

# Daniel E. Winkler

## Curriculum Vitae

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### Contact

Current appointment: **Research Ecologist**, United States Geological Survey

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### Education

University of California, Irvine

Ph.D. (2017) Ecology and Evolutionary Biology

Dissertation: *Effects of climate change on protected and invasive plant species*

(Advisor: Dr. Travis E. Huxman, committee: B.S. Gaut, K.A. Mooney, V.A. Olson)

University of California, Merced

M.S. (2013) Environmental Systems

Thesis: *A multi-level approach to assessing alpine productivity responses to climate change*

(Advisor: Dr. Lara M. Kueppers, committee: P.W. Rundel, A.L. Westerling)

New York University

B.A. (2008) Biological Anthropology, cum laude

### Positions

2019–present **Review Editor**, *Frontiers in Ecology and Evolution*

2017–present **Research Ecologist**, U.S. Geological Survey, Southwest Biological Science Center, Moab, Utah

2016–18 **Reviewing Editor**, *Applications in Plant Sciences*

2015 **Young Leader in Climate Change Fellow**, National Park Service, Saguaro National Park, Tucson, Arizona

2014 **Research Fellow**, National Science Foundation East Asia Pacific Summer Institute, Hokkaido University, Sapporo, Japan

2010–11 **Biological Science Technician**, National Park Service, Sonoran Desert Network, Tucson, Arizona

- 2009 *Conservation and Land Management Botany Intern*, Bureau of Land Management, Vernal Field Office, Vernal, Utah
- 2008 *Student Conservation Association Intern*, U.S. Fish & Wildlife Service, Buenos Aires National Wildlife Refuge, Arizona
- 2008 *Research Fellow*, Rocky Mountain Biological Laboratory, Gothic, Colorado
- 2007 *Biological Anthropology Intern*, American Museum of Natural History, New York

**Peer-Reviewed Publications** (ORCID 0000-0003-4825-9073; \*undergraduate co-author; †as corresponding author)

18. **Winkler DE**, \*Lin MY, Delgadillo J, Chapin KJ, Huxman TE. *in press*. Early life history responses and phenotypic shifts in a rare endemic plant responding to climate change. *Conservation Physiology*.
17. **Winkler DE**, Grossiord C, Belnap J, Howell A, Ferrenberg S, Smith H, Reed SC. 2019. Earlier plant growth helps compensate for reduced carbon fixation after 13 years of warming. *Functional Ecology*, early online version. doi: 10.1111/1365-2435.13432
16. Rodríguez-Buriticá S, †**Winkler DE**, Webb RH, Venable DL. 2019. Local, temporal trajectories explain population-level responses to climate change in saguaro (*Carnegiea gigantea*). *Ecosphere* 10(8): e02844. doi: 10.1002/ecs2.2844
15. **Winkler DE**, Belnap J, Hoover D, Reed SC, Duniway MC. 2019. Shrub persistence and increased grass mortality in response to meteorological drought in dryland systems. *Global Change Biology* 25(9): 3121–3135. doi: 10.1111/gcb.14667 [link](#)
14. **Winkler DE**, Chapin KJ, François O, Garmon JD, Gaut BS, Huxman TE. 2019. Multiple introductions and population structure during the rapid expansion of the invasive Sahara mustard (*Brassica tournefortii*). *Ecology and Evolution* 9(14): 7928–7941. doi: doi.org/10.1002/ece3.5239 [link](#)
13. **Winkler DE**. 2019. Current human impacts on alpine ecosystems: the direct and indirect effects of human-induced climate change and land use. In: Elias, S (Ed.) *Encyclopedia of the World's Biomes*. Elsevier. doi: 10.1016/B978-0-12-409548-9.11879-2 [link](#)
12. **Winkler DE**, Lubetkin KC, Carrell AA, Jabis MD, Yang Y, Kueppers LM. 2019. Alpine plant community responses to climate warming. In: Mohan JE (Ed.) *Ecosystem Consequences of Soil Warming: Microbes, Vegetation, Fauna, and Soil Biogeochemistry*, pp. 297–346. Elsevier. doi: 10.1016/B978-0-12-813493-1.00013-2 [link](#)

11. Mohan JE, Wadgyamar SM, **Winkler DE**, Anderson JT, Frankson PT, Hanifin R, Benavides K, Kueppers LM, Melillo JM. 2019. Plant reproductive, fitness, and phenology responses to climate warming: results from native populations, communities and ecosystems. In: Mohan JE (Ed.) *Ecosystem Consequences of Soil Warming: Microbes, Vegetation, Fauna, and Soil Biogeochemistry*, pp. 61–102. Elsevier. doi: 10.1016/B978-0-12-813493-1.00004-1 [link](#)
10. **Winkler DE**, Backer D, Belnap J, Bradford J, Butterfield B, Copeland S, Duniway M, Faist A, Fick S, Jensen S, Kramer A, Mann R, Massatti R, McCormick M, Munson S, Olwell P, Parr S, Pfennigwerth A, Pilmanis A, Richardson B, Samuel E, See K, Young K, Reed SC. 2018. Beyond traditional ecological restoration on the Colorado Plateau. *Restoration Ecology* 26(6): 1055–1060. doi: 10.1111/rec.12876 [link](#)
9. **Winkler DE**, Butz RJ, Germino MJ, Reinhardt K, Kueppers LM. 2018. Sensitivity of alpine plant species' phenology and physiology to spatio-temporal variation in snowmelt timing. *Frontiers in Plant Science* 9: 1140. doi: 10.3389/fpls.2018.01140 [link](#)
8. Chapin KJ, **Winkler DE**, Wiencek P, Agnarsson I. 2018. Island biogeography and ecological modeling of the amblypygid *Phrynus marginemaculatus* in the Florida Keys archipelago. *Ecology and Evolution* 8 (18): 9139–9151. doi: 10.1002/ece3.4333 [link](#)
7. **Winkler DE**, Gremer JR, Chapin KJ, \*Kao M, Huxman TE. 2018. Rapid alignment of functional trait variation with locality across the invaded range of Sahara mustard (*Brassica tournefortii*). *American Journal of Botany* 105(7): 1188–1197. doi: 10.1002/ajb2.1126 [link](#)
6. Kudo G, Aoshima Y, Miyata R, **Winkler DE**. 2018. Altered morphologies and physiological compensation in a rapidly expanding dwarf bamboo in alpine ecosystems. *Arctic, Antarctic and Alpine Research* 50 (1): e1463733. doi:10.1080/15230430.2018.1463733 [link](#)
5. **Winkler DE**, Conver JL, Huxman TE, Swann DE. 2018. The interaction of drought and habitat explain space-time patterns of establishment in saguaro (*Carnegiea gigantea*). *Ecology* 99 (3): 621–631. doi: 10.1002/ecy.2124 [link](#)
4. Conver, JL, Foley T, **Winkler DE**, Swann DE. 2017. Demographic changes over > 70 yr in a population of saguaro cacti (*Carnegiea gigantea*) in the northern Sonoran Desert. *Journal of Arid Environments* 139:41–48. doi: 10.1016/j.jaridenv.2016.12.008 [link](#)
3. Kudo G, Kawai Y, Amagai Y, **Winkler DE**. 2017. Degradation and recovery of an alpine plant community: experimental removal of an encroaching dwarf bamboo. *Alpine Botany* 127:75–83. doi: 10.1007/s00035-016-0178-2 [link](#)

2. **Winkler DE**, Amagai Y, Huxman TE, Kaneko M, Kudo G. 2016. Seasonal dry-down rates and high stress tolerance promote bamboo invasion above and below treeline. *Plant Ecology* 217(10): 1219–1234. doi: 10.1007/s11258-016-0649-y [link](#)
1. **Winkler DE**, Chapin KJ, Kueppers LM. 2016. Soil moisture mediates alpine life form and community productivity responses to warming. *Ecology* 97(6): 1553–1563. doi: 10.1890/15-1197.1 [link](#)

## Publications submitted

5. Yang Y, Klein JA, **Winkler DE**, Peng A, Lazarus BE, Germino MJ, Suding KN, Kueppers LM. *in review*. Experimental warming of Rocky Mountain alpine tundra enhances belowground production and shifts towards resource acquisition traits.
4. Massatti R, Shriver RK, **Winkler DE**, BA Richardson, JB Bradford. *in review*. Assessment of population genetics and climatic variability can refine climate-informed seed transfer guidelines.
3. Kattage J, ... **Winkler DE**, et al. *in review*. Twelve years of TRY – towards a third generation of plant trait data assimilation and sharing.
2. **Winkler DE** and Brooks E. *in review*. Tracing extremes across iconic desert landscapes: socio-ecological and cultural responses to climate change, water scarcity, and wildflower superblooms.
1. Jabis M, **Winkler DE**, Kueppers LM. *in revision*. Warming acts through earlier snowmelt to advance but not extend alpine community flowering.

## Reports and Other Publications

- 2019 Massatti R, **Winkler DE**, Reed SC, Duniway M, Munson S, Bradford J. Supporting the development and use of native plant materials for restoration on the Colorado Plateau (Fiscal Year 18 Report). BLM-USGS Annual Report 70204477. [link](#)
- 2018 **Winkler DE**, Conner JL, Huxman TE, Swann DE. 2018. The iconic saguaro cactus across its landscape. *Bulletin of the Ecological Society of America* 99(3): 329–339. [link](#)
- 2018 Swann, D., Conner J., **Winkler DE**, Harper C. Climate Change and the Saguaro Cactus. Saguaro National Park Natural Resource Report NPS/SAGU/NRR-2018/1583. [link](#)
- 2017 Brooks E and **Winkler DE**. September 2017. Adapting to Extremes: Desert Communities and Water Scarcity. Sierra Club Desert Report. [link](#)

- 2016 **Winkler DE**. 16 August 2016. Improving earth systems models through research in the tropics. PLOS Ecology Community Blog. [link](#)
- 2016 MacKenzie CM and **Winkler DE**. 15 August 2016. Common gardens for all your climate change needs. PLOS Ecology Community Blog. [link](#)
- 2016 **Winkler DE**. 12 August 2016. Redundancy in response to global change: ecosystem processes buffered by functional diversity. PLOS Ecology Community Blog. [link](#)
- 2016 **Winkler DE**. Forget the supervolcano, let's talk buckwheat! In: *The Wonder of It All: 100 Stories from the National Park Service*. pp. 8–10. San Francisco, Yosemite Conservancy.
- 2015 **Winkler DE**. Spring 2015. Citizen scientists and drought: expected and unexpected measures curtailing the invasive Sahara mustard. In: Wildflowers! newsletter. pp. 3–4. University of California Cooperative Extension.
- 2015 **Winkler DE**. 16 January 2015. When water chokes the desert: finding an unseen benefit in California's drought stricken deserts. Water UCI Graduate Team Blog. [link](#)

## Invited Talks

- 2019 **Winkler DE**, Reed S. Restoration in the age of extremes: adapting to change on our public lands. Intermountain Native Plant Summit IX. Boise, Idaho.
- 2019 **Winkler DE**, Reed S. The not so new challenge to restoring public lands in North American deserts. Society for Ecological Restoration – Southwest Chapter Annual Conference. Tucson, Arizona.
- 2019 **Winkler DE**. Desert dilemmas: plant responses to climate change, superblooms, and the cities and towns adapting to new extremes. New Mexico State University, Department of Biology Seminar Series, Las Cruces, New Mexico.
- 2019 **Winkler DE**, Grossiord C, Belnap J, Howell A, Ferrenberg S, Smith H, Reed S. Sparser but larger: phenological shifts compensate for reduced performance after 13 years of warming. Biennial Conference for Science and Management. Flagstaff, Arizona.
- 2019 **Winkler DE**, \*Lin MY, Delgadillo J, Chapin K, Huxman TE. Nowhere left to go: phenotypic shifts undercompensate warming and drought effects in a rare, endemic alpine cushion. Botany 2019. Invited Colloquium presentation. Tucson, Arizona.
- 2019 **Winkler DE**. A need for synthetic biology: a case study of invasives management in the Southwest. USGS Synthetic Biology Community of Practice working group meeting.

- 2019 **Winkler DE.** Towards resiliency: ecosystem recovery in response to change. Santa Barbara Botanic Garden. Santa Barbara, California.
- 2018 **Winkler DE.** Non-native invasions and native die-offs: the future of America's public lands. University of Richmond, Department of Biology Fall Seminar Series. Richmond, Virginia.
- 2018 **Winkler DE.** On partnerships and pests: collaborative discoveries on invasive threats and native mutualisms. Arizona-Sonora Desert Museum. Tucson, Arizona.
- 2018 **Winkler DE,** Brooks E. Browner or greener, crowded or empty: Biological and social extremes in desert communities. ESA INSPIRE session: Under-Preparation or Overreaction: The Science and Management of Extreme Events in Dryland Ecosystems. Ecological Society of America 103<sup>rd</sup> Annual Meeting. Oral Presentation and Panel Discussion. New Orleans, Louisiana.
- 2018 **Winkler DE,** Belnap J, Bradford J, Butterfield B, Massatti R, Pilmanis A, Duniway M, Munson S, Reed S. Beyond traditional ecological restoration on the Colorado Plateau. Colorado Plateau Native Plant Program Annual Meeting. Oral Presentation. Grand Junction, Colorado.
- 2018 **Winkler DE,** Belnap J, Bradford J, Butterfield B, Massatti R, Pilmanis A, Duniway M, Munson S, Reed S. Useable science for restoring drylands: synthesizing what is already known to facilitate applied research on the Colorado Plateau. Colorado Plateau Native Plant Program Annual Meeting. Poster Presentation. Grand Junction, Colorado.
- 2017 **Winkler DE.** A changing Sonoran Desert: the iconic saguaro cactus and the invasive Sahara mustard. Anza-Borrego Desert State Park. Oral Presentation. Borrego Springs, California.
- 2016 **Winkler DE.** Desert "extremes" and plant communities out of balance. Anza-Borrego Desert State Park Botany Society. Anza-Borrego Desert State Park. Borrego Springs, California.
- 2016 **Winkler DE,** Chapin KJ, Garmon D, Huxman TE. Mustard mayhem! Pinning the origin and pathways of a highly invasive species. Mathias Symposium 2016. Oral Presentation. Bodega Marine Laboratory. Bodega Bay, California.
- 2015 **Winkler DE,** Filippone CL, Hubbard JA, Huxman TE, Swann DE. With climate change, where does it all go? "Historic" plant species and seasonal water sources. National Park Service Young Leaders in Climate Change Professional Development Symposium. Oral Presentation. Department of the Interior. Washington, D.C.
- 2015 **Winkler DE,** Chapin KJ, Huxman TE, Garmon D. Determining the origins of the invasive Sahara mustard (*Brassica tournefortii*) in North America. San Diego Botanic Garden. Oral Presentation. Encinitas, California.

- 2015 Aguilar L, Berry M, Brauch J, Mata Lara M, Ogletree S, Fitzgerald Weber K, **Winkler DE**, Wally Wright C, Young D. Integration of watershed monitoring and citizen science at San Juan Island National Historical Park. Oral Presentation. San Juan Island, Washington.
- 2015 **Winkler DE**, Chapin KJ, Huxman TE, Garmon D. Enabling long term solutions for biocontrol of Sahara mustard (*Brassica tournefortii*) invasion in North American Deserts. The Biodiversity and Invasive Species Network. Oral Presentation. Borrego Springs, California.
- 2014 Aldred J, Bendana S, Bijak A, Devantier J, Fillippone C, Haserodt M, Lancaster H, Luna Golya G, Schook D, **Winkler DE**. Dynamics of rare and sensitive waters of Saguaro National Park. George Wright Society Park Break: Saguaro National Park. Oral Presentation. Tucson, Arizona.

### Contributed Presentations

- 2019 Samuel E, Mitchell R, Massatti R, **Winkler, DE**. Exploring local adaptation and climate resiliency of priority restoration species in northern New Mexico. Biennial Conference for Science and Management. Flagstaff, Arizona.
- 2019 Massatti R, **Winkler DE**, Kilkenny FF. Using patterns of genetic differentiation as the foundation for seed transfer guidelines. Biennial Conference for Science and Management. Flagstaff, Arizona.
- 2019 Reed SC, **Winkler DE**, Massatti R, Duniway M, Shostrand J, Bradford J. Sand dropseed and drought: an outdoor experiment to test plant plasticity and the role of seed source in seeding success under varying precipitation regimes. Biennial Conference for Science and Management. Flagstaff, Arizona.
- 2019 **Winkler DE**, Grossiord C, Belnap J, Howell A, Ferrenberg S, Smith H, Reed SC. Earlier plant growth compensates for reduced carbon fixation after 13 years of warming. Ecological Society of America 104<sup>th</sup> Annual Meeting. Oral presentation. Louisville, Kentucky.
- 2019 **Winkler DE**, Grossiord C, Belnap J, Howell A, Ferrenberg S, Smith H, Reed SC. Phenological advancement and trait plasticity compensates for reduced carbon fixation after 13 years of warming. Botany 2019. Oral presentation. Tucson, Arizona.
- 2018 **Winkler DE**, Backer D, Belnap J, Bradford J, Butterfield B, Copeland S, Duniway M, Faist A, Fick S, Jensen S, Kramer A, Mann R, Massatti R, McCormick M, Munson S, Olwell P, Parr S, Pfennigwerth A, Pilmanis A, Richardson B, Samuel E, See K, Young K, Reed SC. Beyond traditional ecological restoration on the Colorado

- Plateau. Ecological Society of America 103<sup>rd</sup> Annual Meeting. Oral Presentation. New Orleans, Louisiana.
- 2018 **Winkler DE**, Bon MC\*, Cristofaro M, Sforza RFH, Marini F, Augé M, Kashefi J, Smith L, Huxman TE. From genomic analysis of the rapid colonization of the exotic Sahara mustard (*Brassica tournefortii* Gouan 1773) in the United States to the search of its natural enemies. XV International Symposium on Biological Control of Weeds. Poster Presentation. Engelberg, Switzerland. \*presenting author
- 2018 Swann DE, Conver JL, **Winkler DE**, Foley T, O'Brien K. Science and management of saguaros in Saguaro National Park during the past 8 decades. Madrean Conference 2018. Oral Presentation. Tucson, Arizona.
- 2018 Bradford J, Butterfield B, **Winkler DE**, Munson S, Massatti R. Climate change and drought projections to inform dryland restoration on the Colorado Plateau. Colorado Plateau Native Plant Program Annual Meeting. Grand Junction, Colorado.
- 2018 DaBell JA, **Winkler DE**, Bradford J, Butterfield B. Data Synthesis for Restoration Practitioners and Ecologists: Preliminary Plant Trait Database Structure for the Colorado Plateau Native Plant Program. Colorado Plateau Native Plant Program Annual Meeting. Grand Junction, Colorado.
- 2017 **Winkler DE**, Conver JL, Huxman TE, Swann DE. Hydrologic refugia for establishment of the keystone saguaro cactus during drought. Ecological Society of America 102<sup>nd</sup> Annual Meeting. Oral Presentation. Portland, Oregon.
- 2017 **Winkler DE**, Chapin KJ, Kao M, Garmon D, Huxman TE. Local adaptation during the rapid expansion of the invasive Sahara mustard in the southwest. Ecological Society of America 102<sup>nd</sup> Annual Meeting. Oral Presentation. Portland, Oregon.
- 2017 Chapin KJ, **Winkler DE**, Agnarsson I. Island biogeography and ecological modeling of the amblypygid *Phrynus marginamaculatus* in the Florida Keys archipelago. Ecological Society of America 102<sup>nd</sup> Annual Meeting. Oral Presentation. Portland, Oregon.
- 2017 **Winkler DE**, Chapin KJ, Huxman TE. Introduction of Sahara mustard (*Brassica tournefortii*) in North America: Evolutionary and environmental mechanisms promoting invasive species success. The XIX International Botanical Congress. Oral Presentation. Shenzhen, China.
- 2017 **Winkler DE**, Amagai Y, Kaneko M, Huxman TE, Kudo G. Bamboo invasion above and below a treeline ecotone: seasonal soil moisture dry-down rates and high stress tolerance promote invasion success of *Sasa kurilensis*. The XIX International Botanical Congress. Oral Presentation. Shenzhen, China.
- 2017 **Winkler DE**, Filippone C, Hubbard JA, Swann D. Seasonal water use of Saguaro cacti (*Carnegiea gigantea*) and their nurses. George Wright Society Biennial Conference. Oral Presentation. Norfolk, Virginia.



- 2017 **Winkler DE**, Chapin KJ, Huxman TE. The unusual population structure of a pervasive invasive: Sahara mustard in National Parks. George Wright Society Biennial Conference. Oral Presentation. Norfolk, Virginia.
- 2017 Brooks E, **Winkler DE**. Drought at Extremes: Connecting Biological, Socio-Economic, and Cultural Extremity in a Water Dependent Ecology. Oral presentation as part of panel titled: Water Traditions and New Directions for Drought: Risk and Disaster in Southern California Water. Society for Applied Anthropology Annual Meeting. Santa Fe, New Mexico.
- 2016 **Winkler DE**, Chapin KJ, Garmon D, Huxman TE. Using population genomics to uncover the rapid colonization of Sahara mustard (*Brassica tournefortii*) in the United States. California Invasive Plant Council Symposium. Oral Presentation. Tenaya Lodge at Yosemite, California (**1<sup>st</sup> place Student Paper Competition**)
- 2016 Sforza RFH, Augé M, Marini F, Bon MC, **Winkler DE**, M Cristofaro, L Smith. Biocontrol of Sahara mustard: An updated on exploration in the native range. California Invasive Plant Council Symposium. Oral Presentation. Tenaya Lodge at Yosemite, California.
- 2016 **Winkler DE**, Chapin KJ, Garmon D, Huxman TE. Genomic analyses of the rapid colonization of Sahara mustard in the US. Ecological Society of America 101<sup>st</sup> Annual Meeting. Oral Presentation. Fort Lauderdale, Florida.
- 2016 **Winkler DE**, Brooks E, Huxman TE, Olson VA. Extremes of Borrego: biological and social life in a changing desert ecosystem. Ecological Society of America 101<sup>st</sup> Annual Meeting. Poster Presentation. Fort Lauderdale, Florida.
- 2016 **Winkler DE**, Chapin KJ, Garmon D, Huxman TE. Population genomics and the rapid colonization of Sahara mustard (*Brassica tournefortii*) in the United States. Botany 2016. Oral Presentation. Savannah, Georgia.
- 2015 Jabis M, **Winkler DE**, Kueppers LM. Warming contracts flowering phenology in an alpine ecosystem. American Geophysical Union Fall Meeting. Poster Presentation. San Francisco, California.
- 2015 **Winkler DE**, Goulden ML, Kudo G, Kueppers LM, Huxman TE. The complex future of parks: effects of climate change on invasive species in protected ecosystems. George Wright Society Biennial Conference. Oral Presentation. Oakland, California.
- 2015 Swann, D, Aldred J, Bendana S, Bijak A, Devantier J, Fillippone C, Haserodt M, Lancaster H, Luna Golya G, Schook D, **Winkler DE**. Park Break Study of vital resources in Saguaro National Park. George Wright Society Biennial Conference. Oral Presentation. Oakland, California.
- 2015 **Winkler DE**. What goes up must come down: morphophysiological variation in an invasive Japanese dwarf bamboo. Ecology and Evolutionary Biology Graduate Student Symposium. Oral Presentation. University of California, Irvine.

- 2014 **Winkler DE**, Huxman TE, Kudo G. Morphological and physiological compensation promote climate-induced invasions above and below treeline. American Geophysical Union Fall Meeting. Poster Presentation. San Francisco, California.
- 2014 **Winkler DE**, Kudo G. Invasive species biology in a changing climate: insights from deserts to alpine tundra. Japan Society for the Promotion of Science Summer Symposia. Poster Presentation. Sokendai, Japan.
- 2013 **Winkler DE**, Kueppers LM. Productivity responses of an alpine plant community to climate changes: A multi-scale approach. Ecological Society of America 98<sup>th</sup> Annual Meeting. Oral Presentation. Minneapolis, Minnesota.
- 2012 **Winkler DE**, Kueppers LM. Plant Cover Responses to Simulated Climate Change in Alpine Plant Species. Ecological Society of America 97<sup>th</sup> Annual Meeting. Poster Presentation. Portland, Oregon.
- 2008 **Winkler DE**, Smith R. Seasonal reproductive potential and iteroparity of the burying beetle (Coleoptera: Silphidae). Summer Research Symposium. Rocky Mountain Biological Laboratory. Oral Presentation. Gothic, Colorado.

### **Organized Meetings, Workshops, and Conference Sessions**

- 2019 8<sup>th</sup> World Conference on Ecological Restoration (Society for Ecological Restoration), Cape Town, South Africa. Workshop co-organizers Shackelford N and **Winkler DE**. The Global Arid Zone Project – Pooling knowledge and data gathering for global progress in arid and semi-arid restoration.
- 2019 15<sup>th</sup> Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region. Northern Arizona University, Flagstaff, Arizona. Special Symposium co-organizers Massatti R, Pilmanis A, Grant J, **Winkler DE**, Bradford J. Restoration and conservation across Colorado Plateau drylands: concerted activities of the Colorado Plateau Native Plant Program and partners.
- 2019 Ecological Society of America Annual Meeting, Louisville, Kentucky. INSPIRE session organizer and moderator **Winkler DE**, co-organizer Faist A. Interacting Forces: Water at Local to Global Scales and its Influence on Ecological Systems in the Southwest.

### **Grants & Awards**

*Current (\$122,577 as lead PI)*

2018–19 U.S. Fish & Wildlife Service research grant, co-Lead PI w/ R. Massatti (\$50,101)

2018–21 National Park Service Air Resources Division research grant, PI; co-PI S.C. Reed (\$102,457)

2016–18 Tucson Cactus and Succulent Society Research Grant (\$2,000)

2016–18 Western National Parks Association Research Grant, co-Lead PI w/ D. Swann (\$7,476)

*Completed (\$91,538 as lead PI)*

2017 American Alpine Club Research Grant (\$500)

2017 Forrest Shreve Student Research Fund, Ecological Society of America (\$1,200)

2017 Graduate Assistance in Areas of National Need Research Grant (\$2,075)

2016 Newkirk Graduate Student Fellowship, Newkirk Center for Science & Society (\$6,889)

2016 Explorers Club Exploration Fund – Mamont Scholar (\$1,400)

2016 Graduate Assistance in Areas of National Need Research Grant (\$2,146)

2015–17 Tubb Canyon Desert Conservancy research grant (\$60,000)

2014 Howie Wier Memorial Conservation Grant, Anza-Borrego Foundation (\$1,500)

2014 Hardman Native Plant Award, California Native Plant Society (\$550)

2014 Joshua Tree National Park Robert Lee Graduate Student Research Grant (\$3,752)

2014 Water UCI / Jet Propulsion Laboratory Research Fellowship (\$5,000)

2014 Mayhew Graduate Research Award, Boyd Deep Canyon Desert Res. Center (\$1,166)

2014 Annetta Carter Memorial Fund research grant, California Botanical Society (\$1,000)

2014 UC MEXUS Student and Postdoctoral Research Small Grant (\$1,500)

2014 Mildred E. Mathias Graduate Student Research Grant (\$2,860)

**Other Awards and Academic Fellowships**

2017 Public Impact Distinguished Fellowship, UC Irvine (\$12,000)

2017 Ayala School of Biology Sciences Graduate Fellowship Award, UC Irvine (\$1,000)

- 2017 Physiological Ecology Section Travel Award, Ecological Society of America (\$500)
- 2017 Steele/Burnand Anza-Borrego Desert Research Center Fellowship (\$22,139)
- 2017 International Botanical Congress Award, NSF/Botanical Society of America (\$2,400)
- 2017 George Melendez Wright Student Travel Scholarship, George Wright Society (\$1,175)
- 2016 GAANN – Graduate Assistance in Areas of National Need Fellowship (\$32,476)
- 2016 GAANN – Graduate Assistance in Areas of National Need Fellowship (\$13,600)
- 2016 Real Brown Travel Award, Ecological Society of America (\$300)
- 2016 NCAR Graduate Workshop on Environmental Data Analytics Award
- 2016 1<sup>st</sup> Place Student Paper Competition, California Invasive Plant Council (\$250)
- 2016 Associated Graduate Students Travel Scholarship, UC Irvine (\$400)
- 2016 PLOS Ecology Reporting Fellowship (\$500)
- 2016 Associated Graduate Students Travel Scholarship, UC Irvine (\$400)
- 2016 Mathias Symposium Award, UC Natural Reserve System (\$600)
- 2015 ARCS Award Finalist, UC Irvine School of Biological Sciences
- 2015 COTE Cluster of Excellence Summer School Award, U. of Bordeaux, France (\$3,000)
- 2015 California Drought Scholarship, Water UCI & AGU Chapman Conference (\$325)
- 2015 George Melendez Wright Student Travel Scholarship, George Wright Society (\$1,150)
- 2015 Associated Graduate Students Travel Scholarship, UC Irvine (\$400)
- 2015 George Wright Society Park Break Fellowship (\$3,000)
- 2015 UC Irvine Data Science Initiative Graduate Fellowship, UC Irvine (\$6,039)
- 2015 Young Leaders in Climate Change Fellowship, National Park Service (\$15,000)
- 2014 Anza Borrego Foundation Student Travel Scholarship (\$190)
- 2014 School of Biological Science Travel Grant, UC Irvine (\$500)
- 2014 George Wright Society Park Break Fellowship (\$3,000)
- 2014 School of Biological Sciences Fellowship, UC Irvine (\$11,524)

- 2014 East Asia and Pacific Summer Institute Fellowship, NSF (\$11,748)
- 2014 Steele/Burnand Anza-Borrego Desert Research Center Fellowship (\$22,139)
- 2013 School of Biological Sciences Fellowship, UC Irvine (\$3,198)
- 2012 Graduate Student Researcher Fellowship, UC Merced (\$9,978)
- 2012 Graduate Division Fellowship, UC Merced (\$3,885)
- 2012 Environmental Systems Graduate Bobcat Fellowship, UC Merced (\$3,750)
- 2011 Star Award, US National Park Service (\$750)
- 2009 AmeriCorps Education Award (\$1000)
- 2008 University Honors Scholar, New York University
- 2008 Rocky Mountain Biological Laboratory Fellowship (\$5,000)
- 2004–08 New York Lottery Leaders of Tomorrow Scholarship (\$4,000)
- 2004–08 New York University Academic Scholarship (\$60,000)
- 2004–08 New York University, Dean’s List
- 2004 New York University, Residence Hall Leadership Award

## Teaching experience

- 2018 Guest Lecturer, Invasions in Biology, University of Richmond (BIOL199, 4 credits). *Letters to undergraduates: my guide to a successful career in field ecology.*
- 2017 Teaching Assistant, Ecology and Evolutionary Biology Seminar and Discussion Section, UC Davis (EVE 198, 1–2 credits).
- 2015 Guest Lecturer, Global Sustainability, UC Irvine (US13B, 4 credits). *Global climate change, the carbon budget, and carbon sequestration.*
- 2013 Teaching Assistant, Physiological Plant Ecology, UC Irvine (E127, 4 credits).
- 2013 Guest Lecturer, Physiological Plant Ecology, UC Irvine (E127, 4 credits). *Plant allocation and growth strategies*
- 2012 Teaching Assistant, Life: Concepts and Issues, UCLA (LS15, 4 credits)

- 2012 Guest Lecturer, Ecosystems of California, UC Merced (ESS050, 4 credits). *Urban ecosystem structure and the heat-island effect*
- 2012 Teaching Assistant, Ecosystems of California, UC Merced (ESS050, 4 credits)
- 2011 Teaching Assistant, Biological Anthropology, UC Merced (ANTH005, 4 credits)

## Student Mentoring

### UC Irvine undergraduate research (Bio Sci 199 credits):

- 2014–16 Michelle Yu-Chan Lin, 10 credits + Summer Undergraduate Research Fellowship Program Awardee + Excellence in Research Honors + Robert Ernst Prize for Excellence in Research in Plant Biology
- 2014–16 Melanie Kao, 12 credits + Excellence in Research Honors
- 2015–16 May Li, 10 credits
- 2014–15 Jun Dong, 6 credits
- 2016 Anh Dang, 3 credits
- 2016 Angela Choi, 3 credits
- 2016 Aarohi Desai, 5 credits
- 2016 Herman Kooner, 3 credits
- 2016 Khanh Phan, 2 credits

### UC Irvine undergraduate and local high school\* research volunteers

- 2016 Herman Kooner
- 2016 Jeffrey Vozzo
- 2015 Keon Rabbani\*
- 2014 Alyssa Collins
- 2014 Phuongthao Nguyen

### Conference mentoring

- 2019 Emily Swindell, PLANTS program mentor, Botany meeting, Tucson, Arizona
- 2016 Vincent Oliveras, SEEDS program mentor, Ecological Society of America meeting, Fort Lauderdale, Florida
- 2016 Liz Sampson, PLANTS program mentor, Botany meeting, Savannah, Georgia

## Service & Outreach

### Editorial positions and accomplishments

- 2019–present Review Editor, *Frontiers in Ecology and Evolution*
- 2016–2018 Reviewing Editor, *Applications in Plant Sciences* (2016 – 2018: 21 manuscripts reviewed)
- 2018 Top 1% of reviewers in Plant & Animal Science, Publons.com, 2018: [link](#)

**Peer-reviewer**

*American Journal of Botany* (2019: 1 manuscript; 2018: 1 manuscript);  
*Applications in Plant Sciences* (not as editor; 2018: 3 manuscripts);  
*Arctic, Antarctic, and Alpine Research* (2019: 2 manuscripts; 2015: 1 manuscript);  
*Biological Invasions* (2017: 1 manuscript);  
*Climate* (2019: 1 manuscript);  
*Ecology* (2019: 1 manuscript; 2018: 2 manuscripts);  
*Ecology and Evolution* (2019: 2 manuscripts);  
*Ecological Monographs* (2019: 2 manuscripts, 2018: 2 manuscripts);  
*Ecosphere* (2016: 2 manuscripts, 2015: 1 manuscript);  
*Ecosystems* (2018: 1 manuscript);  
*Forests* (2019: 5 manuscripts; 2018: 2 manuscripts);  
*Frontiers in Microbiology* (2019: 1 manuscript);  
*Global Change Biology* (2018: 1 manuscript);  
*Global Ecology and Biogeography* (2019: 1 manuscript);  
*Global Ecology and Conservation* (2019: 1 manuscript);  
*International Journal of Environmental Research and Public Health* (2017: 2 manuscripts);  
*Invasive Plant Science and Management* (2019: 1 manuscript);  
*Journal of the Torrey Botanical Society* (2019: 2 manuscripts; 2018: 1 manuscript);  
*New Phytologist* (2018: 1 manuscript),  
*PeerJ* (2018: 1 manuscript);  
*Plant Ecology & Diversity* (2018: 1 manuscript);  
*Plant and Soil* (2013: 1 manuscript, 2012: 1 manuscript);  
*Plants* (2019: 1 manuscript);  
*PLOS One* (2017: 1 manuscript);  
*Rangeland Ecology and Management* (2019: 1 manuscript);  
*Silva Fennica* (2019: 1 manuscript);  
*Symmetry* (2018: 1 manuscript).

**Leadership & service positions**

2019– Chair, Southwestern Chapter, Ecological Society of America  
 2019– Co-Lead, Global Arid Zone Project (GAZP) database and international coordinated experiment  
 2019– Working group member, USGS Synthetic Biology Community of Practice working group.  
 2019 Ecological Society of America Southwestern Chapter Student Travel Awards reviewer  
 2018–19 Vice Chair, Southwestern Chapter, Ecological Society of America  
 2018– Shreve and Whittaker Awards Committee member, Ecological Society of America, includes: Forrest Shreve Student Research Award, The Whittaker Distinguished Ecologist Award, and The Whittaker Travel Award  
 2018 North American Congress for Conservation Biology, conference abstracts reviewer

- 2017 Ecological Society of America Student Section Travel Awards reviewer
- 2017 Biodiversity Collections Network (BCoN) Research Coordination Network workshop participant, American Institute of Biological Sciences, Washington, D.C.
- 2016–17 Master Plant Science Team mentor and liaison for the PlantingScience elementary school online program
- 2016 North American Congress for Conservation Biology, conference abstracts reviewer
- 2015–16 Graduate Admissions Committee, UC Irvine Ecology & Evolutionary Biology
- 2015 U.S. National Park Service Young Leader in Climate Change

### Conference session chair

- 2019 Ecological Society of America meeting (COS 3: Climate Change)
- 2019 Botany 2019 meeting (ECO4 Ecology 4: Plant, Population, Community and Ecosystem Response to Environmental Stressors and Change)
- 2018 Ecological Society of America meeting (COS 3: Climate Change I)
- 2017 George Wright Society Conference on Parks and Protected Areas (OCC 64: Understanding Aquatic & Riparian Invasive Species and Outbreak Events)
- 2016 Ecological Society of America meeting (COS 46: Invasion: Dynamics, Population Processes)
- 2015 George Wright Society Conference on Parks and Protected Areas (OCC 208: Responding to Invasive Plant Species).

### Media and Press

- 2019 NPR KJZZ [link](#)
- 2019 ScienceDaily [link](#)
- 2019 Tucson Sentinel [link](#)
- 2019 Environmental News Network [link](#)
- 2019 Phys.org [link](#)
- 2019 University of Arizona News [link](#)
- 2019 Skeptical Science [link](#)
- 2018 Earth.com news [link](#)
- 2018 Tucson Sentinel [link](#)
- 2018 AZ Big Media [link](#)
- 2018 Science Moab radio/podcast interview [link](#)
- 2018 The FEET blog [link](#)
- 2017 Ecological Society of America [link](#)
- 2017 Phys.org [link](#)
- 2017 Science Newsline [link](#)
- 2017 Environmental News Network [link](#)
- 2016 Guest Instagrammer for American Geophysical Union (June 2016: [link](#))



## Training, certifications & study abroad

- 2019 Ecological Society of America Science Policy Workshop, Northern Arizona University, Flagstaff, AZ
- 2018 IsoCamp: Stable Isotope Biogeochemistry and Ecology, short course, University of Utah, UT (3 graduate-level coursework credits earned)
- 2018 Wilderness First Aid, American Safety and Health Institute, Canyon Country Discovery Center
- 2018 Photosynthesis Training Course, LI-COR, Lincoln, NE
- 2016 3<sup>rd</sup> Annual Graduate Workshop on Environmental Data Analytics, NCAR, Boulder, CO
- 2016 Safe Zone Training, UC Irvine LGBT Resource Center
- 2015 Next Generation Sequence Data Analysis, UC Irvine Data Science Initiative short course
- 2015 Introduction to Linux, UC Irvine Data Science Initiative short course
- 2015 COTE Summer School: Biodiversity and Global Change, U. of Bordeaux, France
- 2015 CPR & AED certified, National Park Service, Tucson, Arizona
- 2014 Summer Abroad, Hokkaido University, Sapporo, Japan
- 2013 Wilderness First Aid, Remote Medical, Institute of Arctic and Alpine Research
- 2011 Wilderness First Responder, Wilderness Medical Associates, University of Arizona
- 2011 High Occupancy Vehicle Training, University of Arizona
- 2009 Wildland Firefighter Red Card Certification (Type 2), Bureau of Indian Affairs
- 2009 Training, All Terrain Vehicle Safety Institute, Basic Safety Training
- 2005 Semester Abroad, New York University in Florence, Italy
- 2005 Semester Abroad, New York University in Paris, France

## Professional Affiliations

- 2017– Society for Ecological Restoration
- 2016– Botanical Society of America
- 2011– Ecological Society of America
- 2015–17 California Invasive Plant Council
- 2014–17 California Native Plant Society
- 2014–17 U.S. Biosphere Reserves Association
- 2014–17 George Wright Society
- 2014–16 American Geophysical Union
- 2013–16 California Botanical Society
- 2013–16 Southern California Botanists
- 2012–14 Sigma Xi
- 2011–14 American Association for the Advancement of Science (AAAS) Science Program for Excellence in Science
- 2008–09 Member, Rocky Mountain Biological Laboratory