

Anthony Domiano Vaudo, PhD

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1664 N VIRGINIA ST MS 314 RENO, NV 89557

EDUCATIONAL BACKGROUND

PhD Entomology, Pennsylvania State University

August 2011 - December 2016, 40 hours/week, \$24,000/year

501 ASI Building, University Park, PA 16802

Advisors: Christina Grozinger, PhD, +1 (814) 865-2214 & John Tooker, PhD, +1 (814) 865-7082

Dissertation: “Pollen nutrition, the foundation of bumble bee foraging”.

I conducted basic and applied field and laboratory research on the nutritional ecology of native bumble bee foraging behavior and health, including foraging assays, analytical chemistry, and greenhouse studies. In this research I developed unique analytical techniques to model the link between bee foraging behavior, health, and reproductive success. This was transformative in the field of bee nutritional ecology and essential for the management of habitat restoration and conservation of native wild and managed bee populations, including threatened or endangered species.

I was self-funding by winning USDA-NIFA Predoctoral and NAPPC grants. I produced peer reviewed journal publications, and presented findings at academic and extension meetings (ESA, ICE, International Conference on Pollinator Biology). I presented to a variety of public stakeholders (USDA-NIFA, NAPPC, Master Gardeners, Pennsylvania State Beekeepers, Xerces Society). I also developed and presented education to youth through public outreach programs (e.g. Great Insect Fair, Wings in the Park). I supervised and mentored undergraduate student assistant researchers contributing to my research projects who won undergraduate research scholarships and awards.

MS Entomology, University of Florida

August 2008 - December 2010, 40 hours/week, \$16,000/year

1881 Natural Area Dr, Gainesville, FL 32608

Advisor: Dr. Jamie Ellis, +1 (352) 273-3924

Thesis: “The effects of land use on Cape honey bee (*Apis mellifera capensis* Escholtz) nesting dynamics in the Eastern Cape, South Africa”

I conducted field research on the nesting behavior, colony strength, and population trends of wild honey bee colonies in South Africa. I engaged with South African private landowners and businesses for land access to conduct research and protect pollinators. I conducted hands-on workshops for honey beekeeping as a subsistence practice to South African and Congolese

communities. I wrote publications and presented extension classes for Florida beekeepers. I wrote peer reviewed publications of research.

BS Psychology, University of Florida

August 1999 - May 2003

ADDITIONAL TRAINING

- Plant and Pollen Metabarcoding Workshop, 2016, Würzburg University, Würzburg, Germany
- The Bee Course, 2016, American Museum of Natural History Southwestern Research Station, Portal, AZ
- ddRAD-seq Population Genetics Wetlab Workshop, 2017, University of Maryland, College Park, MD
- Postdoctoral Academic and Industry Career Empowerment Course, 2022, University of Nevada Reno, Reno, NV
- Statistical Rethinking Bayesian Statistics Course, 2022, online
- Inclusive STEM Teaching Project Course, 2022, online

PROFESSIONAL EXPERIENCE

Postdoctoral Scholar, University of Nevada Reno

August 2019-Present, 40Hours/Week, \$50,000/Year

1667 N. Virginia St., MS 314, Reno, NV 89557

Supervisor: Anne Leonard, PhD, +1 (775) 784-1932

I plan, conduct and direct basic and applied wildlife ecological field and laboratory research on the nutritional ecology of native bees and plants in the Great Basin and Eastern Sierra regions. This research involves investigating population trends of bee species at the landscape level and evaluating their foraging preferences among host-plant species, and how these may change across geographic, ecological, and climatic gradients and anthropogenic stressors in the region. I then use these findings to make recommendations for habitat restoration, conservation, and management of wild bees and their host-plants, including rare, unique, and threatened species.

I develop and utilize unique and customized techniques to conduct projects to collect and analyze biological databases for plant-pollinator communities, including insect and plant taxonomy, interaction networks, analytical chemistry, and behavioral experiments. I analyze data using multivariate and modeling statistical software, such as JMP, R, Boris, and Geneious Prime, to assess behavior, habitat dynamics, species interactions, phylogenetic, and spatial components.

I disseminate research results by publishing in peer-reviewed journals (see publications section below) and presenting at academic conferences and meetings (e.g. ESA, Natural Areas, BOMBUSS, Field Museum of Chicago, University of Wyoming, University of Wisconsin). I present my research and knowledge, and serve as a subject matter expert by evaluating methods and consulting for public and private stakeholders in habitat restoration, management, and conservation (including USDA-ARS, Forest Service, Walker Basin Conservancy, Desert Farming Initiative, Tahoe Science Advisory Council). I also share my research findings and topical expertise with media outlets (e.g. Edible Reno-Tahoe).

I lead my research program by collaborating with an interdisciplinary and cooperative team of faculty, students, and stakeholders including taxonomists, botanists, analytical chemists, physiologists, and ecologists. I prepare weekly reports to my supervisor about data, status, trends of the research.

I recruit, supervise, mentor, and train undergraduate and graduate students conducting research in lab and field environments. This involves the assignment, direction and planning of research projects and deadlines, as well as providing regular assessment and guidance. I also teaching a course titled Bee Natural History and Identification to graduate students and staff at the University of Nevada Reno.

I conduct day to day lab management and managerial oversight, including sample and equipment organization and maintenance, ordering, shipping and receiving, chemical waste management, and delegation of tasks to lab members.

Fulbright Postdoctoral Scholar, University of Kwazulu-Natal, South Africa

January 2018 - July 2019, 40 Hours/Week, \$61,000/Year

University of Kwazulu-Natal Life Sciences, Private Bag X01, Scottsville, 3209

Supervisor: Steve Johnson, PhD, +27 (33) 260-5148

Self-funded by obtaining a Fulbright award, I conducted wildlife ecological field research on public and private lands (including completing agreements and permits), on the assembly, phylogenetics, evolution, and population interaction networks of native bee and plant communities across multiple landscapes and vegetation habitats in South Africa. This research involved investigating population trends of bee species and evaluating their foraging preferences among host-plant species, which include rare, unique, and new species. This research is used to understand the ecology of bee-flower relationships and make local habitat restoration and management recommendations for wild native bee species.

Using a variety of techniques, deep field work, and analyses, I maintained and analyzed a database of the assemblages of plant-pollinator communities, including insect and plant taxonomy, interaction networks, genetic barcoding and phylogenetic analyses, and functional trait analysis. I analyzed data using modeling statistical software such as JMP, R, and Geneious Prime.

I led this project by collaborating with an international (South Africa, Germany, and USA) and interdisciplinary team of pollination ecologists, invertebrate and plant taxonomists, and phylogeneticists.

During this time, I wrote peer reviewed journal publications, and presented findings at academic conferences and diverse public and private conservation stakeholder meetings in the country (including Addo Elephant National Park and University of Kwazulu-Natal).

Postdoctoral Scholar, Pennsylvania State University

January 2017 - December 2017, 40 Hours/Week, \$45,000/Year

501 ASI Building, University Park, PA 16802

Supervisor: Margarita López-Urbe, PhD, +1 (814) 865-8245

I conducted laboratory research on population trends using population genetics, phylogenetics, and disease dynamics using museum curated native bee specimens. In this study I developed a unique and customized analytical technique to nondestructively collect biological data from preserved specimens,

as well as customized a new population genetic analysis to specifically work with museum specimens. This project promoted the use of “extended specimens” from previously collected biological material.

I conducted laboratory research using pollen metabarcoding of larval provisions of managed bees. This technique was used to determine managed bee use of resources in both public and private agricultural lands. These data and techniques are used to make recommendations for the habitat management of both wild and managed species.

I conducted applied field research and modeled the effects of introduced managed pollinators on the health, status, and population trends of native bee communities in the Tibetan Plateau, China. This research involves a combination of insect and plant wildlife techniques in sampling and identification, wildlife and habitat diversity metrics, and potential threats to natural populations. These data are used for understanding the interactions of introduced or invasive species on native wildlife populations and their conservation.

I analyzed these data with a wide variety of complex modeling and multivariate and bioinformatic statistical software including JMP, R, Python coding, Geneious Prime, and Primer.

I developed and lead these projects with an international (China, Germany, USA) and interdisciplinary team of collaborations including pollination ecologists, insect taxonomists, biostatisticians, and geneticists.

I produced peer reviewed journal publications, and presented findings at academic conferences and meetings (ESA, Three Rivers Evolution Event). I was awarded funding to use CT scanning of bees to obtain information on the “extended specimens” and develop 3D models for educational tools. I served as a subject matter expert to a variety of public conservation stakeholders (Flight 93 Memorial, Master Gardeners, Pennsylvania State Beekeepers, and other media). I also developed and presented education to youth through public outreach programs (e.g. Great Insect Fair).

HONORS AND AWARDS

FELLOWSHIPS/GRANTS

- 2019 National Research Foundation Postdoctoral Research Funding, South Africa. (R100,000 ≈ \$7,000)
- 2018 Fulbright Science and Technology, Sub-Saharan Africa Grant for Postdoctoral Research. *Untangling the network: exploring the role of nutritional niches in pollination syndromes.* (\$61,000)
- 2014 USDA AFRI NIFA Predoctoral Fellowships Grant. *Elucidating the role of nutrition in pollinator foraging behavior and health.* (\$79,000)
- 2014 North American Pollinator Protection Campaign (NAPPC) Bee Health Improvement Project Grant. *The effects of pollen diversity on bumble bee health in an agricultural environment.* (\$9,700)
- 2013 BBSRC US-UK Honey Bee Health Exchange. *The influence of social context on the molecular mechanisms of nutritional regulation in honeybees and bumblebees.* (\$3,450)
- 2017 Energy and Environmental Sustainability Laboratories (Penn State) EESLGreen program. *CT imaging of bees for identification and outreach education.* (\$1,250).

2012 Sigma Xi Grants-in-Aid of Research. *Effects of floral nutrition on bee foraging preferences*. (\$600)

AWARDS

- 2016 Ralph O. Mumma Graduate Award, Penn State Department of Entomology, for outstanding achievement (\$1,069)
- 2016 Plant and Pollen Metabarcoding Workshop 2016. Scholarship and tuition waiver (\$1,606)
- 2014 ESA Annual Meeting 2014 Student Competition Presidents Prize. 1st Place in Student Competition (\$75)
- 2019 University of Nevada Reno Professional Development Travel Award (\$500)
- 2021 University of Nevada Reno Professional Development Travel Award (\$500)
- 2014 USDA AFRI Student Travel Grant for ESA Annual Meeting 2014 (\$500)
- 2013 William Yendol Memorial Research Award (\$396.40)
- 2013 Sahakian Family Endowment for Graduate Education in Agricultural Sciences Travel Award (\$300)

ENTOMOLOGICAL SOCIETY OF AMERICA MEMBER 2012-PRESENT

INVITED UNIVERSITY LECTURES AND SEMINARS

SEMINARS

- 2022 University Wyoming Department of Zoology and Physiology Seminar. "Pollen nutrition, bee-flower interactions, and implications for conservation." Laramie, WY, February 2022.
- 2021 University of Wisconsin-Madison Entomology Colloquium Seminar. "Bee nutritional ecology: unifying behavior, communities, and conservation." Madison, WI
- 2021 USDA-ARS Seminar. "Bee nutritional ecology: unifying behavior, communities, and conservation." Stoneville, MS
- 2021 The Field Museum Seminar. "Bee nutritional ecology: unifying behavior, communities, and conservation." Chicago, IL
- 2020 USDA-ARS Seminar. "Applying nutritional ecology to bumble bee conservation and management." Logan, UT
- 2019 Seminar for Penn State Center for Pollinator Research. "Phylogeny vs function: how ancestry and physical traits predict bee-flower interactions across different biomes". University Park, PA

LECTURES

- 2022 NRES 345 Range and Forest Plants, University of Nevada Reno
- 2022 EECEB 753 Science Communication and Conservation, University of Nevada Reno
- 2015 ENT 222 Honey Bees and Humans. Penn State
- 2015 HORT 405 Plant Ecology. Penn State
- 2010 ENY 3005/5006 Principles of Entomology. University of Florida

SKILLS AND SPECIALIZED TRAINING

- Propose, design and conduct collections, field, laboratory, and green house-based research on bee biology and ecology. Research projects include bee population biodiversity, pollination ecology, and community interactions with native and introduced plants, nutritional ecology, physiology, reproductive success and fitness, behavior, phylogenetics, and population genetics.
- Research skills include invertebrate surveying, collection, and curation; invertebrate taxonomy and identification; biodiversity and network analyses; cognition and behavioral analysis; physiological analysis; insect rearing and beekeeping; plant rearing (field and greenhouse); analytical chemistry; field observation and data collection; molecular/genetic analysis (including ddRAD, phylogenetics, and metabarcoding); statistical programming and software (JMP, R, bioinformatics, Geneious Prime, Primer)
- Publication and presentation of research for academic and peer reviewed journals and conferences, and diverse public and private stakeholders, landowners, and interest groups.
- Extension, consultation, and recommendation of pollinator conservation including habitat restoration, enhancement, and management and training in ecological design.
- Leading and managing international and interdisciplinary cooperative research project teams involving multiple researchers and diverse public and private stakeholders.
- Grant writing and acquiring federal and non-profit research funding.
- Recruitment, hiring, and mentorship and supervision of diverse undergraduate and graduate student researchers.
- Lab management and administration including ordering, sample, equipment, and chemical organization, chemical waste management, and task delegation.

FELLOWSHIPS/GRANTS

- 2019 National Research Foundation Postdoctoral Research Funding, South Africa. (R100,000 ≈ \$7,000)
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AWARDS

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- 2014 USDA AFRI Student Travel Grant for ESA Annual Meeting 2014 (\$500)
- 2013 William Yendol Memorial Research Award (\$396.40)
- 2013 Sahakian Family Endowment for Graduate Education in Agricultural Sciences Travel Award (\$300)

PEER-REVIEWED PUBLICATIONS

- 2022 **Vaudo AD**, Erickson E, Patch HM, Grozinger CM, and Mu JP (Under Review) Impacts of soil nutrition on floral traits, pollinator attraction, and fitness in cucumbers (*Cucumis sativus* L.) Scientific Reports. PREPRINT (Version 1) available at Research Square, doi: 10.21203/rs.3.rs-2085798/v1
- 2021 Wood TJ, Vanderplanck M, Vastrade M, **Vaudo AD**, and Michez D. (2021) Trees for bees: could woody plant pollen be used as a consistent resource in bee-focused agri-environmental schemes? *Entomologia Generalis*. doi: 10.1127/entomologia/2021/1241
- 2021 Francis JS, Tatarko AR, Richman SK, **Vaudo AD**, and Leonard AS. (2021) Microbes and pollinator behavior in the floral marketplace Current Opinion in Insect Science. 44:16-22. doi: 10.1016/j.cois.2020.10.003
- 2020 **Vaudo AD**, Biddinger DJ, Sickel W, Keller A, and López-Urbe MM. (2020) Introduced bees (*Osmia cornifrons*) collect pollen from both coevolved and novel host-plant species within their family-level phylogenetic preferences. *Royal Society Open Science*. 7: 200225. <http://dx.doi.org/10.1098/rsos.200225>
- 2020 **Vaudo AD**, Tooker JF, Patch HM, Biddinger DJ, Coccia M, Crone MK, Fiely M, Francis JS, Hines HM, Hodges M, Jackson SW, Michez D, Mu JP, Russo L, Safari M, Treanore ED, Vanderplank M,

- Yip E, Leonard AS, Grozinger CM. (2020) Pollen protein:lipid macronutrient ratios may guide broad patterns of bee species floral preferences. *Insects*. 11:132.
- 2020 Russo L, Keller J, **Vaudo AD**, Grozinger CM, Shea K. (2020) Warming increases pollen lipid concentration in an invasive thistle, with minor effects on the associated floral-visitor community. *Insects*. 11:20.
- 2019 Treanore ED, **Vaudo AD**, Grozinger CM, Fleischer SJ. (2019) Examining the nutritional value and effects of different floral resources in pumpkin agroecosystems on *Bombus impatiens* worker physiology. *Apidologie*. doi: 10.1007/s13592-019-00668-x
- 2019 Russo L, **Vaudo AD**, Fisher J, Grozinger CM, Shea K. (2019) Bee community preference for an invasive thistle associated with higher pollen protein content. *Oecologia*. doi: 10.1007/s00442-019-04462-5
- 2018 **Vaudo AD**, Fritz ML, and López-Urbe MM. (2018) Opening the door to the past: Accessing phylogenetic, pathogen, and population data from museum curated bees. *Insect Systematics and Diversity*. doi: 10.1093/isd/ixy014
- 2018 Galbraith DA, Fuller ZL, Ray AM, Brockmann A, Frazier M, Gikungu MW, Martinez FI, Kapheim KM, Kerby JT, Kocher SD, Losyev O, Muli E, Patch HM, Rosa C, Sakamoto JM, Stanley S, **Vaudo AD**, Grozinger CM. (2018) Investigating the viral ecology of global bee communities with high-throughput metagenomics. *Scientific Reports*. doi:10.1038/s41598-018-27164-z
- 2018 **Vaudo AD**, Farrell LM, Patch HM, Grozinger CM, and Tooker JF. (2018) Consistent pollen nutritional intake drives bumble bee (*Bombus impatiens*) colony growth and reproduction across different landscapes. *Ecology and Evolution*. 8: 5765-5776.
- 2016 **Vaudo AD**, Stabler D, Patch HM, Tooker JF, Grozinger CM, and Wright G (2016) Bumble bees regulate their intake of essential protein and lipid pollen macronutrients. *Journal of Experimental Biology*. 219: 3962-3970.
- 2016 **Vaudo AD**, Patch HM, Mortensen DA, Tooker JF, and Grozinger CM (2016) Macronutrient ratios in pollen shape bumble bee (*Bombus impatiens*) foraging strategies and floral preferences. *Proceedings of the National Academy of Sciences*. doi: 10.1073/pnas.1606101113
- 2015 Bohnenblust EW, **Vaudo AD**, Egan JF, Mortensen DA, and Tooker JF (2015) Effects of the herbicide dicamba on non-target plants and pollinator visitation. *Environmental Toxicology and Chemistry*. doi: 10.1002/etc.3169
- 2015 **Vaudo AD**, Tooker JF, Grozinger CM, Patch HM (2015) Bee nutrition and floral resource restoration. *Current Opinion in Insect Science*. 10: 133-141.
- 2014 **Vaudo AD**, Patch HM, Mortensen DA, Grozinger CM, and Tooker JF (2014) Bumble bees exhibit daily behavioral patterns in pollen foraging. *Arthropod-Plant Interactions*. 8: 273-283.
- 2013 Human H, Brodschneider R, Dietemann V, Dively G, Ellis JD, Forsgren E, Fries I, Hatjina F, Hu F, Jaffé R, Jensen AB, Köhler A, Magyar JP, Özkýrým A, Pirk CWW, Rose R, Strauss U, Tanner G, Tarpy DR, van der Steen JJM, **Vaudo A**, Vejsnæs F, Wilde J, Williams GR, and Zheng H (2013) Miscellaneous standard methods for *Apis mellifera* research. *Journal of Apicultural Research*. 52(4): doi: 10.3896/IBRA.1.52.4.10

- 2012 **Vaudo AD**, Ellis JD, Cambray GA, and Hill M (2012) Honey bee (*Apis mellifera capensis/A. m. scutellata* hybrid) nesting behavior in the Eastern Cape, South Africa. *Insectes Sociaux*. 59: 323-331.
- 2012 **Vaudo AD**, Ellis JD, Cambray GA, and Hill M (2012) The effects of land use on honey bee (*Apis mellifera*) population density and colony strength parameters in the Eastern Cape, South Africa. *Journal of Insect Conservation*. 16: 601-611.

SCIENTIFIC PRESENTATIONS

Invited

- 2022 University Wyoming Department of Zoology and Physiology Seminar. "Pollen nutrition, bee-flower interactions, and implications for conservation." Laramie, WY, February 2022.
- 2021 University of Wisconsin-Madison Entomology Colloquium Seminar. "Bee nutritional ecology: unifying behavior, communities, and conservation." Madison, WI
- 2021 ESA 2021 Symposium Organizer (with Rodney Richardson) and contributed presentation. "Pollinator nutritional research: From collecting and characterizing floral resource provisions to the inference of ecological and evolutionary consequences." Denver, CO
- 2021 USDA-ARS Seminar. "Bee nutritional ecology: unifying behavior, communities, and conservation." Stoneville, MS
- 2021 The Field Museum Seminar. "Bee nutritional ecology: unifying behavior, communities, and conservation." Chicago, IL
- 2020 USDA-ARS Seminar. "Applying nutritional ecology to bumble bee conservation and management." Logan, UT
- 2020 ESA 2020 Branch Meeting. "Bees differentiate in nutritional space through pollen host-plant preferences: implications for community conservation". Oklahoma City, OK (postponed due to COVID-19)
- 2019 Seminar for Penn State Center for Pollinator Research. "Phylogeny vs function: how ancestry and physical traits predict bee-flower interactions across different biomes". University Park, PA
- 2018 Thicket Forum South Africa. "Bee nutrition: Unifying behavior, community, and conservation." Addo National Park, South Africa
- 2017 ESA Annual Meeting 2017. "Bee health and foraging behavior are unified through pollen nutritional quality." Denver, CO
- 2017 Behavioral Ecology and Experimental Methods Workshop. "Nutritional Ecology of Pollinators." University Park, PA
- 2014 14th Annual NAPPC International Conference. "Bumble Bee Health in and Agricultural Environment. Washington, D.C.
- 2013 International Conference on Pollinator Biology, Health and Policy. "*Bombus impatiens* Foragers Exhibit Predictable Daily Patterns in Pollen Foraging Preferences." University Park, PA

Contributed

- 2022 UNR Postdoctoral Seminar Series. “Bee nutritional ecology: unifying behavior, communities, and conservation”. Reno, NV
- 2022 ESA Pacific Branch Meeting Presentation. “Pollen nutrition structures bee-wildflower community interactions in the Eastern Sierra”. Santa Rosa, CA
- 2022 ESA Pacific Branch Meeting Poster. Supervised undergraduate research: “Plant species’ pollen macronutrients vary across sites: Implications for plant-pollinator interactions”. Santa Rosa, CA
- 2022 ESA Pacific Branch Meeting Poster. Supervised undergraduate research: “Bee pollen nutrition differs among genera and remains consistent across years in a Sierra Nevada meadow”. Santa Rosa, CA
- 2020 ESA Annual Meeting Section Symposium Presentation. “The nutritional ecology of bee pollination: does pollen composition structure community interactions?”
- 2020 Natural Areas Conference. “The nutritional ecology structuring bee-flower communities in the sierra and sagebrush and implications for conservation”.
- 2019 ESA Annual Meeting Section Symposium Presentation. “Hornfaced mason bee (*Osmia cornifrons*) larval pollen provisions indicate foraging preference for Rosaceae host-plant species and suggest efficient orchard crop pollination”. St. Louis, MO
- 2019 Bombuss 2.0 Conference, poster presentation. “Quality is in the legs of the collector: defining pollen quality within the nutritional landscape and its implications for pollinator conservation.” Toronto, Canada
- 2017 Three Rivers Evolution Event, poster presentation. “Old Bees, Next Genetics.” University of Pittsburgh
- 2016 ICE 2016 XXV International Congress of Entomology. “Pollen Nutrition Drives Bumble Bee Foraging Preferences from the Lab to the Landscape.” Orlando, FL, September 2016
- 2016 International Conference on Pollinator Biology, Health and Policy; poster presentation. “Bumble bees (*Bombus impatiens*) are Floral Generalists, but Nutritional Specialists.” University Park, PA
- 2016 Plant and Pollen Metabarcoding Workshop 2016 Presentation. “The Interactions of Landscape, Foraging Decisions, and Nutrition Influencing Bumble Bee Colony Health.” Würzburg, Germany
- 2015 ESA Section Symposium Presentation. “Bee Nutrition and Floral Resource Restoration: Integrating Nutritional Ecology and Conservation.” Minneapolis, MN
- 2014 ESA Student Competition. “Bee Foraging Strategies Are Shaped by Pollen Nutritional Quality.” Portland, OR
- 2013 ESA Student Competition. “Biotic and Abiotic Factors Guide Bumble Bee (*Bombus impatiens*) Pollen Foraging Preferences.” Austin, TX

MENTORSHIP AND TEACHING

- Mentorship
 - Five undergraduate students: two Penn State Dutch Gold Honey Undergraduate Scholarships, one Penn State Apes Valentes Undergraduate Research Award, and three students traditionally underrepresented in STEM.
 - Two postbaccalaureate students: two NSF REPS students, both traditionally underrepresented in STEM and one first generation college student.
 - Doctoral Thesis Co-Examiner for Swiss Federal Institute of Technology
- Completed Inclusive STEM Teaching Project Course: <https://www.inclusivestemteaching.org/>
- Course instruction and development:
 - EECB 790 Bee Natural History and Identification. University of Nevada Reno
 - Pollen Nutritional Analysis Workshop. Penn State
- Guest Lecturer:
 - NRES 345 Range and Forest Plants, University of Nevada Reno
 - EECB 753 Science Communication and Conservation, University of Nevada Reno
 - ENT 222 Honey Bees and Humans. Penn State
 - HORT 405 Plant Ecology. Penn State
 - ENY 3005/5006 Principles of Entomology. University of Florida
- App Development: College of Education. Penn State
- Teaching Assistant:
 - ENT 314 Ornamental Entomology. Penn State
 - ENT 202 The Insect Connection. Penn State (Developed extra credit field trip component)

EXTENSION AND OUTREACH

- 2022 Outreach for Tahoe Expedition Academy: 3rd grade education about native bees
- 2022 Tahoe Science Advisory Council: Consultation for bee monitoring and habitat restoration
- 2021 Walker Basin Conservancy meeting: Pollination, bees, and restoration recommendations
- 2020 Extension publication, Center for Pollinator Research News, Penn State: “Pollen nutrition may guide broad patterns of bee species host-plant preferences”
- 2017 Master Gardener Continuing Education, presentation. “Bee Nutrition: How bees forage for high-nutrition pollen”
- 2017 Pennsylvania State Beekeepers Association, poster. “Old bees, Next Genetics”
- 2017 Penn State Great Insect Fair. Staff and Developed “How do bees carry their food?” booths (including 3D printed bee models from CT scans)
- 2017 Flight 93 National Memorial Stakeholder’s Meeting, presentation. “Bumble bee nutrition in the landscape”

- 2016 Pennsylvania State Beekeepers Association, poster. “Bumble bees (*Bombus impatiens*) are floral generalists, but nutritional specialists.”
- 2016 Xerces Society Pollinator Conservation Short Course, presentation. “Integrating bee nutrition, foraging behavior and habitat restoration”
- 2016 Wyoming Bee College, presentation. “Bee Nutrition, Foraging Behavior, and Habitat Restoration”
- 2015 Pennsylvania Master Gardener Mini College, presentation
- 2015 Penn State Great Insect Fair. Staff
- 2014 Penn State Great Insect Fair. Staff and Developed “What Do Bees Eat” booth
- 2013 Wings in the Park Staff. State College, PA
- 2012 Penn State Great Insect Fair. Staff
- 2012 Science Speaker Series, Boys’ Latin Charter School and University City High School; outreach presentation
- 2010 Florida State Beekeepers Association, presentation. “Bee Hunting and Research in South Africa”
- 2010 Florida Master Beekeeper Program, presentation. “Honey Bee Biology”
- 2010 Wildlife and Environment Society of South Africa, presentation. “The Effects of Land Use on the Cape Honey Bee.” Rhodes University
- 2010 Field course on how to remove and hive wild honey bee colonies, instructor. Hogsback, South Africa, and Lubumbashi, Democratic Republic of Congo
- 2009 University of Florida Bee College Staff
- 2010 Extension publication. Vaudo, AD. Bee Hunting in South Africa. Florida Melitto Files. FDACS and University of Florida/IFAS. 4(4)
- 2010 Extension publication. Vaudo, AD. The Cape Honey Bee. Florida Melitto Files. FDACS and University of Florida/IFAS. 3(2)
- 2010 Master Beekeepers Honey bee biology and beekeeping, instructor
- 2009 Extension publication. Vaudo, A.D. Wagging Wonder. Florida Mellito Files. FDACS and University of Florida/IFAS. 3(1)
- 2009 Florida State Fair, UF Department of Entomology representative
- 2009 Master Beekeepers Honey bee biology and beekeeping, instructor
- 2008 CALS Tail Gator, UF Department of Entomology representative
- 2008 Master Beekeepers Honey bee biology and beekeeping, instructor

MEDIA

- 2022 Photographs of bees, contribution to UNR’s Discovery magazine feature on pollinator research

- 2020 Featured article and figure, *Insects* journal webpage. “Pollen nutritional ratios may guide bee species floral preferences”
- 2020 Edible Reno-Tahoe Magazine interview. “The latest buzz on bees: University of Nevada Reno is a hub for pollinator research”. By Claire McArthur.
- 2019 Cover photograph. *Insect Systematics and Diversity* Volume 3, Issue 1
- 2019 Thicket Forum South Africa website. “Bee nutrition: Unifying behavior, community, and conservation”
- 2017 López-Uribe Lab Blog. “See the Unseen, Great Insect Fair 2017”
- 2017 López-Uribe Lab Blog. “Opening the door to the past: What new genetic information can be accessed from museum curated bees”
- 2016 Interview for Xploration Awesome Planet TV show. University Park, PA
- 2016 News article for The Wildlife Society about research. “How bumble bees balance their diet.” By Nala Rogers
- 2016 Radio interview for Science Update for American Association for the Advancement of Science (AAAS). “Choosy Bees.” By Bob Hirshon
- 2016 Press release; “Picky eaters: Bumble bees prefer plants with nutrient-rich pollen.” By Sara LaJeunesse
- 2010 BBC Radio interview discussing Science in Africa. Grahamstown, South Africa
- 2010 Film interview for “American Foulbrood” documentary by Carlos Francisco. Eastern Cape, South Africa

REFERENCES

Christina Grozinger, PhD

Distinguished Professor of Entomology
Director, Center for Pollinator Research
PhD Advisor
The Pennsylvania State University
W209 Millennium Science Complex
University Park, PA 16802
+1 (814) 865-2214
cmgrozinger@psu.edu

Margarita López-Uribe, PhD

Associate Professor of Entomology
Pollinator Health Extension Specialist
Postdoc Supervisor
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Anne Leonard, PhD

Associate Professor of Biology
Postdoc Supervisor
University of Nevada Reno
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Extension Specialist
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Professor Steven Johnson

South Africa Research Chair
Postdoc Advisor
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Pietermaritzburg, South Africa
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johnsonsd@ukzn.ac.za

Dylan Kosma, PhD

Assistant Professor of Biochemistry
and Molecular Biology
Collaborator
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+1 (775) 682-7319
dkosma@unr.edu