\$35,000 over two awards)

Teaching and Mentoring

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|----------------------------------|---|---|
| Mentor & Co-organizer | 📖 | Climate Change AI In-Person Summer School (2023) |
| Co-organizer | 📖 | Climate Change AI Virtual Summer School (2023) |
| Data Science Fellow & Instructor | 📖 | UC Berkeley Social Science Data Lab; (1) Data wrangling (2) Deep learning in Python (3) Introduction to R, and (4) Data visualization (2022-2023) |
| Graduate Student Instructor | 📖 | UC Berkeley; ESPM 157: Data Science for Global Change Ecology (2020) |
| Graduate Student Mentor | 📖 | UC Berkeley; Fung Fellowship Conservation and Technology Course (2022) |

Teaching and Mentoring (continued)

Guest Lectures	■	Stanford University; Introduction to conservation planning and practice (2023)
	■	University of California Santa Barbara; Introduction to Remote Sensing (2023)
	■	Stanford University; Introduction to conservation planning and practice (2022)
	■	Trinity College; U.S. Environmental Policy, Partisanship, and the Global Climate Crisis (2022)
	■	UC Berkeley; Conservation and Technology (2022)
	■	Middlebury Institute of International Studies; International Marine Science and Policy (2022)
	■	Middlebury Institute of International Studies; Ecological Analysis (2022)
Research Mentor	■	Undergraduate Research Apprentice Program (URAP) (2020-2022)
	■	Undergraduate Honors Thesis Program (2019-2022)
Technical Mentor	■	IPAM; Public Policy Course (2017)
Undergraduate Instructor	■	Yale University; Physics I (2014)
	■	Yale University; Organic Chemistry II (2013)







Policy Documents and Briefs

2022	■	Pathways to 30x30 California: Accelerating Conservation of California's Nature , Scientific/Technical Writer [PDF]
	■	Conserving California: Advancing Science in Support of 30x30 , Scientific Writer and Facilitator [PDF]
	■	California's Pathways to 30x30: Conserving Freshwater Ecosystems , Legislative Summary; Lead Scientific Writer [PDF]
	■	California's Pathways to 30x30: Expanding Access to Nature , Legislative Summary; Contributing Scientific Writer [PDF available upon request]
	■	California's Pathways to 30x30: Working Lands and Other Effective Conservation Measures (OECMs) , Legislative Summary; Contributing Scientific Writer [PDF available upon request]
	■	California's Pathways to 30x30: Partnering with California Native American Tribes , Legislative Summary; Contributing Scientific Writer [PDF available upon request]
2021	■	Advancing 30x30 and Protecting Biodiversity , Lead Scientific Writer [PDF]
2018	■	Prioritizing Areas for Reforestation of Private Lands in the Brazilian Amazon . Policy Brief. [PDF]
2016	■	Analysis of National Circumstances in the Context of REDD+ and Identification of REDD+ Abatement Levers in Papua New Guinea Report produced by the Wildlife Conservation Society. [PDF]




Working Groups

- 2024  Data Justice Workshop (Invited presentation)
- 2022-2023  Ethics and Practices of Algorithmic Conservation Reading Group ([link](#)) *Co-founder/organizer*
- 2023  Environmental Data Science Innovation Summit (ESIIL)
-  Environmental Data Science Summit (NCEAS)
- 2022  AI-Assisted Decision-Making for Conservation (Harvard Center for Research on Computing and Society)
- 2019-2021  Ecological Forecasting Initiative *Student Working Group Co-chair and Co-founder*
- 2021  UC Berkeley Data and Environment Working Group *Co-founder*
-  Bioinformatics and Community Science Round Table steering committee, California Biodiversity Network
-  Culturally Relevant Education in Environmental Data Science (CREEDS) Workshop
- 2020  SESYNC Cyberinfrastructure Summer Institute
-  NIMBioS Adaptive Management Tutorial
-  People, Land, and Ecosystems: Leveraging NEON for Socio-Environmental Synthesis
- 2019  National Ecological Observation Network (NEON) Science Summit
-  Advancing Integrated Process-Based Modeling of Socio-Environmental Systems (SESYNC)
-  Graduate Student Workshop on Socio-Environmental Synthesis (SESYNC)
-  Ecological Forecasting Initiative Summer Course
- 2017  Mathematical Ecology Working Group: Woods Hole, MA

Professional Service and Outreach

- 2023  Climate Change AI Core Team
- 2022  Graduate Programs Committee student representative (ESPM, UC Berkeley)
- 2021-2022  Graduate Admission Committee student representative (ESPM, UC Berkeley)
- 2018-2021  UC Berkeley Graduate Student Association (GSA)
- 2019-2021  Letters to a Pre-scientist: *Volunteer*
- 2018-2021  Bay Area Scientists in Schools (BASIS): *Instructor*



Selected Presentations

- 2023  **Chapman, M.** Human histories shape the biodiversity data that decide our future. *GEO BON Conference, Montreal 2023*
-  **Chapman, M.** From individual decisions to international agreements: Addressing biodiversity loss in an age of algorithms. *University of California Santa Barbara (invited departmental seminar)*
-  **Chapman, M.** Addressing biodiversity loss in an age of algorithms. *International Institute for Applied Systems Analysis (invited seminar).*




Selected Presentations (continued)

- 2022  **Chapman, M.**, Jung, M., and Visconti, P.. Multiscale prioritization of conservation and restoration measures to meet 2030 biodiversity targets in the EU. *IIASA Summer Symposium* [Slides]
-  **Chapman, MS**, Boettiger, C, and Brashares, J. Potential contributions of private lands to U.S. 2030 biodiversity targets. *ESA 2022* [Slides]
-  **Chapman, MS**. Climate mitigation and biodiversity contributions of land conservation and management (as part of a panel on "Ecologists Perspectives on COP26") *ESA 2022*. [Slides]
-  **Chapman, MS**. Governing AI Applications To Monitoring and Managing Our Global Environmental Commons. *AAAI/ACM conference on Artificial Intelligence, Ethics, and Society (AIES 2022)*. [Slides]
- 2021  **Chapman, M.**, Schell, C., Brashares, J. "30x30: The New Conservation". Break-throughs Magazine Virtual Series. [Recording]
-  **Chapman, M.**. Pathways to 30x30: Accelerating Conservation of California's Nature. California Biodiversity Network Bioinformatics and Conservation Planning round table.
-  **Chapman, M.**, Boettiger, C. From data to decisions: Algorithms, power, and effective ocean management. UN FAO global forum on AI for a digital blue Planet. [Recording]
- 2020  **Chapman, M.**. Large climate mitigation from adding trees to agricultural lands. The Nature Conservancy Seminar Series (Invited Talk).
-  **Chapman, M.**. Large climate mitigation from adding trees to agricultural lands. Woodwell Climate Research Center Friday Seminar Series (Invited Talk).
-  **Chapman, M.**, et al. Tipping points in diversified farming systems. Ecological Society of America 2020 Meeting. Contributed Talk. [Recording]
- 2018  **Chapman, M.**, and Walker, W. (2018). A Global Analysis of Woody Aboveground Carbon Storage in Crop and Pasture lands. AGU Fall Meeting. (Presentation)

Reviewer

- Journals  Nature Ecology and Evolution, Trends in Ecology and Evolution, Methods in Ecology and Evolution, Nature communication, Conservation biology, International forestry review
- Grants  Climate Change AI Innovation Grant

Skills

- Languages  Native English, Basic Spanish and Kiswahili
- Coding  R, Python, SQL, L^AT_EX, Google Earth Engine, ArcGIS
- Statistics  Spatial statistics, Hierarchical Bayesian modeling, Decision processes