

## **ROXANEH S. KHORSAND - CURRICULUM VITAE**

Department of Organismal Biology and Ecology

Colorado College

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### **Professional Academic Experience**

Assistant Professor, Department of Organismal Biology and Ecology, Colorado College, 2023 – present.

Visiting Assistant Professor, Department of Organismal Biology and Ecology, Colorado College, 2018 – 2023.

Visiting Assistant Professor, School of Biological Sciences, University of Northern Colorado, 2015 – 2018.

Adjunct Instructor, Department of Biological Sciences, Florida International University, 2015.

Postdoctoral Associate, Department of Biological Sciences, Florida International University, 2013 – 2015.

### **Education**

Ph.D. Biology, Florida International University, 2013.

B.S. Biology, University of Colorado at Boulder, 2003.

B.A. Spanish Literature, University of Colorado at Boulder, 2003.

### **Research Interests**

- Engage students throughout the research process including experimental design, data collection and dissemination of results
- General plant reproductive ecology and global change ecology
- Plant phenology, breeding systems, floral rewards, plant-pollinator interactions
- Pollinator networks, trophic mismatch between plants and pollinators
- Experience conducting research in the Arctic, temperate, sub-tropics, and tropics

### **Publications (\* indicates student co-author)**

**Khorsand, R.**, Sancier-Barbosa, F., May, J.F., Høye, T.T, and Oberbauer, S.F. In review. The effects of experimental warming on plant-pollinator interactions and floral rewards in the Low Arctic. *Arctic Science*.

**Khorsand, R.** and Awolaja, F\*. 2020. Pollination and breeding system of *Thermopsis divaricarpa* (Fabaceae: Papilionoideae) in the southern Rockies. *Western North American Naturalist* 80: 509–520.

Koptur, S. and **Khorsand, R.** 2018. Pollination ecology of three sympatric palms of southern Florida pine rocklands. *Natural Areas Journal* 38: 15-25.

**Khorsand Rosa, R.**, Oberbauer, S.F., Starr, G. Parker LaPuma, I., Pop, E., Ahlquist, L., and Baldwin, T. 2015. Plant phenological responses to a long-term experimental extension of growing season and soil warming in tussock tundra of Alaska. *Global Change Biology* 21: 4520–4532.

**Khorsand Rosa, R.**, Imbrozio Barbosa, R., and Koptur, S. 2014. Which factors explain reproductive output of *Mauritia flexuosa* (Arecaceae) in forest and savanna habitats of northern Amazonia? *International Journal of Plant Sciences* 175(3):307-318.

**Khorsand Rosa, R.** 2014. A review of the pollination biology of *Mauritia flexuosa*. *Palms* 58(2): 77-82.

**Khorsand Rosa, R.** and Koptur, S. 2013. New findings on the pollination biology of *Mauritia flexuosa* (Arecaceae) in Roraima, Brazil: linking dioecy, wind, and habitat. *American Journal of Botany* 100(3): 613-621.

**Khorsand Rosa, R.**, Imbrozio Barbosa, R., and Koptur, S. 2013. How do habitat and climate variation affect phenology of the Amazonian palm, *Mauritia flexuosa*? *Journal of Tropical Ecology* 29(3): 255-259.

**Khorsand Rosa, R.** 2011. Bees collect resin from *Mauritia flexuosa* in Roraima, Brazil. *Palms* 55(4): 200-203.

**Khorsand Rosa, R.** and Koptur, S. 2009. Preliminary observations and analyses of pollination in *Coccothrinax argentata*: Do insects play a role? *Palms* 3(2): 75-83.

### **Teaching Experience, Courses Taught**

2023 – Assistant Professor, Colorado College, Department of Organismal Biology  
Present and Ecology: Biology of Plants (BE 105), Ecology (BE 208), Biostatistics (BE220)  
Ecology and the Environment (EV209), Experimental Design and Advanced Ecology (BE 440),  
Research in Biology (BE 309/409)

2018 – Visiting Assistant Professor, Colorado College, Department of Organismal Biology  
2023 and Ecology: Biology of Plants (BE 105), Ecology (BE 208), Advanced Ecology (BE 308),  
Experimental Design and Advanced Ecology (BE 440)\*, Research in Biology (BE 309/409)  
\* For the lab portion of this class, I collaborated with my CC colleague, Dr. Flavia  
Sancier-Barbosa (Dept. of Math and Computer Sciences) to develop data analysis  
modules for students using R.

2015 – Visiting Assistant Professor, University of Northern Colorado, School of Biological  
2018: Sciences: Principles of Biology (BIO 110), Exploring Biology (BIO 100), Ecology (BIO  
360), Scientific Writing (SCI 291), Undergraduate Biology Seminar (BIO 491),  
Graduate Topics in Ecology and Evolution, Climate Change and Phenology (BIO  
565), Conservation of Natural Resources (ENST 265), Introduction to Environmental  
Studies (ENST 100)

- 2015 Adjunct Instructor, Florida International University, Department of Biological Sciences: Ecology (PCB 3043), Senior Seminar (BSC 4931)
- 2015 Guest Lecturer, Florida International University, Department of Biological Sciences: Tropical Ecology
- 2011 Guest Lecturer, Federal University of Roraima, Brazil: Plant Ecology  
2009 Guest Lecturer, Florida International University, Department of Biological Sciences: Ecology
- 2007 – Graduate Teaching Assistant, Florida International University, Department of  
2012: Biological Sciences: General Biology I Laboratory (BSC 1010L), General Biology II Laboratory (BSC 1011L), Ecology (PCB 3043), Plant Ecology (BOT 4601), Evolution (PCB 4674)

### **Research and Professional Experience**

- 2018 – present, Effects of climate change on arctic plant phenology and pollination  
2013 – 2015 (Toolik Field Station, AK, USA): I began this work as a postdoctoral associate in 2013, then took on a new aspect of the project in 2019 mentoring research students. To date, I have trained 12 Colorado College undergraduates in research since 2018.
- 2016 – 2017 Pollination ecology of montane plant species (Mountain Research Station, CO., USA): I mentored one student in the McNair Scholars Program at the University of Northern Colorado in field research. This research project led to a publication with the student as my co-author (see publications above). I also served as a faculty mentor for the Research Experiences for Undergraduates (REU) program at the field station.
- 2008 – 2010 Visiting Researcher, National Institute for Amazonian Research, INPA (Boa Vista, Roraima, Brazil): As part of my doctoral research, I collaborated with Dr. Reinaldo Barbosa (INPA) (see publications above), and mentored students in research.
- 2005 Field Assistant (Maracá Ecological Station, Roraima, Brazil): I volunteered as a field assistant at the field station.
- Herbarium Technician, Executive Commission of Cacao Plantations, CEPLAC (Ilhéus, Bahia, Brazil): I volunteered as a herbarium technician and field assistant in the Atlantic Rain Forest for Dr. Wayt Thomas (New York Botanical Garden).
- 2004 English Editor, *Iran News* (Tehran, Iran): I edited articles for English grammar before final publication. This newspaper was the only English-language newspaper published in Tehran.
- 2001– 2003 Undergraduate Research Assistant, University of Colorado at Boulder (Boulder, CO., USA): I worked as a research assistant in the lab of Dr.

Pamela Diggle. Tasks included sectioning ovules and quantifying fruit size to understand sexual expression in *Solanum*.

### **Evidence of Student Research Mentorship (including funding and presentations)**

- 2023 Sydney Morris, Independent Study (and poster presentation): *The effects of burn severity on soil chemistry and Pinus ponderosa regeneration in Waldo Canyon, CO*. Midstates Consortium for Math and Science Undergraduate Research Symposium. St. Louis, MO.
- Zach Ginn, Senior Thesis (and oral presentation): *The temporal dynamics of plant-insect interactions in the Low Arctic*. Department of Organismal Biology and Ecology, Colorado College.
- Zach Ginn, Colorado College Student Faculty Collaborative Grant, *Experimental warming and plant-pollinator interactions in the Alaskan Arctic*, \$4,000.
- 2022 Luca Keon and Zach Ginn, oral presentation: *Plants and pollinators of the Low Arctic: investigating community responses to climate change*. Toolik Field Station Weekly Seminar Series, AK.
- Alex Jennings, *Tundra pollen reference guide for 31 plant species in the Low Arctic*. This is the first pollen reference guide for species at our field sites and is now available to all researchers at Toolik Field Station.
- Zach Ginn, Colorado College Student Faculty Collaborative Grant, *Experimental warming and plant-pollinator interactions in the Alaskan Arctic*, \$4,000.
- Carmen Villalba, Grace Evans, Zach Ginn, poster presentation: *Pollen analysis of arctic insect floral visitors*. OBE Day, OBE Department Research Symposium, Colorado College, Colorado Springs, CO.
- Alex Jennings, Thematic Minor: *Sustainable food production: agroecology, pollination biology, and mycology in the Anthropocene*. I served as the primary mentor for Alex throughout his independent minor at Colorado College.
- Zach Ginn, poster presentation: *Investigating alpine plant-pollinator communities on Pikes Peak*. Organismal Biology and Ecology (OBE) Day, OBE Department Research Symposium, Colorado College, Colorado Springs, CO.
- 2021 Lucy Zicarelli and Thad Allen, poster presentation: *Scanning Electron Microscopy of pollen from six families of arctic plants*. OBE Day, OBE Department Research Symposium, Colorado College, Colorado Springs, CO.
- Alex Jennings and Zach Klingner, poster presentation: *Effects of a warming climate on plant-pollinator interactions in the Alaskan tundra*. OBE Day, OBE Department Research Symposium, Colorado College, Colorado Springs, CO.
- 2020 Alex Jennings and Zach Klingner, poster presentation: *Effects of a warming climate on plant-pollinator interactions in the Alaskan tundra*. Midstates Consortium

for Math and Science Undergraduate Research Symposium, Biological Sciences and Psychology (virtual).

Alex Jennings, Colorado College Student Faculty Collaborative Grant, *Effects of climate change on plant-pollinator interactions in the Alaskan Arctic*, \$4,000.

2019 John Feigelson, poster presentation: *The effect of experimental warming on plant-pollinator relationships in the Low Arctic*. Midstates Consortium for Math and Science Undergraduate Research Symposium, Biological Sciences and Psychology, Washington University, St. Louis, MO.

Hayes Henderson, poster presentation: *What is the potential of a phenological mismatch between arctic tundra plants and their pollinators?* Colorado College SCoRE Symposium, Colorado Springs, CO.

Hayes Henderson, Colorado College Student Faculty Collaborative Grant, *Effects of climate change on plant-pollinator interactions in the Alaskan Arctic*, \$4,000.

Caroline Brose, Colorado College undergraduate independent research, *Decrease in soil moisture influences bird vetch growth and nodulation in a boreal forest*. Oral presentation, Invasive Species Workshop, Fairbanks, AK.

2018 Olufisayo Awolaja, University of Northern Colorado Undergraduate Research Fellowship, *Pollination biology of Thermopsis divaricarpa in the southern Rocky Mountains*, \$1,300.

2018 Olufisayo Awolaja, poster presentation: *The pollination and reproductive ecology of Thermopsis divaricarpa*. National Conference on Undergraduate Research (NCUR), University of Central Oklahoma, Edmond, OK.

2017 Olufisayo Awolaja, 1<sup>st</sup> place poster presentation: *The pollination and reproductive ecology of Thermopsis divaricarpa*. University of Northern Colorado Undergraduate Research Symposium, nominated to present at NCUR 2018.

Olufisayo Awolaja, University of Northern Colorado Undergraduate Research Fellowship, \$1,400.

### **External Grants**

2019 National Science Foundation (NSF) Research Opportunity Award, \$28,000. *The effect of experimental warming on plant-pollinator interactions in the Alaskan Arctic*.

2017 Continental Divide Research Learning Center (CDRLC), Rocky Mountain National Park (RMNP), \$60,000 (applied, not funded). *Gene flow and pollen limitation in aspen stands in Rocky Mountain National Park*.

2016 CDRLC, RMNP, \$60,000 (applied, not funded). *Pollen flow limitation in disjunct clonal Colorado aspen stands*.

- 2011 National Science Foundation Supplement to Doctoral Dissertation Enhancement Project Award, \$3,000. *The reproductive ecology of the Amazonian palm, Mauritia flexuosa.*
- 2010 National Science Foundation Doctoral Dissertation Enhancement Project Award, \$15,000. *The reproductive ecology of the Amazonian palm, Mauritia flexuosa.*
- 2010 Fulbright Scholar Fellowship, \$15,000.
- 2009 Montgomery Botanical Center Research Fellowship, \$2,000. *Factors driving reproductive output of the Amazonian agroforestry palm, Mauritia flexuosa.*
- 2008 International Palm Society Fellowship, \$4,500. *Phenology and pollination of Mauritia flexuosa.*
- National Science Foundation Graduate Research Fellowship, Honorable Mention. *The pollination biology of Mauritia flexuosa (Arecaceae) in the northern Amazon.*
- 2007 National Science Foundation Cyber Bridges Award, \$5,000

### **Internal Funding and Awards**

- 2023 Colorado College (CC) Natural Sciences Executive Council (NSEC) Research Grant, \$7,500. *The effect of experimental warming on plant-pollinator interactions and floral rewards in the Alaskan Arctic*
- 2022 CC NSEC Research Grant, \$7,500. *The effect of experimental warming on plant-pollinator interactions in the Alaskan Arctic.*
- 2021 CC NSEC Research Grant, \$7,500. *The effect of experimental warming on plant-pollinator interactions in the Alaskan Arctic.*
- 2020 CC SEGway Research Award, \$5,000. *How does climate warming affect plant pollinator networks in the Alaskan Arctic?*
- CC NSEC Research Grant, \$5,000. *The effect of experimental warming on plant-pollinator interactions in the Alaskan Arctic.*
- 2015 University of Northern Colorado, School of Biological Sciences Faculty Research Award, \$2,000. *Phenology and pollination of montane plant species: predicting responses to climate change.*
- 2013 Florida International University (FIU), Worlds Ahead Graduate. This award is the highest distinction a graduate student can earn at FIU.
- FIU Biology Symposium, Best Graduate Student Talk, Honorable Mention. *Abiotic and biotic factors driving reproductive output of Mauritia flexuosa (Arecaceae).*

2012 FIU Dissertation Year Fellowship, \$25,000. *The reproductive ecology of the agroforestry palm, Mauritia flexuosa (Arecaceae,) in Roraima, Brazil.* Botanical Society of America, Best Graduate Student Paper, Ecological Section, Columbus, OH. *Pollination of Mauritia flexuosa (Arecaceae) in Roraima, Brazil: linking dioecy, wind, and habitat.*

FIU Biology Symposium, Best Graduate Student Talk. *How do habitat and climate variation affect phenology of the Amazonian palm, Mauritia flexuosa?*

### **Invited Academic Seminars and Research Talks**

2023 Invited research talk, University of Colorado Denver, Department of Geography and Environmental Science, declined.

2022 On-campus interview research talk, Department of Biology, Lewis and Clark College, Portland, OR. *The effects of experimental warming on plant-pollinator interactions and floral rewards in the Alaskan Arctic.*

On-campus interview teaching talk, Department of Biology, San Francisco State University, San Francisco, CA. *Plant mating patterns, pollination, and ecosystem services: case study of coffee.*

On-campus interview research talk, Department of Biology, Lake Forest College, Lake Forest, IL. *The effects of experimental warming on plant-pollinator interactions and floral rewards in the Alaskan Arctic.*

On-campus interview teaching talk, Department of Biology, Lake Forest College, Lake Forest, IL. *“Problem-solving” in the natural world: form and function. Gas exchange.*

On-campus interview research talk, Department of Organismal Biology and Ecology, Colorado College, Colorado Springs, CO. *How does warming affect plant-pollinator interactions and floral rewards in the Alaskan Arctic?*

On-campus interview teaching talk, Department of Organismal Biology and Ecology, Colorado College, Colorado Springs, CO. *Ecosystem ecology.*

2019 Invited research talk, University of Colorado, Colorado Springs, CO. *From the Amazon to the Arctic: why plant reproductive biology matters in a changing climate.*

Invited research talk, Toolik Field Station, AK. *How does experimental warming affect plant-pollinator interactions and plant reproductive success in the Arctic?*

2018 On-campus interview, Department of Biology, Florida International University, FL., removed myself from search upon accepting another offer.

On-campus interview, Department of Biology, Unity College, ME., removed myself from search upon accepting another offer.

- On-campus interview, Department of Biology, University of Alabama, AL., offered position, declined.
- 2017 On-campus interview, Department of Biology, William Jewell College, MO., declined.
- On-campus interview, Environmental and Sustainability Studies, University of Northern Colorado, CO.
- 2016 On-campus interview, Department of Biology, North Central College, IL., offered position, declined.
- 2015 On-campus interview, Department of Biology, University of Puget Sound, WA.,
- Research talk, São Paulo State University, Rio Claro (UNESP, Rio Claro), São Paulo, Brazil. *Da Amazônia até o Ártico: efeitos ambientais na biologia reprodutiva das plantas.*
- 2014 Research talk, Botanical Society of America Conference, Boise, ID. *Predicting phenological responses of arctic tundra species to climate change.*
- 2013 Research talk, Florida International University Biology Symposium, Miami, FL. *Reconsidering wind-pollination in the tropics: a case study of Mauritia flexuosa (Arecaceae).*
- 2012 Research talk, Botanical Society of America Conference, Columbus, OH. *Floral biology and pollination of the agroforestry palm, Mauritia flexuosa: why field observations are not enough.*
- Research talk, Plant Biologists of South Florida Annual Meeting, Miami, FL. *Flowering and fruiting phenology of Mauritia flexuosa, an Amazonian palm.*
- 2010 Research talk, Federal University of Roraima (UFRR), Boa Vista, Roraima, Brazil. *A ecologia reprodutiva do buriti em Roraima.*
- 2008 Poster presentation, Ecological Society of America Plant-Pollinator Interactions Conference, Milwaukee, WI. *The pollination biology of three sympatric palms of southern Florida pine rocklands.*

### **Professional Development**

- 2022 *Racism and White Discomfort: The Problem and the Solution.* Excel at CC, Colorado College. Aug. 3, 2022.
- 2021 – present *Creativity and Science Series Workshop.* Creativity and Innovation, Colorado College. In this ongoing series, I collaborate with faculty across departments to develop and implement creativity modules for science courses.

- 2021 *Addressing Conflicts Related to Bias, Privilege, and Identity in the STEM Classroom*. Academic Impressions. Apr. 29, 2021.
- Get Comfortable Being Uncomfortable: Engaging in Dialogue about Race and Bias*. Academic Impressions. Feb. 18, 2021.
- Identifying and Mitigating Imposter Syndrome*. Case Western Reserve University. Feb. 9, 2021.
- Anti-racism in Field Study*. Center for Global Education and Field Study, Colorado College. Feb. 8, 2021.
- 2020 *STEM Communication Workshop*. Alan Alda Center for Communicating Science, Stony Brook University. Nov. 13, 2020.

### **Academic Service and Community Engagement**

- 2023 Collaborated with Coronado High School science teacher, Steve Ottmer, in his course, *Outdoor and Expeditionary Science*. Students learned various sampling techniques in ecology, metrics to quantify biodiversity, and basic experimental design.
- 2022 Developed (with my department chair, Dr. Shane Heschel) an Excel statistics module for the OBE department to be used in all ecology courses.
- 2021 Mentored a CC student in his summer research project on alpine plant-pollinator interactions. Assisted student in data analysis and interpretation of results. This project was part of a field botany class taught by my department colleague and was independent of my own research.
- 2020 – Present American Association of University Professors (AAUP), Colorado College Chapter. Attended meetings, compiled data to document the experiences of contingent faculty at CC.
- 2018 – Present OBE departmental service tasks including selecting recipients for annual undergraduate awards, reviewing applications for visiting faculty (2021), interviewing final candidates for visiting faculty position.
- 2021 Reviewed incoming CC undergraduate applications for Margaret Barnes Scholarship.
- 2017 Greeley 500 Women Scientists Pod: led scientific collaboration with local school, Fred Tjardes School of Innovation.
- 2017 Schulze Series, University of Northern Colorado (<http://www.unco.edu/mind/schulze/>): played a key role in the organization of this bi-annual event.
- 2017 *Discover UNC Fair*. gave oral presentations to audiences of prospective students and parents.

- 2017 Women Scientists Panel, Association of Women in Geosciences, University of Northern Colorado: panelist.
- 2015 – Undergraduate Committee, School of Biological Sciences, University  
2018 of Northern Colorado. Tasks included contributing to the 5-year Comprehensive Review of the School of Biological Sciences, annual assessments of the undergraduate program, and selection of annual undergraduate awards.
- 2016 – Research Advisor for McNair Fellow Undergraduate Biology Majors,  
2018 University of Northern Colorado.
- 2016 – Scientific Writing (SCI 291) Committee, University of Northern Colorado:  
2018 developed a common syllabus for SCI 291 across all scientific disciplines.
- 2016 – Pollination ecology outreach: Swanson Elementary, Denver, CO.: gave interactive  
2017 presentations with school children (grades 1-5) about pollination and agriculture.
- 2016 – Academic Advisor for Environmental Studies Majors, University of  
2017 Northern Colorado.
- 2016 – Advisory Board for National Science Foundation project  
2017 "Collaborative research: sexism present in the field: gendered experiences in science field settings and the impact on academic and career pursuits."
- 2012 – Ecology outreach: Henry E.S. Reeves Elementary, Miami, FL.: gave interactive  
2013 presentations with school children (grades 1-5) about tropical ecology.
- 2011 Earth Week, Integrated Museum of Roraima (MIRR), Boa Vista, Roraima, Brazil: presented to the general public about the reproductive ecology of a keystone species, *Mauritia flexuosa*.
- 2010 – Environmental outreach with school children and community members in  
2011 Roraima, Brazil: gave interactive presentations about tropical ecology and regional environmental degradation in elementary schools in the city of Boa Vista, as well indigenous villages including Boqueirão and Miriti.
- 2008 – Trained four local field assistants in Roraima, Brazil.  
2011 Mentored two undergraduate students at *Faculdade Atual*, Roraima, Brazil.

### **Reviewer (Journals and Proposals)**

- 2023 Annals of Botany
- 2021 Global Change Biology
- 2017 Wetlands
- 2016 American Journal of Botany  
Global Ecology and Conservation

2015 International Journal of Fruit Science  
2014 AoB PLANTS  
Biotemas  
International Palm Society  
2013 National Institute for Amazonian Research  
International Palm Society  
2012 International Palm Society  
2011 Journal of the Torrey Botanical Society

### **Professional Affiliations**

American Association of University Professors  
Colorado Native Plant Society  
Botanical Society of America  
Union of Concerned Scientists  
Association for Tropical Biology and Conservation  
International Palm Society

### **Languages**

English (fluent): reading, writing, speaking  
French (fluent): reading, writing, speaking  
Portuguese (fluent): reading, writing, speaking  
Spanish (fluent): reading, writing, speaking  
Farsi (proficient): speaking

### **Computer and technological skills**

Microsoft Office  
R Statistical Software  
SPSS Statistics  
Learning Management Systems: Canvas, Blackboard  
Classroom Response Systems: iClicker, Turning Point  
Online teaching tools: McGraw-Hill Education Connect, MacMillan Education Launchpad, Wiley and Sons Wiley-PLUS