

# Alejandra Martínez Berdeja, Ph.D.

## Curriculum Vitae

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### Education

- Ph.D., 2014. Botany and Plant Sciences, University of California, Riverside  
Dissertation: “Ecological significance of seed retention and timing of seed dispersal to seasonal rainfall variability in *Chorizanthe rigida*, a serotinous winter desert annual”.  
Advisor: Exequiel Ezcurra
- B.S., 2005. Biology, Universidad Nacional Autónoma de México (UNAM)  
Thesis (2006): “Early growth analysis of three endangered cacti (*Mammillaria pectinifera*, *Obregonia denegrii* and *Coryphantha werdermannii*) under controlled humidity and radiation conditions”.  
Advisor: Ma. Teresa Valverde
- B.A., 2004. Law, Instituto Tecnológico Autónoma de México (ITAM)  
Thesis (2011): “Environmental Complaints before the National Human Rights Commission as an instrument that promotes environmental public participation”.  
Advisor: Miguel Sarre

### Employment History

#### Academic:

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|-----------|---|
| 2021      | Adjunct Instructor, University of California, Riverside, Department of Botany and Plant Sciences (June – July 2021)                       |
| 2020      | Postdoctoral Research Affiliate, University of California, Davis, Department of Evolution and Ecology, Schmitt Lab (Sept. 2019 – present) |
| 2019      | Postdoctoral Scholar, University of California, Davis, Department of Evolution and Ecology, Schmitt Lab (Feb. – Sept.)                    |
| 2018      | Postdoctoral Research Affiliate, University of California, Davis, Department of Evolution and Ecology, Schmitt Lab                        |
| 2014-2017 | Postdoctoral Scholar, University of California, Davis, Department of Evolution and Ecology, Schmitt Lab                                   |

- 2011 Teaching Assistant for California's Cornucopia, Department of Botany and Plant Sciences, University of California, Riverside
- 2005 Substitute Teacher (Biology), Modern American School, Mexico

### **Consulting:**

- 2008 Research Assistant to Prof. Irene Pisanty, National Commission for the Knowledge and Use of Biodiversity (CONABIO), Mexico.
- 2008 Research Assistant to Dr. Lucía Almeida, Global Environmental Fund (GEF, World Bank), Mexican Environmental Agency (SEMARNAT), Mexico.
- 2006-2007 Environmental Law and Impact Assessment Consulting, Vera, Carvajal & Sosa, S. C. Law Firm, Mexico City.

### **Grants, Honors, and Awards**

- 2019 New Phytologist Next Generation Scientists 2019 - travel contribution
- 2019 University of California Davis Postdoctoral Scholars Association Travel Grant
- 2015 CONACyT Postdoctoral Fellowship
- 2014 CONACyT Postdoctoral Fellowship
- 2014 Graduate Student Achievement Award, University of California, Riverside
- 2012 Dissertation Year Program Fellowship, University of California, Riverside
- 2011 California Desert Research Grant, The Community Foundation
- 2008 CONACyT PhD Scholarship, Mexican National Science and Technology Council

### **Peer-Reviewed Publications**

**Martínez-Berdeja, A.**, Stitzer, M. C., Taylor, M. A., Okada, M., Ezcurra, E., Runcie, D., and Schmitt, J. 2020. Functional variants of *DOG1* control seed chilling responses and variation in seasonal life-history strategies in *Arabidopsis thaliana*. *PNAS*, DOI: 10.1073/pnas.1912451117

**Martínez-Berdeja, A.**, Hamilton, J. A., Bontemps, A., Schmitt, J., and Wright, J. W. 2019. Evidence for population differentiation among Jeffrey and Ponderosa pines in survival, growth and phenology. *Forest Ecology and Management*, 434: 40 – 48.

Conlisk, E., Swab, R., **Martínez-Berdeja, A.**, Daugherty, M. P. 2016. Post-fire recovery in coastal sage scrub: seed rain and community trajectory. *PLoS ONE*, 11(9): e0162777. doi:10.1371/journal.pone.0162777

**Martínez-Berdeja, A.**, Ezcurra, E. and Torres, M. 2015. Morphological variability in propagules of a desert annual as a function of rainfall patterns at different temporal and

spatial scales. **Functional Ecology**, 29: 1260 – 1267.

**Martínez-Berdeja, A.**, Ezcurra, E. and Sanders, A. C. 2015. Delayed seed dispersal in North American deserts. **Madroño**, 62: 21 – 32.

**Martínez-Berdeja, A.**, Torres, M., Altshuler, D. L. and Ezcurra, E. 2014. Hydration history and attachment morphology regulate seed release in *Chorizanthe rigida* (Polygonaceae), a serotinous desert annual. **American Journal of Botany**, 101 (7): doi 10.3732/ajb.1400120

**Martínez-Berdeja, A.**, Pietrasiak, N., Tamase, A., Ezcurra, E. and Allen, E. B. 2013. Living where others dare not: Microhabitat distribution in *Chorizanthe rigida*, a serotinous desert annual. **Journal of Arid Environments**, 97: 120 - 126.

Holt, J. S., Welles, S. R., Silvera, K., Heap, I. M., Heredia, S. M., **Martínez-Berdeja, A.**, Palenscar, K. T., Sweet, L. C., and Ellstrand, N. 2013. Taxonomic and life history bias in herbicide resistant weeds: implications for deployment of resistant crops. **PLoS ONE** 8(9):e71976.

**Martínez-Berdeja, A.** and Valverde, T. 2008. Growth response of three globose cacti to radiation and soil moisture: an experimental test of the mechanism behind the nurse effect. **Journal of Arid Environments**, 72: 1766 – 1774.

### Manuscripts in Preparation

**Martínez-Berdeja, A.**, Okada, M., Cooper, M. D., Runcie, D. E., Burghardt, L. T., and Schmitt, J. Germination timing and soil substrate determine the effect of precipitation variability on *Arabidopsis* fitness in a mediterranean environment. *In prep* for *New Phytologist*.

Fournier-Level, A., Taylor, M. A., Paril, J., **Martínez-Berdeja, A.**, Stitzer, Cooper, M., Roe, and J., Schmitt, J. Adaptive significance of flowering time plasticity across natural seasonal environments. *In review* for *New Phytologist*.

Caton-Darby, M. A., Taylor, M. A., LaDoux, T., Schmitt, J., and **Martínez-Berdeja, A.** Standing genetic variation interacts with droughts tolerance to predict germination fractions under increasing inductive temperature in *Mimulus bigelovii*, a California desert winter annual. *In prep* for *American Journal of Botany*.

**Martínez-Berdeja, A.**, and Ezcurra, E. Desert annuals plant architecture and micro-scale temperature gradient in cold and warm deserts. Submitted to *Journal of Arid Environments*.

### Other publications

Ezcurra, E., **Martínez-Berdeja, A.**, and Villanueva-Almanza, L. 2020. Chapter 3: The Evolution of North American Deserts and the Uniqueness of Cuatro Ciénegas. In: Mandujano, M. C., Pisanty, I., and Eguiarte, L. E. (Eds.), *Plant Diversity and Ecology in the Chihuahuan Desert, Cuatro Ciénegas Basin An Endangered Hyperdiverse Oasis*, Springer.

Ezcurra, E., Mellin, E., and **Martínez-Berdeja, A.** Hot Deserts. In: eLS (Citable reviews in the Life Sciences). John Wiley & Sons Ltd, Chichester. <http://www.els.net> [doi: 10.1038/npg.els.0003178].

**Martínez-Berdeja, A.** and Ezcurra, E. What can *Chorizanthe rigida* propagule morphology tell us about rainfall variability and geomorphology in desert ecosystems? Science Newsletter. Mojave National Preserve & Sweeney Granite Mountains Desert Research Center, National Park Service. April, 2015.

### **Professional Presentations**

- 2019 *DOG1* functional variation is associated with flowering and germination syndromes that determine life-history variation in *Arabidopsis thaliana*. Poster presented at the New Phytologist Next Generation Scientists 2019 Symposium. (University College Dublin, Dublin, Ireland)
- 2019 Functional variants of *DOG1* control seed chilling responses and drive variation in seasonal life history strategies in *Arabidopsis thaliana*. Oral presentation at the Evolution Meeting (Providence, RI).
- 2019 *DOG1* functional variation is associated with flowering and germination syndromes that determine life-history variation in *Arabidopsis thaliana*. Poster presented at the 3<sup>rd</sup> UK Plant Evolution Meeting. (Kew Royal Botanic Gardens, London, UK)
- 2015 Effects of variation at flowering and dormancy loci on life history and fitness responses of *Arabidopsis thaliana* to different precipitation regimes. Oral presentation at the Ecological Society of America Meeting (Baltimore, MD)
- 2013 Morphological variability and divergence in seed characters of a winter desert annual (*Chorizanthe rigida*) across a precipitation gradient. Oral presentation at the Ecological Society of America Meeting (Minneapolis, MN)
- 2012 Desert seasonal rainfall variability and seed retention in *Chorizanthe rigida*. Oral presentation at the Ecological Society of America Meeting (Portland, OR)
- 2011 Ecological significance of serotiny and timing of seed dispersal in desert regions with varying seasonal rainfall distribution. Oral presentation at the Ecological Society of America Meeting (Austin, TX)
- 2005 Early growth analysis of three endangered cactus species. Oral presentation at CITES Cactus Work Group, 5<sup>TH</sup> Meeting (Oaxaca, Mexico)
- 2005 Inter-American Human Rights Court, Moot Court Competition (Washington, D.C.)
- 2005 Phillip Jessup International Law Moot Court Competition (Mexico City, Mexico)

### **Service**

- 2009-2013 Volunteer: California Invasive Plant Council (Cal-IPC) Student Chapter, UC Riverside.

- 2010-2011 Representative: Botany and Plant Sciences, Graduate Student Association, UC Riverside.
- 2002-2003 Social Service Volunteer: National Institute of Ecology (INE), Mexico.

### **Additional Education and Training**

Fall CEQA Basics Workshops 2011 - Riverside. Topic: Fundamentals of California Environmental Quality Act and the State Guidelines. Organized by the Association of Environmental Professionals (AEP).

Watershed restoration for Sustainable Development. Forever Water Program, Nov. 2004 – Organized by Alternativas y Participación Social, A. C.

International Seminar on “Water and waste regulation in Mexico, U. S. and Canada and transboundary challenges”, Aug. 2004. Organized by the Mexican Law Bar, Lawyers College.

### **Membership in Professional Organizations**

Ecological Society of America (ESA) 2011 – 2015

Society for the Study of Evolution (SSE) 2019 – 2020

### **Languages**

Fluent in English and Spanish, basic proficiency in French

### **Computer Skills**

R software, Gradient Forest analysis, GEMMA for GWAS, UNIX for bioinformatics