

# **Exhibit 1**

**From:** Van Butsic [mailto:vanbutsic@berkeley.edu]

**Sent:** Friday, July 17, 2020 12:52 PM

**To:** Philippakis, Katherine (20) x4434

**Subject:** Letter to County

Dear Katherine,

I have reviewed the letter to the county regarding the Maha project. The letter accurately reflects my expert opinion on the matter of wildfire and residential development.

Best,

Van

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Van Butsic

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# Van Butsic

Associate Cooperative Extension Specialists & Adjunct Professor  
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## Professional appointments

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<b>University of California Berkeley</b>	<b>2013-Present</b>
Associate Cooperative Extension Specialist & Adjunct professor	2019-present
Assistant Cooperative Extension Specialist & Adjunct professor	2013-2019
	<b>2011-2013</b>
<b>Humboldt University Berlin</b>	
Alexander von Humboldt Postdoctoral Fellow	

## Education

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<b>University of Wisconsin-Madison: Ph.D., Forestry</b>	<b>2011</b>
Thesis: "Land Use and Conservation: Causal Policy Analysis and Coupled Modeling on the Social-Ecological Interface."	
<b>University of Wisconsin-Madison: M.S., Agricultural and Applied Economics</b>	<b>2007</b>
Thesis: "Land Conservation and Development: An Economic Analysis of Lakefront Change."	
<b>Reed College: B.A., Economics</b>	
Thesis: "Valuing Water Rights in Douglas Country Oregon, Using the Hedonic Pricing Method."	
	<b>2003</b>

## Research Interests

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Wildfire land use, conservation, environmental economics and policy, Cannabis, GIS applications

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**Publications** ("A" denotes peer reviewed publication "C" denotes non-peer reviewed, \* denotes new since last review. 19 "A" publications since last review, 2 "C" publications)

- \*A64 Wen, L., Chatalova, L., Butsic, V., Hu, F.Z.Y. & Zhang, A. (2020). Capitalization of land development rights in rural China: A choice experiment on individuals' preferences in peri-urban Shanghai. *Land use policy*, 97, 104803.
- \*A63 Laćan, I., Moanga, D., McBride, J.R. & Butsic, V. (2020). "Sealed in San José:" Paving of front yards diminishes urban forest resource and benefits in low-density residential neighborhoods. *Urban For. Urban Green.*, 54, 126755.

- \*A62 Butsic, V., Kuemmerle, T., Pallud, L., Helmstedt, K.J., Macchi, L. & Potts, M.D. (2020). Aligning biodiversity conservation and agricultural production in heterogeneous landscapes. *Ecol. Appl.*, 30.
- \*A61. Moritz, M. & Butsic, V. (2020). Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California. *Univ. Calif. Agric. Nat. Resour.*, 1-24.
- \*A60. Schumann, R.L., Mockrin, M., Syphard, A.D., Whittaker, J., Price, O., Gaither, C.J., Emrich, C.T. & Butsic, V. (2020). Wildfire recovery as a “hot moment” for creating fire-adapted communities. *Int. J. Disaster Risk Reduct.*, 42, 101354.
- \*C59 Mccann, H., Butsic, V., Battles, J., Cisneros, R., Jin, Y., Kocher, S., Potts, M.D., Stephens, S., Herbert, C. & Smith, S. (2020). *The Benefits of Headwater Forest Management*. San Francisco.
- \*C58. Mccann, H., Butsic, V., Battles, J., Cisneros, R., Jin, Y., Kocher, S., Potts, M.D. & Stephens, S. (2020). *The Benefits of Headwater Forest Management Technical Appendix: Review of the Scientific Literature*.
- \*A57. Butsic, V., Kuemmerle, T., Pallud, L., Helmstedt, K.J., Macchi, L. & Potts, M.D. (2020). Aligning biodiversity conservation and agricultural production in heterogeneous landscapes. *Ecol. Appl.*, 30.
- \*A56. Wilson, H., Bodwitch, H., Carah, J., Daane, K., Getz, C., Grantham, T.E. & Butsic, V. (2019). First known survey of cannabis production practices in California. *Calif. Agric.*, 73, 119-127.
- \*A55. Valachovic, Y., Quinn-Davidson, L., Stackhouse, J. & Butsic, V. (2019). Perceptions of cannabis among Humboldt County timberland and ranchland owners. *Calif. Agric.*, 73, 161-168.
- \*A54. Schwab, B., Wartenberg, A. & Butsic, V. (2019). Characteristics of farms applying for cannabis cultivation permits. *Calif. Agric.*, 73, 128-135.
- \*A53. Brandt, J.S., Radeloff, V., Allendorf, T., Butsic, V. & Roopsind, A. (2019). Effects of ecotourism on forest loss in the Himalayan biodiversity hotspot based on counterfactual analyses. *Conserv. Biol.*, 33, 1318-1328.
- \*A52 Klein, J.A., Tucker, C.M., Nolin, A.W., Hopping, K.A., Reid, R.S., Steger, C., Grêt-Regamey, A., Lavorel, S., Müller, B., Yeh, E.T., Boone, R.B., Bourgeron, P., Butsic, V., Castellanos, E., Chen, X., Dong, S.K., Greenwood, G., Keiler, M., Marchant, R., Seidl, R., Spies, T., Thorn, J. & Yager, K. (2019). Catalyzing Transformations to Sustainability in the World's Mountains. *Earth's Futur.*, 7, 2018EF001024.
- \*A51 Yin, H., Butsic, V., Buchner, J., Kuemmerle, T., Prishchepov, A. V., Baumann, M., Bragina, E. V., Sayadyan, H. & Radeloff, V.C. (2019). Agricultural abandonment and re-cultivation during and after the Chechen Wars in the northern Caucasus. *Glob. Environ. Chang.*, 55, 149-159.
- \*A50 Bar-Massada, A., Ives, A.R. & Butsic, V. (2019). A mathematical partitioning of the effects of habitat loss and habitat degradation on species abundance. *Landsc. Ecol.*, 34, 9-15.

- \*A49 **Butsic, V.**, Carah, J.K., Baumann, M., Stephens, C. & Brenner, J.C. (2018). The emergence of cannabis agriculture frontiers as environmental threats. *Environ. Res. Lett.*, 13, 124017.
- \*A48 Huang, J., **Butsic, V.**, He, W., Degefu, D., Liao, Z., An, M., Huang, J., Butsic, V., He, W., Degefu, D.M., Liao, Z. & An, M. (2018). Historical Accountability for Equitable, Efficient, and Sustainable Allocation of the Right to Emit Wastewater in China. *Entropy*, 20, 950.
- \*A47 Piquer-Rodríguez, M., Baumann, M., **Butsic, V.**, Gasparri, H.I., Gavier-Pizarro, G., Volante, J.N., Müller, D. & Kuemmerle, T. (2018). The potential impact of economic policies on future land-use conversions in Argentina. *Land use policy*, 79, 57-67.
- \*A46 An, M., **Butsic, V.**, He, W., Zhang, Z., Qin, T., Huang, Z., Yuan, L., An, M., Butsic, V., He, W., Zhang, Z., Qin, T., Huang, Z. & Yuan, L. (2018). Drag Effect of Water Consumption on Urbanization—A Case Study of the Yangtze River Economic Belt from 2000 to 2015. *Water*, 10, 1115.
- \*A45 Nolte, C., Gobbi, B., le Polain de Waroux, Y., Piquer-Rodríguez, M., **Butsic, V.** & Lambin, E.F. (2018). Challenges in Attributing Avoided Deforestation to Policies and Actors: Lessons From Provincial Forest Zoning in the Argentine Dry Chaco. *Ecol. Econ.*, 150, 346-352.
- \*A44 Wen, L., **Butsic, V.**, Stapp, J.R. & Zhang, A. (2018). What happens to land price when a rural construction land market legally opens in China? A spatiotemporal analysis of Nanhai district from 2010 to 2015. *China Econ. Rev.*
- \*A43 Moanga, D., Schroeter, I., Ackerly, D. & **Butsic, V.** (2018). Avoided land use conversions and carbon loss from conservation purchases in California. *J. Land Use Sci.*, 13, 391-413.
- A42 Marshall, A., **Butsic, V.** & Harte, J. (2018). The phenology of wilderness use: Backcountry recreation in a changing climate. *Weather. Clim. Soc.*, 10, 209-223.
- A41 Radeloff, V.C., Helmers, D.P., Kramer, H.A., Mockrin, M.H., Alexandre, P.M., Bar-Massada, A., **Butsic, V.**, Hawbaker, T.J., Martinuzzi, S., Syphard, A.D. & Stewart, S.I. (2018). Rapid growth of the US wildland-urban interface raises wildfire risk. *Proc. Natl. Acad. Sci. U. S. A.*, 115, 3314-3319.
- A40 Piquer-Rodríguez, M., **Butsic, V.**, Gärtner, P., Macchi, L., Baumann, M., Gavier Pizarro, G., Volante, J.N., Gasparri, I.N. & Kuemmerle, T. (2018). Drivers of agricultural land-use change in the Argentine Pampas and Chaco regions. *Appl. Geogr.*, 91, 111-122.
- A39 Starrs, C.F., **Butsic, V.**, Stephens, C. & Stewart, W. (2018). The impact of land ownership, firefighting, and reserve status on fire probability in California. *Environ. Res. Lett.*, 13, 034025.
- A38 **Butsic, V.**, Schwab, B., Baumann, M. & Brenner, J.C. (2017). Inside the Emerald Triangle: Modeling the Placement and Size of Cannabis Production in Humboldt County, CA USA. *Ecol. Econ.*, 142, 70-80.
- A37 Macaulay, L. & **Butsic, V.** (2017). Ownership characteristics and crop selection in California cropland. *Calif. Agric.*, 71, 221-230.
- A36 Wang, I.J., Brenner, J.C. & **Butsic, V.** (2017). Cannabis, an emerging agricultural crop, leads to deforestation and fragmentation. *Front. Ecol. Environ.*, 15, 495-501.

- A35 Nolte, C., Gobbi, B., le Polain de Waroux, Y., Piquer-Rodríguez, M., **Butsic, V.** & Lambin, E.F. (2017). Decentralized Land Use Zoning Reduces Large-scale Deforestation in a Major Agricultural Frontier. *Ecol. Econ.*, 136, 30-40.
- A34 Locke, C.M., **Butsic, V.** & Rissman, A.R. (2017). Zoning effects on housing change vary with income, based on a four-decade panel model after propensity score matching. *Land use policy*, 64, 353-362.
- A33 **Butsic, V.**, Shapero, M., Moanga, D. & Larson, S. (2017). Using InVEST to assess ecosystem services on conserved properties in Sonoma County, CA. *Calif. Agric.*, 71, 81-89.
- C32 **Butsic, V.**, McCann, H., Axelson, J., Gray, B., Jin, Y., Mount, J., Stephens, S. & Stewart, W. (2017). *Improving the Health of California's Headwater Forests*. San Francisco.
- A31 Kocher, S. & **Butsic, V.** (2017). Governance of Land Use Planning to Reduce Fire Risk to Homes Mediterranean France and California. *Land*, 6, 24.
- A30 **Butsic, V.**, Lewis, D.J., Radeloff, V.C., Baumann, M. & Kuemmerle, T. (2017). Quasi-experimental methods enable stronger inferences from observational data in ecology. *Basic Appl. Ecol.*, 19, 1-10.
- C29 Schwab, B. & **Butsic, V.** (2017). Estimating the impact of cannabis production on rural land prices in Humboldt County, CA. *Gen. Tech. Rep. PSW-GTR-258*. Albany, CA U.S. Dep. Agric. For. Serv. Pacific Southwest Res. Stn. 395-402.
- C28 **Butsic, V.** & Brenner, J.C. (2017). *Cannabis (Cannabis sativa or C. indica) agriculture and the environment: a systematic, spatially-explicit survey and potential impacts*. *Gen. Tech. Rep. PSW-GTR-258*. Albany, CA U.S. Dep. Agric. For. Serv. Pacific Southwest Res. Stn. 383-393.
- A27 Wen, L., **Butsic, V.**, Stapp, J.R. & Zhang, A. (2017). Can China's land coupon program activate rural assets? An empirical investigation of program characteristics and results of Chongqing. *Habitat Int.*, 59, 80-89.
- A26 **Butsic V.**, Munteanu C, Griffiths P, Knorn J, Radeloff VC, Lieskovský J, Mueller D, Kuemmerle T (2016) The effect of protected areas on forest disturbance in the Carpathian Mountains from 1985 to 2010. *Conservation Biology*. doi:10.1111/cobi.12835.
- C25 Mount, J., Hanak, E., **Butsic, V.**, Grantham, T., Jin, Y., Stephens, S. & Viers, J. (2016). *California's Water: Protecting Headwaters*. San Francisco.
- A24 **Butsic, V.**, Syphard, A.D., Keeley, J.E. & Bar-Massada, A. (2017). Can private land conservation reduce wildfire risk to homes? A case study in San Diego County, California, USA. *Landsc. Urban Plan.*, 157, 161-169.
- A23 Syphard, A.D., **Butsic, V.**, Bar-Massada, A., Keeley, J.E., Tracey, J.A. & Fisher, R.N. (2016). Setting priorities for private land conservation in fire-prone landscapes: Are fire risk reduction and biodiversity conservation competing or compatible objectives? *Ecol. Soc.*, 21, art2.

- A22 **Butsic, V.** & Brenner, J.C. (2016). Cannabis (*Cannabis sativa* or *C. indica*) agriculture and the environment: a systematic, spatially-explicit survey and potential impacts. *Environ. Res. Lett.*, 11, 044023.
- A21 **Butsic, V.**, Baumann, M., Shortland, A., Walker, S. & Kuemmerle, T. (2015). Conservation and conflict in the Democratic Republic of Congo: The impacts of warfare, mining, and protected areas on deforestation. *Biol. Conserv.*, 191, 266-273.
- A20 **Butsic, V.** & Kuemmerle, T. (2015). Using optimization methods to align food production and biodiversity conservation beyond land sharing and land sparing. *Ecol. Appl.*, 25, 589-595.
- A19 **Butsic, V.**, Kelly, M. & Moritz, M. (2015). Land Use and Wildfire: A Review of Local Interactions and Teleconnections. *Land*, 4, 140-156.
- A18 Brandt, J.S., **Butsic, V.**, Schwab, B., Kuemmerle, T. & Radeloff, V.C. (2015). The relative effectiveness of protected areas, a logging ban, and sacred areas for old-growth forest protection in southwest China. *Biol. Conserv.*, 181, 1-8.
- A17 Corbelle-Rico, E., **Butsic, V.**, Enríquez-García, M.J. & Radeloff, V.C. (2015). Technology or policy? Drivers of land cover change in northwestern Spain before and after the accession to European Economic Community. *Land use policy*, 45, 18-25.
- A16 Fischer, J., Abson, D.J., **Butsic, V.**, Chappell, M.J., Ekroos, J., Hanspach, J., Kuemmerle, T., Smith, H.G. & von Wehrden, H. (2014). Land sparing versus land sharing: moving forward. *Conserv. Lett.*, 7, 149-157.
- A15 Levers, C., Verkerk, P.J., Müller, D., Verburg, P.H., **Butsic, V.**, Leitão, P.J., Lindner, M. & Kuemmerle, T. (2014). Drivers of forest harvesting intensity patterns in Europe. *For. Ecol. Manage.*, 315, 160-172.
- A14 Munteanu, C., Kuemmerle, T., Boltiziar, M., **Butsic, V.**, Gimmi, U., Kaim, D., Király, G., Konkoly-Gyuró, É., Kozak, J., Lieskovský, J., Mojses, M., Müller, D., Ostafin, K., Ostapowicz, K., Shandra, O., Štych, P., Walker, S. & Radeloff, V.C. (2014). Forest and agricultural land change in the Carpathian region—A meta-analysis of long-term patterns and drivers of change. *Land use policy*, 38, 685-697.
- A13 Syphard, A.D., Bar Massada, A., **Butsic, V.** & Keeley, J.E. (2013). Land use planning and wildfire: development policies influence future probability of housing loss. *PLoS One*, 8, e71708.
- A12 Beaudry, F., Radeloff, V.C., Pidgeon, A.M., Plantinga, A.J., Lewis, D.J., Helmers, D. & **Butsic, V.** (2013). The loss of forest birds habitats under different land use policies as projected by a coupled ecological-econometric model. *Biol. Conserv.*, 165, 1-9.
- A11 **Butsic, V.**, Lewis, D.J. & Radeloff, V.C. (2013). Reserve selection with land market feedbacks. *J. Environ. Manage.*, 114, 276-84.
- A10 Radeloff, V.C., Beaudry, F., Brooks, T.M., **Butsic, V.**, Dubinin, M., Kuemmerle, T. & Pidgeon, A.M. (2013). Hot moments for biodiversity conservation. *Conserv. Lett.*, 6, 58-65.

- A9 **Butsic, V.**, Radeloff, V.C., Kuemmerle, T. & Pidgeon, A.M. (2012). Analytical Solutions to Trade-Offs between Size of Protected Areas and Land-Use Intensity. *Conserv. Biol.*, 26, 883-893.
- A8 Radeloff, V.C., Nelson, E., Plantinga, A.J., Lewis, D.J., Helmers, D., Lawler, J.J., Withey, J.C., Beaudry, F., Martinuzzi, S., **Butsic, V.**, Lonsdorf, E., White, D. & Polasky, S. (2012). Economic-based projections of future land use in the conterminous United States under alternative policy scenarios. *Ecol. Appl.*, 22, 1036-1049.
- A7 **Butsic, V.**, Gaeta, J.W. & Radeloff, V. (2012). The ability of zoning and land acquisition to increase property values and maintain largemouth bass growth rates in an amenity rich region. *Landsc. Urban Plan.*, 107, 69-78.
- A6 **Butsic, V.**, Hanak, E. & Valletta, R.G. (2011). Climate Change and Housing Prices: Hedonic Estimates for Ski Resorts in Western North America. *Land Econ.*, 87, 75-91.
- A5 Rissman, A.R. & **Butsic, V.** (2011). Land trust defense and enforcement of conserved areas. *Conserv. Lett.*, 4, 31-37.
- A4 **Butsic, V.**, Lewis, D.J. & Ludwig, L. (2011). An Econometric Analysis of Land Development with Endogenous Zoning. *Land Econ.*, 87, 412-432.
- A3 **Butsic, V.**, Lewis, D.J. & Radeloff, V.C. (2010). Lakeshore zoning has heterogeneous ecological effects: an application of a coupled economic-ecological model. *Ecol. Appl.*, 20, 867-879.
- A2 Lewis, D.J., Provencher, B. & **Butsic, V.** (2009). The dynamic effects of open-space conservation policies on residential development density. *J. Environ. Econ. Manage.*, 57, 239-252.
- A1 **Butsic, V.** & Netusil, N.R. (2007). Valuing Water Rights in Douglas County, Oregon, Using the Hedonic Price Method. *J. Am. Water Resour. Assoc.*, 43, 622-629.

## Grants

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### Funded (\* denotes new since last review)

- \*Resources Legacy Fund, Cannabis Research, PI, Total: \$300,000 Project Length: 3 years (2020)
- \*Resources Legacy Fund, Cannabis Research, PI. Total: \$100,000 Project Length: 1 year (2019)
- \*Rustici Rangeland Trust, Rangelands and Wildfire, co-PI: \$50,000 Project Length: 2 years (2019)
- \*Tobacco-Related Disease Research Program, NRCS Pilot Award, Cannabis, Tobacco and the Environment. Co-PI Total: \$300,000 Project Length: 1.5 years (2019)
- \*Alameda Open Space, A decision support tool for conservation planning. PI. Total: \$23,000. Project length: 1 year (2019)
- California Rangeland Trust, Evaluating the Value of Ecosystem Services from Conservation Easements and Return on Investment. Co-PI. Total: \$55,000. Project length: 1 year (2018)
- NASA, Long-term Land Degradation in the Caucasus. Co-PI. Total: \$500,000 (\$153,000 to UCB). Project length: 3 year. (2018)



Nature Conservancy, Survey of Agricultural Cannabis Producers. PI. Total: \$12,100. Project length: 4 years. (2018)

California Natural Resources Agency, UCCE Forestry in Support of AB 1492 Timber Regulation and Forest Restoration Program. Co-PI. Total: \$111,131. Project length: 1 year. (2018)

Sonoma County, Economic Value of Rangeland Conservation. PI. Total: \$9,500. PI Project length: 1 year. (2017)

Renewable Resources Extension Act, California Land Use and Ownership Portal co-PI, Total \$7,500 Project length: 1 year (2016)

California State Coastal Conservancy, Land Acquisition and Ecosystem Carbon in Coastal California: A Proposal to the California Coastal Conservatory. Co-PI. Total: \$139,958 (\$25,000 to UCB). Project length: 2 years (2016)

Nature Conservancy, Mapping Cannabis Expansion in Northern California. PI. Total: \$11,061. Project length: 1 year (2016) + \$40,000 in-kind support

Renewable Resources Extension Act, California Land Use and Ownership Portal PI, Total \$15,000 Project length: 1 year, (2016)

## Awards

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Alexander von Humboldt Award for Post-Doctoral Researchers ~\$120,000 Project length: 2 years (2011)

Wisconsin Distinguished Graduate Fellowship Award ~\$40,000 Project Length: 1 year (2010)

Vespucci Imitative IGERT Scholarship ~\$5,000 Project Length: 1 week (2010)

Vilas Travel Award ~\$600 Project Length: 1 week (2010)

Henry C. Taylor Award for Outstanding Master's Thesis (2007)

## Presentations ("A" denotes academic, "E" extension, \* indicates invited)

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E85\* "Benefits of headwater forest" Public Policy Institute of California, virtual panel (2020)

A84\* "Humboldt Sustainable Futures" Humboldt State, virtual panel (2020)

E83\* "California Land Use and Fire" Insurance Commissioner's Climate Insurance Working Group, Sacramento (2020)

E82\* "California Hemp Update" National Hemp Meeting, Colorado (2020)

E81\* "Land conservation prioritization" Altamont Open Space District, Livermore (2020)

E80\* "Cannabis in California" Fellowship Forum, Palo Alto (2019)

A79\* "Cannabis and the environment in Northern California" Wildlife Society, Reno (2019)

E78\* "Wildfire and land use in California" Capital Impact, Sacramento (2019)

E77\* "Small scale cannabis production in California" Mexican Senate, Mexico City (2019)

E76\* “Small scale cannabis production in California” Mexico Ministry of Agriculture, Mexico City (2019)

E75 “Protecting California Communities from Fire, Drought, and Flood”, Moderator, Sacramento (2019)

E74\* “Wildfire in California Rangelands” RMAC, Sacramento (2019)

E73 “Land Use and Cannabis” Mendocino, Hopland (2019)

E72 “Land Use and Cannabis” Humboldt Growers, Garberville (2019)

E71 “Cannabis Research Center Research Briefing” Berkeley (2019)

E70\* “Cannabis and California” Governors office, Sacramento (2019)

E69\* “Cannabis and the environment” SLO Food Preservers, San Louis Obispo (2019)

E68\* “Cannabis and the environment” Panelist, Discover Cal, Seattle Washington (2019)

E67\* “Cannabis and the environment” Environmental Health Professionals, Calaveras County (2019)

E66\* “Cannabis and the environment” Exploratorium After Dark, San Francisco (2019)

A65 “Cannabis and Water in California” Panelist, UCANR Water Program Team (2019)

A64\* “Cannabis in California” Forestry Seminar, UW Madison (2019)

E63 “Cannabis Research Center, Inaugural Event” Berkeley California (2019)

E62 “Wildfire on public and private land” Society for Range Management Meeting (2018)

E61\* “Land use planning and Wildfire” Ventura Country Cooperative Extension (2018)

A60\* “A career in Cooperative Extension” Berkeley Connect (2018)

A59\* “Cannabis and the Environment” UC Merced Environmental Science Colloquium (2018)

E58\* “Wildfire and land use planning” Sonoma County Cooperative Extension (2018)

E57\* “Land use change, Fire, Cannabis” California Water Boards Data Science Symposium, Sacramento CA (2018)

E56\* “Panel Discussion: How to address water quality monitoring problems associated with fire?” California Water Boards Data Science Symposium, Sacramento CA (2018)

E55\* “The WUI fire problem: Can we solve it?” The Fellowship Forum, Palo Alto, CA (2018)

A54\* “Cannabis production and the environment” Legalizing Marijuana in Canada: Policy Challenges, McGill University (2018)

A53 “Emissions from agriculture to residential conversion” ANR Statewide Conference, Ontario CA (2018)

A52 “Ecosystem Services Valuation” ANR Statewide Conference, Ontario CA (2018)

- A51\* “Cannabis cultivation in Humboldt County” Young German Academy: Time for Space, Ohlstadt, Germany (2018)
- E50\* “Management of wildland fuels” Calforest annual conference, Napa CA (2018)
- E49\* “Rangeland Ecosystem Services” Society for Range Management Regional Meeting, Volcano CA (2018)
- E48\* “Expansion of cannabis cultivation” PPIC Annual Research Network Meeting, San Francisco CA (2018)
- E47\* “Cannabis impacts on large landowners” Humboldt Forestry Extension, Eureka CA (2018)
- E46\* “Managing forest to enhance water resources” Association of California Water Agencies annual meeting, Anaheim CA (2017)
- E45\* “Improving the Health of California’s Headwater Forest” Sierra Nevada Conservancy, Sacramento, CA (2018)
- A44 “Cannabis and the environment in California” TRDRP Workshop, Santa Barbara CA (2017)
- E43\* “Land use planning and wildfire” Personal Insurance Federation of California, Sacramento CA (2017)
- E42\* “Improving the Health of California’s Headwater Forest” USFS Regional Forester, Vallejo, CA (2017)
- E41\* “Improving the Health of California’s Headwater Forest” Public Policy Institute of California, Sacramento CA (2017)
- E40 “Panel diversity of scholars and scholarship in diversified farming systems” Diversified Farming Systems, Berkeley CA (2017)
- E39\* “Improving the Health of California’s Headwater Forest” Little Hoover Commission, Sacramento CA (2017)
- A38\* “Cannabis and the environment” Environmental Studies Seminar, San Jose State University (2017)
- P37\* “Cannabis in Humboldt County” Humboldt Colloquium, Washington DC (2017)
- E36\* “Wildfire and forest management” Public Policy Institute of California, San Francisco CA (2017)
- E35 “Being an extension specialist” Extension Showcase, Berkeley CA (2016)
- E34 “Sustainability and GIS in the classroom” Sustainability in the Classroom, Berkeley CA (2016)
- A33\* “The effectiveness of protected areas in the Carpathian Mountains” Three Gorges University Seminar, Yichang China (2016)
- E32\* “How to get into graduate school in the United States” Wuhan Agricultural University Undergraduate Seminar, Wuhan China (2016)
- A31\* “Land use law and Planning in the United States” Wuhan Agricultural University Graduate Seminar, Wuhan China (2016)

- A30 “Teleconnections in California’s Almond and Cattle industries” The Global Land Program Bi-annual Conference, Beijing China (2016)
- E29 “UCCE and Cannabis: Future Directions” UCCE Humboldt County, Garberville CA (2016)
- E28 “Cannabis expansion in Redwood Country” Redwood Symposium, Eureka CA (2016)
- A27 “Land system science” Stanford University, Stanford CA (2016)
- E26\* “Cannabis and land use in Humboldt County” Humboldt County Board of Supervisors, Eureka CA (2016)
- E25\* “Cannabis in Northern California” Humboldt County Cattleman’s Association, Humboldt County CA (2016)
- A24 “Cannabis in Humboldt County” American Association of Geographers Annual Meeting, San Francisco CA (2016)
- E23 \* “Protected areas in California” Meeting of Sierra land trusts, Sierra Foothill REC (2016)
- A22 “Land use and extension” UCCE Extension Showcase, Berkeley California (2016)
- A21 “Cannabis and land use in Northern California” ESPM Seminar, Berkeley CA, 2016
- A20\* “Cannabis in Northern California” College of Natural Resources Emeriti Reception, Berkeley, CA (2015)
- E19\* “Fire and water in California” Public Policy Institute of California, Research Network Meeting San Francisco, CA (2015)
- A18 “Regime change in land use: The case of cannabis” International Association of Landscape Ecology World Congress, Portland, Oregon (2015)
- A17 “The effectiveness of protected areas in the Carpathian Mountains” Parks for science, Science for parks summit. UC Berkeley Campus, Berkeley, CA (2015)
- A16\* “Quasi-experimental methods for ecologist” German Young Academy of Science, Ohlstadt, Germany (2015)
- A15 “Fire, conservation and land use in San Diego, County, USA” Ecological Society of America Annual Meeting, Sacramento CA, 2014
- A14 “Spatial panel models” ESPM Spatial Seminar, Berkeley CA (2014)
- A13 “The importance of multiple species, heterogeneity, and trade when assessing production biodiversity trade-offs” Global Land Project Open Science Meeting, Berlin Germany (2014)
- E12\* “Getting started in extension” ESPM Extension Showcase, Berkeley CA (2014)
- A11\* “Conflict and conservation: the impact of warfare, mining, and protected areas on deforestation in the Democratic Republic of Congo” Bay Area Tropical Forestry Network, Berkeley CA (2014)
- A10 “Conflict and conservation: the impact of warfare, mining, and protected areas on deforestation in the Democratic Republic of Congo ESPM Seminar - Berkeley CA, (2013)

- A9 “200 years of land use change in the Carpathian Mountains” GeoLunch Berkeley CA (2013)
- A8 “The impacts of land restitution on forest harvest in Eastern Europe” FORECOM, Krakow, Poland (2013)
- A7 “Modeling recent and past land use change in the Carpathian mountains” Mountain Research Initiative, Building Resilience in Mountain Systems: Estes Park, CO (2012)
- A6 “Coupled economic-ecological modeling: past experience in Wisconsin and future directions in the Carpathian Mountains” Invited Presentation, Humboldt University Geography Colloquium: Berlin, Germany (2012)/ IAMO, Halle, Germany (2012)
- A5 “Reserve selection in dynamic landscapes” US-IALE Symposium: Portland, Oregon (2011)
- A4 “A theoretical model of trade-offs between biodiversity and economic output” International Conference on Conservation Biology: Edmonton, Canada (2010)
- A3 “Conservation defense” Land Trust Alliance National Rally: Portland, Oregon (2009)
- A2 “Estimating the effects of endogenous zoning” Heartland Economics Workshop, Champaign, Illinois (2009) / ARES Session Agricultural and Applied Economics Association National Meeting: Milwaukee, Wisconsin (2009)
- A1 “Lakefront zoning has heterogeneous effects.” Ecological Society of America National Meeting: Milwaukee, Wisconsin (2009)

## Teaching

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### University of California Berkeley

*Introduction to GIS (ESPM 72) (2015,2017,2019)*

Guest Lectures: Berkeley Connect, ESPM15, ESPM 102C, UC Forestry Camp (2017,2018,2019)

### University of Wisconsin-Madison

2008

*Natural Resource Economics (AAE 571)*

## Reviewer

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*Applied Ecology, American Journal of Agricultural Economics, Agricultural and Resource Economics Review, Biodiversity and Conservation, Biological Conservation, Canadian Journal of Agricultural Economics Conservation Biology, Conservation Letters, Ecological Applications, Ecological Economics, Environmental Economics, Environmental Management, Forestry, Frontiers in Ecology and the Environment, Habitat International, Land, Land Use Science, Land Economics, Land Use and Urban Planning, Natural Resources Forum, PloS ONE, Science of the Total Environment, Sustainability*

## University and Community Service

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President - Academic Assembly Council	2020 - present
ESPM Council	2019- present
President Elect - Academic Assembly Council	2018- 2020
Industrial Hemp Advisory Board	2018- present
Co-director - Cannabis Research Center at UC Berkeley	2017-present
Oversight Committee member - Geographic Innovation Facility	2014- present
Scientific Advisory Board - Bay Area Greenprint	2015- 2019
UC Berkeley Representative to Academic Assembly council	2014-2018

## Academic Mentoring

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### Current PhD Students

Diana Moanga (2015-present)  
Jared Stapp (2015-present)  
Katherine Segal (2016-present)  
Claudia Herbert (2018 - present)

### Visiting Scholars

Diego Rybski (2019-present) *Potsdam Institute for Climate Research*  
An Min (2017-2018)- Hohai University, Nanjing China  
Ariani Wartenberg (2018-present) - ETH Zurich, Zurich Switzerland  
Anu Kramer (2018-present) - University of Wisconsin Madison, Madison Wisconsin  
Anthony Otero (2017-2018) - Wageningen University, Wageningen, Netherlands  
Lanjiao Wen (2016-2017) - Wuhan Agricultural University, Wuhan China

### Post-Doctoral Scholars

Hekia Bodwitch (2019 - Present)  
Ariani Wartenberg - (2019-present)  
Michael Polson - (2017-present)  
Luke Macaulay - (2015-2016) Currently Assistant Specialist at UC Berkeley

### Undergraduate

I have mentored over 60 undergraduate researchers as part of the Sponsored Projects for Undergraduate Research, within the College of Natural Resources.