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CHRISTOPHER P. KRIEG

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I. RESEARCH AREAS

Plant physiological ecology, species distribution modeling, polyploid ecology, abiotic stress, functional biogeography, hydraulic vulnerability, conservation physiology, structure & function

II. EDUCATION

2019 **University of Florida**, Gainesville FL
Ph.D., Botany; Advisor: Dr. Emily Sessa

2014 **Colgate University**, Hamilton NY
B.A., Biology; Advisor: Dr. James (Eddie) Watkins

III. PROFFESSIONAL APPOINTMENTS

2020–2022 NSF Postdoctoral Research Fellow, **University of Wisconsin**, Madison, WI
2021–2022 Courtesy Postdoctoral Associate, **Florida International University**, Miami, FL
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

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

IN PREPARATION

11. **Krieg C**, Seeger K*, Company C, Watkins J, McCulloh K, Mclearn D. Functional traits that underlie leaf lifespan mature at different rates in a tropical fern species. (in prep)
10. **Krieg C**, Gosetti S*, Watkins J, McCulloh K. Reproductive phases coincide with changes in photosynthetic physiology in an endangered cycad species. (in prep)

PEER-REVIEWED PAPERS

9. McCulloh K, Augustine S‡, Goke A‡, Jordan R‡, **Krieg C**‡, O'Keefe K‡, Smith D‡. **(2022)** At least it's a dry cold: the global distribution of freeze-thaw and drought stress and the hydraulic traits that impart tolerance in conifers. (in review)
8. **Krieg C**‡ & Chambers S‡. **(2022)** The Ecology and Physiology of Fern Gametophytes: a methodological synthesis. *Applications in Plant Sciences* (in review)
7. Marques E, **Krieg C**, Decosta E, Bueno E, Sessa E, Penmetsa RV, von Wettberg EJB. **(2020)** The impact of domestication on above-and below-ground trait responses to nitrogen fertilization in wild and cultivated genotypes of chickpea (*Cicer sp*.). *Frontiers in Genetics*, 11, doi: 10.3389/fgene.2020.576338
6. Greenlon A *et al*. (#9/26 **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,* 116(30), 15200-15209
5. **Krieg C**, Watkins JE, Jr., McCulloh K. **(2019)** A new protocol for psychrometric pressure-volume curves of fern gametophytes. *Applications in Plant Sciences*, 7(5)
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. Mulualem 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**, Mulualem K, von Wettberg EJB. **(2017)** Germplasm characterization and trait discovery. In "*The Pigeonpea Genome*". p65-79, Springer, Cham.

GENERAL AUDIENCE (* mentored undergraduates)

5. Gosetti S*, **Krieg C**. **(2022)** What we still don't know about cycad reproductive physiology. *Cycads* (in press)
4. Zeller Z*, **Krieg C**. **(2019)** Spoiled soils and the role of ferns in phytoremediation. *Fiddlehead Forum*, 45, 5
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, Penmetsa 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 PI **Christopher Krieg**, sponsor(s) Katherine McCulloh, Cécile Ané (UW Madison), Adam West (U Cape Town)	207,000
2019–2020	National Geographic Exploration Grant PI Katherine McCulloh (UW Madison), co-Is **Christopher Krieg** (UW Madison), Adam West (U Cape Town), and Michele Pfab (South African National 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	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. PROFFESSIONAL PRESENTATIONS († indicates speaker)

INVITED TALKS

2019 **Krieg C**†, McCulloh K, Guralnick R, Soltis P, Sessa E. Transgressive physiological traits explain broad-scale niche novelty in an allopolyploid fern complex. Botany. Bot. Soc. of Am., Rochester MN

2018 **Krieg C**†. New findings in cycad physiology. Montgomery Botanical Center: Mini-Symposium, Miami FL

2015 **Krieg C**†. Pterrific Pteridophytes. Audubon Society, Corkscrew Swamp Sanctuary, Immokalee FL

CONTRIBUTED TALKS

2020 **Krieg C**†. From Genes to Distributions: physiological ecology as an integrator of polyploid biology. Botany. Bot. Soc. Of Am., virtual conference

2018 **Krieg C**†, McCulloh K, Sessa E. Polyploidy, traits, and the niche: insights into coexistence mechanisms. Botany. 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.

POSTERS

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. Botany. 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. Botany. Bot. Soc. of Am., Boise ID

VIII. ADVANCED RESEARCH 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, Co-developer

S17 BSC 3911: Entering Research in Biology

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 (* conference presentation, ° published article
15 undergraduate students, 14 of whom are from underrepresented group(s), resulting in 6 poster presentations, and 5 publications w/ undergraduate co-authorship

TEACHING METHODOLGY & PEDEGOGY TRAINING
University of Wisconsin, DELTA program, CIRTL Network
S21 Developing an Evidence-Based Teaching Plan (4 wks)
F20 Equity in STEM for all genders (semester)
F20 Engaging Students through High-Impact Practices (4 wks)
University of Florida, Department of Biology
F15 ZOO 6927: Biology Laboratory Instructional Methods (semester)

X. SERVICE & OUTREACH

SERVICE TO PROFESSION
Grant reviewer: National Science Foundation standard grant proposals
Ad hoc reviewer: New Phytologist, American Fern Journal, American Journal of Botany, Journal of Agronomy, Plant Signaling & Behavior, American Biology Teacher, Plants People Planet, PeerJ
2021 **Instructor**, Phys-Fest III, methods in hydraulics, CSU Mountain Campus, CO
2020–*present* **Reviewing Editor**, Applications in Plant Sciences
2020 **Senior member**, NSF GRFP workshop, Botanical Society of America
2020 **Organizer**, Symposium on polyploid ecology, annual Botany meeting
2019–*present* **Director of Symposia & Colloquia**, Bot. Soc. of America, Physiology Section
2019–*present* **Counsel member**, IUCN Cycad Specialty Group
2019–*present* **Counsel member**, Grants Committee, The Cycad Society

SERVICE TO UNIVERSITY
2021–*present* **Postdoctoral Representative**, Climate Task Force, Botany Dept., UW-Madison
2020 **Steering Committee Member**, BIPOC Inclusion, Botany Dept., UW-Madison
2017–2019 **Co-Founder & Admin**, Facebook page: UF Biology Undergraduate Researchers
2017 **Co-Developer**, Entering Research in Biology, (BSC 3911), UF Dept. of Biology
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 (not exhaustive)

American Fern Society (member)
Botanical Society of America (member)
Ecological Society of America (member)
Society for the Study of Evolution (member)
National Association of Biology Teachers (member)

The Cycad Society (counsel member)
IUCN Cycad Specialty Group (counsel member)
Australia Academy of Science (research fellow alumnus)
Montgomery Botanical Center (research fellow)