

EMMA C. UNDERWOOD

Department of Environmental Science & Policy. One Shields Avenue, University of California, Davis. USA
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EDUCATION

Ph.D. Ecology. University of California, Davis. USA.

M.A. Geography. Ohio University, Athens. USA.

B.Sc. Geography and American Studies. University of Wales, Swansea, UK.

RESEARCH INTERESTS

Ecosystem services, fire ecology, climate change, Mediterranean-type ecosystems, species distribution modeling, invasive plant species, and estimating conservation return on investment.

PROFESSIONAL EXPERIENCE

Dept. of Environmental Science & Policy, University of California, Davis, USA

Research Scientist (2008-present);

- Research on US Department of Agriculture (USDA) Forest Service International Program's funded project to assess land cover change in Zimbabwe and the impacts on associated ecosystem services (PI);
- Research on USDA and CalFire funded project to spatially quantify and estimate the economic value of ecosystem services and wildfire impacts in southern California. Components include development of online tool for resource managers to access data and reports for USDA (PI);
- Research on National Fish and Wildlife Foundation funded projects to develop tools to prioritize postfire restoration and validate tool by restoring plots and comparing with non-restored plots of the Piru fire (Los Padres NF);
- Developed spatial predictive models of the potential distribution of four invasive plant species in the Mojave desert (collaborated with USGS, Pacific Northwest National Laboratory) (PI);
- Evaluated ecosystem services in the Central Valley of California and quantified the tradeoffs of different management scenarios (collaboration with The Nature Conservancy (co-PI);
- Developed science-based recommendations and spatial tools for addressing multiple management objectives in the Sierra Nevada forests, California (co-PI).

The Nature Conservancy, California Science Program, USA

Postdoctoral Researcher (Feb 2005-Dec 2007)

- Evaluated the protection and conversion status of the world's five Mediterranean-climate regions and assessed current and future threats to biodiversity (co-PI);
- Applied return on investment concepts to prioritizing work in Mediterranean climate ecoregions.

California Space Institute Center of Excellence, University of California, Davis, USA

Postdoctoral Researcher (May 2004-Jan 2005)

- Investigated the use of hyperspectral and multispectral remote sensing to identify and map invasive plant species in California coastal ecosystems;
- Detected and mapped aquatic weeds in the river systems of the Central Valley of California using hyperspectral imagery for the California Department of Boating and Waterways.

National Park Service, Yosemite National Park, California, USA

Consultant (Oct 2001-Nov 2002)

- Analyzed plant community data from Yosemite National Park and developed predictive models of plant invasions using biophysical and anthropogenic disturbance data to assist resource managers.

Department of Environmental Science & Policy, University of California, Davis, USA

Doctoral Researcher in Landscape & Conservation Ecology (Oct 1999-Apr 2004)

- Designed and conducted experiments to investigate the effects of prescribed fire and cattle grazing on invertebrates in a blue oak ecosystem in Northern California;

- Developed a landscape scale monitoring framework for The Nature Conservancy's Lassen Foothills Project;

World Wildlife Fund - US, Conservation Science Program, Washington DC, USA

Conservation Analyst (Oct 1995-Aug 1999)

- Coordinated and conducted an assessment of the terrestrial ecoregions of continental Africa which informed WWF's Global 200 ecoregions project;
- Developed and tested predictive models for identifying patterns of biodiversity in the Congo Basin rainforests and undertook regional scale conservation assessments of central Africa (CARPE);
- Organised and taught GIS workshops at field sites across Africa and assisted field projects with GIS;
- Conducted GIS analysis of impediments to grizzly bear movement and identified potential linkage zones in southwestern Montana.

PUBLICATIONS

Journal papers

- Underwood, E.C.**, A.D. Hollander, H.D. Safford, and J.N. Williams. Estimating the environmental impacts of southern California's wildfires. *Frontiers in Ecology and Evolution* (in revision).
- Underwood, E.C.**, Q.M. Sorenson, C.C. Schrader-Patton, N.A. Molinari and H.D. Safford. Resprouting, seeding, and facultative seeding shrub species in California's Mediterranean-type climate region. *Frontiers in Ecology and Evolution* (in review).
- Underwood, E.C.**, A.D. Hollander, and B.A. Hahn. Assessing Trends in Tree Loss, Wildfire, and Population Growth in Zimbabwe Since 2000. Submitted to *Frontiers in Forest and Global Change* (in review).
- Underwood, E.C.**, A.D. Hollander, N.A. Molinari, L. Larios, and H.D. Safford. 2021. Identifying priorities for post-fire restoration in California chaparral shrublands. *Restoration Ecology* 30 (3):e13513. doi: 10.1111/rec.13513
- Schrader-Patton, C.C. and **E.C. Underwood**. 2021. New biomass estimates for chaparral-dominated southern California landscapes. *Remote Sensing*, 13, 1581. <https://doi.org/10.3390/rs13081581>
- Klinger, R.C., **E.C. Underwood**, R. McKinley, M.L. Brooks. 2021. Contrasting geographic patterns of ignition probability and burn severity in the Mojave. *Frontiers in Ecology and Evolution* 9:593167. doi: 10.3389/fevo.2021.593167
- Molinari, N.A., **E.C. Underwood**, S.C. Sawyer, and R.J. Butz. 2021. Chapter 5, California chaparral case study. Pages 99-122 in Meyer, M.D., J.W. Long, and H.D. Safford, editors. Postfire restoration framework for national forests in California. Gen. Tech. Rep. PSW-GTR-270. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. Albany, CA. 204 p.
- Underwood, E.C.** and H.D. Safford. 2021. Appendix 5: Postfire restoration prioritization tool for chaparral shrublands. Pages 183-185 in Meyer, M.D., J.W. Long, and H.D. Safford, editors. Postfire restoration framework for national forests in California. Gen. Tech. Rep. PSW-GTR-270. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. Albany, CA. 204 p.
- Santin, C., S. H. Doerr, J. G. Pausas, **E. C. Underwood**, and H. D. Safford. 2020. No evidence of suitability of prophylactic fluids for wildfire prevention at landscape scales. Letter. Proceedings of the National Academy of Sciences. www.pnas.org/cgi/doi/10.1073/pnas.1922086117
- Underwood, E.C.**, A.D. Hollander, H.D. Safford, J.B. Kim, R. Drapek, and L. Srivastava. 2019. The impacts of climate change on ecosystem services in southern California. *Ecosystem Services* 39, 101008.
- Underwood, E.C.**, R.C. Klinger, and M. Brooks. 2019. Effects of invasive plants on fire regimes and postfire vegetation diversity in an arid ecosystem. Submitted to *Ecology and Evolution* 00:1-15.
- Underwood, E.C.**, J. Franklin, N. Molinari, and H. Safford. 2018. Global change and the vulnerability of chaparral ecosystems. *Bulletin of Ecological Society of America*. 99(4):e01460.
- Flint, L.E., **E.C. Underwood**, A.L. Flint, and A.D. Hollander. 2019. Characterizing the influence of fire on hydrology in southern California. *Natural Areas Journal* 39(1):108-121.
- Underwood, E.C.**, A.D. Hollander, and L.E. Flint. 2018. Climate change impacts on water provision

- ecosystem services in southern California's National Forests. *Environmental Research Letters* 13:124019.
- Brauneder, K., C. Montes, S. Blyth, L. Bennun, S.H.M. Butchart, M. Hoffmann, N.D. Burgess, A. Cuttelod, M.I. Jones, V. Kapos, J. Pilgrim, M.J. Tolley, **E.C. Underwood**, L.V. Weatherdon, S.E. Brooks: Global screening for Critical Habitat in the terrestrial realm. 2018. *PLoS ONE* 13(3): e0193102.
- Bohman, G.N., **E.C. Underwood**, and H.D. Safford. 2018. Estimating biomass in California's chaparral and coastal sage shrublands. *Madroño* 65(1): 28-46.
- Underwood, E.C.**, J.H. Viers, R.A. Hutchinson, T. Distler, T.R. Kelsey, and J. Marty. 2017. Quantifying ecosystem services in an agricultural-dominated landscape under future land management scenarios. *San Francisco Estuary and Watershed Science* 15(2): <http://doi.org/10.15447/sfews.2017v15iss2art4>
- Underwood, E.C.**, Olson, D., Hollander, A.D., and J.F. Quinn. 2014. Ever-wet tropical forests as biodiversity refuges. *Nature Climate Change* 4:740-741.
- Cox, R.L. and **E.C. Underwood**. 2011. The importance of conserving biodiversity outside of protected areas in mediterranean systems. *PLoS ONE* 6(1): e14508.
- Underwood, E.C.**, J.H. Viers, J.F. Quinn, and M. North. 2010. Using topography to meet wildlife and fuels treatment objectives in fire-suppressed landscapes. *Environmental Management* 46: 809-819.
- Underwood, E.C.** and J.F. Quinn. 2010. Response of ants and spiders to prescribed fire in oak woodlands of California. *Journal of Insect Conservation* 14: 359-366.
- Underwood, E.C.**, K.R. Klausmeyer, R.L. Cox, S.M. Busby, S.A. Morrison, and M.R. Shaw. 2009. Expanding the global protected areas network to save the imperiled mediterranean biome. *Conservation Biology* 23(1):43-52.
- Underwood, E.C.**, J.H. Viers, K. R.Klausmeyer, R.L. Cox, and M.R. Shaw. 2009. Threats and biodiversity in the mediterranean biome. *Diversity and Distributions* 15:188-197.
- Underwood, E.C.**, K.R. Klausmeyer, S.A. Morrison, M. Bode, and M.R. Shaw. 2009. Evaluating conservation spending for biodiversity return: A retrospective analysis in California. *Conservation Letters* 2:130-137.
- Underwood, E.C.** and C.E. Christian. 2009. Consequences of prescribed fire and grazing on grassland ant communities. *Environmental Entomology* 38(2): 325-32.
- Underwood, E.C.**, M.R. Shaw, K.A. Wilson, P. Kareiva, K.R. Klausmeyer, M.F. McBride, M. Bode, S.A. Morrison, J.M. Hoekstra, H.P. Possingham: 2008. Protecting biodiversity when money matters: Maximizing return on investment. *PLoS ONE* 3(1): e1515. doi:10.1371/journal.pone.0001515.
- Bode, M., K.A. Wilson, T.M. Brooks, R.A. Mittermeier, W.R. Turner, F. McBride, **E.C. Underwood**, H.P. Possingham. 2008. Robustness of resource allocation among biodiversity hotspots. *Proceedings of the National Academy of Sciences* 105(17):6498-6501.
- Wilson, K.A., **E.C. Underwood**, S.A. Morrison, K.R. Klausmeyer, W.W. Murdoch, B. Reyers, G. Wardell-Johnson, P.A. Marquet, P.W. Rundel, M.F. McBride, R.L. Pressey, M. Bode, J.M. Hoekstra, S.J. Andelman, M. Looker, C. Rondinini, P. Kareiva, M.R. Shaw, and H.P. Possingham. 2007. Maximising the conservation of the world's biodiversity: What to do, where and when. *PLoS Biology* 5(9):e223.
- Underwood, E.C.**, S.L. Ustin, and C.M. Ramirez. 2007. A comparison of spatial and spectral image resolution for mapping invasive plants in coastal California. *Journal of Environmental Management* 39(1):63-83.
- Underwood, E.C.** and B.L. Fisher. 2006. The role of ants in conservation monitoring: If, when and how. *Biological Conservation* 132:166-182.
- Underwood, E.C.**, M.J. Mulitsch, J.A. Greenberg, M.L. Whiting, S.L. Ustin, S.C. Kefauver. 2006. Mapping invasive aquatic vegetation in the Sacramento-San Joaquin Delta using hyperspectral imagery. *Environmental Monitoring and Assessment* 121(1-3): 47-64.
- Chan, K.M.A., M.R. Shaw, D.R. Cameron, **E.C. Underwood**, G.C. Daily. 2006. Conservation planning for ecosystem services. *PLoS Biology* 4(11):e379.

- Klinger, R.C., **E.C. Underwood**, and P.E. Moore. 2006. The role of environmental gradients in non-native plant invasion into burned areas in Yosemite National Park, California. *Diversity and Distributions* 12:139-156.
- Underwood, E.C.**, R.C. Klinger, and P.E. Moore. 2004. Predicting patterns of non-native plant invasions in Yosemite National Park, California. *Diversity and Distributions* 10:447-459.
- Underwood, E.C.**, S.L. Ustin, and D. DiPietro. 2003. Mapping non-native plants using hyperspectral imagery. *Remote Sensing of Environment* 86:150-161.
- Reiner, R., **Underwood, E.C.**, Niles, J. 2002. Monitoring conservation success in a large oak woodland landscape. In Proceedings of the Fifth Symposium on Oak Woodlands: Oaks in California's Changing Landscape USDA Forest Service General Technical Report PSW-GTR-184.
- Olson, D.M., E. Dinerstein, E. Wikramanayake, N. Burgess, G. Powell, **E.C. Underwood**, J. D'Amico, I. Itoua, H. Strand, J. Morrison, C. Loucks, T. Allnutt, T.H. Ricketts, Y. Kura, W. Wettengel, and K. Kassem. 2001. Terrestrial ecoregions of the world: A new map of life on earth. *Bioscience* 51(11):933-938.

Books, book contributions, and proceedings

- Underwood, E.C.**, C.C. Schrader-Patton, and Q.M. Sorenson. 2022. Estimating the Impacts of Wildfire on Chaparral Shrublands in Southern California using an Online Web Mapping Tool. Proceedings for the Fire and Climate Conference May 23-27, 2022, Pasadena, California, USA and June 6-10, 2022, Melbourne, Australia. Published by the International Association of Wildland Fire, Missoula, Montana, USA.
- Schrader-Patton, C.C., **E.C. Underwood**, and Q.M. Sorenson. 2022. Estimating Wildfire Impacts on the Biomass of Southern California's Chaparral Shrublands. Proceedings for the Fire and Climate Conference May 23-27, 2022, Pasadena, California, USA and June 6-10, 2022, Melbourne, Australia. Published by the International Association of Wildland Fire, Missoula, Montana, USA.
- Underwood, E.C.**, H.D. Safford, N.A. Molinari, and J.E. Keeley (editors). 2018. Valuing chaparral: ecological, socio-economic, and management perspectives. Springer Series on Environmental Management. Springer, Cham, Switzerland.
- Underwood, E.C.**, A.D. Hollander, P.R. Huber, and C. Schrader-Patton. 2018. Mapping the value of national forest landscapes for ecosystem service provision. Pages 245-270 in Underwood, E.C., H.D. Safford, N.A. Molinari, and J.E. Keeley, editors. Valuing chaparral: ecological, socio-economic, and management perspectives. Springer Series on Environmental Management. Springer, Cham, Switzerland.
- Safford, H.D., **E.C. Underwood**, and N.A. Molinari. 2018. Managing chaparral resources on public lands. Pages 411-448 in Underwood, E.C., H.D. Safford, N.A. Molinari, and J.E. Keeley, editors. Valuing chaparral: ecological, socio-economic, and management perspectives. Springer Series on Environmental Management. Springer, Cham, Switzerland.
- Molinari, N.A., **E.C. Underwood**, J.B. Kim, and H.D. Safford. 2018. Climate Change Trends for Chaparral. Pages 385-409 in Underwood, E.C., H.D. Safford, N.A. Molinari, and J.E. Keeley, editors. Valuing chaparral: ecological, socio-economic, and management perspectives. Springer Series on Environmental Management. Springer, Cham, Switzerland.
- Safford, H.D., **E.C. Underwood**, N.A. Molinari, J.E. Keeley. 2018. Summary: the past, present and future of California chaparral. Pages 449-454 in Underwood, E.C., H.D. Safford, N.A. Molinari, and J.E. Keeley, editors. Valuing chaparral: ecological, socio-economic, and management perspectives. Springer Series on Environmental Management. Springer, Cham, Switzerland.
- Underwood, E.C.**, A.D. Hollander, and J.F. Quinn. 2013. Geospatial Tools for Identifying and Managing Invasive Plant Species. Pages 133-151 in S. Jose, H.P. Singh, R.K. Kohli and D.R. Batish, editors. *Invasive Plant Ecology*. CRC Press, Boca Raton, FL. (302 pages)
- M. North, R.M. Boynton, P.A. Stine, K.F. Shipley, **E.C. Underwood**, N.E. Roth, J.H. Viers, and J.F. Quinn. 2012. Chapter 10. Geographic Information System Landscape Analysis Using GTR 220 Concepts. In Managing Sierra Nevada Forests, USDA Forest Service Pacific Southwest Research Station General Technical Report PSW-GTR-237.

- Underwood, E.C.** and S.L. Ustin. 2007. Trends in Invasive Alien Species. Pages 161-177 in H. Strand, R. Höft, J. Stritholt, L. Miles, N. Horning, E. Fosnight, editors. *Sourcebook on Remote Sensing and Biodiversity Indicators*. Secretariat of the Convention on Biological Diversity, Montreal, Technical Series no. 32.
- Burgess, N.D., J. D’Amico, **E.C. Underwood**, E. Dinerstein, D.M. Olson, I. Itoua, J. Schipper, T.H. Ricketts, and K. Newman. 2004. *Terrestrial ecoregions of Africa and Madagascar: A conservation assessment*. Island Press, Washington, D.C. pp 501.
- Dinerstein, E., G. Powell, D.M. Olson, E. Wikramanayake, R. Abell, C.J. Loucks, **E.C. Underwood**, T. Allnutt, W. Wettengel, T.H. Ricketts, H. Strand, S. O’Connor, and N. Burgess. 2000. *A workbook for conducting biological assessments and developing biodiversity visions for ecoregion-based conservation: Part I, Terrestrial Ecoregions*. World Wildlife Fund. Washington, D.C.
- Primm, S.P. and **E.C. Underwood**. 1996. Reconnecting grizzly bear populations in fragmented landscapes. Pages 40-42 in T.H. Ricketts, E. Dinerstein, D.M. Olson, C.J. Loucks, W. Eichbaum, D. DellaSala, K. Kavanagh, P. Hedao, P.T. Hurley, K.M. Carney, R. Abell, and S. Walters, editors. *Terrestrial ecoregions of North America: A conservation assessment*. Island Press. Washington D.C.

Datasets

- Schrader-Patton, C.C. and **E.C. Underwood**. 2022. Annual biomass data (2001-2021) for southern California: above- and below-ground, standing dead, and litter. Dryad, Dataset, <https://doi.org/10.5061/dryad.qz612jmtj>
- Hollander, A. and **E.C. Underwood**. 2021. Shrubland vegetation topographic facets of Southern California. Dryad, Dataset, <https://doi.org/10.25338/B8JW59>
- Hollander, A. and **E.C. Underwood**. 2021. Raster classification and mapping of ecological units of Southern California, Dryad, Dataset, <https://doi.org/10.25338/B8432H>
- 2017. Spatial data archived with USGS from Mojave project.
 - 2021. Spatial data archived with USFS International Programs from Zimbabwe project.

RESEARCH GRANTS AND AWARDS

- California Department of Forestry and Fire Protection (CalFire): ‘Measuring wildfire impacts and post-fire recovery of shrubland biomass under different climate conditions’, E. Underwood (PI). \$353,974 (with \$35,000 in matching contributions) (active June 2020);
- National Fish and Wildlife Foundation: ‘Assessing the Restoration of Ecosystem Services in Post-fire Chaparral Landscapes’, E. Underwood (PI). \$425,413 (with \$212,206 in matching contributions) (active Jan 2021);
- US Forest Service International Programs: ‘Ecosystem Services Mapping in Forests of Zimbabwe’, E. Underwood (PI). \$30,000 additional funding to undertake regional assessment (active);
- California Department of Forestry and Fire Protection (CalFire): ‘Impacts of Wildfire and Climate on Ecosystem Services in Southern California: Tool Development and Data Needs’, E. Underwood (PI). \$285,599 (with \$217,716 in matching contributions) (active Sept 2019);
- US Forest Service International Programs: ‘Ecosystem Services Mapping in Forests of Zimbabwe’, E. Underwood (PI). \$98,698 (active);
- USDA Western Wildlands Environmental Threats Assessment Center: technical assistance grant to finish ecosystem services tool, E. Underwood (co-PI). \$50,000 (active June 2019);
- National Fish and Wildlife Foundation: ‘Developing a Decision Support Tool for Post-fire Restoration’, E. Underwood (PI). \$169,021 (with \$84,550 in matching contributions) (complete);
- USDA Forest Service technical assistance grant from USFS Geospatial Technology and Applications Center (GTAC) for developing on-line mapping tool. Equivalent to \$70,000 (complete);
- California Landscape Conservation Cooperative. May 2015. ‘Assessing the impacts of future climates and fire on hydrologic regimes in the Mediterranean-type ecosystems of southern California’, E. Underwood (PI), L. Flint, A. Flint, H. Safford. \$124,880 (with \$317,336 in matching contributions) (complete);

- USDA Forest Service Regional Office and WWETAC: ‘Ecosystem services assessment of the Santa Clara River Watershed’. June 2014. E. Underwood (PI), J. Quinn, H. Safford, and in collaboration with F. Lupi, C. Garnache, L. Srivastava. \$370,000 (complete);
- US Geological Survey. July 2011. ‘Detecting and mapping fuels and fire hazard in the Mojave Desert’. E. Underwood (co-PI), R. Klinger, J. Quinn. \$150,000 (complete);
- The Nature Conservancy, California. Feb 2005. Postdoctoral research funding ‘A conservation assessment of Global Mediterranean Habitat Types’. E. Underwood (co-PI), J. Quinn, R. Shaw. \$115,000 (complete);
- National Park Service Inventory and Monitoring Program-Yosemite National Park. Oct 2001. ‘Assessing Invasive Plants in Yosemite National Park’. E. Underwood (co-PI), R. Klinger. \$11,000 (complete);
- The Nature Conservancy, California; Schlinger Grant. April 2001. ‘Evaluating the impacts of fire on invertebrates in oak savanna grasslands of Northern California’ PhD research funding. \$7,590 (complete);
- National Science Foundation Biological Invasions IGERT Fellowship (Integrative Graduate Education and Research Traineeship Program). Spring 2002. \$4,038;
- University of California, Davis awards including Jastro Shields Award and Tuition Fellowships.

ACADEMIC SERVICE

- Guest editor for special issue of Remote Sensing journal (impact factor 4.5) on ‘Earth Observations for Biodiversity and Ecosystems of Mediterranean-Type Climate Regions’;
- Invited speaker at classes at University of California, Davis including Principles of Ecology, Remote Sensing and the Environment, and Insects in the Environment, and for US Forest Service funded International Seminar on Climate Change and Natural Resource Management;
- Invited lecturer in Applied Ecology at University of Southampton, UK;
- Panel member for reviewing proposals to National Science Foundation grant call ‘Dimensions in Biodiversity’ (June 2012) and NASA ROSES (Research Opportunities in Space and Earth Sciences) grant call ‘Climate and Biological Response’ (January 2011);
- Affiliation with National University of Science and Technology, Zimbabwe;
- Reviewer for peer reviewed journals including: Conservation Biology, Remote Sensing of the Environment, Biological Invasions, Journal of Applied Photogrammetric Engineering and Remote Sensing, Professional Geographer and Perspectives in Plant Ecology, Evolution and Systematics journals, Community Ecology, Environmental Management, and Frontiers in Ecology and the Environment;
- Steering committee member for 2nd International Biodiversity and Vines Workshop, UC Davis;

PRESENTATIONS AT PROFESSIONAL CONFERENCES AND INVITED SEMINARS

- Presenter at Association of Fire Ecology. Prioritizing Post-fire Restoration in Chaparral Shrublands in Southern California, Florence, Italy (October 2022).
- Presenter at MedEcos (virtual). Estimating the Impacts of Wildfire on Chaparral Shrublands in Southern California (Sept 2022);
- Presenter at International Association of Wildland Fire (virtual). Estimating the Impacts of Wildfire on Chaparral Shrublands in Southern California (March 2022);
- Presenter at International Association for Landscape Ecology (virtual). Impacts of Wildfire on Shrubland Biomass and its Recovery (March 2022);
- Presenter at Natural Areas Association conference (virtual). Prioritizing Post-fire Restoration in Chaparral Shrublands in Southern California (October 2020);
- Presenter at Natural Areas Association conference (virtual). Estimating the Impacts of Wildfire on Ecosystem Services in Southern California (October 2020);
- Co-presenter at International Association of Landscape Ecology (virtual). New Biomass Estimates for Shrubland in Southern California (May 2020);

- Presenter at England and Wales Wildfire Forum’s Wildfire Conference (Wales, UK) (Nov 2019);
- Organizing member and co-presenter for USFS special session at Natural Capital Conference, Stanford University (March 2019);
- Invited speaker at Geography and Biological Sciences departmental seminar at University of Swansea, UK (Feb 2019);
- Invited speaker at a USDA Forest Service special session at A Community for Ecosystem Services conference (Dec 2018, Washington DC);
- Organizing committee member and presenter at the 2nd (2015) and 3rd (2018) Chaparral Symposiums. Held at USFS Angeles National Forest training center, Arcadia, California;
- Invited speaker at Living with Fire in California’s Coast Landscapes. Held at Sonoma State University (May 2018);
- Organizing and facilitating special session at Riparian Summit, UC Davis (October 2017), ‘Valuing Riparian and Hydrological Ecosystem Services on Federal Lands in Southern California’;
- Organizing and facilitating special session at Natural Areas Association conference, UC Davis (October 2016) ‘Understanding the Impact of Climate Change on Ecosystem Services’.

OTHER MEDIA AND OUTPUTS

- Zimbabwe Ecosystem Snapshot: infographics document
<https://africaandmideast.internationalprograms.us/wp-content/uploads/2021/09/Zim-Assessment-Infographic-ecosystem-services-V8.pdf>
- Zimbabwe ESRI Storymap
<https://storymaps.arcgis.com/stories/928c37330cbd4e2481b808782ff2b89f>
- Southern California Ecosystem Services Assessment: website created by E.C. Underwood and A.D. Hollander <https://socalecosystemservices.sf.ucdavis.edu/research> made live August 2021);
- Podcast recorded by UC Davis News and Media Relations “Unfold” on carbon, climate and chaparral shrublands in California: <https://www.ucdavis.edu/news/podcasts/unfold/california-wildfires-climate-change> Released October 2020.
- ‘Valuing Chaparral’ an ecosystem services educational video created in collaboration with the USDA Forest Service: <https://www.youtube.com/watch?v=w-8KFNr1c9o> (posted Nov. 2018)
- Post-fire Restoration Prioritization (PReP) Tool for resource managers:
<https://github.com/adhollander/postfire> (posted Aug. 2019)