Melissa (Millie) Chapman

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milliechapman

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

starting July 2025 **ETH Zürich** Tenure Track Assistant Professor of Environmental Policy

2024-present **Google Research** Visiting Faculty Researcher

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 | Visiting PhD Student

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]**

Peer-reviewed articles

1. **Chapman**, **M.**, Jung, M., Boettiger, C., Ringwald, L., Leclère, D., Gusti, M., Augustynczik, A., & Visconti, P. (2025). Meeting European biodiversity targets under future land-use demands. *Nature Ecology and Evolution.* https://doi.org/10.1038/s41559-025-02671-1

2. Harrell, L., Kaeser-Chen, C., Ayan, B. K., Anderson, K., Conserva, M., Kleeman, E., Neumann, M., Overlan, M., **Chapman**, **M.**, & Purves, D. (2025). Heterogenous graph neural networks for species distribution modeling. *International Conference on Learning Representations (ICLR).* https://doi.org/10.48550/arXiv.2503.11900

3. **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

4. Ellis-Soto, D., **Chapman**, **M.**, & Koltz, A. (2024). Addressing data disparities is critical for biodiversity assessments. *Trends in Ecology and Evolution.* https://doi.org/10.1016/j.tree.2024.10.005

5. Jung, M., Alagador, D. A., **Chapman**, **M.**, Hermoso, V., Kujala, H., O'Connor, L., Schinegger, R., Verburg, P., & Visconti, P. (2024). An assessment of the state of conservation planning in Europe. *Philosophical Transactions of the Royal Society B.* https://doi.org/0.1098/rstb.2023.0015

6. Oestreich, W., Mckenna, M., Go, M., **Chapman**, **M.**, & Oliver, R. (2024). Listening to animal behavior to understand changing ecosystems. *Trends in Ecology and Evolution.* https://doi.org/10.1016/j.tree.2024.06.007

7. Oliver, R., **Chapman**, **M.**, Ellis-Soto, D., Brum-Bastos, V., Cagnacci, F., Long, J., Loretto, M.-C., Patchett, R., & Rutz, C. (2024). Access to human mobility data is essential for building a sustainable future. *Cell Reports Sustainability.* https://doi.org/10.1016/j.crsus.2024.10007

8. 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.* https://doi.org/10.1017/eds.2024.12

9. Sprenkle-Hyppolite, S., Griscom, B., Griffey, V., Munshi, E., & **Chapman**, **M.** (2024). Expert-informed leakage-free global carbon dioxide removal potential of trees in agriculture. *Carbon Balance and Management.* https://doi.org/10.1186/s13021-024-00268-y

10. **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

11. **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

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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

18. 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

19 **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

20 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

21 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

22 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

23 **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

24 **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

25 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

26 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

27 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

28 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

29 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

30 **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

31. 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

32. 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

33. 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

34. 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.0000000000000404

35. 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

In review

1. Ellis-Soto, D., & **Chapman**, **M.** (n.d.). *Historic residential segregation impacts biodiversity data availability disparately across the tree of life (in review).*

2. Faxon, H., & **Chapman**, **M.** (n.d.). *The colonial infrastructures of contemporary conservation data (in review).*

3. Hulkund, N., Oliver, R., **Chapman**, **M.**, & Beery, S. (n.d.). *Data sharing policies and considerations must influence machine learning research directions in ecological applications (in review).*

4. Oestreich, W., Czapanskiy, M., Katija, K., Record, N., & **Chapman**, **M.** (n.d.). *Collective science to inform global ocean protections (in review).* https://doi.org/10.22541/au.174282888.81070415/v1

5. Scoville, C., Amironesei, R., Xu, L., **Chapman**, **M.**, Record, N., & Boettiger, C. (n.d.). *Participation and contestability in dynamic natural resource management (workshop manuscript).* https://doi.org/10.31235/osf.io/ac7hx

Fellowships and Grants

2024-2027 **NASA - Biological Diversity and Ecological Conservation** Co-PI ($620,000)

2023 **NCEAS Director's Postdoc Fellowship**, National Center for Ecological Analysis and Synthesis (approx. $140,000)

Fellowships and Grants (continued)

- **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)

Selected Presentations

2024
- **Chapman, M**. Can AI help us make more informed conservation decisions? *Aspen Global Change Institute (AGCI), AI and Biodiversity Workshop, Invited Talk*
- **Chapman, M**. Addressing the social and political dimensions of biodiversity data. *North American Congress for Conservation Biology (NACCB), Vancouver 2024*
- **Chapman, M & Faxon, H.**. The colonial infrastructures of contemporary biodiversity data. *Data Justice Workshop, Barcelona 2024*
- **Chapman, M & Faxon, H.**. The colonial infrastructures of contemporary biodiversity data. *World Biodiversity Forum, Davos 2024*
- **Chapman, M**. Do biodiversity data biases risk entrenching social inequity into policy strategies? *Resources for the Future (Invited talk)*
- **Chapman, M**. From individual decisions to international agreements: addressing biodiversity loss in the age of algorithms. *Oregon State University (Invited Seminar)*
- **Chapman, M**. From individual decisions to international agreements: addressing biodiversity loss in the age of algorithms. *National Center for Ecological Analysis and Synthesis (Invited Roundtable Seminar)*
- **Chapman, M**. From data to decisions: toward a just and sustainable planetary future in the age of AI. *University of Oregon (Invited Seminar)*
- **Chapman, M**. From individual decisions to international agreements: addressing biodiversity loss in the age of algorithms. *Stony Brook University (Invited Seminar)*

Selected Presentations (continued)

- **Chapman, M**. AI is transforming the way we confront climate change and biodiversity loss. *GreenBiz Sustainability Conference (Invited keynote panel)*

2023

- **Chapman, M**. AI for equitable climate action. *GLOCAL Innovation Grant Kick-off (invited keynote speaker)*
- **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).*
- **Chapman, M**. From individual decisions to international agreements: Addressing biodiversity loss in an age of algorithms. *University of California Berkeley (Wildlife seminar)*

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, M**, Boettiger, C, and Brashares, J. Potential contributions of private lands to U.S. 2030 biodiversity targets. *ESA 2022* [**Slides**]
- **Chapman, M**. Climate mitigation and biodiversity contributions of land conservation and management (as part of a panel on "Ecologists Perspectives on COP26") *ESA 2022*. [**Slides**]
- **Chapman, M**. 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)

Working Groups and Assessments

2024-2025

- USGS North American Biodiversity and Climate Assessment (Chapter Lead Author)

Working Groups and Assessments (continued)

- NSF/NCEAS Biodiversity Data & Conservation Science working group
- 2024 — Data Justice Workshop (Invited paper/presentation)
- Resources for the Future: Climate Change and Natural Capital Workshop
- 2022-2024 — Ethics and Practices of Algorithmic Conservation Reading Group **(link)** *Co-founder/organizer*
- 2023 — Environmental Data Science Innovation Summit (ESIIL)
- 2023, 2024 — 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

Teaching and Mentoring

- Mentor & Co-organizer — Climate Change AI In-Person Summer School (2023)
- Co-organizer — Climate Change AI Virtual Summer School (2023, 2024)
- 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)
- Guest Lectures — UC Santa Barbara; Data Science (2023)
- UC Santa Barbara; Data Science (2023)
- Stanford University; Introduction to conservation planning and practice (2023)
- University of California Santa Barbara; Introduction to Remote Sensing (2023)

Teaching and Mentoring (continued)

- 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

2024
- **Land protection and restoration tools to effectively meet 2030 conservation targets in the United States**, USDA Internal Brief [**PDF available upon request**]

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**]

Professional Service and Outreach

2024
- Climate Change AI Innovation Grants Chair

Professional Service and Outreach (continued)

- Session organizer at World Biodiversity Forum
- Session organizer at North American Convention for Conservation Biology

2023-2024 — 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*