Melissa Chapman

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Education

2018 – present **Ph.D., UC Berkeley** Environmental Science, Policy, and Management.
Dissertation: *From individual decisions to international agreements: Multi-scalar approaches to meet post-2020 biodiversity targets*

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.*

Employment History

2022 **International Institute of Applied Systems Analysis (IIASA)** Visiting Science Fellow

2020 – 2022 **Resources Legacy Fund** Scientific writer for California's Pathways to 30x30 Initiative

2015 – 2018 **Woodwell Climate Research Center** Research Assistant II

Academic publications

[Google Scholar] | [ORCID]

Peer-reviewed articles

1. **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 (Accepted)*.

2. Estein, C., **Chapman**, **M.**, Schell, C., Lowy, N., & Gerson, J. (2022). Demystifying the graduate school application process. *Bulletin of the Ecological Society of America*. doi:10.32942/osf.io/e5umr

3. Calhoun, K. L., **Chapman**, **M.**, Tubbesing, C., McInturff, A., Gaynor, K. M., Van Scoyoc, A., ... 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. doi:https://doi.org/10.1111/ddi.13394

4. **Chapman**, **M.**, Wiltshire, S., Baur, P., Bowles, T., Carlisle, L., Castillo, F., ... Karp, D. et al. (2022). Social-ecological feedbacks drive tipping points in farming system diversification. *One Earth*, *5*(3), 283–292. doi:https://doi.org/10.1016/j.oneear.2022.02.007

5. 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. doi:https://doi.org/10.1002/eap.2578

6. Lapeyrolerie, M., **Chapman**, **M.**, Norman, K. E., & Boettiger, C. (2022). Deep reinforcement learning for conservation decisions. *Methods in Ecology and Evolution*. doi:https://doi.org/10.48550/arXiv.2106.08272

7. Moravek, J., Andrews, L. R., Serota, M. W., Dorcy, J. A., **Chapman**, **M.**, Wilkinson, C. E., ... Brashares, J. S. (2022). Centering 30x30 conservation initiatives on freshwater ecosystems. *Frontiers in Ecology and the Environment (In press)*.

8. **Chapman**, **M.**, Oestreich, W. K., Frawley, T. H., Boettiger, C., Diver, S., Santos, B. S., ... Chand, K. et al. (2021). Promoting equity in the use of algorithms for high-seas conservation. *One Earth*, *4*(6), 790–794. doi:https://doi.org/10.1016/j.oneear.2021.05.011

9. **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)*. doi:10.48550/arXiv.2205.10911

10. Kitzes, J., Blake, R., Bombaci, S., **Chapman**, **M.**, Duran, S. M., Huang, T., ... Oestreich, W. K. et al. (2021). Expanding neon biodiversity surveys with new instrumentation and machine learning approaches. *Ecosphere*, *12*(11), e03795. doi:https://doi.org/10.1002/ecs2.3795

11. Nagy, R. C., Balch, J. K., Bissell, E. K., Cattau, M. E., Glenn, N. F., Halpern, B. S., ... **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. doi:https://doi.org/10.1002/ecs2.3833

12. Ordway, E. M., Elmore, A. J., Kolstoe, S., Quinn, J. E., Swanwick, R., Cattau, M., ... **Chapman**, **M.** et al. (2021). Leveraging the neon airborne observation platform for socio-environmental systems research. *Ecosphere*, *12*(6), e03640. doi:https://doi.org/10.1002/ecs2.3640

13. Roe, S., Streck, C., Beach, R., Busch, J., **Chapman**, **M.**, Daioglou, V., ... Engelmann, J. et al. (2021). Land-based measures to mitigate climate change: Potential and feasibility by country. *Global Change Biology*, *27*(23), 6025–6058. doi:https://doi.org/10.1111/gcb.15873

14. Scoville, C., **Chapman**, **M.**, Amironesei, R., & Boettiger, C. (2021). Algorithmic conservation in a changing climate. *Current Opinion in Environmental Sustainability*, *51*, 30–35. doi:https://doi.org/10.1016/j.cosust.2021.01.009

15. **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. doi:https://doi.org/10.1111/gcb.15121

16. Griscom, B. W., Busch, J., Cook-Patton, S. C., Ellis, P. W., Funk, J., Leavitt, S. M., ... **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. doi:https://doi.org/10.1098/rstb.2019.0126

17. 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. doi:https://doi.org/10.1002/fee.2243

18. 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. doi:https://doi.org/10.1016/j.landusepol.2018.02.048

19. Cunningham, C., Chen, W. C., Shorten, A., McClurkin, M., Choezom, T., Schmidt, C. P., ... **Chapman**, **M.** et al. (2014). Impaired consciousness in partial seizures is bimodally distributed. *Neurology*, *82*(19), 1736–1744. doi:https://doi.org/10.12122FWNL.0000000000000404

20. Galvin, B. D., Li, Z., Villemaine, E., Poole, C. B., **Chapman**, **M.**, Pollastri, M. P., … 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. doi:https://doi.org/10.1371/journal.pntd.0003145

Preprints

1. Ellis-Soto, D., **Chapman**, **M.**, & Locke, D. (2022). *Uneven biodiversity sampling across redlined urban areas in the united states.* doi:10.32942/osf.io/ex6w2
2. **Chapman**, **M.**, Boettiger, C., & Brashares, J. S. (2022). *The potential contribution of private lands to united states 30x30 conservation.* doi:https://doi.org/10.32942/osf.io/pb2s8
3. Kurz, D., Middleton, A. D., **Chapman**, **M.**, Van Houtan, K. S., Wilkinson, C., Withey, L., & Brashares, J. (2021). *Building bridges in the post-trump era: Can conservation scientists help recover bipartisan support for us environmental protection?* doi:https://doi.org/10.32942/osf.io/entgj

In review/In prep (drafts available upon request)

1. Barker, K., **Chapman**, **M.**, & et al. (2023). *The changing role of ecologists in the united nations response to climate change (in prep).*
2. **Chapman**, **M.**, Goldstein, B., Schell, C., Boettiger, C., & et al. (2023). *Social and political dimensions of biodiversity monitoring (in prep).*
3. **Chapman**, **M.**, Jung, M., Boettiger, C., Brashares, J., & Visconti, P. (2023). *Spatial prioritization of conservation and restoration measures to meet 2030 biodiversity targets in the eu (in prep).*
4. Hasting, Z., **Chapman**, **M.**, Ocloo, X., Stenger, K., & Hunt, L. (2023). *Toward socially just transitions to agroforestry for climate mitigation and adaptation (in review).*
5. Montealegre-Mora, F., Laperolerie, M., **Chapman**, **M.**, & Boettiger, C. (2023). *Pretty darn good control: When are approximate solutions better than approximate models? (in prep).*
6. Scoville, C., Faxon, H., **Chapman**, **M.**, & et al. (2023). *Environment, society and machine learning (in review).*

Fellowships and Grants

2022
- **Departmental Research Fellowship**, University of California Berkeley ($17000)
- **International Institute of Applied Systems Analysis (IIASA) Summer Fellowship**, Funded through the National Academy of Science ($8000)
- **Data Science Teaching Fellowship**, Funded through the UC Berkeley Social Science Data-Lab ($2500)
- **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. $35000)

2020
- **Berkeley Center For Technology, Society, and Policy Fellowship** (project link) ($4000)

Fellowships and Grants (continued)

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)

Teaching and Mentoring

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)

Guest Lectures
- Stanford University; Introduction to conservation planning and practice (2022)
- Trinity College; U.S. Environmental Policy, Partisanship, and the Global Climate Crisis (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]**

Policy Documents and Briefs (continued)

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

2022 Ethics and Practices of Algorithmic Conservation Reading Group **(link)** *Co-founder/organizer*

Environmental Data Science Summit (NCEAS) (delayed to 2023 due to COVID)

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

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

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]**

Selected Presentations (continued)

- **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. 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)

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