

Brian Joseph Enquist

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Professor

Department of Ecology and Evolutionary Biology

University of Arizona, BioSciences West, Tucson, Arizona 85721

External Professor

The Santa Fe Institute, Santa Fe, New Mexico, 87501

Education

- PhD Biology (Ecology Program) July 1998. University New Mexico. Albuquerque, NM.
- MS Biology (Ecology Program) Feb. 1994. University of New Mexico, Albuquerque, NM.
- BA Biology, (*With Distinction*), May 1991. Colorado College Colorado Springs, CO.

Academic Awards, Fellowships, and Honors

- Four publications in the 20 most downloaded papers (2018)
- Web of Science, Highly Cited Researcher (2018, 2019)
- ESA Fellow, Ecological Society of America (2018).
- Leverhulme Professorship, Oxford University, UK (2017).
- Martin School Fellow, Oxford University, UK (2017).
- AAAS Fellow, American Association for the Advancement of Science (2012).
- College of Science Galileo Circle Fellow, University of Arizona (2011).
- Elected Chair, Gordon Research Conference, Metabolic Basis Ecology Evolution (2010).
- International Mobility Fellow, Charles University, Center for Theoretical Study, Prague, Czech Republic (2009).
- Associate Research Fellow, Centre National de la Recherche Scientifique (CNRS), Montpellier, France (2009).
- Honorary Degree, PhD in Science, The Colorado College (2007).
- TEAM Fellow, Conservation International (2007).
- ISI Essential Science Indicators (ESI), Author with the highest percent increase in total citations in the field of Environment and Ecology (2005).
- Popular Science Magazine, "Top 10 Brilliant Young Scientists" (2004).
- NSF CAREER Young Investigators Award (2002-2007).
- Center for Applied Biodiversity Science Fellow, Conservation International (2002-2004)
- George C. Mercer Award, Ecological Society of America, *Awarded for best ecological paper by a researcher under the age of 40* (2001).
- NSF Postdoctoral Research Fellowship (1998-2000).
- Santa Fe Institute Postdoctoral Research Fellowship, *Declined* (1998).
- Visiting Scholar, Silwood Park, Imperial College, UK (May, 1998).
- Best research poster, UNM Biology Research Day (1994 & 1998).
- NSF Graduate Research Training Fellowship (1996-1998).
- Santa Fe Institute Complex Systems Summer School (1997).
- Fulbright Fellow, Costa Rica (1995-1996).
- Richard G. and Reba Beidleman Award, Colorado College, Honors Convocation, *Awarded to the best graduating student in Ecology* (1991).
- Graduation with Distinction in Biology, Colorado College (1991).

Professional Employment Appointments

- **Currently - External Faculty**, The Santa Fe Institute, Santa Fe, New Mexico (2007 -).
- **Currently - Professor**, Department of Ecology & Evolutionary Biology, The University of Arizona, Tucson, Arizona (2009 -).
- Associate Professor, Department of Ecology & Evolutionary Biology, The University of Arizona, Tucson, Arizona (2005- 2009).
- Assistant Professor, Department of Ecology Evolutionary Biology, The University of Arizona, Tucson, Arizona (2001-2005).
- NSF Postdoctoral Fellow, NCEAS (National Center for Ecological Analysis and Synthesis), University of California, Santa Barbara, CA (Sept. 1999 – Dec. 2000).
- NSF Postdoctoral Fellow, SFI (The Santa Fe Institute), Santa Fe, New Mexico. (Aug. 1998 - Sept 1999).

Editorial Boards

- Editor, *Ecology Letters* (Nov. 2007 –).
- Associate Editor, *Global Ecology and Biogeography* (Summer 2010 -).
- Invited Guest Editor, *Annual Review of Ecology, Evolution, & Systematics* (2009 - 2010).
- Editorial Board, *Global Ecology and Biogeography* (2003- 2006).
- Member of Faculty of 1000 (Nov. 2005 – Jan. 2007).

Social Media/Open Science

- Twitter - <https://twitter.com/bjenquist>
- GitHub - <https://github.com/EnquistLab>
- Enquist lab - [YouTube Channel](#)
- FigShare - https://figshare.com/authors/Brian_Enquist/663712
- Lab website and blog - <https://brianjenquist.wordpress.com>
- Google Scholar - <https://scholar.google.com/citations?user=mAbA6EoAAAAJ&hl=en>
- ResearchGate - https://www.researchgate.net/profile/Brian_Enquist

Publications

- Over 210 Peer reviewed publications.
- Google Scholar, 4/24/2020: Citations = 36,017, h-index = 76,

Submitted (In Review and Revision)

- Althuizen, Inge; Gya, Ragnhild; Jaroszynska, Francesca; Lee, Hanna ; Telford, Richard; Goldberg, Deborah E; Enquist, Brian; Vandvik, Vigdis. Trait shifts affect ecosystem carbon exchange under climate change in alpine grasslands. *Global Change Biology* (In Review)
- Lee Hannah, Patrick R. Roehrdanz, Richard T Corlett, Brian J Enquist, Wendy Foden, Jon Lovett, Pablo A Marquet & Guy F Midgley. Last call for tropical protected areas. *Science Advances* (In revision).
- Feng et al. Moore's Law increase in global biodiversity knowledge poses integration opportunities. *Science* (In review).
- Carolyn Flower, Wendy C. Hodgson, Andrew M. Salywon, Brian S. Maitner, Brian J. Enquist, Matthew A. Peeples, Benjamin Blonder. Past human food use may continue to influence present day plant distributions in the Sonoran Desert. *PNAS* (In Review).
- Carolina Tovar, Nicola Kuhn, Julia Carretero, Vigdis Vandvik, Brian J. Enquist, Kathy Willis Globally important plant functional traits for coping with climate change. *Ecology Letters*

- Cho-ying Huang, Sandra M. Durán, Kai-ting Hu, Nathan G. Swenson, Brian J. Enquist. A synoptic sensing approach to assess chronic and episodic climate effects on a Costa Rican seasonally dry tropical forest. *Global Change Biology* (In Review)
- Megan A. Gaitan, Daniel J. Wiczynski, Sandra M. Duran, Sean T. Michaletz, Carolyn A. F. Enquist, Catherine M. Hulshof, George C. Stevens, Nathan G. Swenson, Gregory P. Asner, Brian J. Enquist, Van M. Savage, and Lisa Patrick Bentley. Long-term shifts in community composition in a Central American dry tropical forest. *Biotropica*

Published

2020:

1. Enquist, B.J., A. Abraham, M. Harfoot, Y. Malhi, and C. Doughty (2020) [On the importance of the megabiota to the functioning of the biosphere](#). *Nature Communications* (In Press).
2. Swenson, N.G., C. M. Hulshof, M. Katabuchi, and B.J. Enquist. [Long-term shifts in the functional composition and diversity of a tropical dry forest: a 30-yr study](#). *Ecological Monographs* (In Press).
3. Li, Y., Peter B. Reich, Nawal Shrestha, Bernhard Schmid, Xiao Feng, Tong Lyu, Brian S. Maitner, Xiaoting Xu, Yichao Li, Dongting Zou, Zheng-Hong Tan, Xiangyan Su, Zhiyao Tang, Qinghua Guo, Xiaojuan Feng, Brian J Enquist, Zhiheng Wang. [Leaf size of woody dicots predicts ecosystem primary productivity](#). *Ecology Letters*. (In review).
4. Park, D.S., Feng, X., Maitner, B. S., Ernst, K. C., and B.J. Enquist. Darwin's naturalization conundrum can be explained by spatial scale. *PNAS*. (In Press).
5. Feng, X., Qiao, H., & Enquist, B. J. (2020). [Doubling demands in programming skills call for ecoinformatics education](#). *Frontiers in Ecology and the Environment*, 18(3), 123-124.
6. Kuppler, J., Albert, C.H., Ames, G.M., Armbruster, W.S., Boenisch, G., Boucher, F.C., Campbell, D.R., Carneiro, L.T., Chacón-Madrugal, E., Enquist, B.J. and Fonseca, C.R., 2020. [Global gradients in intraspecific variation in vegetative and floral traits are partially associated with climate and species richness](#). *Global Ecology and Biogeography*.
7. Oliveras, Imma, Lisa Bentley, Nikolaos M. Fyllas, Agne Gvozdevaite, Alexander Frederick Shenkin, Theresa Prepah, Paulo Morandi et al. (2020) [The influence of taxonomy and environment on leaf trait variation along tropical abiotic gradients](#)." *Frontiers in Forests and Global Change* 3: 18.
8. Patrick, L., Thompson, S., Halbritter, A.H., Enquist, B.J., Vandvik, V. and Cotner, S., [Adding Value to a Field-Based Course with a Science Communication Module on Local Perceptions of Climate Change](#). *The Bulletin of the Ecological Society of America*, p.e01680.
9. Martin, R.E., G. P. Asner, L. P. Bentley, A. F. Shenkin, N. Salinas, K. Q. Huaypar, M. M. Pillco, F. Delis C. Alvarez, B. J Enquist, S. Diaz, Y. Malhi (2020) [Covariance of Sun and Shade Leaf Traits Along a Tropical Forest Elevation Gradient](#). *Frontiers in Plant Science* (In Press).
10. Hannah, L., Roehrdanz, P.R., Marquet, P.A., Enquist, B.J., Midgley, G., Foden, W., Lovett, J.C., Corlett, R.T., Corcoran, D., Butchart, S.H. and Boyle, B., 2020. [30% land conservation and climate action reduces tropical extinction risk by more than 50%](#). *Ecography*.

2019:

11. Enquist, B.J. et al. (2019) [The commonness of rarity: Global and future distribution of rarity across land plants](#). *Science Advances*, 5 (11), eaaz0414.
12. Vanessa Buzzard, Sean T. Michaletz, Ye Deng, Zhili He, Daliang Ning, Lina Shen, Qichao Tu, Joy Van Nostrand, James W. Voordeckers, Jianjun Wang, Michael D. Weiser, Michael Kaspari, Robert B. Waide, Jizhong Zhou, and Brian J. Enquist. [Continental scale structuring of forest and soil diversity via functional traits](#). *Nature Ecology and Evolution*, 3 (9), 1298-1308.
13. Sandra M. Durán , Roberta E. Martin , Sandra Díaz , Brian S. Maitner , Yadvinder Malhi , Norma Salinas, Alexander Shenkin, Miles R. Silman, Daniel J. Wiczynski, Gregory P. Asner, Lisa Patrick Bentley, Van M. Savage, and Brian J. Enquist. [Informing trait-based ecology by assessing remotely-sensed functional diversity across a broad tropical temperature gradient](#). *Science Advances* 5 (12), eaaw8114.
14. Wiczynski, D., B. Boyle , V. Buzzard , S. Duran , A. Henderson , C. Hulshof , A. Kerkhoff , M. McCarthy , S. Michaletz , N. Swenson , G. Asner , L. Bentley , B. J. Enquist and V. Savage [Climate shapes and shifts functional biodiversity in forests worldwide](#). *PNAS*, 116:587-592.
15. Varadharajan C, Agarwal DA, Brown W, Burrus M, Carroll RW, Christianson DS, Dafflon B, Dwivedi D, Enquist BJ, Faybishenko B, Henderson A. Challenges in Building an End-to-End System for Acquisition, Management, and Integration of Diverse Data From Sensor Networks in Watersheds: Lessons From a Mountainous Community Observatory in East River, Colorado. *IEEE Access*. 2019 Dec 5;7:182796-813.
16. McFadden, I.R., Sandel, B., Tsirogiannis, C., Morueta-Holme, N., Svenning, J.C., Enquist, B.J. and Kraft, N.J., (2019) [Temperature shapes opposing latitudinal gradients of plant taxonomic and phylogenetic \$\beta\$ diversity](#). *Ecology Letters*, 22:1126-1135.
17. Chavana-Bryant, Cecilia, Yadvinder Malhi, Athanasios Anastasiou, Brian J. Enquist, Eric G. Cosio, Trevor F. Keenan, and France F. Gerard. [Leaf age effects on the spectral predictability of leaf traits in Amazonian canopy trees](#). *Science of the Total Environment* 666 (2019): 1301-1315.
18. Mia Vedel Sørensen, Bente Jessen Graae, Aimee Classen, Brian J. Enquist, Richard Strimbeck. [Biotic and abiotic drivers of C cycling in three arctic-alpine tundra plant communities: potential mechanisms](#). *Arctic, Antarctic and Alpine Research* 51(1), pp.128-147.
19. Merow, Cory, Brian S. Maitner, Hannah L. Owens, Jamie M. Kass, Brian J. Enquist, Walter Jetz, and Rob Guralnick. (2019) [RMMS: Species' Range Model Metadata Standards](#). *Global Ecology and Biogeography*, DOI:10.1111/geb.12993
20. Bruelheide, Helge, Jürgen Dengler, Borja Jiménez-Alfaro, Oliver Purschke, Stephan M. Hennekens, Milan Chytrý, Valério D. Pillar et al. [sPlot—A new tool for global vegetation analyses](#). *Journal of Vegetation Science* 30, no. 2 (2019): 161-186.
21. Weiser, M.D., Ning, D., Buzzard, V., Michaletz, S.T., He, Z., Enquist, B.J., Waide, R.B., Zhou, J., and M. Kaspari. [Thermal disruption of soil bacterial assemblages decreases diversity and assemblage similarity](#). *Ecosphere*, 10(2), p.e02598.
22. Aaron Hogan, J., Sean M. McMahon, Vanessa Buzzard, Sean T. Michaletz, Brian J. Enquist, Jill Thompson, Nathan G. Swenson, Jess K. Zimmerman. [Drought and the interannual variability of stem growth in an aseasonal, everwet forest](#). *Biotropica* 51(2), pp.139-154.
23. Jesús Aguirre-Gutiérrez, Imma Oliveras, Sami Rifai, Sophie Fauset, Stephen Adu-Bredu, Kofi Affum-Baffoe, Timothy R. Baker, Ted R. Feldpausch, Agne Gvozdevaite, Wannes Hubau, Nathan J. B. Kraft, Simon L. Lewis, Sam Moore, Ülo Niinemets, Theresa Peprah, Oliver L. Phillips, Kasia Ziemińska, Brian J. Enquist, and Yadvinder

- Malhi. [Drier tropical forests are more susceptible to functional changes in response to a long term drought](#). *Ecology Letters* 22(5), pp.855-865.
24. Steidinger et al. [Climatic controls of decomposition drive the global biogeography of forest tree symbioses](#). *Nature* 569(7756), p.404.
25. Kelsey T. Dillon, Amanda N. Henderson, Alexandra G. Lodge, Nina I. Hamilton, Lindsey L. Sloat, Brian J. Enquist, Charles A. Price, and Andrew J. Kerkhoff. [On the relationships between size and abundance in plants: beyond forest communities](#). *Ecosphere* (In Press).
26. Barnett, David; Adler, Peter, Chemel, Benjamin; Duffy, Paul; Enquist, Brian; Grace, James; Harrison, Susan; Peet, Robert; Schimel, David; Stohlgren, Thomas; Vellend, Mark. [The plant diversity sampling design for The National Ecological Observatory Network](#). *Ecosphere* 10(9).
27. Šímová, Irena, Brody Sandel, Brian J. Enquist, Sean T. Michaletz, Jens Kattge, Cyrille Violle, Brian J. McGill et al. [The relationship of woody plant size and leaf nutrient content to large-scale productivity for forests across the Americas](#). *Journal of Ecology* (2019). (In Press).

2018:

28. Doughty, C.E., Santos-Andrade, P.E., Shenkin, A., Goldsmith, G.R., Bentley, L.P., Blonder, B., Díaz, S., Salinas, N., Enquist, B.J., Martin, R.E. Asner, G.P. and Y. Malhi (2018) [Tropical forest leaves may darken in response to climate change](#). *Nature Climate Change*, 2:1918–1924.
29. Bjorkman, A.D. et al. (50+ international authors) [Plant functional trait change across a warming tundra biome](#) *Nature*, 562:57–62.
30. Echeverría-Londoño, S., Enquist, B.J., Neves, D.M., Violle, C., Boyle, B., Nathan J.B. Kraft, N.J.B., Maitner, B.S., McGill, B., Peet, R.K., Sandel, B., Smith, S.A., Svenning, J. Wiser, S.K., and Kerkhoff, A.J., [Plant functional diversity and the biogeography of biomes in North and South America](#). *Frontiers in Ecology and Evolution*, 6:219.
31. Henn, J.J., B. J. Enquist, A. H. Halbritter, K. Klanderud, B.S. Maitner, L. Patterson, C. Pöstch, R.Telford, Y.Yang, and V.Vandvik. [The role of intraspecific trait variation and plasticity in mediating alpine plant response to climate change](#). *Frontiers in Plant Science*, 9:1548.
32. Blonder, B., Enquist, B.J., Graae, B.J., Kattge, J., Maitner, B.S., Morueta-Holme, N., Ordonez, A., Šímová, I., Singarayer, J., Svenning, J.C. and Valdes, P.J. [Late Quaternary climate legacies in contemporary plant functional composition](#). *Global Change Biology*, 24:4827-4840.
33. Babst, F., Bodesheim, P., Charney, N., Friend, A.D., Girardin, M.P., Klesse, S., Moore, D.J., Seftigen, K., Björklund, J., Bouriaud, O., Dawson, A., DeRose, R.J., Dietze, M.C., Eckes, A., Enquist, B.J., Frank, D.C., Mahecha, M.D., Poulter, B., Record, S., Trouet, V., Turton, R., Zhang, Z., & M.E.K. Evans. [When tree rings go global: challenges and opportunities for retro- and prospective insight](#). *Quaternary Science Reviews* 197:1-20.
34. Messier, J., Violle, C., Enquist, B.J., Lechowicz, M.J., and B.J. McGill. [Similarities and differences in intrapopulation trait correlations of co-occurring tree species: consistent water-use relationships amid widely different correlation patterns](#). *American Journal of Botany*, 9:1477-1490.
35. Taylor, T., McMahon, S., Smith, M., Boyle, B., Violle, C., van Haren, Joost, Simova, I., Meir, P., Ferreira, L., de Camargo, P., da Costa, A., Enquist, B.J., and S. Saleska (2018) [Isoprene emission structures tropical tree biogeography and community assembly responses to climate](#). *New Phytologist* 220:435-446.
36. Eiserhardt, W.L., Antonelli, A., Bennett, D.J., Botigué, L.R., Burleigh, J.G., Dodsworth, S., Enquist, B.J., Forest, F., Kim, J.T., Kozlov, A.M., Leitch, I.J., Maitner, B.S., Mirarab, S., Piel, W.H., Pérez-Escobar, O.A., Pokorny, L., Rahbek, C., Sandel, B., Smith, S.A.

- Stamatakis, A., Vos, R.A, Warnow, T., and W.J. Baker (2018) [A roadmap for global synthesis of the plant tree of life](#). *American Journal of Botany*, 105:614-622.
37. Vasseur, F., Exposito-Alonso, M., Ayala-Garay, O., Wang, G., Enquist, B.J., Violle, C. Vile, D. and D. Weigel (2018) [Adaptive diversification of plant allometry in *Arabidopsis thaliana*](#). *Proceedings of the National Academy of Sciences*, 115: 3416-3421.
38. Maitner, B.S., B. Boyle, N. Casler, R. Condit, J. Donoghue II, S. M. Durán, D. Guaderrama, C. E Hinchliff, P. M. Jørgensen, N. J. B. Kraft, B. McGill, C. Merow, N. Morueta-Holme, R. K. Peet, B. Sandel, M. Schildhauer, S. A. Smith, Jens-Christian Svenning, B. Thiers, C. Violle, S. Wisser, and B. J. Enquist. (2018) [The BIEN R package: A tool to access the Botanical Information and Ecology Network \(BIEN\) Database](#). *Methods in Ecology and Evolution*, 9:373-379.
39. Michaletz ST, AJ Kerkhoff & BJ Enquist (2018) [Drivers of terrestrial plant production across broad geographic gradients](#). *Global Ecology and Biogeography* 27:166-174.
40. Blonder, B., Salinas, N., Patrick Bentley, L., Shenkin, A., Chambi Porroa, P.O., Valdez Tejeira, Y., Boza Espinoza, T.E., Goldsmith, G.R., Enrico, L., Martin, R., Asner, G.P., Díaz, S., Enquist, B.J., and Y. Malhi. (2018) [Structural and defensive roles of angiosperm leaf venation network reticulation across an Andes-Amazon elevation gradient](#). *Journal of Ecology* 106:1683-1699.
41. Poorter, L., van der Sande, M.T., Arets, E.J., Ascarrunz, N., Enquist, B., Finegan, B., Carlos Licona, J., Martínez-Ramos, M., Mazzei, L., Meave, J.A. and Muñoz, R. (2018) [Biodiversity and climate determine the functioning of Neotropical forests](#). *Global Ecology and Biogeography*, 27:389-390.
42. Šímová I, Violle C, Svenning JC, Kattge J, Engemann K, Sandel B, Peet RK, Wisser SK, Blonder B, McGill BJ, Boyle B and B.J. Enquist (2018) [Spatial patterns and climate relationships of major plant traits in the New World differ between woody and herbaceous species](#). *Journal of Biogeography*, 45:895-916.
43. Serra-Díaz JM, Enquist B.J., Maitner B., Merow C., and Svenning J.C. (2018) Big data of tree species distributions: how big and how good? *Forest Ecosystems* 1:30. <https://doi.org/10.1186/s40663-017-0120-0>.
44. Oliveras, I., Román-Cuesta, R.M., Urquiaga-Flores, E., Quintano Loayza, J.A., Kala, J., Huamán, V., Lizárraga, N., Sans, G., Quispe, K., Lopez, E., Lopez, D., Torres, I.C. Enquist, B.J. and Y. Malhi (2018) [Fire effects and ecological recovery pathways of tropical montane cloud forests along a time chronosequence](#). *Global Change Biology*, 24:758-77.

2017:

45. Enquist, B.J., L.P. Bentley, A. Shenkin, B. Maitner, V. Savage, S. Michaletz, B. Blonder, V. Buzzard, T. E. Boza Espinoza, W. Farfan-Rios, C. Doughty, G. R. Goldsmith, R. E. Martin, N. Salinas, M. Silman, S. Díaz, G. P. Asner, & Y. Malhi (2017) [Assessing trait-based scaling theory in tropical forests spanning a broad temperature gradient](#) *Global Ecology and Biogeography*, 26:1357-137
46. Blonder, B., Morrow, C.B., Maitner, B., Harris, D.J., Lamanna, C., Violle, C., Enquist, B.J. and Kerkhoff, A.J., 2018. [New approaches for delineating n-dimensional hypervolumes](#). *Methods in Ecology and Evolution*, 9:305-319.
47. Doughty CE, Santos-Andrade PE, Goldsmith GR, Blonder B, Shenkin A, Bentley LP, Chavana-Bryant C, Huaraca-Huasco W, Díaz S, Salinas N, Enquist BJ et al. (2017) [Can Leaf Spectroscopy Predict Leaf and Forest Traits Along a Peruvian Tropical Forest Elevation Gradient?](#) *Journal of Geophysical Research: Biogeosciences*, 122:2952-65.
48. Willis, K.J., Carretero, J., Enquist, B.J., Kuhn, N., Tovar, C. and V. Vandvik (2017) [Climate change – which plants will be the winners?](#) In: Willis, K.J. (ed.) *State of the World's Plants 2017*. Report. Royal Botanic Gardens, Kew. ISBN: 978-1-84246-647-

6. Which traits are favored under climate change?
<https://stateoftheworldsplants.com/2017/climate-change.html>
49. Blonder, B., Lamanna, C., Violle, C. and Enquist, B.J., 2017. [Using n-dimensional hypervolumes for species distribution modelling: A response to Qiao et al.\(\)](#). *Global Ecology and Biogeography*, 26:1071-1075.
 50. Weiser MD, Michaletz ST, Buzzard V, Deng Y, He Z, Shen L, Enquist BJ, Waide RB, Zhou J, and Kaspari M. (2018) [Toward a theory for diversity gradients: the Abundance-Adaptation Hypothesis](#). *Ecography* 41:255-64.
 51. Brummer, A.B., Savage, V.M., and B. J. Enquist (2017) [A General Model for Metabolic Scaling in Self-Similar Asymmetric Networks](#). *PLoS Computational Biology*, 13: e1005394.
 52. Stark, J., Lehman, R., Crawford, L., Enquist, B.J. and B. Blonder (2017) [Does environmental heterogeneity drive functional trait variation? A test in montane and alpine meadows](#). *Oikos* 126:1650-1659.
 53. Messier J, Lechowicz MJ, McGill BJ, Violle C, and B.J. Enquist (2017) [Interspecific integration of trait dimensions at local scales: The plant phenotype as an integrated network](#). *Journal of Ecology*, 105:1775-90.
 54. Fyllas, N.M., Patrick Bentley, L., Shenkin, A., Asner, G.P., Atkin, O.K., Díaz, S., Enquist, B.J., Farfan-Rios, W., Gloor, E., Guerrieri, R., Huaraca Huasco, W., Ishida, Y., Martin, R.E., Meir, P., Phillips, O., Salinas, N., Silman, M., Weerasinghe, L.K., Zaragoza-Castells, J., and Y. Malhi. (2017) [Solar radiation and functional traits explain the decline of forest primary productivity along a tropical elevation gradient](#). *Ecology Letters*, 20:730-740.
 55. Blonder, B., Moulton, D.E., Blois, J., Enquist, B.J., Graae, B.J., Macias-Fauria, M., McGill, B.J., Nogué, S., Ordonez, A., Sandel, B., and J. Svenning (2017). [Predictability in community dynamics](#). *Ecology Letters*, 20: 293–306.
 56. Weiser, M. D., Swenson, N.G., Enquist, B.J., Michaletz, S.T., Waide, R.B., Zhou, J., and M. Kaspari (2017) [Taxonomic Decomposition of the Latitudinal Gradient in Species Diversity of North American Floras](#). *Journal of Biogeography*, 45:418-428.
 57. Csergo, A.M., Salguero-Gomez, R., Broennimann, O., Coutts, S.R., Guisan, A., Angert, A.L., Welk, E., Stott, I., Enquist, B.J., McGill, B., Svenning, J., Violle, C., and Y. M. Buckley (2017) [Less favourable climates constrain demographic strategies in plants](#). *Ecology Letters*, 20(8), pp.969-980.
 58. Kaspari, M., J. Bujan, D. Ning, S.T. Michaletz, Z. He, B.J. Enquist, R.B. Waide, J. Zhou, M.D. Weiser, B. Turner and S.J. Wright (2017). [Biogeochemistry drives abundance and diversity in the prokaryotes, fungi, and invertebrates of a Panama forest](#). *Ecology*, 98:2019–2028.
 59. María Natalia Umaña, X. Mi, Min Cao, B.J. Enquist, Z. Ha, R. Howe, Y. Iida, D. Johnson, L. Lin, X. Liu, K. Ma, I-Fang Sun, J. Thompson, M. Uriarte, X. Wang, A. Wolf, J. Yang, J. K. Zimmerman, and N. G. Swenson (2017). [The role of functional uniqueness and spatial aggregation in explaining rarity in trees](#). *Global Ecology and Biogeography*, 26:777-786.
 60. Sørensen, M., Strimbeck, R., Nystuen, K., Kapas R., Enquist, B.J. and B. Graae (2017) [Draining the pool? Carbon storage and fluxes in three alpine plant communities](#). *Ecosystems*, 21:316-330.
 61. Blonder, B., Salinas, N., Patrick Bentley, L., Shenkin, A., Chambi Porroa P.O., Valdez Tejeria, Y., Violle, C., Fyllas, N.M., Goldsmith, G.R., Martin, R., Asner, G.P., Diaz, S., Enquist, B.J. and Y. Malhi (2017) [Predicting trait-environment relationships for venation networks along an Andes-Amazon elevation gradient](#). *Ecology*, 98:1239-1255.

62. Gallet, R.M, Violle, C., Fromin, N., Zahab, R., Enquist, B.J., and T. Lenormand (2017). [The evolution of bacterial cell size: the internal diffusion-constraint hypothesis](#). *The ISME Journal*, 11:1559—1568.
63. Asner, G.P., R. E. Martin, C. B. Anderson, K. Kryston, N. Vaughn, D. E. Knapp, L. P. Bentley, A. Shenkin, N. Salinas, F. Sinca, R. Tupayachi, K. Q. Huaypar, M. M. Pillco, F. D. Ccori Álvarez, S. Diaz, B.J. Enquist, Y. Malhi. (2016) [Scale-dependence of Canopy Trait Distributions Along a Tropical Forest Elevation Gradient](#). *New Phytologist*, 214: 973-988.

2016:

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Grants, Awards, and Fellowships

- **Department of Energy (2020-2023)** [Biogeochemical Dynamics from Genomes to Watershed Scales: The Watershed Function Scientific Focus Area \(SFA\)](#) PIs Susan Hubbard and Ken Williams, LBNL, Berkeley Lab.
- **National Science Foundation, Harnessing the Data Revolution, Harnessing the Data Revolution**, [Collaborative Research: Near term forecasts of global plant distribution, community structure, and ecosystem function](#). PI B.J. Enquist
- **National Geographic Explorers Grant** [Analyzing the future of tropical dry forests using new technologies and low-cost laser scanning](#). PIs B.J. Enquist and Adam Chumurzynski.
- **Department of Energy (2017-2020)** [Biogeochemical Dynamics from Genomes to Watershed Scales: The Watershed Function Scientific Focus Area \(SFA\)](#) PIs Susan Hubbard and Ken Williams, LBNL, Berkeley Lab.
- **Norwegian Research Council (2017 - 2020)** [TraitTrain: Comparing climate change impacts on High North vs. Alpine ecosystems through research and training in trait-based approaches](#). PI Vigdis Vandvik;
- **Norwegian Research Council (2018 - 2020)** [INCLINE: Indirect climate change impacts on alpine plant communities \(Forskerprosjekt - FRIMEDBIO\)](#). PI Vigdis Vandvik.
- **National Science Foundation (2016-2019)** [ABI Development: Creating a generic workflow for scaling up the production of species ranges](#) PI B.J. Enquist; Collaborative proposal with Brian McGill (University of Maine) and Cory Merrow (Yale University).
- **National Science Foundation (2016-2019)** [RUI: Niche evolution, ecological limits, and the macroecology of land plant biodiversity](#). NSF (DEB Populations and Community Ecology). PI B.J. Enquist; Collaborative proposal with A. Kerkhoff (Kenyon College).
- **National Science Foundation (2015-2018)** [Developing integrated trait-based scaling theory to predict community change and forest function in light of global change](#). NSF (DEB Ecosystems). PI B.J. Enquist; Collaborative proposal with V.M. Savage (UCLA), L.Patrick-Bentley, and G. Asner (Carnegie/Stanford).
- **Global Environment Facility (GEF) and Conservation International (2016-2019)** [Spatial Planning for Protected Areas in Response to Climate Change \(SPARC\)](#) PI Lee Hannah.
- **Department of Homeland Security (2016-2018)**. [A general informatics workflow, database, and geospatial tools for the dissemination of high quality biodiversity data across space and time](#). PI B.J. Enquist.

- **NERC: UK Research Grant (2013 – 2015)** - *Tree communities, airborne remote sensing and ecosystem function: new connections through a traits framework applied to a tropical elevation gradient*. PI Yadvinder Malhi (Oxford University).
- **University of Arizona, Institute for the Environment (2013)** - *Process-based Models for Forecasting Geographic Ranges – Integrating Plant Distributions, Demography, and Traits in a Bayesian, Informatics Framework*. Institute for the Environment Faculty Exploratory Grant, PIs B.J. Enquist and M. Evans.
- **Aspen Center for Environmental Studies (ACES) Grant (2013 – 2015)** - *Future Forest Distribution Model” and website in order to forecast and visualize Western tree species responses to climate change*.
- **National Science Foundation – Dissertation Improvement Grant (2008 – 2010)** Graduate fellowship for Benjamin Blonder – *Paleoclimate reconstruction from leaf venation networks*, NSF DEB.
- **National Science Foundation (2013-2016)**. *Novel lessons from ancient plants: Water transport in the earliest tracheophytes*. Jarmilla Pitterman, PI, UC Santa Cruz.
- **National Science Foundation (2012-2015)**. Research Opportunity Award (ROA). PI Enquist, B.J., Supplemental funding to - *Collaborative Research: Experimental Macroecology: Effects of Temperature on Biodiversity*.
- **National Science Foundation, Macrosystems (2011- 2015)**. *Experimental Macroecology*. Collaborative proposal with J. H. Brown, Kaspari, M., Wade, B., J. Zhou, C. Hou.
- **National Science Foundation via the iPlant Collaborative (2010 – 2012)**. *Developing BIEN – The Botanical Information and Ecology Network - to investigate the ecological impacts of global climate change on plant biodiversity*. PI B.J. Enquist, Co-PI Condit, R., Theirs, B., M. Schildhauer and B. Peet.
- **National Science Foundation (2010 – 2013)**. *Semantic Web Informatics for Species in Space and Time*. PI Dunne, J., Co-PI B.J. Enquist, J. Golbeck, R. Williams and N. Martinez.
- **National Science Foundation (2008-2012)**. Major Research Instrumentation. *Acquisition of a Distributed Environmental Sensor Network by the Rocky Mountain Biological Laboratory* PI: Ian Billick, Co-PIs: C.Still, B.J. Enquist, B. Peckarsky, and S. Wissinger.
- **National Center for Ecological Analysis and Synthesis and iPlant (2008 – 2012)**. **Enquist, B.J.** PI with Co-PIs R. Condit, R. Peet, B. Boyle, and S. Dolins, National Center for Ecological Analysis and Synthesis (NCEAS) working group, “*Developing BIEN – The Botanical Information and Ecology Network - to investigate the ecological impacts of global climate change on plant biodiversity*”. Support of participant costs for 5 working group meetings 2008 - 2012.
- **National Science Foundation – Advancing Theory in Biology, ATB (2008-2011)** *Combining Theories For Plant Architecture, Allometry, and Traits to Develop the Next Generation of Scaling Theory* **Enquist, B.J.** PI, Collaborative proposal with V. Savage (UCLA), J. Sperry (Utah), and P. Reich (Minnesota).
- **National Science Foundation – Dissertation Improvement Grant (2008 – 2010)**. Graduate Fellowship for Scott Stark – *Testing multiple determinants of growth rate-mass scaling relationships in an Amazonian Forest*.
- **Center for Applied Biodiversity Science, Conservation International, CABS Fellowship (2008-2009)**. *Developing a general macroecological framework for scaling plant community, diversity, biomass, and dynamics across time and space*.
- **National Park Service Research Grant (2008-2009)** *Assessing plant taxonomic and functional diversity across elevational gradients*. Enquist, B.J. PI, B.Boyle (Co-PI).

- **Center for Applied Biodiversity Science, Conservation International, CABS Fellowship (2007-2008).** *Developing a general macroecological framework for scaling plant community, diversity, biomass, and dynamics across time and space.* PI: B.J. Enquist.
- **National Science Foundation Post-doctoral Bioinformatics Fellowship (2006-2008)** (E.P. White (PI), Enquist, B.J. CoPI).
- **National Science Foundation Young Investigator CAREER Award (2002-2007).** *Scaling plant life-history, ontogeny, diversity, and ecology: Elaboration of a general model.* PI- B.J. Enquist. NSF DEB-0133974.
- **United States Geological Survey (USGS) Post-doctoral Research Grant (2003-2004)** *Developing a general framework for scaling plant community diversity, biomass, and dynamics across time and space – SALVIAS (Synthesis and Analysis of Local Vegetation Inventories Across Scales).* PI - Enquist, B.J., Co-PI J. Pither.
- **National Parks Service Research Grant (2003-2004).** *Assessing Floristic Communities along an Elevational Gradient In Tropical Mexico – Comparison to Florissant National Monument, CO.* PI Enquist, B.J. Co-PI B. Boyle and D. Kerkhoff.
- **Center for Applied Biodiversity Science, Conservation International, CABS Fellowship (2002-2004)** *Developing a general macroecological framework for scaling plant community, diversity, biomass, and dynamics across time and space;* PI - Enquist, B.J.
- **Department of Energy (DOE), Los Alamos National Labs (2003-2004)** *Scaling Relationships in Biology: Developing and Applying a Unifying Theory from Molecular through Biosphere Scales.* PI D. D. Breshears,; Co-PIs Unkefer, P.J., West, G.B., Woodruff, W.H., Donohoe, R.J., Ebinger, M.H., Cremers, D.A.; Collaborators **Enquist, B.J.**, Brown, J.H. and Allen, C.D.

Organized Meetings, Workshops, Symposia

- **2018 International workshop: OpenTraits, New Orleans, August, 4-5th, 2018-** Organized and led the first OpenTraits workshop part of a coordinated, international series of meetings focused on facilitating open collaboration and standardization in the collection and sharing of trait data. <http://opentraits.org/>
- **2018-Symposium: Ecoinformatics Advances: Building Technosocial Systems for Open Data and Big Science** Ecological Society of America, Annual Meeting 2018, New Orleans. Organizers: John (Jack) Williams Corina Gries, and B.J. Enquist <https://eco.confex.com/eco/2018/meetingapp.cgi/Session/14041>
- **2018- International Course - International Plant Functional Traits Course 4, Svalbard.** University Centre in Svalbard, Norway. Co-led and co-taught with Prof. V. Vandvik for 20 students <https://www.uib.no/en/rq/EECRG/114808/plant-functional-traits-course-4>
- **2017- International Workshop: A roadmap for global synthesis of the plant tree of life.** An international workshop held at Kew Royal Botanical Gardens, London UK. October 2017. Organizers W. Eiserhardt, B. Maitner, B.J. Enquist, W. Baker.
- **2017- International Conference: Co-Organizer International Biogeography Society Meetings, Tucson Arizona.**
- **2017- Workshop: Integrating and cleaning biodiversity data: Workflows to model ranges and merge associated ecological, phylogenetic, and trait information.** Organizers: Cory Merow, B.J. Enquist et. al. The 8th Biennial Conference of the International Biogeography Society was held at the University of Arizona, Tucson Arizona, January 2017.

- **2017- International Course - International Plant Functional Traits Course 3, Puna Alpine Grasslands, Peru.** Wayqecha Cloud Forest Biological Station. Co-led and co-taught with Prof. V. Vandvik for 20 students
<https://www.uib.no/en/rg/EECRG/109375/plant-functional-traits-course-3>
- **2016- International Course - International Plant Functional Traits Course 2, Gongga Mountains, Tibetan Plateau, China.** Alpine Ecosystem Observation and Experiment Station. Co-led and co-taught with Prof. V. Vandvik for 20 students
<https://www.uib.no/en/rg/EECRG/97477/plant-functional-traits-course-2>
- **2015-Symposium: Scaling in Ecology: Building a synthetic and predictive science for the next 100 years.** Organized symposium for the 100th Anniversary of the Ecological Society of America meetings, 2015, Baltimore. Organizers: B.J. Enquist and Charles Price. <https://eco.confex.com/eco/2015/webprogram/Session10682.html>
- **2014-International Issue: Proceedings of the National Academy of Sciences, Special Issue on 'Functional Biogeography', 2014.** In 2011, led by Cyrille Violle, we proposed to the editors of PNAS to organize a special issue (an 'in print' symposium) on 'Functional Biogeography'. This has been tentatively accepted and the due date for the collection of papers is June 15th 2014. NAS member Prof. Steve Pacala at Princeton University and Peter Reich from University of Minnesota agreed to sponsor this issue. The editors of the session are post-doc Cyrille Violle (CNRS France & Univ. of Arizona), Brian J. Enquist (Univ. Arizona), and Stephen Pacala (NAS member; Princeton Univ.). The Associate Editors: Jens Kattge (Max Planck Institute), Peter Reich (Univ. Minnesota).
- **2012-2008-NCEAS working group, 2012 - 2008 "Developing an integrated botanical information network to investigate the ecological impacts of global climate change on plant biodiversity"** – Organized at the National Center for Ecological Analysis and Synthesis or the Botanical Information and Ecology Network (BIEN). PI, B.J. Enquist, Co-PIs Richard Condit, Bob Peet, Brad Boyle, Steve Dolins. October, 2011
<http://www.nceas.ucsb.edu/featured/enquist>
- **2010-Symposium: Developing a Taxonomic Name Resolution Service of Botany, April 2010.** Working group at the Missouri Botanical Garden, March, 2010. Via the iPlant Collaborative The BIEN team is working to assemble a demonstration project that includes most of the premier plant biodiversity databases for the Americas (sources listed below). By the end of 2011 we propose to produce a single resource giving species names, locations, and often abundances, for about 25 million species occurrence records. Our ultimate goal is to unite an ever-growing pool of plant distributional data with information on plant co-occurrence, ecology, traits and phylogeny. See <http://www.iplantcollaborative.org/node/1044> and <https://pods.iplantcollaborative.org/wiki/display/iptol/TNRS+Workshop>
- **2010-International Conference, Elected Chair – 2010 Gordon Research Conference on "The metabolic basis of ecology"** held July, 2010. Elected by the participants of the 2006 Gordon Conference to chair the July, 2010 meeting. Together with my co-chair Dr. David Atkinson of Liverpool University, we initiated, organized, advertised, and oversaw the 2010 GRC conference. This was a two year commitment to this GRC meeting that included handling the \$20K GRC budget and fundraising an additional \$9K to support speaker and participant travel and registration costs.
<http://www.grc.org/programs.aspx?year=2010&program=metbasis>
- **2006-Workshop Toward a Unified Theory of Ecological Systems** (J. Green, B.J. Enquist, S. Hubbell, and P. Marquet organizers. Sept. 2006 The Santa Fe Institute and the National Center for Ecological Analysis and Synthesis.
- **Symposium: A "new" paradigm for community ecology: building from functional ecology** - (McGill, B. and B.J. Enquist organizers). Aug. 2004; Ecological Society of

- America Meetings in Portland, OR. Program: <http://abstracts.co.allenpress.com/pweb/esa2004/category/?ID=32244>
- **Symposium: Biophysical Ecology** (Sabo, J. and **B.J. Enquist** organizers). Aug. 2003; Ecological Society of America Meetings in Savannah GA. Program: <http://abstracts.co.allenpress.com/pweb/esa2003/category/?ID=23502>
 - **Annual Southwestern Association of Biologists Meeting**: Portal, AZ Oct. 2002 (**Enquist, B.J.** and M. Weiser organizers). Meeting website and official program: <http://eeb37.biosci.arizona.edu/~swab/main.html>.
 - **Symposium: Scaling the implications of organismal size across evolutionary time and ecological space: A synthesis of recent advances and insights.** (**Enquist, B.J.**, Smith, F.A., and P.A. Marquet organizers). Aug 2002; Ecological Society of America Meetings in Tucson, AZ. Program: <http://abstracts.co.allenpress.com/pweb/esa2002/category/?ID=510>.
 - **Workshop: Fractals in Biology: Developing the underlying mechanistic principles for self-similarity.** Workshop with 15 participants, Nov. 29-Dec. 2 2000, The Santa Fe Institute (**B.J. Enquist** and D. Morse organizers). Program: <http://discuss.santafe.edu/biofractals/>.

Sampling of Public Talks

- 2020 College of Science Public Science Lecture Series, Catalysts of Change. Our Rapidly Changing Biosphere. <https://www.youtube.com/watch?v=GEuvFfl3ZtY>
- 2017 Oxford Martin School – Oxford University. The concept of time in biology, and the unity of life. <https://www.youtube.com/watch?v=u1NJTtWQSHQ>
- 2016 UofA Science Café, It's About Time. The Dimensions of Biological Time
- 2015 Life In the Universe – UofA College of Science Public Lecture series. [Life on Earth: By Chance or By Law?](#)
- 2014 Aspen Ideas Festival – [Climate change and the fate of our forests](#) – Aspen Colorado. July 1st.
- 2012 BrownFest – a homage to Jim Brown and Astrid Kodric-Brown - [Experimental Allometry & Evolution of Allometry](#) – Homage to James H. Brown

Supervision and mentoring of post-docs:

Dr. Sean Michaletz (PhD University of Calgary), 2013 - 2017. Currently, Assistant Professor, University of British Columbia, Canada; Dr. Naia Morueta-Holme (PhD Biology, Aarhus University 2014), 2015 - 2017 Currently, Assistant Professor Center for Macroecology, Evolution and Climate, University of Copenhagen, Denmark; Dr. Sandra Duran (PhD University of Alberta). 2016 - . Dr. Danilo Neves (PhD Federal University of Minas Gerais, Botany Department, Brazil). 2016 - 2018 , accepted an Assistant Professor position at the Federal University of Minas Gerais (Brazil); Dr. Daniel Park (PhD Harvard, 2016) BBCS postdoc, 2017-2018; Dr. Xiao Feng (PhD University of Oklahoma) BBCS postdoc; Dr. Rachael Gallagher (PhD Macquarie University, Australia) 2017. She is a ARC Discovery Early Research Career spending part of her postdoc in my lab; Dr. Erica Newman (PhD UC Berkeley, 2016) 2018 - ; Julia Chacon (PhD Madrid 2018) 2020 - .

Supervision and mentoring of graduate students:

Lindsey Sloat (PhD:2009 – 2015). Currently a postdoc, University of Minnesota.; Benjamin Blonder (PhD:2009 – 2014). Assistant Professor position at Arizona State University; Julie Messier (PhD:2010 – 2015). Co-advised with B. McGill and M. Lechowicz. Assistant Professor, University of Waterloo, Canada; John Donoghue (Masters:2010 – 2014). Co-advised with B. McGill, GIS Manager, GIS Engineer, The Altum Group; Amanda Henderson (Masters:2013 – 2016). DOE Research Scientist, Berkeley Labs; Alex Brummer (PhD:2012 – 2017). Postdoc, UCLA. Co-advised with Alex Cronin in Physics; Vanessa Buzzard (PhD:2013 – 2017). Research Lab Manager, Biosphere2; Brian Maitner (PhD:2014 – present; Lorah Patterson (PhD:2016 – present); Adam Chmurzynski (PhD:2017 – present), Matiss Castorena Salaks, PhD Student (2017 – present); Michiel Pillet (PhD:2018 – present).

Supervision and mentoring of international graduate students and post-docs:

Kristine Engemann Jensen (2012 – 2015). She finished her PhD with Jens-Christian Svenning at Aarhus University, Denmark. I was an international member of her PhD committee and hosted her for in my lab for several months in 2012-2015; Mia Vedel Sørensen (2016 – 2018) I was co-supervisor with Professor Bente Jessen Graae at the Norwegian University of Science and Technology in Trondheim Norway (NTNU). Mia is applying our methods for linking traits and ecosystem carbon flux in a long-term experiment along an elevational gradient in Norway; Dr. Irena Simova (PhD Charles University, Czech Republic), August 2012 - 2017. Dr. Simova was an international postdoctoral fellow with funding from the Czech Republic to travel to my lab part of her time and to collaborate on our NSF Macrosystems project; Jehová Lourenço Junior – External, PhD Student, Brazil, March 2017 – October 2018, PhD ‘Sandwich’. Jehová defended his PhD at the University of Arizona Fall 2018. He is currently a postdoc Jitka Klimešová in the Czech Republic. Yaoqi Li – Visiting PhD Student, Peking University, China, Nov. 2017 – Nov. 2018. Yaoqi is defending her PhD late spring 2019; Jiaxin Zhang – Visiting PhD Student, Chinese Academy of Science, Wuhan China, June 2018 – June 2019; Ragnhild Gya PhD Student, University of Bergen, Department of Biology, Norway, Sept. 2019 – Sept. 2020.

Affiliations American Association for the Advancement of Science, American Society of Naturalists, Ecological Society of America (*Theoretical and Physiological Ecology Sections*), Botanical Society of America (*Ecological and Tropical Biology section*).

Overview of synergistic activities:

Development of Botanical Ecoinformatics Data Networks, Workflows, and Tools - In order to enable the next generation of big-data driven science, we have actively worked to develop publically accessible standardized botanical datasets, workflows, and informatics tools. This work includes development of the following:

- **BIEN**- The Botanical Information and Ecology Network – is integrating the available herbarium specimens, plant functional trait and ecological plot data for the New World, biendata.org. BIEN is a network of numerous scientists from across the globe who are developing a standardized workflow to integrate disparate sources of botanical data that

- together can address prominent questions of plant macroecology, evolution, and comparative biology. The BIEN database currently houses about 200 million integrated and standardized botanical observations from across the New World – from herbarium, trait, and ecological plot observations.
- TNRS - In order to do repeatable, robust global ecology and comparative biology one must integrate disparate data containing differing taxonomic names. As part of my research efforts to integrate global data collaborative research with the iPlant Collaborative and the Missouri Botanical Garden, we have just developed a Taxonomic Name Resolution Service (TNRS). Featured in *Nature*, the service standardizes and 'scrubs' global botanical names so as to make taxon names 'usable' for comparative analyses. It is an informatics tool to correct and align any botanical taxonomic information, [tnrs.iplantcollaborative.org /](http://tnrs.iplantcollaborative.org/) Since its release in 2011, use of the TNRS has been exponential with over 50,000 users and 1,000 new sessions each month.
 - The San Emilio Forest Dynamics long-term plot - My group maintains a long-term forest dynamics plot on the growth, death, and recruitment of all trees within a 17ha plot in Guanacaste, Costa Rica. Started in 1976, the plot contains ~ 20,000 trees and is one of the largest and longest running forest plots.
 - OpenTraits.org Functional traits have rapidly become an integral part of biodiversity, earth system, and climate change research. Trait-based approaches allow comparisons (of patterns, trends, global change impacts etc.) across regions and systems that have few taxa in common. But despite widespread interest, we still have incomplete knowledge of how traits vary within and across species, locations and time and we still lack a common trait standard to link and share trait data within and across disparate organisms (plants, insects, birds, mammals etc.). I have led the start of OpenTraits to help advance the use of trait based approaches and data in biology and earth system research.