Melissa Chapman

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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., Augustynczik, 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.* 🔗 https://doi.org/10.1126/science.adh8874

[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., Laperolerie, 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., Ilangakoon, 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/10.12122FWNL.000000000000404

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

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". Breakthroughs 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, LaTeX, Google Earth Engine, ArcGIS

Statistics   🔖   Spatial statistics, Hierarchical Bayesian modeling, Decision processes