

# CHRISTOPHER P. KRIEG

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## I. RESEARCH INTERESTS

Plant physiological ecology, species distribution modeling, functional biogeography, trait evolution, stress responses, hydraulic vulnerability to drought, conservation

## II. EDUCATION

- 2019           **University of Florida**, Gainesville FL  
                  Ph.D., Botany; Advisor: Dr. Emily Sessa  
                  Dissertation: *Trait evolution and niche expansion in polyploid ferns*
- 2014           **Colgate University**, Hamilton NY  
                  B.A., Biology; Advisor: Dr. James (Eddie) Watkins  
                  Thesis: *Sunfleck utilization in ferns, gymnosperms, and angiosperms*

## III. PROFESSIONAL APPOINTMENTS (– on-going)

- 2018–2019   University Associate, **University of Tasmania**, Hobart, TAS, Australia  
2015–2018   Grinter Graduate Research Fellow, **University of Florida**, Gainesville, FL  
2015           Research Technician, **University of California**, Davis, CA  
2014           Research Technician, **Florida International University**, Miami, FL  
2014           Summer Research Fellow, **Colgate University**, Hamilton, NY  
2013–2014   Undergraduate Researcher, **Colgate University**, Hamilton, NY

## IV. PUBLICATIONS (‡ equal contributions, \* mentored undergraduates)

### IN PREPARATION

10. **Krieg C**, McCulloh K, Guralnick R, Sessa E. Transgressive physiological traits explain broad-scale niche novelty in an allopolyploid fern complex.
9. **Krieg C**, O’Keefe K, Salvi A, Sessa E, McCulloh K. Diverse strategies to regulate plant water status regulation in six fern species.
8. **Krieg C**, McCulloh K, Sessa E. Polyploidy enhances coexistence through trait differentiation and niche partitioning in a *Polystichum* polyploid complex.
7. Marques E‡, **Krieg C‡**, Decosta E, Bueno E, Sessa E, von Wettberg EJB. (2019) Impact of domestication on above- and below- ground trait responses to nitrogen fertilization in wild and cultivated genotypes of chickpea (*Cicer* sp.)

### PEER-REVIEWED PAPERS

6. Greenlon *et al.* (#12/25 **Krieg C**). (2019) Global-level population genomics reveals differential effects of geography and phylogeny on horizontal gene transfer in soil bacteria. *Proceedings of the National Academy of Sciences*, in revision (2<sup>nd</sup> round)
5. **Krieg C**, Watkins JE, Jr., McCulloh K. (2019) A new protocol for psychrometric pressure-volume curves of fern gametophytes. *Applications in Plant Sciences*, in press
4. **Krieg C**, Valls R\*, Vatland S, Gordinier J, Porter S, von Wettberg EJB. (2019) Nitrogen fixation: fixing the gap between concept and evidence-based learning with legume biology. *American Biology Teacher*, 81:4, 245-250
3. von Wettberg EJB *et al.* (#27/49 **Krieg C**). (2018) Ecology and genomics of an important crop wild relative as a prelude to agricultural innovation. *Nature Communications*, 9:649
2. **Krieg C**, Watkins JE, Jr., Chambers S, Husby C. (2017) Sex-specific differences in functional traits and resource acquisition in five cycad species. *AoB Plants*, 9:2



1. Muluaem K, van der Maesen LJG, **Krieg C**, von Wettberg EJB. (2016) Historical and phylogenetic perspectives of pigeonpea. *Legume Perspectives*, 11, 7-9

## BOOK CHAPTERS

1. **Krieg C**, Muluaem K, von Wettberg EJB. (2017) Germplasm characterization and trait discovery. In “*The Pigeonpea Genome*”. p65-79, Springer, Cham.

## GENERAL AUDIENCE (\* mentored undergraduates)

4. Zeller Z\*, **Krieg C**. (2018) Soil remediation. *Fiddlehead Forum*, 45, 87-88
3. Pinson J, **Krieg C**. (2017) Fern foray. *Fiddlehead Forum*, 44, 4-7
2. **Krieg C**, Saunders S\*. (2016) Ferns in space. *The Palmetto*, 33, 8-10
1. **Krieg C**, Jimenez S\*, Vargas D, Penmetza RV, von Wettberg EJB. (2015) Green chickpeas: bringing Florida a new vegetable from the semi-arid tropics. *The Tropical Garden*, 36-37

**V. MAJOR GRANTS**

\$ AMOUNT

|           |   |        |
|-----------|---|--------|
| 2020–2022 | National Science Foundation Postdoctoral Research Fellowship<br>Biological Research Collections Track (2 yr funding)  | 69,000 |
| 2019–2020 | National Geographic Exploration Grant<br>PI Katherine McCulloh (UW Madison), co-Is <b>Christopher Krieg</b> (UF)<br>Adam West (U Cape Town), and Michele Pfab (South African National<br>Biodiversity Institute). | 50,087 |

**VI. GRADUATE RESEARCH FUNDING & TRAVEL AWARDS**

\$ AMOUNT

|      |  |        |
|------|--|--------|
| 2018 | NSF Graduate Research Opportunities Worldwide                          | 5,000  |
| 2018 | Graduate Student Research Award, Botanical Society of America          | 500    |
| 2018 | Kelly Botanical Research Fellowship, Montgomery Botanical Center       | 3,000  |
| 2018 | Student Travel Grant, Graduate Student Council, University of Florida  | 350    |
| 2018 | Graduate Student Training Grant, Torrey Botanical Society              | 1,000  |
| 2018 | Australia-Americas PhD Internship, Australia Academy of Sciences       | 3,500  |
| 2018 | Carrie Lynn Yoder Scholarship, University of Florida                   | 500    |
| 2016 | NSF Graduate Research Fellowship (3 yr funding)                        | 34,000 |
| 2016 | Student Travel Award, Graduate Student Council, University of Florida  | 350    |
| 2016 | Rosemary Graduate Research Grant, Society for the Study of Evolution   | 2,500  |
| 2016 | Michael L. May Interdisciplinary Research Grant, University of Florida | 1,000  |
| 2015 | Grinter Graduate Student Fellowship, University of Florida             | 7,500  |
| 2015 | Student Travel Award, American Fern Society                            | 550    |
| 2015 | Organization for Tropical Studies Scholarship                          | 1,000  |
| 2014 | Student Travel Grant, Picker Science Institute, Colgate University     | 1,000  |
| 2014 | Research Fellowship, Picker Science Institute, Colgate University      | 3,500  |

**VII. PROFESSIONAL PRESENTATIONS**

## INVITED TALKS

- 2018 **Krieg C**. New findings in cycad physiology: Cycad-Symposium: Montgomery Botanical Center Miami, FL
- 2015 **Krieg C**. Pteridophytes. Audubon Society, Corkscrew Swamp Sanctuary, Immokalee FL

## ORAL PRESENTATIONS

- 2019 **Krieg C**, McCulloh K, Guralnick R, Sessa E. Transgressive physiological traits explain broad-scale niche novelty in an allopolyploid fern complex. *planned for Bot. Soc. of Am.*, Tucson AZ



- 2019 **Krieg C**, McCulloh K, Guralnick R, Sessa E. Transgressive physiological traits explain broad-scale niche novelty in an allopolyploid fern complex. *planned for* Ecol. Soc. of Am., Louisville KY
- 2018 **Krieg C**, McCulloh K, Sessa E. Polyploidy, traits, and the niche: insights into coexistence mechanisms. Bot. Soc. of Am., Rochester MN
- 2018 **Krieg C**. The role of serpentine soils in the evolution of a polyploid fern complex. Northeast Natural History Conference. Burlington, VT
- 2017 **Krieg C**. Cycads are weird. PopBio series, Dept. of Biol., Univ. of Florida
- 2016 **Krieg C**. Evolution, and natural selection on ecophysiological traits in polyploid ferns. Whitney Laboratory for Marine Bioscience, St. Augustine FL

#### POSTER PRESENTATIONS

- 2018 **Krieg C**, McCulloh K, Sessa E. Polyploidy enhances coexistence through trait differentiation and niche partitioning. Gordon Research Conference: Multiscale Vascular Plant Biology, Mt. Snow VT
- 2017 **Krieg C**. How understanding niche evolution in cycads can improve the conservation of threatened and endangered species. FMNH, Gainesville FL
- 2016 **Krieg C**, Watkins JE Jr, Husby C. Sex-specific differences in functional traits and resource acquisition in five cycads. PEPG, Lisbon, Portugal
- 2016 **Krieg C**, Watkins JE Jr, Husby C. Sex-specific differences in functional traits and resource acquisition in five cycads. Bot. Soc. of Am., Savannah GA
- 2015 **Krieg C**, Watkins JE Jr. Lineage specific responses to sunflecks in ferns, cycads, and angiosperms. Next Generation Pteridology, Washington DC
- 2014 **Krieg C**, Watkins JE Jr. Sunfleck utilization in ferns, cycads, and angiosperms. Bot. Soc. of Am., Boise ID

### VIII. ADVANCED TRAINING & FIELD COURSES

- 2018 Australian Plant Ecology, Victoria, Australia; UW-Madison field course
- 2018 PHYS-fest 2, Holden Arboretum, OH, USA
- 2017 Stable Isotope Biogeochemistry and Ecology (Isocamp), Salt Lake City, UT, USA
- 2016 Plant Environmental Physiology Group Techniques (PEPG), LIS, Portugal
- 2016 Taxonomy & Biology of Ferns & Lycophytes, Eagle Hill Institute, ME, USA
- 2016 PHYS-fest, Konza Biological Field Station, KS, USA
- 2016 LICOR 6400 Workshop, LiCor Biosciences, Lincoln NE, USA
- 2015 Desert Ecology & Evolutionary Biology, CA, USA; UW-Madison field course
- 2015 Ferns & Lycophytes, Organization for Tropical Studies, Costa Rica

### IX. TEACHING & MENTORSHIP (*Semesters taught: F = Fall, S = Spring, ## = Year*)

#### COURSE DEVELOPMENT

**University of Florida**, Department of Biology

S17 BSC 3911: Entering Research in Biology

**Pine Crest School**, Environmental Studies, Boca Raton FL

S15 Nitrogen Fixation & Legume Biology semester long experiment

#### TEACHING ASSISTANT

**Organization for Tropical Studies (OTS)**, Costa Rica

S17 Graduate level: Ferns & Lycophytes

**University of Florida**, Department of Biology

S16 PCB 3601C: Plant Ecology

F15 BSC 211L: Integrative Principles of Biology 2



## GUEST LECTURER

**University of Florida**, Department of Biology

- S17 BOT 3503: Phys. & Mol. Bio. of Plants, Topic: C3 vs C4 leaf physiology  
 S16 PCB 3601C: Plant Ecology, Topic: Leaf physiology, acclimation & adaptation  
 S16 BOT 6935: Plant Phys. Reading Group, Topic: Leaf physiology

## RESEARCH MENTORSHIP (\* published abstract, ° published article)

- 2017–2019 Zachary Zellar\*\*°, University of Florida  
 2017–2018 Natalie Treister\*, University of Wisconsin–Madison  
 2017 Giovanna Bishop, Wheaton College  
 2016 Sandy Saunders°, University of Florida  
 2015 Rebecca Valls\*°, Florida International University

**X. SERVICE & OUTREACH** (– on-going)

## SERVICE TO PROFESSION

**Ad hoc reviewer**: American Fern Journal, Journal of Agronomy,  
 American Journal of Botany, American Biology Teacher,  
 Plant Signaling & Behavior, HortScience, PeerJ,  
 Plants People Planet

## SERVICE TO UNIVERSITY

- 2017 – **Co-Founder & Admin.**, Facebook page: UF Biology Undergraduate Researchers  
 2017–2018 **Green Initiatives**, Biology Graduate Student Association, University of Florida  
 2016–2017 **President**, Biology Graduate Student Association, University of Florida  
 2016–2017 **Graduate Rep.**, Biology Graduate Student Association, University of Florida

**XI. PROFESSIONAL AFFILIATIONS**

American Fern Society (member)  
 Botanical Society of America (member)  
 Ecological Society of America (member)  
 Society for the Study of Evolution (member)  
 Torrey Botanical Society of America (member)  
 National Association of Biology Teachers (member)  
 Organization for Tropical Studies (member)  
 Florida Native Plant Society (member)  
 The Cycad Society (member)

Australia Academy of Science (research fellow)

NSF Postdoctoral Research Fellowship Program in Biology (research fellow)\* *begins Jan 2020*

NSF Graduate Research Fellowship Program (research fellow)

Montgomery Botanical Center (research fellow)

