

Oscar Jesús Valverde Barrantes

1402 Franklin Av., Kent, Ohio, 44240

Cell Phone: (330) 844-6769

Email: os.valverde33@gmail.com

I am a botanist and microbiologist deeply interested in the study of the belowground interactions between plants and their associated microbial communities. My field of research includes the study of the co-evolution between mycorrhizal fungus and seed plants, the mechanisms driving the variation in functional root traits and the impacts of different root strategies on ecological processes like soil carbon accrual and species coexistence. I work in multiple ecosystems, with an especial emphasis in tropical forests. I also use botanical garden collections to address ecological questions. I have ample experience teaching classes to a wide diversity of target groups ranging from elementary and middle schools to graduate student dissertations and abroad studies. My ultimate goal is to incorporate the belowground component as a central topic of discussion, consolidating root ecology as a standalone field in ecology.

Education

- 2007-2013 PhD. Biological Sciences. Kent State University.
Dissertation: “A phylogenetic perspective on fine root ecology: assessing the role of root evolution on fine root functional traits and ecological interactions in woody angiosperms”, Kent State University. GPA 4.0
- 2003-2006 Master of Science. Ecology and Environmental Biology. Thesis: “Fine root biomass and dynamics of six tropical species”, Iowa State University. GPA 3.77
- 1998-2003 Master Scientiae. Biology Faculty University of Costa Rica.
Thesis: “Effects of logging in the structure and floristic composition of the cativales (*Prioria copaifera* Griseb.)”. GPA 3.9
- 1993-97 Bachelor. Forestry Engineering Department.
Technological Institute of Costa Rica. Final investigation: “Forest structure and floristic patterns for two forests in the Cordillera of Talamanca, Costa Rica.”

Professional Experience

- 2016-Present International Center of Tropical Botany. Florida International University.
Department of Biological Sciences.
- Study root functional trait variation along fertility gradients in tropical Amazonian forests from Brazil, French Guyana and Peru (Project NEVEDIV in collaboration with INPA and INRA - UMR)
 - Study the interactions between mycorrhizal fungi and soil pathogens on the foraging strategies of trees in temperate forests (Project MycoPath in collaboration with Skidmore College, Indiana and Kent State University)
 - Describing functional trait syndromes in the hyper-diverse genera *Ficus* and the entire order of Cycadophyta looking for relationships between species trait syndromes, belowground microbial associations and

- biogeographical distributions (In collaboration with Montgomery, Kampong, Chapman and Fairchild Botanical Gardens).
- Coordination and supervision of graduate students in the project FACE Amazon, Manaus, Brazil (<http://amazonface.org/>).
 - Design and redaction of the new version of the book “A Field Guide to the Families and Genera of Woody Plants of Northwest South America” originally authored by Alwyn Gentry.
- 2015-2016 Instituto Nacional de Pesquisa da Amazônia-INPA, in collaboration with the Oak Ridge National Laboratory, Department of Energy (DOE).
FACE-Amazon Project
- In charge of monitoring and developing studies about root dynamics in Amazonian forest, including the description of functional root types, quantification of root biomass and root productivity, root decay and integration between above and belowground compartments. Advising Brazilian students in restoration and plantation management projects.
- 2013-2014 Adjunct Professor, Kent State University.
- Studied geographical and climatic factors affecting the expression of sex ratios in the gynodioecious species *Lobelia siphilitica*.
 - Work on aspect of root evolution and factors affecting decay rates in fine roots of woody angiosperms in temperate forests
 - Teaching undergraduate classes as lecturer
 - Mentoring of undergraduate student.
 - In charge of manuscript preparation and submission. Preparation of grant proposals.
- 2003-2006 Project ECOS. Tree species effects on ecosystem processes.
- In charge of the belowground component (soil and root systems) of the project.
 - In charge of manuscript preparation and submission.
- 1999-2003 Staff member in the No-Governmental Organization Biological Corridor Talamanca-Caribe.
Project: “Biodiversity conservation in the Biological Corridor Talamanca-Caribe”.
- Development of a vulnerability index for timber extraction in tropical forests.
 - Foundation of the first local environmental committee in Costa Rica.
 - Development and implementation of an environmental education program in elementary schools in Talamanca.
 - Equator Prize 2002 for outstanding efforts in conservation in a World Heritage Site. World Summit on Sustainable Development, Johannesburg, South Africa.
- 1997-1999 Plant taxonomist in the national Herbarium of Costa Rica.

Project: Costa Rica Central Pacific Florula

- Publication of several new species of plants including some of my own collection: *Microchilus valverdei* (Orchidaceae), *Macroclinium montis-narae* (Orchidaceae), *Plinia cuspidata* (Myrtaceae) and *Bactris ana-juliae* (Arecaceae).

1997. FUNDECOR (Cordillera development foundation)
- Diagnostic sampling in mature and logged forests, Rio Corinto, Limón, Costa Rica. Research coordinator.
1996. Forest Goods and Services (Private society):
- Tree identification for management activities. Plant taxonomist
1995. ODA (Organization for Environmental Development).
- Permanent plots establishment in moist tropical forests. Sarapiquí, Costa Rica. Plant taxonomist

Extramural grants

2019. **In preparation.** Genetic, phylogenetic and functional diversity in long-term grassland experiments in South Africa. Principal Investigators: Ward, D., Blackwood, C, Rocha, O, and Valverde-Barrantes, O J.
2018. **Pending.** Proposal 1856552 NSF. \$ 547 000. Collaborative Research: Integrating functional traits and climatic tolerances to predict responses of tropical plant communities to climate change. Principal Investigators: C. Baraloto, K. Feeley and **Valverde-Barrantes, OJ.** Contributed 30%.
2017. **Funded** 08010000 DEB. \$300 000. National Science Foundation (NSF-USA). Shifting control from plant-microbe feedback to resource partitioning in temperate forests: predictions from traits of dominant tree species. Principal Investigators: Blackwood, C.B, Phillips, R. and Smemo, K. Senior Personnel: **Valverde-Barrantes, OJ.**, and Johnson, D. Contributed 30%
2017. **Not funded.** Exploring the Forest Underground: how roots and microbes interact for the search of nutrients in tropical rainforest. \$30 000. National Geographic Research Board. Principal Investigators **Valverde-Barrantes, OJ**, Hofhansl, Florian, Fuchslueger, Lucia, Solis, Laura. Contributed 90%
2017. **Funded.** Experiment.com. \$5000. How do root vary? An exploration of root functional traits across an environmental gradient in Hainan, China. Hogan, A., **Valverde-Barrantes, OJ**, Xu, H and Ding, Q. <https://experiment.com/projects/root-functional-trait-variability-across-an-environmental-gradient-in-hainan-china>
2015. **Funded.** Proposal DEB-1532833. \$150 000. Moving Beyond the Leaf Analogy: Root Trait Controls on Decomposition and Soil Carbon Dynamics (NSF-USA). Principal Investigators: Blackwood, CB and **Valverde-Barrantes, OJ.** Contributes 50%
2015. Pre-Proposal submitted January 2015, **Not Invited.** Proposal 1528808. National Science Foundation (NSF-USA).

Uncovering the relative roles of phylogenetic constraints and physiological trait integration in the evolution of the niche. Principal Investigators: Madeiros, J, and Burns, J. Senior Personnel: **Valverde-Barrantes, OJ**. Contributed 20%

2014. Full Proposal submitted December 2 2014, **Invited not funded**. Proposal 0000217138. Department Of Energy (DOE-USA). \$1,432,602

Revealing the Hidden Side of Tree Diversity: Species and Trait Effects on Root Carbon Dynamics across a Latitudinal Gradient. Principal Investigators: Blackwood, CB, **Valverde-Barrantes, OJ**, and Dietze, M. Contributed 40%

2014. Pre-Proposal submitted January 2014, **Not Invited**. 041071101 DEB. National Science Foundation (NSF-USA).

The cryptic side of trait diversity: evolution, ecology and biogeography of fine roots in woody plants. Principal Investigators: Blackwood, C.B, and **Valverde-Barrantes, O**. Contributed 50%

2014. Pre-Proposal submitted October 2014, **Not Invited**. National Science Foundation (NSF-USA). Partners for International Research and Education (PIRE).

Relic and Managed Ecosystems of Costa Rica: Uncovering unseen biodiversity. Principal Investigators: Leff, L, Blackwood, C.B, and Rocha, O. Senior Personnel: **Valverde-Barrantes, O**. Contributed 10%

Evidence of Scholarly Activity

Publications

32. **Valverde-Barrantes O.J.**, Hogan, J.A., & Rocha, O. J. 2019. Effects of canopy openness on seedling survival and performance following logging in a monodominant lowland swamp forest in Costa Rica. *Journal of Vegetation Science* (in press)
31. Lugli, L. M. Mercado, K. M. Andersen, L. Fuchslueger, A. Longhi, C. A. Quesada, K. J. Schaap, J. Schmeisk Rosa, **O. Valverde-Barrantes**, I. P. Hartley. 2019. Multiple phosphorus acquisition strategies adopted by fine roots in low-fertility soils in Central Amazonia Plant and Soil (doi.org/10.1007/s11104-019-03963-9).
30. Perez, T.M., **Valverde-Barrantes O.J.**, Bravo, Taylor, T.C., Fadrique B., Hogan J.A., Pardo C. J., Stroud J.T., Baraloto C., & Feeley K.J. 2018. Botanic gardens are an untapped resource for studying the functional traits of tropical plants. *Philosophical Transactions of the Royal Society in Biology* 374: 20170390.
29. Minerovic, A. J., **Valverde-Barrantes, O.J.**, & Blackwood CB. 2018. Physical and microbial mechanisms of decomposition vary in importance among root orders and tree species with differing chemical and morphological traits. *Soil Biology and Biochemistry* 124: 142-149.
28. **Valverde-Barrantes, O.J.**, K.A. Smemo, L.M. Feinstein, M.W. Kershner, & C.B. Blackwood. 2018. Patterns in spatial distribution and root trait syndromes for ecto and arbuscular mycorrhizal temperate trees in a mixed broadleaf forest. *Oecologia* 186: 731-741.
27. Raich, J.W., & **Valverde-Barrantes, O.J.** 2017. Soil CO₂ Flux, Moisture, Temperature, and Litterfall, La Selva, Costa Rica, 2003-2010. ORNL DAAC, Oak Ridge, Tennessee, USA.
26. Ghosh S., Ayayee P.A., **Valverde-Barrantes O.J.**, Blackwood C.B., Royer T.V., & Leff L.G. 2017. Initial nitrogen enrichment conditions determines variations in nitrogen substrate utilization by heterotrophic bacterial isolates. *BMC Microbiology* 17: 87.
25. Medeiros, J.S., Burns, J.S., Nicholson, J., Rogers L. & **Valverde-Barrantes, O.J.** 2017 Decoupled leaf and root carbon economics is a key component in the ecological diversity and evolutionary divergence of deciduous and evergreen lineages of genus *Rhododendron*. *American Journal of Botany* 104: 803-818
24. Iversen C.M., McCormack, M. L., Powell A.S., Blackwood C.B., Freschet G. T., Kattge J., Roumet C., Stover D.B., Soudzilovskaia N.A., **Valverde-Barrantes O.J.**, van Bodegom P.M., & Violle, C. 2017. Building a global Fine-Root Ecology Database to address important questions in root ecology. *New Phytologist* 215: 15-26

23. **Valverde-Barrantes O.J.**, Freschet G.T., Roumet C., Blackwood C.B. 2017. A worldview of root traits: the influence of ancestry, growth form, climate and mycorrhizal association on the functional trait variation of fine-root tissues in seed plants. *New Phytologist* 215: 1562–1573.
22. Freschet, G.F., **Valverde-Barrantes, O.J.**, Craine, J.M. et al. 2017. Climate, soil and plant functional types as drivers of global fine-root trait variation. *Journal of ecology* 105: 1182–1196.
21. **Valverde-Barrantes, O.J.** & C.B. Blackwood. 2016. Root traits are multidimensional: specific root length is independent from root tissue density and the plant economic spectrum: Commentary on Kramer-Walter et al. *Journal of Ecology* 104: 1311–1313.
20. **Valverde-Barrantes, O.J.**, Horning, A., K.A. Smemo, & C.B. Blackwood. 2016. Phylogenetically constrained traits in root systems influence arbuscular mycorrhizal colonization in woody angiosperms. *Plant and Soil* 404: 1–12.
19. **Valverde-Barrantes, O.J.**, K.A. Smemo, & C.B. Blackwood. 2015. Fine root morphology is phylogenetically structured but nitrogen is related to the plant economics spectrum in temperate trees. *Functional Ecology* 29: 796–807.
18. **Valverde-Barrantes, O.J.**, K.A. Smemo, L.M. Feinstein, M.W. Kershner, & C.B. Blackwood. 2015. Aggregated and complimentary: symmetric proliferation, overyielding, and mass effects explain fine root biomass in a diverse temperate deciduous forest landscape. *New Phytologist* 205:731–742. (Additional Commentary for this article by Jones, A. 2015. Belowground fine root biomass, traits and trees. *New Phytologist* 205: 461–462)
17. **Valverde-Barrantes, O.J.** & Rocha, O.J. 2013. Logging impacts on forest structure and seedling dynamics in *Prioria copaifera* dominated tropical rain forest in Talamanca, Costa Rica. *Revista de Biología Tropical*. 62:347–57.
16. Blackwood, C.B., K.A. Smemo, M.W. Kershner, L.M. Feinstein, & **O.J. Valverde-Barrantes**. 2013. Decay of ecosystem differences and decoupling of tree community-soil environment relationships at ecotones. *Ecological Monographs* 83:403–417.
15. **Valverde-Barrantes, O.J.**, K.A. Smemo, L.M. Feinstein, M.W. Kershner, & C.B. Blackwood. 2013. The distribution of below-ground traits is explained by intrinsic species differences and intraspecific plasticity in response to root neighbours. *Journal of Ecology* 101:933–942.
14. Wu, L., L.M. Feinstein, **O. Valverde-Barrantes**, M.W. Kershner, L.G. Leff, & C.B. Blackwood. 2011. Placing the effects of leaf litter diversity on saprotrophic microorganisms in the context of leaf type and habitat. *Microbial Ecology* 61:399–409.

13. Russell, A. E., J. W. Raich, R. Bedoya, **O. Valverde-Barrantes**, & E. González. 2010. Carbon dynamics in the tropics. *Bulletin of the Ecological Society of America* 91: 224-225.
12. Russell, A. E., J. W. Raich, R. Bedoya, **O. Valverde-Barrantes**, & E. González. 2010. Impacts of individual tree species on carbon dynamics in a moist tropical forest environment. *Ecological Applications* 20: 1087-1100.
11. Raich, J. W., A. E. Russell & **O. Valverde-Barrantes**. 2009. Fine root decay rates vary widely among lowland tropical tree species. *Oecologia* 161: 325-330.
10. **Valverde-Barrantes, O.J.**, Raich, J. W. & Russell, A. E. 2007. Fine-root mass, growth and nitrogen content for six tropical tree species. *Plant Soil* 290: 357-370.
9. **Valverde-Barrantes, O.J.** 2007. Relationships between litterfall, fine root growth, and soil respiration for five tropical tree species. *Can J. For. Res.* 37: 1954-1965.
8. Russell AE, Raich JW, **Valverde-Barrantes OJ**, & Fisher RF 2007. Tree species effects on soil properties in experimental plantations in tropical moist forest. *Soil Science Society of America Journal* 71:1389-1397
7. **Valverde-Barrantes, O.** 2006. Application of a timber extraction vulnerability index in a humid tropical forest. *KURU* 3: 1-15
<http://www.itcr.ac.cr/revistaKuru/pdf/Articulo%201.pdf>
6. Farji-Brener A. G., **O. Valverde**, L. Paolini, M. A. La Torre, E. Quintero, E. Bonaccorso, L. Arnedo, & Richard Villalobos. 2002. Acumen function in leaves and its vertical distribution in a tropical rain forest of Costa Rica. *Revista de Biología Tropical* 50: 1-7.
5. Gómez-Laurito, J. & **Valverde-Barrantes, O.** 2002. A new species of *Plinia* L. (Myrtaceae) from the southern Caribbean of Costa Rica. *Lankesteriana* 3: 11-13.
4. **Valverde-Barrantes, O.** 2001. El Corredor Biológico Talamanca Caribe, Costa Rica. *Memorias: Simposio Conceptualización y Criterios para Corredores Biológicos en Mesoamérica. V Congreso de la Sociedad Mesoamericana para la Biología y la Conservación.* San Salvador, El Salvador. 17-19pp.
3. Chavarría, C.R., & **O. Valverde**. 2000. Delimitación y muestreo florístico del humedal de Punta Mona, Gandoca- Manzanillo, Costa Rica. *Boletín de Humedales y Zonas Costeras* 2(5). San José, Costa Rica: IUCN.
2. **Valverde-Barrantes, O.** 1998. Estructura forestal y patrones florísticos de dos bosques tropicales húmedos de la Cordillera de Talamanca, Costa Rica. *Brenesia* 49-50: 39-60.
1. **Valverde-Barrantes, O.** 1998. Jaboncillo. *Sapindus saponaria*. Poster ilustrativo N° 15. *Revista Forestal Centroamericana.* CATIE. Turrialba, Costa Rica.

Manuscripts in preparation

Valverde-Barrantes, O.J., Maherali, H., Baraloto, C. & Blackwood, C.B. Evolutionary pathways between leaf and root traits precluded mycorrhizal associations in Angiosperms. (in prep.)

Kong D, Wang J., Wu H., Valverde-Barrantes O.J., Wang R, Zeng H., Kardol P., Zhang H., & Feng, Y. Nonlinear relationships of root functional traits in seed plants at a global scale. Nature Communications (in review)

Zeng W., Xiang W., Zhou B., Ouyang S., Zeng Y., Chen L., Milcu A., Valverde-Barrantes, OJ. Positive and saturate effects of tree species richness on fine root biomass in subtropical forests: niche segregation and differential species contributions. (In review)

L. Fuchslueger, K. Schaap, K. Andersen, S. Garcia, A. Grandis, F. Hofhansl, E. Oblitas, O. J. Valverde-Barantes, M. Hoosbeek, C. A. Quesada, R. Norby, I. P. Hartley and FACE-team; Controls on microbial decomposition and soil CO₂ efflux dynamics in a mature rainforest soil in Central Amazonia (in prep.)

Authier, L, Schimann, H., Baraloto, C. and Valverde-Barrantes, O.J. Root anatomy helps to reconcile observed root trait syndromes in tropical and temperate trees. (in prep.)

Teaching Experience

Classes taught

2016-2019 *Tropical Botany*. Appointed Assistant

- Assistant in field and class instruction. Lecturer for order Fagales and Ericales and general plant biology with emphasis on root tissues.

Science Teachers Enrichment Program in the Kampong Botanical Garden (K-STEP). Instructor

- Preparing materials, lectures and field practices for high school teachers in the Miami-Dade school district, so they can include environmental topics in their classrooms.

2015-2016 Co-organization of the 1st and 2nd Amazon-FACE field course focusing on model-data integration, INPA, Manaus, Brasil

2015 *Career Pathways in Biology*. Appointed Lecturer
Kent State University

- Standalone instructor for a 35-student class.
- Responsible for all lecture material and invited speakers

General Plant Biology. Appointed Lecturer
Kent State University

- Standalone instructor for a 30-student class.
- Responsible for all lecture and complementary material, test preparation and grading

Economics Botany. Appointed Lecturer
Kent State University

- Standalone instructor for a 30 student class.
- Responsible for all lecture and complementary material, test preparation and grading

2014

Biological biodiversity. Lecturer
Kent State University

- Standalone instructor for a >150 student class.
- Responsible for all lecture material, complementary material and test

Career Pathways in Biology. Lecturer
Kent State University

- Standalone instructor for a 35 student class.
- Responsible for all lecture material, complementary material and invited speakers

2013

Microbiology. Lecturer for Basic Microbiology for Nursing majors
Kent State University

- Standalone instructor for a >150 student class.
- Responsible for all lecture material, complementary material and test

Biological biodiversity. Lecturer
Kent State University

- Standalone instructor for a >150 student class.
- Responsible for all lecture material, complementary material and test

2010-2012

Tropical Ecology. Teaching Assistant. Biological Sciences Department,
Kent State University.

- Responsible for coordination and project development assistance for a 25 student class. Mostly responsible for plant identification during class.
- Supervised the confection of group and individual scientific writing projects.

Ornithology. Teaching Assistant. Biological Sciences Department,
Kent State University.

- Standalone instructor for laboratory sections.
- Responsible for designing lesson plans, assessments, and field trips.
- Supervised classes of 20 students.

Plant Taxonomy-Local Flora. Teaching Assistant. Biological Sciences Department, Kent State University.

- Standalone instructor for laboratory sections.
- Responsible for designing lesson plans, assessments, and field trips.
- Supervised classes of 25 students.

2009-2010 *Microbiology*. Teaching Assistant. Biological Sciences Department, Kent State University.

- Standalone instructor for laboratory sections including Honor Classes.
- Responsible for conducting and supervising experiments.
- Supervised classes of 25 students.

2008-2009 *Biological Foundations*. Teaching Assistant. Biological Sciences Department, Kent State University.

- Standalone instructor for laboratory sections including Honor Classes.
- Supervised and conducted experiments.
- Supervised classes of 25 students.

2001-2003 *Environmental Education*. Biological Corridor Talamanca-Caribe. Costa Rica

- Collaborated on curriculum development for an environmental program for grade schools in Talamanca, Costa Rica.
- Designed workshops for professional development for teachers approved by the Ministry of Education in Costa Rica (MINAET).

Guest Lecturers

Spring 2011 *General Plant Biology*. Guest Lecturer. KSU

Spring 2009-2010 *General Microbiology*. Guest Lecturer. KSU

Summer 2010 *Plant Biology*. Identification of common trees in the Central Valley, Costa Rica. Guest Speaker. University of Costa Rica.

Summer 2008. *Forest Management*. Incorporating a vulnerability index for tree managements in tropical forests. Guest Speaker. Technological Institute of Costa Rica.

Adviser Undergraduate and Graduate Students

2018-19 Shivani Patel (undergraduate independent study)

2017-18 Solene Beroujon, Lousie Authier (MS adviser)

2016 Nathielly Martins, Amanda Cordeiro, Laynara Lugli (MS adviser)

2015 Louisa Rogers (REU adviser)

2014	Andrew Edgar, Jaynell Nichols, Sofia Koutzoukis, Sophia Zaynor. (REU adviser)
2013-2014	Anthony Minerovic (undergraduate independent studies and MS adviser)
2013	Nancy Urbano (REU adviser)
2011-2012	Amber Horning, Kristine Niessel (undergraduate independent studies)
2010-2011	Josh Lucas, Jagganath Silwal (undergraduate independent studies)

Conference Presentations

Authier, L, Schimann, H., Baraloto, C. and **Valverde-Barrantes, O.J.** 2019. Root anatomy helps to reconcile observed root trait syndromes in tropical and temperate trees. 104th Annual Meeting ESA. Louisville, KY.

Valverde-Barrantes O. J. 2018. Evidence of belowground functional trait integration in the genus *Ficus* (Moraceae). 103th Annual Meeting ESA. New Orleans, LA.

J. Aaron Hogan, **O. J. Valverde-Barrantes**, Q. Ding, H. Xu & C. Baraloto. 2018. Plant functional traits of tropical saplings across a successional gradient in Jianfengling, China. 103th Annual Meeting ESA. New Orleans, LA.

Blackwood, C.B., A. Minerovic, & **O.J. Valverde-Barrantes**. 2017. Invited Ignite Session: Root trait diversity: A key to soil carbon stabilization, but can it be simplified for terrestrial ecosystem models? 102nd Annual Meeting ESA. Portland, OR.

Valverde-Barrantes O. J. 2016. Evidence of belowground community structuring and niche divergence among coexisting species in temperate and tropical forests. 2nd International Tropical Botany and Pine Rockland Conference, Miami, Florida.

Valverde-Barrantes O. J., & Blackwood C. B. 2015. A worldview of root traits: functional trait variation in fine root tissues of seed plants. 100th Annual Meeting ESA. Baltimore, MD.

Valverde-Barrantes O. J., & Blackwood C. B. 2012. Functional traits in fine roots: integrating below and above ground traits in angiosperms. Botanical Society of America 2012 Meeting. Columbus. OH.

Valverde-Barrantes, O. J., Feinstein, L. M., Smemo, K. A., Kershner, M. W., & Blackwood, C. B. 2011. Evidence of niche divergence structuring the belowground community in a temperate forest. 96th Annual Meeting ESA. Austin, TX.

Valverde-Barrantes, O. J., Feinstein, L. M., Smemo, K. A., Kershner, M. W., & Blackwood, C. B. 2010. Fine root distribution and root plasticity among coexisting tree species in a broad-leaf temperate forest. 95th Annual Meeting ESA. Pittsburgh, PA.

- Blackwood, C.B., K.A. Smemo, L.M. Feinstein, **O.J. Valverde-Barrantes**, M.W. Kershner. 2009. Does community composition or environmental variability control extracellular enzyme activity in soil? A spatial analysis in a complex forested landscape. Oral Paper Abstract, Soil Science Society of America Annual Meeting, Pittsburgh, PA.
- Feinstein, L.M., **O.J. Valverde-Barrantes**, M.W. Kershner, L. Leff, L. Wu, C.B. Blackwood. 2009. Leaf Litter Diversity Effects on Microbial Functional and Taxonomic Profiles. Oral Paper Abstract, Soil Science Society of America Annual Meeting, Pittsburgh, PA.
- Lan, W., L.M. Feinstein, **O. J. Valverde-Barrantes**, M.W. Kershner, L.G. Leff, C.B. Blackwood. 2008. Leaf Diversity and Decomposition: A comparison of terrestrial and aquatic environments. Poster Abstract, American Society for Microbiology 108th General Meeting, Boston, MA.
- Valverde-Barrantes, O. J.** & Rocha, O. 2007. Effects of timber extraction on diversity and tree regeneration in a *Prioria copaifera* forest in the Caribbean lowlands of Costa Rica. Iowa Conservation Biology Symposium. ISU, Ames,
- Valverde-Barrantes, O.J.**, & Raich J. W. 2006. Relationships among litterfall, fine-root growth and soil respiration for five tropical tree species. 26th Annual Midwest Ecology and Evolution Conference. Kent, OH.
- Valverde-Barrantes, O.J.**, & Raich J. W. 2006. Differences in fine root standing crop, growth and nutrient content for six tropical species in plantations. 13th Annual Ecology & Evolutionary Biology Spring Symposium. Ames, IA.

Conference Posters

- Valverde-Barrantes O. J.**, & Blackwood C. B. 2016. Root traits at global scale: Strong phylogenetic and growth form effect in the distribution of root traits globally. 101th Annual Meeting ESA. Fort Lauderdale, FL.
- * Minerovic, A., **Valverde-Barrantes O. J.**, & Blackwood, C. B. 2015. Root decomposition in forest ecosystems: chemical or morphological control? 100th ESA Conference, Baltimore, USA.
- * Koutzoukis, S., **Valverde-Barrantes, O.**, Case, A. 2014. Climate structures geographic patterns of mitochondrial diversity in *Lobelia siphilitica* (Campanulaceae). John S. Rogers Summer Research Conference. Lewis and Clark College
- *Nicholson, J., Burns, J., **Valverde-Barrantes, O.** and Medeiros, J. 2014. Secrets of *Rhododendron* roots. Kent State University REU Symposium.
- *Eagar C. A., **Valverde-Barantes, O.**, Smemo K.A., Phillips, R.P. and Blackwood, C.B. 2014. Examining the Effects of Soil Type and Fungicide Use on American Elm (*Ulmus americana*). Kent State University REU Symposium.

*Minerovic, A., **Valverde-Barrantes O. J.**, & Blackwood, C. B. 2014. Root decomposition in forest ecosystems: chemical or morphological control? Kent State University Undergraduate Symposium.

Valverde-Barrantes, O. J., Feinstein, L. M., Smemo, K. A., Kershner, M. W., & Blackwood, C. B. 2012. Belowground productivity and biodiversity: the effect of soil conditions and species diversity on fine root biomass distribution in a broadleaf forest ecosystem. 97th Annual Meeting ESA. Cincinnati, OH.

*Horning, A.L., **Valverde-Barrantes O. J.**, & Blackwood, C. B. 2012. Angiosperm root evolution: the relationship between root anatomy and mycorrhizal colonization among Angiosperm trees. 97th Annual Meeting ESA. Cincinnati, OH.

*Nissel, K.P., **Valverde-Barrantes, O.J.**, & Blackwood, C.B. 2012. Evolution of root systems in woody plants: Evidence of morphological and chemical divergence among major angiosperm clades. 29th Annual Midwest Ecology and Evolution Conference. Cincinnati, OH.

Valverde-Barrantes, O.J., C. Blackwood, K. Smemo, L. Feinstein, & M. Kershner. 2009. Measuring the complexity of fine root systems at the population and community levels in a temperate forest. ASA-CSSA-SSSA 2009 Annual International Meeting. Pittsburgh, PA.

Rocha, O & **Valverde-Barrantes, O. J.** 2005. Effects of traditional logging on seedlings survival and levels of genetic diversity in the tropical lowland swamp forests in the Atlantic coast of Talamanca, Costa Rica: the case of the dominant species, *Prioria copaifera*. Annual Meeting of the botanical Society of America. Austin TX.

* Independent study or REU project for undergraduate students.

Invited Seminar Presentations

2018. Root functional traits in the tropical rain forest. Department of Biological Sciences. University of Vienna, Vienna, Austria.

2016. A worldview of root traits: functional trait variation in fine root tissues of seed plants. Florida International University. Department of Biological Sciences. Miami, FL.

2015. Conservation experiences in the Biological Corridor Talamanca-Caribe. UNED, Costa Rica.

2015. Root evolution and their implications for climatic change. University of Costa Rica

2015. A worldview of root traits: functional trait variation in fine roots of seed plants. Oak Ridge National Laboratory.

2013. Integrating roots and leaves in angiosperm trees, the importance of phylogenetic structures in functional traits. Indiana University.

2012. Fine roots: the unmeasured dimension of the forest. John Carrol University.

Awards and Grants

2012. Kent State University Fellowship. Graduate Studies. Received Scholarship for 2013 Spring Semester.
2012. Dr. David M. Jarzen and Susan A. Jarzen Scholarship for Botanical Research. \$5000.00 Award
- 2009-2013. Kent State University. Phi Beta Delta Honor Society for International Scholars for Outstanding Academic Achievement. 4.0 GPA.
2010. Soil Ecology Section Travel Grant. 95th Ecological Society of America meeting.
2010. Art and Margaret Herrick Aquatic Ecology Research Facility Student Research Grant.
2003. Organization for Tropical Studies. Full scholarship for Tropical Plant Taxonomy Course. Costa Rica.
2000. Organization for Tropical Studies. Full scholarship for Tropical Ecology and Conservation Field Course. Costa Rica

Service Activities

Ad-hoc Journal Editor

Acta Amazonica

Ad-hoc Journal Reviewer

Acta Oecologica

African Journal of Agricultural Research

American Journal of Botany

Annals of Botany

Canadian Journal of Forestry Research

Ecology

Ecosystems

European Journal of Forest Research

European Journal of Soil Biology

Functional Ecology

Journal of Ecology

Journal of Forestry Research

New Phytologist.

Perspectives in Plant Ecology, Evolution and Systematics

PLoS One

Plant and Soil

Revista de Biología Tropical

Soil Science Society of America Journal.

Extra-curricular activities

President of the Biology Graduate Association 2011-2012

Graduate representative for new faculty hiring committee. Department of Biology. KSU 2011.

Contacts

Christopher Baraloto. Florida International University. Director of the International Center of Tropical Botany. cbarolot@fiu.edu. 305 348 4027. 11200 SW 8th Street, OE 243. Miami, FL 33199, USA

Christopher Blackwood. Kent State University. Associate Professor. cblackwo@kent.edu
Phone: 330-672-3895. 217 Cunningham Hall. Kent Ohio. 44242.

Colleen Iversen. Senior Staff Scientist. Oak Ridge National Laboratory. iversencm@ornl.gov
(865) 241-3961. Oak Ridge National Laboratory. One Bethel Valley Road Building 4500-N, MS 6301 Oak Ridge, TN 37831-6301.

Andrea Case. Kent State University. Associate Professor. Kent State University. acase@kent.edu
Phone: 330-672-2297. 133 Cunningham Hall. Kent Ohio. 44242.

Richard Norby. Distinguished Research and Staff Member. Oak Ridge National Laboratory.
rjn@ornl.gov. (865) 576-5261. Oak Ridge National Laboratory. One Bethel Valley Road Building 4500-N, MS 6301 Oak Ridge, TN 37831-6301.

James W. Raich. Associate Professor. Iowa State University. jraich@iastate.edu. Phone 515-294-5073. 251 Bessey Hall. Ames, Iowa 50011-1020

Oscar Rocha. Kent State University. Associate Professor. Kent State University
orocha@kent.edu Phone: 330-672-2297. 133 Cunningham Hall. Kent Ohio. 44242.