

## **Arielle Levine - CV**

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### **RESEARCH INTERESTS:**

Human-environment interactions; Community involvement in natural resource management; Natural resource governance; Fisheries management; Social monitoring for natural resources management; Marine protected areas; Coastal resiliency; Social-ecological vulnerability to climate impacts; Human perceptions of environmental conditions and management; Social drivers of environmental behavior

### **APPOINTMENTS**

2020-present	Director, Sustainability Major, San Diego State University
2019-present	Professor, Department of Geography, San Diego State University
2016-2019	Associate Professor, Department of Geography, San Diego State University
2011-2016	Assistant Professor, Department of Geography, San Diego State University
2010-2019	Regional Coral Reef Social Scientist, contractor to NOAA's Coral Reef Conservation Program
2006-2010	Social Research Project Manager, Joint Institute for Marine and Atmospheric Research (RCUH – Pacific Islands Fisheries Science Center)

### **EDUCATION**

Princeton University	Geological and Geophysical Sciences	B.A., 1995
University of California, Berkeley	Environmental Science, Policy, and Management	Ph.D, 2006

### **PUBLICATIONS:**

#### **Peer reviewed journal articles**

- Levine, A.** (in press) Reducing the prevalence of chemical UV filters from sunscreens in aquatic environments: regulatory, public awareness, and other considerations. *Integrated Environmental Assessment and Management*. <https://doi.org/10.1002/ieam.4432>
- Konrad, L, **A. Levine** (2021) Controversy over beach access restrictions at an urban coastal seal rookery: Exploring the drivers of conflict escalation and endurance at Children's Pool Beach in La Jolla, CA. *Marine Policy*. 132:104659.
- Baker, D, G. Murray, J. Kaijage, **A. Levine**, D. Gill, E. Makupa. (2021) Relationships matter: assessing the impacts of a Marine Protected Area on human wellbeing and relational values in southern Tanzania. *Frontiers in Marine Science*. 8:673045. doi:10.3389/fmars.2021.673045
- B. Quimby, **A. Levine** (2021) Adaptive capacity of marine comanagement: a comparative analysis of the influence of colonial legacies and integrated traditional governance on outcomes in the Pacific. *Regional Environmental Change*. 21:10.
- S. Crook, **A. Levine**, D. Lopez-Carr (2021) Perceptions and application of the ecosystem services approach among Pacific Northwest National Forest managers. *Sustainability*. 13, 1259.

- A. Lawrence, A. Heenan, **A. Levine**, N. Haddaway, F. Powell, L. Wedding, R. Roche, P. Lawrence, C. Szostek, H. Ford, L. Southworth, J. Sannassy Pilly, L. Richardson, G. Williams (2021) Spatiotemporal scales of coral reef fish ecological research and management: a systematic map protocol. *Environmental Evidence*. 10:3.
- Dundas, S., **A. Levine**, R. Lewison, A. Doerr, C. White, A. Galloway, C. Garza, E. Hazen, J. Padilla-Gamiño, J. Samhuri, A. Spalding, A. Stier, J. White (2020) Integrating Oceans into Climate Policy: Any Green New Deal Needs a Splash of Blue. *Conservation Letters*. 13:5. 1-12.
- Levine, A.** (2020) Sunscreen use and awareness of chemical toxicity amongst beach goers prior to the Hawaii ban on chemical ingredients found to be toxic to coral reef ecosystems. *Marine Policy*. 117: 103875.
- Arroyo, M., **A. Levine**, G. Seingier, L. Brenner, C. Leyva, Espejel, I. (2020) Indicators to measure pressure, state, impact and responses of surf breaks: The case of Bahía de Todos Santos World Surfing Reserve. *Ocean and Coastal Management*. V. 195.
- Friedman, W., Halpern, B., McLeod, E., Beck, M., Duarte, C., Kappel, C., **Levine, A.**, Sluka, R., Adler, S., O'Hara, C., Sterling, E., Tapia-Lewis, S., McClanahan, T., Pendleton, L., Spring, M., Toomey, J., and Weiss, K., J. Montambault (2020) Research priorities for achieving healthy marine ecosystems and human communities in a changing climate. *Frontiers in Marine Sciences*. 7:5.
- Arroyo, M., **A. Levine**, I. Espejel (2019) A transdisciplinary framework proposal for surf break conservation and management: Bahía de Todos Santos World Surfing Reserve. *Ocean and Coastal Management*. 197-211.
- Jones, S., **A. Levine**, N. Jiddawi (2019) Effective co-management and long-term reef fish recovery from severe coral bleaching: Insights from Misali Island, PECCA, Tanzania. *Ocean & Coastal Management*, 178, p.104843.
- Hunter, C., M. Lauer, **A. Levine**, S. Holbrook, A. Rassweiler. (2018) Maneuvering Toward Adaptive Co-management in a Coral Reef Fishery. *Marine Policy*. 98: 77-84.
- Quimby, B., **A. Levine** (2018) Participation, Power, and Equity: examining three key social dimensions of fisheries comanagement. *Sustainability*. 10, 3324.
- Chase, S., and **A. Levine** (2018) Citizen Science: exploring the potential of natural resource monitoring programs to influence environmental attitudes and behaviors. *Conservation Letters*. 11 (2): 1-10.
- Breslow, S., S., Allen, M., Holstein, D., Sojka, B., Barnea, R., Basurto, X., Carothers, C., Charnley, S., Coulthard, S., Dolšak, N., Donatuto, J., García-Quijano, C., Hicks, C., **Levine, A.**, Mascia, M., Norman, K., Poe, M., Satterfield, T., St. Martin, K., Levin, P. (2017) Evaluating Indicators of Human Wellbeing for Ecosystem-Based Management. *Ecosystem Health and Sustainability*. 3 (12): 1-8.
- Charnley S., C. Carothers, T. Satterfield, **A. Levine**, K. Norman, M. Poe, K. Norman, J. Donaturto, M. Mascia, P. Levin, S. Breslow, X. Basurto, C. Hicks, C. Garcia-Quijano, K. St. Martin. (2017) Evaluating the Best Available Social Science for Natural Resource Management Decision-making. *Environmental Science and Policy*. 73. p. 80-88.
- Farley, K., K. Walsh, **A. Levine**. (2017) Opportunities for and obstacles to conservation of rangelands in San Diego County. *Ecology and Society*. 22 (1): 38.
- Hicks, C, **A. Levine**, A. Agrawal, X. Basurto, S. Breslow, C. Carothers, S. Charnley, S. Coulthard, N. Dolsak, J. Donaturto, C. Garcia-Quijano, M. Mascia, K. Norman, M. Poe, T. Satterfield, K. St. Martin, P. Levin (2016) Engage key social concepts for sustainability. *Science*. 352 (6281). p. 38-40.
- Levine, A.** (2016) The development and unravelling of marine resource co-management in the Pemba Channel, Zanzibar: institutions, governance, and the politics of scale. *Regional Environmental Change*. 16 (5). p. 127-1291.

- Chase, S., and **A. Levine** (2016) A framework for evaluating and designing citizen science programs for natural resources monitoring. *Conservation Biology*. 30 (3). p. 456-466.
- Raynal, J., **A. Levine**, M. Comeros-Raynal. (2016) American Samoa's marine protected area system: institutions, governance, and scale. *Journal of International Wildlife Law and Policy*. 19: 4.
- Breslow, S., B. Sojka, R. Barnea, X. Basurto, C. Carothers, S. Charnley, S. Coulthard, N. Dolsak, J. Donaturto, C. Garcia-Quijano, C. Hicks, **A. Levine**, M. Mascia, K. Norman, M. Poe, T. Satterfield, K. St. Martin, P. Levin. (2016) Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management. V. 66, p. 250-259. *Environmental Science and Policy*.
- Heenan, A., K. Gorospe, I. Williams, **A. Levine**, P. Maurin, M. Nadon, T. Oliver, M. Timmers, S. Wongbusarakum, R. Brainard (2016) Ecosystem monitoring for ecosystem management: a call for polycentric monitoring systems. *Journal of Applied Ecology*. 53. p. 699-704.
- Levine, A.** and L. Richmond (2015) Using common-pool resource design principles to assess the viability of community-based fisheries co-management systems in American Samoa and Hawaii. *Marine Policy*. 62: 9-17.
- Levine, A.** and C. Feinholz (2015). Participatory GIS to inform coral reef management: mapping human coastal and ocean uses in Hawaii. *Applied Geography*. 59: 60-69.
- Levine, A.**, L. Richmond, and David Lopez-Carr (2015). Marine resource management: Culture, livelihoods, and governance. *Applied Geography*. 59: 56-59.
- Levine, A.** and L. Richmond (2014). Examining Enabling Conditions for Community-based Fisheries Co-management: Comparing Efforts in Hawaii and American Samoa. *Ecology and Society*. 19 (1): 24.
- Rossiter, J. and **A. Levine** (2014). What makes a "successful" MPA? The unique context of Hawaii's Fish Replenishment Areas. *Marine Policy*. V. 44, p. 196-203
- Levine, A.**, and F. Sauafea-Leau (2013). Traditional knowledge of marine use and management in American Samoa: Documenting changes over time through interviews with elder fishers. *Pacific Science* 67(3): 395-407.
- Wandesforde-Smith, G., N. Watts, **A. Levine** (2010) Wildlife Conservation and Protected Areas: Darwin, Marx, and Modern Science in the Search for Patterns that Connect. *Journal of International Wildlife Law and Policy*. 13:4. p. 357 – 374.
- Levine, A.** (2007) Staying Afloat: State Agencies, Local Communities, and International Involvement in Marine Protected Areas in Zanzibar, Tanzania. *Conservation and Society*: 5: 562–585.
- Levine, A.** (2006) Local Responses to Marine Conservation in Zanzibar, Tanzania. *University of California Global, Area, and International Archive*. California Digital Library.
- Levine, A.** and Geoffrey Wandesforde-Smith. (2004) Wildlife, Markets, States, and Communities in Africa: Looking Beyond the Invisible Hand. *Journal of International Wildlife Law and Policy*: 7: 135–142.
- Levine, A.** (2004) Local Responses to Marine Conservation in Zanzibar, Tanzania. *Journal of International Wildlife Law and Policy*: 7: 183-202.
- Levine, A.** (2002) Convergence or Convenience: International Development NGOs and Conservation Assistance in Tanzania. *World Development*: 30:6 1043-1055.

**Edited Journal Issues:**

**Levine, Arielle**, Laurie Richmond, and David Lopez-Carr, editors (2015) Marine Resource Management: Culture, Livelihoods, and Governance. Special Issue of *Applied Geography*.

**Levine, Arielle** and Geoffrey Wandesforde-Smith, editors (2004) Wildlife, Markets, States, and Communities in Africa. Special issue of the *Journal of International Wildlife Law and Policy*: 7:14.

### **Peer reviewed technical memoranda**

Gorstein, M., J. Loerzel, P. Edwards, **A. Levine** (2019) National Coral Reef Monitoring Program Socioeconomic Monitoring Component: Summary Findings for USVI, 2017.

Gorstein, M., J. Loerzel, P. Edwards, **A. Levine** (2019) National Coral Reef Monitoring Program Socioeconomic Monitoring Component: Summary Findings for CNMI, 2016. US Dep. Commerce, NOAA Tech. Memo., NOAA-TM-NOS-CRCP-34, 69p. + Appendices.

Gorstein, M., J. Loerzel, **A. Levine**, P. Edwards, and M. Dillard (2018) National Coral Reef Monitoring Program Socioeconomic Monitoring Component: Component: Summary Findings for Guam, 2016. US Dep. Commerce, NOAA Tech. Memo., NOAA-TM-NOS-CRCP-32, 64p. + Appendices.

M. Gorstein, J. Loerzel, **A. Levine**, P. Edwards, and M. Dillard (2018) National Coral Reef Monitoring Program Socioeconomic Monitoring Component: Summary Findings for Hawaii, 2015. US Dep. Commerce, NOAA Tech. Memo., NOAA-TM-NOS-CRCP-30, 69p. + Appendices.

Gorstein, M., J. Loerzel and P. Edwards, **A. Levine**, M. Dillard (2017) National Coral Reef Monitoring Program Socioeconomic Monitoring Component. Summary Findings for Puerto Rico, 2015. *NOAA Technical Memorandum* CRCP 28, 64 p. + Appendices. DOI: 10.7289/V5BP00V9.

**Levine, A.**, M. Dillard, J. Loerzel and P. Edwards (2016) National Coral Reef Monitoring Program Socioeconomic Monitoring Component. Summary Findings for American Samoa, 2014. *NOAA Technical Memorandum* CRCP 24, 80 p. + Appendices.

Gorstein, M., M. Dillard, J. Loerzel and P. Edwards, **Levine, A.** (2016) National Coral Reef Monitoring Program Socioeconomic Monitoring Component. Summary Findings for Florida, 2014. *NOAA Technical Memorandum* CRCP 25, 57 p. + Appendices. DOI: 10.7289/V5VH5KV5.

Richmond, L. and **A. Levine**. (2012) Institutional analysis of community-based marine resource management initiatives in Hawaii and American Samoa. *NOAA Technical Memorandum*. NOAA-TM-NMFS-PIFSC-35, 48 p. + Appendices.

Armstrong, K., D. Herdrich, **A. Levine** (2010) Historic fishing methods in American Samoa. *NOAA Technical Memorandum*. NOAA-TM-NMFS-PIFSC-23, 70 p. + Appendices.

**Levine, A.**, and S. Allen (2009) American Samoa as a Fishing Community. *NOAA Technical Memorandum* NOAA-TM-NMFS-PIFSC-19.

### **Book Reviews**

**Levine, A.** (2006) Review of Christine Walley. Rough Waters: Nature and Development in an East African Marine Park. *Journal of International Wildlife Law and Policy*: 9:1.

### **Published Reports**

Hofmann, G.E.\*, Hazen, E.L.\*, Ambrose, R.F., Aseltine-Neilson, D., Carter H., Caselle, J.E., Chan, F., Kone, D., **Levine, A.**, Micheli, F., Panos, D., Sunday, J., White, J.W. Climate Resilience and California's Marine Protected Area Network: A Report by the Ocean Protection Council Science

Advisory Team Working Group and California Ocean Science Trust, June 2021. (\*Working Group co-chairs, other co-authors in alphabetical order)

- Levine, A.** (2019) Sunscreen Use in Hawaii: An Assessment of Beach-goer Use of Sunscreen Prior to Implementation of the 2021 Chemical Ban. Sept. 2019.  
[https://www.kohalacenter.org/docs/reports/Sunscreen\\_Report\\_Sept2019.pdf](https://www.kohalacenter.org/docs/reports/Sunscreen_Report_Sept2019.pdf)
- Heenan, A. K. Gorospe, **A. Levine**, J. Raynal, and A. Lawrence. (2017) Linking local and national data to improve marine managed area monitoring and data quality in Tutuila, American Samoa: a feasibility report. PIFSC Working Paper WP-17-001.
- Edwards, P., **A. Levine**, M. Dillard, and J. Loerzel. (2016) National Oceanic and Atmospheric Administration Coral Reef Conservation Program Social Science Strategy: 2016-2021. NOAA NOS, Silver Spring, MD.
- Levine, A.** and S. Kilarski. (2015) Socioeconomic survey on the Marine Environment, Pollution, and Village Adaptive Capacity in American Samoa: Vatia, Aunu'u, and Faga'alu Villages Survey Results. NOAA Coral Reef Conservation Program.
- Levine, A.** and S. Kilarski. (2014) National Coral Reef Monitoring Program (NCRMP) Socioeconomic Monitoring for U.S. Coral Reef Jurisdictions: American Samoa Survey Results. NOAA Coral Reef Conservation Program.
- Levine, A.** and C. Reynolds. (2014) Watershed and Coastal Mapping Mapbook: Utulei, Faga'alu, Fatumafuti. Results from participatory coastal and watershed mapping in priority MPA network sites. NOAA Coral Reef Conservation Program.  
[http://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/169/Watershed\\_and\\_Coastal\\_Mapbook.pdf](http://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/169/Watershed_and_Coastal_Mapbook.pdf)
- Levine, A.**, K. Mausio, and C. Reynolds. (2013) Fagaloa Coastal Uses Mapbook: Results from the participatory coastal uses mapping project in the Fagaloa harbor region, American Samoa. NOAA Coral Reef Conservation Program. [http://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/169/Watershed\\_and\\_Coastal\\_Mapbook.pdf](http://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/169/Watershed_and_Coastal_Mapbook.pdf)
- Levine, A.** and K. Mausio (2012) West Maui Coastal Uses Participatory Mapping Project: Human Uses Map Book. Results from the Participatory Coastal Uses Mapping Workshops, Honolu – Wahikuli Region, West Maui. NOAA CRCP and Hawaii Division of Aquatic Resources.  
[http://www.hawaiicoralreefstrategy.com/PDFs/4\\_Priority\\_Sites\\_West\\_Maui/West\\_Maui\\_Coastal\\_Uses\\_Mapbook\\_Web.pdf](http://www.hawaiicoralreefstrategy.com/PDFs/4_Priority_Sites_West_Maui/West_Maui_Coastal_Uses_Mapbook_Web.pdf)
- Levine, A.** and M. D'Iorio (2011) Hawai'i Coastal Use Mapping Project: Ocean Uses Map Book. Results from the Participatory Ocean Use Mapping Workshops, South Kohala and North Kona Districts. NOAA CRCP, MPA Center, and HI Division of Aquatic Resources.  
[http://www.mpa.gov/pdf/atlas/hi/hi\\_coastal\\_use\\_mapbook.pdf](http://www.mpa.gov/pdf/atlas/hi/hi_coastal_use_mapbook.pdf)
- Loper, C., **A. Levine**, J. Agar, M. Hamnett, V. Leeworthy, M. Valdes-Pizzini, and K. Wallmo. (2010) NOAA Coral Reef Conservation Program Social Science Strategy: 2010-2015.  
[http://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/20448/CRCP\\_Social\\_Science\\_Strategy.pdf](http://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/20448/CRCP_Social_Science_Strategy.pdf)
- Fesenmyer, K., **A. Levine**, and R. Neumann (2005) Channel Islands National Park Business Plan. National Park Service.
- Levine, A.** (2002) Overview of Fishing on Misali. In: Misali Island Conservation Project Review Workshop: Report on Proceedings and Results. Pemba, Tanzania. May 4-7. CARE International.

## **Documentary Video**

Palolo: The cultural and environmental significance of American Samoa's Marine Worm. 2008. **Arielle Levine**, Producer, Editor, Scripting. Fred Ahoia, Director, Editor. Copyright: Pacific Islands Fisheries Science Center and American Samoa Department of Marine and Wildlife Resources. Rootz Island Productions.

### **Current Research Grants**

**National Oceanic and Atmospheric Administration: Assessing Community Vulnerability to Ocean Acidification Across the California Current Ecosystem**, Role = PI for SDSU in Collaborative Grant with U.C. Davis, U. Oregon, and CA Ocean Science Trust (\$396,434 to SDSU; total grant = \$1,040,662), Sept. 2020 – Aug. 2023.

**Pew Foundation Lenfest Ocean Program: Managing Across Boundaries: Preventing Interjurisdictional Conflicts Arising From Shifting Fish Stocks**, Role = Co-PI, collaborative grant with Environmental Defense Fund and U. Wisconsin (\$313,621), Sept. 2020 – August 2023.

**Pew Foundation Lenfest Ocean Program: Enhancing adaptive capacity assessment in fisheries decision making: Identifying barriers and ways to overcome them**, Role = Co-PI, collaborative grant with U. Washington (\$33,336 to SDSU; total grant = \$288,695), June 2021 – May 2023.

**NSF Coastal SEES Collaborative Research: Climate change impacts on the sustainability of key fisheries of the California Current System**, Role = PI for SDSU in collaborative grant with Scripps Institute of Oceanography (\$520,150 to SDSU; total grant = \$1.5M), National Science Foundation, Oct. 2016 – August. 2022 (extended due to COVID-19).

### **Courses Taught**

GEOG 170: Sustainable Places and Practices

HONOR 413: Culture and Environment

GEOG 496: Oceans, Coasts, and Society

GEOG 570: Environmental Conservation Practice

GEOG 670: Environmental Conservation Theory (Social-Ecological Systems)

GEOG 700: Research Design in Geography

GEOG 770: Seminar in Environmental Conservation (Environmental Governance)

### **Professional Service**

Science Advisory Team Member to California Ocean Protection Council (2019 – present)

Ocean Science Trust Working Group Member: Assessing Climate Resilience of California's Marine Protected Area Network (2019-2021)

Social Science Working Group member: NOAA CESSRST (2018 – present)

Editorial Board Member: *Journal of International Wildlife Law and Policy* (2015 – present)