

**Elizabeth Makings**  
3931 E. Carson Road  
Phoenix, Arizona 85042  
Cell: 623/692-4405 Work: 480/965-6162  
elizabeth.makings@asu.edu

**Professional interests:** I am a botanist with expertise in Southwestern floristics. I am particularly interested in the diversity, distribution, and evolutionary history of plants and applying this knowledge toward teaching, conservation, and outreach.

### **Appointments**

2004-present, Vascular Plant Herbarium Collections Manager, School of Life Sciences, Arizona State University

2004-2010, Botanist, Terrestrial Ecological Unit Inventory, Southwestern Region 3, United States Forest Service

### **Education**

M.S., Plant Biology, Arizona State University, 2003. Thesis: Flora and Vegetation of the San Pedro Riparian National Conservation Area, Cochise County, Arizona.

B.A., Environmental, Population, and Organismal Biology, University of Colorado-Boulder, 1988.

### **Courses that I teach**

“Flora of Arizona”

“Sonoran Desert Field Botany”

“Grasses of Arizona”

### **Authored books**

Brown, D.E. and E. Makings. 2014. Grasslands of North America. *Desert Plants* Vol. 29(2):160 pp.

### **Selected Journal articles**

Stromberg, J. C., E. Makings, D. E. Brown, and D. Wolkis. In press. Conservation of the cienega endemic, *Eryngium sparganophyllum* Hemsl. (Apiaceae). *Southwestern Naturalist*.

Makings, E., E., T. R. Van Devender, A. L. Reina-Guerrero, and S. F. Hale. 2018. A Preliminary Flora of the Sierra Juriquipa, Sonora, Mexico. *Arizona Native Plant Society: The Plant Press* 41(2): 33-40.

Makings, E., J. P. Soves. 2018. Solanaceae Part Six: *Nicotiana* L. Tobacco.

Makings, E. 2018. In Memoriam: Donald J. Pinkava (29 August 1933–25 July 2017). *Journal of the Botanical Research Institute of Texas* 12(1): 377-385.

McNair, D. M., J. Fox, R. Lindley, S. D. Carnahan, M. E. Taylor, and E. Makings. 2018. Identifying *Abutilon parishii* (Malvaceae) and similar species in Arizona and Sonora. *Phytoneuron* 2018-84:1-12.

Brown, D.E., E. Makings, A. Neils, D. Jenness, R. L. Glinski, R. D. Babb, M. B. Traphagen. 2017. Biotic Resources of the Lower Santa Cruz River Flats, Pinal County, Arizona. *Desert Plants* 32(2):51 pp.

Darrow, K. and E. Makings. 2016. New Records for the Flora of Arizona: *Hydrocotyle umbellata* (Araliaceae), *Bryophyllum daigremontianum* (Crassulaceae), *Malvastrum coromandelianum* (Malvaceae). *Canotia* 12:86-89.

Stromberg, J.S., E. Makings, A. Eyden, R. Madera, J. Samsky III, F. Coburn, and B. Scott. 2016. Provincial and cosmopolitan: floristic composition of a dryland urban river. *Urban Ecosystems* 19:429-453.

Bateman, H. L., J. C. Stromberg, M. J. Banville, E. Makings, B. D. Scott, A. Suchy and D. Wolkis 2015. Novel water sources restore plant and animal communities along an urban river. *Ecohydrology*, 8:792–811.

Makings, E. 2013. Vegetation and Flora of the St. David and Lewis Springs Cienegas, Cochise County, Arizona. In L. Collins, L. Eskew, J. Gottfried, et al., technical coordinators, *Biodiversity and management of the Madrean Archipelago III: Merging Science and Management in a Rapidly Changing World*. Tucson, AZ. Gen. Tech Rep. RM-GTR Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Makings, E., L. Butler, and M. Chew, J. Stromberg. 2011. ‘Found then Drowned’ Noteworthy Collections from Tempe Towne Lake Riverbed. *Desert Plants* 27(1):3-10.

Allred, K., E. Makings. 2010. Plant Distribution Reports, *Hackelochloa granularis*. *New Mexico Botanist* 51:3.

Bates, S. T., F. Farruggia, E. Gilbert, R. Gutierrez, D. Jenke, E. Makings, E. Manton, D. Newton and L. R. Landrum. 2009. Solanaceae, Potato Family, Part Two: key to the genera and *Solanum* L. *Canotia* 5(1):1-16.

Makings, E. 2006. Flora of the San Pedro Riparian National Conservation Area. *Desert Plants* 22(2): 104 pp.

Daniel, T. F., E. Makings, M. Chamberlain. 2005. Additions to the Acanthaceae of Arizona. *Proceedings of the California Academy of Sciences* 56:88-90.

Stromberg J. C., K. J. Bagstad, J. Leenhouts, S. J. Lite, E. Makings. 2005. Effects of stream flow intermittency on riparian vegetation of a semiarid region river (San Pedro River, Arizona). *River Research and Applications* 21:925-938.

Makings, E. 2002. Noteworthy collections, Arizona: *Mancoa pubens* (Brassicaceae) *Madrono* 49(2):132-133.

### **Contributed chapters**

Stromberg, J., K. Bagstad, E. Makings. 2009. Floristic Diversity (of the San Pedro River), pp. 89-104. In Stromberg, J. and B. Tellmann: Ecology and Conservation of the San Pedro River. The University of Arizona Press. 529 pp.

### **Published reviews**

Makings, E. 2010. Review of “Field Guide to Forest and Mountain Plants of Northern Arizona” by J.D. Springer, M.L. Daniels, and M. Nazaire with forward by Bruce Babbitt. *Canotia* Vol. 6(1): 44-46.

Makings, E. and J. Stromberg. 2003. Review of D. S. Correll and H. B. Correll, "Aquatic and Wetland Plants of Southwestern United States." *Native Plants Journal*.

### **Ad-hoc manuscript reviews**

Canotia

Flora of North America

### **Selected Oral presentations**

"The San Pedro Riparian National Conservation Area: flora revisited" Arizona Botanists Meeting invited speaker, field trip leader, July 28, 29, 2019, Sierra Vista, Arizona.

"Flora of the Sierra Juriquipa, Sonora, Mexico" E. Makings. Biodiversity and Management of the Madrean Archipelago IV. May 14- 18, 2018. Tucson, Arizona.

"A Perspective on the flora and vegetation of the Lower Santa Cruz River Flats" E. Makings. October meeting for the Pinal County Open Spaces Committee, 2 October 2017, Florence, Arizona.

"A Perspective on the flora and vegetation of the Lower Santa Cruz River Flats" E. Makings and D. E. Brown. Eighth annual Santa Cruz River Research Days, March 31, 2016, Tucson, Arizona.

"*Eryngium sparganophyllum* - Arizona eryngo, a rare cienega plant from southeastern Arizona and Mexico" E. makings, D. Wolkis, S. Blackwell. Arizona Native Plants Society, February 10, 2015, Phoenix, Arizona.

"The Salt River Flora, Then and Now" E. Makings. Arizona Native Plants Society, February 11, 2014.

"Species diversity in restored and unrestored reaches of the urbanized Salt River" J. Stromberg, H. Bateman, J. Foltz-Sweat, E. Makings, B. Scott, A. Suchy, D. Wolkis. Arizona Hydrological Society, September 17-20, 2012, Phoenix, Arizona.

"Found Then Drowned, Noteworthy Collections from Tempe Towne Lake" E. Makings. Arizona Botanists, February 11-12, 2011. Phoenix, Arizona.

"Flora of the Valles Caldera National Preserve, New Mexico" E. Makings. Arizona Native Plant Society, April 11, 2008, Phoenix, Arizona.

"Flora of the San Pedro Riparian National Conservation Area" Arizona Native Plant Society, November 11, 2005. Desert Botanical Garden, Phoenix, Arizona.

"Flora of the San Pedro Riparian National Conservation Area" E. Makings. Biodiversity and Management of the Madrean Archipelago II. May 11- 15, 2004. Tucson, Arizona.

"Flora of the San Pedro Riparian National Conservation Area" E. Makings. Forty-seventh annual Arizona-Nevada Academy of Science, March, 2002. Glendale, Arizona.

### **Poster presentations**

“Freshwater Restoration in a Changing Climate: Preliminary Findings from Santa Cruz Watershed Cienegas” D. Wolkis, J. Stromberg, E. Makings. Arizona Botanists Meeting, February 22, 2014.

“Beyond cottonwoods: floristic restoration in an urban floodplain” J. Stromberg, D. Wolkis, B. Scott, E. Makings. 26<sup>th</sup> Meeting of the Arizona Riparian Council, 4-6 April 2013, Scottsdale, Arizona.

“Just add water: benefits of serendipitous restoration in an urban floodplain,” J. Stromberg, H. Bateman, J. Foltz-Sweat, D. Wolkis E. Makings, B. Scott, A. Suchy, N. Wilson. CAP-LTER Fifteenth Annual All Scientists Meeting, January 11, 2013, Scottsdale, Arizona.

“Plant and animal diversity in accidentally and intentionally restored reaches along the urbanized Salt River in central Arizona,” H. Bateman, A. Bridges, E. Makings, B. Scott, J. Stromberg, A. Suchy, D. Wolkis. Long Term Ecological Research Network, All Scientist’s Meeting, September 10-13, 2012, Estes Park, Colorado.

“Found Then Drowned, Noteworthy Collections from Tempe Towne Lake” E. Makings. Botanical Society of America July 9-13, 2011. St. Louis, MO.

“Desertlands of North America,” D. E. Brown and E. Makings. Dynamic Deserts Conference, Arizona State University, February 26-28, 2009. Tempe, Arizona.

“Grasses of the San Pedro” E. Makings. Arizona Native Plant Society, October 2005, Phoenix, Arizona.

“Gradient Analysis of Soil, Vegetation and Climate on the Tonto National Forest” G. Robertson and E. Makings. West Regional Cooperative Soil Survey Conference, June 19-23, 2006, Park City, Utah.

“Flora of the San Pedro Riparian National Conservation Area,” Ecological Society of America, 87<sup>th</sup> annual meeting, August 4-9, 2002. Tucson, Arizona.

### **Articles**

*The Plant Press* (Arizona Native Plant Society) 2014 “The Arizona State University Herbarium” in “The Herbarium, a Priceless Resource for Botanical Documentation, Research, and Understanding.” 37(1): 3-6.

*The Plant Press* 2011 “Found Then Drowned, Three Noteworthy Collections from Tempe Town Lake” 35(1):14-15

*Canotia* 2009 “Elinor Lehto, Arizona Botanist 1915-2009” 5:53-55

### **Selected Outreach**

- Mirabel residents – Campus plants tour 28 March 2021
- Central Arizona Chapter for the Society of Conservation Biology –ASU campus plants 15 April 2021
- Greatergood.org, Madrean Discovery Expeditions, Central Sonora Sky Islands – 2017, 2018, 2019.
- Plant identification for capital murder case – Phoenix, PD, Yavapai County PD. 2019-2020

- Invited interviewee for Center for Biological Diversity film “Vigneto: Yes or No?” [https://watch.showandtell.film/watch/sanpedrofilm?subscriberID=8dbe18d4-5f39-11eb-acb4-d77ac2363a07]
- Osher Lifelong Learning Institute at Arizona State University, “Botany For All: Learn Your Plants!” 9, 16 Sep 2019.
- Botany workshop, Prescott College Center for Cultural and Ecological Studies, Kino Bay, Mexico (5-7 March 2019).
- K-12 outreach at ASU Natural History Collections Building [https://biokic.asu.edu/] (ongoing)
- Site Steward, Mesquite Wash, Tonto National Forest, AZ State Parks Site Steward Program (2013- present)
- East Valley Tribune interview “Tumbleweeds take shape in iconic Chandler Christmas tree.” 27 Nov 2017
- Central Arizona Butterfly Association, annual butterfly count at Boyce-Thompson Arboretum (2013 - 2021)
- McDowell Sonoran Preserve, annual butterfly count (2013 - 2021)
- Wildflower walks and volunteer/staff wildflower identification training at Boyce Thompson Arboretum (2013, 2015, 2019)
- ASU School of Life Sciences, Night of the Open Door (annual)
- ASU School of Life Science: “Ask A Biologist,” Learning resource tool for teachers and K-12 (ongoing)
- Prescott College botany students guest instructor (19 Sept 2017)
- Donald J. Pinkava memorial (1 July 2017)
- ASU Night of the Open Door (annual)
- Boyce-Thompson Arboretum winter/spring annual wildflower training (2017-)
- “The Arizona State University Herbarium” in “The Herbarium, a Priceless Resource for Botanical Documentation, Research, and Understanding.” *The Plant Press* 37(1): 3-6. Spring 2014
- “The Nature of Creation, Joseph’s Hayden’s Oratorio and Beyond,” (Plant fossil displays and 3D images for Hayden Library exhibit). (April –October 2015)
- Grass workshop, Plant Atlas Project of Arizona, seminar and field trip (Sept 19, 20, 2015)
- Fossil Freeway Open House, ASU Natural History Collections Building (10 September 2015)
- ASU School of Life Science: “ASU Explores Outdoors” Field trip leader for interpretive hikes with in local natural areas (2013, 2014, 2015)
- Patten Herbal Collection photo archive of 18th Century Hanbury volumes (2015)
- SoLS Walking Club, interpretive hike of campus plants (February 2015)
- Field work and plant ID for desert plant wall photos in remodel of ASU Enterprise Marketing Hub building (2015)
- Grass identification workshop, Arizona Native Plant Society, September 9-10, 2014.
- Guest instructor Canyon Ridge Elementary School 4th grade class (19 May 2014)
- Tempe Historical Museum “Botany Day” (26 June 2013)
- SEINet tutorial for Forest Service Terrestrial Ecosystems Survey Team (4 June 2013)
- Master Gardener’s plant identification seminar (10 May 2013)
- *Asclepias* article for Arizona Riparian Council Newsletter (May 2013)
- Boy Scouts of America– desert plant identification at South Mountain (23 February 2013)
- Cooperative project with grounds crew identifying ASU Campus plants for digital database (2013)

### **Science Advisory Board**

The Natural History Institute, Prescott, Arizona

## **Graduate mentoring**

### Graduate degrees in progress

Zach Berry, MS  
Soon Flynn, Ph.D.  
Gabriel Garcia, MS  
Anthony Motta, MS  
Daniel Moses, MS

### Graduated

Jean-Philippe Solves, May 2019. Chapter 1: A Preliminary Checklist of the Vascular Plants of Las Cienegas National conservation Area. Chapter 2: New Insights into the Life History Traits of the Endangered Wetland Obligate *Lilaeopsis schaffneriana* subsp. *recurva* (Apiaceae). MS.  
Cole Larson-Whittaker, May 2019. Flora of the Middle Verde River. MS  
Alison Willis, May 2019. MS Analysis of genetic diversity and clarification of species boundaries in *Echinomastus erectocentrus* var. *acunensis* and close relatives. MS.  
Kara Baron, December 2018. Fire and reseeding effects on Arizona Upland plant community composition and a floristic inventory of Cave Creek Regional Park. MS.  
Albatool Albedewi, December 2017. Developing a Virtual Flora Portal for Vascular Plants of Saudi Arabia. MS.  
Danika Setaro, December 2016. A seed bank study of Southwestern riparian areas: temperature effects and diversity. MS.  
Dustin Wolkis, May 2016. Plant Ecology of Arid-land Wetlands; a Watershed Moment for Ciénega Conservation. MS.  
Frankie Coburn, August 2015. Flora of the Upper Verde River, Arizona. MS.  
Lane Butler, August 2015. Ecological effects of stream flow permanence on butterfly and plant communities of Sonoran Desert streams. MS.  
Doug Newton, April 2012. The vascular flora of the Eagletail Mountain Region. MS.  
Darin Jenke, April 2011. The Phoenix Four Rivers flora, Maricopa County, Arizona. MS.  
Bethany Lester, November 2008. The vascular flora of the Hummingbird Springs Wilderness, Maricopa County, Arizona. MS.

## **Undergraduate, Graduate, and K-12 mentoring**

Courtney Currier, Graduate research/Herbarium worker 2021, "*Salpichroa* (Solanaceae) treatment for *CANOTIA*: An Arizona journal publishing botanical and mycological papers [<https://canotia.org/>]  
Kristen Countryman, Herbarium intern 2021  
Seth Wielgus, Herbarium intern 2021  
Eric Lopez, Herbarium intern 2021  
Ritvik Vallambhatla, Basis High School, Chandler, AZ. Herbarium intern 2020  
Elena Wegryn, Herbarium intern 2020  
Isabella Bernat, Herbarium intern 2020  
Eliem Smith, Herbarium intern 2020  
Chrisovalantou Karakozis, Herbarium intern 2020  
Kariah Slagel, Undergraduate research/Herbarium worker 2018 - 2019 "*Jaltomata* (Solanaceae)" treatment for *CANOTIA*: An Arizona journal publishing botanical and mycological papers [<https://canotia.org/>]  
Annie Wolf, Herbarium intern 2019-2020  
Gabriel Garcia, Herbarium intern 2019-2020

Christian Parrinello, Undergraduate research 2019-2020  
Yasmine Parra, Undergraduate research, "Digitizing the Cochise County Herbarium donation." 2018 - 2020  
Sam Blevin, Herbarium intern 2019  
Ana Kahn, Herbarium intern 2019  
Chad Hauck, Honors Thesis, "The Diversity and History of the plants in the Alleyways of Tempe" 2018-2019.  
Yasmine Parra, Undergraduate research, Digitizing the Cochise County Herbarium donation. 2018 - 2020  
Jonathon Maranville, Undergraduate research/Herbarium worker 2018 - 2019 "Capsicum L. " treatment for *CANOTIA: An Arizona journal publishing botanical and mycological papers* [https://canotia.org/]Botany[https://canotia.org/]  
Amariel DeMarchi, Herbarium intern 2018-2019  
Cristina Port, Herbarium intern 2018-2019  
Dena Bergman Herbarium intern 2017  
Victoria Canizales, Herbarium intern 2016-2017  
Jean-Philippe Solves, Herbarium intern/Barrett Honor's College thesis, 2013-2018 "Solanaceae Part Six: Nicotiana L. Tobacco" treatment for *CANOTIA: An Arizona journal publishing botanical and mycological papers* [https://canotia.org/]  
Alexandra Brunet-Giambalvo, Herbarium intern, 2016-2017  
Linh Ngo, Herbarium intern, 2014-2017  
Lidia Peon, Herbarium intern, 2014-2017  
Valia Brannan, Herbarium intern, 2014  
Cris Brackenridge, Herbarium intern, 2014  
Anni Poetzl, Herbarium intern, 2014- 2015  
Aaron Boydston, Herbarium intern, 2014- 2015  
Alandon Joe, Herbarium intern, 2014- 2015  
Kara Barron, Herbarium intern/Honor's College special project 2012  
Katie Arrivas, Herbarium intern, 2011- 2013  
Elizabeth Ochoa, Herbarium intern, 2011-2013  
Robert Madera, Herbarium intern, 2012- 2012  
Darin Jenke, Herbarium intern, 2007- 2008  
Erin Manton, Barrett Honor's College thesis, "Flora of Escudilla Mountain, Apache County, AZ" 2007-2008  
Emily Douglas, Herbarium intern, 2008  
Bianca Despotides, Herbarium intern, 2007- 2008  
Theresa Price, Herbarium intern, 2004- 2005

### **Professional societies**

Arizona Native Plant Society  
National Geographic Society

### **Miscellaneous**

Date of birth: March 22, 1964  
Athletic accomplishments:  
United States Open Championships 1995, 1997, 1999 (Golf)  
Big Eight champion 1987, University of Colorado school record holder (Javelin)  
High school All-American, Ft. Pierce Central HS, 1982 (Basketball)