MARIELLE NATASHA SMITH

EDUCATION & RESEARCH POSITIONS

2017-present	**Postdoctoral Research Associate**, Forestry, Michigan State University (MSU). *Advisor:* Scott Stark
2010-2016	**PhD**, Ecology & Evolutionary Biology, University of Arizona *Dissertation:* 'Responses of tropical forest canopy structure and function to seasonal and interannual variations in climate' *Advisors:* Scott Saleska & Travis Huxman
2012	Tropical Plant Systematics & Forest Inventory field course, Organization for Tropical Studies, Costa Rica
2005-2006	**MSc**, Science Communication, Imperial College, London
2001-2005	**BSc**, Ecology & Environmental Management, Cardiff University, Wales

NON-ACADEMIC POSITIONS

- 2010: Media Relations Assistant, Communications Services, University of Cambridge
- 2009: Festival Bookings Administrator, Cambridge Science Festival, Community Affairs, University of Cambridge
- 2008: Radio producer, Clear Channel Radio Fairbanks, Alaska
- 2006-2007: Assistant Ecologist, Capita Symonds Ltd., East Grinstead

PUBLICATIONS (Google Scholar) (IF: impact factor)

(1) **Smith MN**, Stark SC, Schietti J, Almeida DRA, [+ 50 co-authors]. Diverse anthropogenic disturbances shift Amazon forests along a structural spectrum. (In press for special issue of *Frontiers in Ecology & the Environment*).

(2) Nunes MH, Camargo JLC, Vincent G, Calders K, Oliveira RS, Huete A, de Moura YM, Nelson B, **Smith MN,** Stark SC, Maeda EE. 2022. Forest fragmentation impacts the seasonality of Amazonian evergreen canopies. *Nature Communications* (IF **14.9**). 13, 917. https://doi.org/10.1038/s41467-022-28490-7

(3) Costa FRC, Schietti J, Stark SC, **Smith MN**. 2022. The other side of tropical forest drought: Do shallow water table regions of Amazonia act as large-scale hydrological refugia from drought? In press as *Tansley Review* in *New Phytologist* (IF **8.5**). https://doi.org/10.1111/nph.17914

(4) **Smith MN,** Taylor TC, van Haren J, Rosolem R, Restrepo-Coupe N, Adams J, Wu J, de Oliveira RC, da Silva R, da Araujo AC, de Camargo PB, Huxman, TE, and Saleska SR. 2020. Empirical evidence for resilience of tropical forest photosynthesis in a warmer world. *Nature Plants* (IF **13.3**). 6(10): 1225-1230. https://doi.org/10.1038/s41477-020-00780-2 *(Altmetric 174 – coverage by 10 news outlets including National Geographic, top 2% of articles tracked).*

(5) Stark SC, Breshears DB, Aragón S, Villegas JC, Law DJ, **Smith MN**, Minor DM, Leandro de Assis R, Almeida DRA, de Oliveira G, Saleska SR, Swann ALS, Mauro S. Moura J, Carmargo JL, da Silva R, Aragão LEOC, and RC Oliveira. 2020. Reframing tropical savannization: linking changes in canopy structure to energy balance alterations that impact climate. *Ecosphere* (IF **2.8**). DOI: 10.1002/ecs2.3231

(6) Albert LP, Restrepo-Coupe N, **Smith MN,** Wu J, Chavanna-Bryant C, Prohaska N, Taylor TC, Martins G, Ciais P, Mao J, Arain MA, Li W, Shi X, Ricciuto DM, Huxman TE, McMahon SM, Saleska SR. 2019. Cryptic phenology in plants: case studies,

implications, and recommendations. *Global Change Biology* (IF **8.6**). 25(11): 3591-3608. https://doi.org/10.1111/gcb.14759

(7) Almeida DRA, Stark SC, Schietti J, Camargo JLC, Amazonas NT, Gorgens EB, Rosa DM, **Smith MN,** Valbuena R, Saleska SR, Andrade A, Mesquita R, Laurance SG, Laurance WF, Lovejoy TE, Broadbent EN, Shimabukuro YE, Parker GG, Lefsky M, Brancalion PHS. 2019. Persistent effects of fragmentation on tropical rainforest canopy structure after 20 years of isolation. *Ecological Applications* (IF **4.4**). 29(6): p.e01952. https://doi.org/10.1002/eap.1952

(8) Taylor TC, **Smith MN**, Slot M, Feeley KJ. 2019. The capacity to emit isoprene differentiates the photosynthetic temperature responses of tropical plant species. *Plant Cell & Environment* (IF **6.4**). 42(8): 2448-2457. https://doi.org/10.1111/pce.13564

(9) **Smith MN,** Stark SC, Taylor TC, Ferreira ML, de Oliveira E, Restrepo-Coupe N, Chen S, Woodcock T, dos Santos DB, Alves LF, Figueira M, Camargo PB, de Oliveira R, Aragão L, Falk DA, McMahon SM, Huxman TE, and Saleska SR. 2019. Seasonal and drought related changes in leaf area profiles depend on height and light environment in an Amazon forest. *New Phytologist* (IF **8.5**). 222(3): 1284-1297. https://doi.org/10.1111/nph.15726
(Altmetric 104 - 5 news outlets including Mongabay, top 5% of articles tracked)

(10) Shao G, Stark SC, de Almeida DR, **Smith MN.** 2019. Towards high throughput assessment of canopy dynamics: the estimation of leaf area structure in Amazonian forests with multitemporal multi-sensor airborne lidar. *Remote Sensing of Environment* (IF **8.2**). 221: 1-13. https://doi.org/10.1016/j.rse.2018.10.035

(11) Taylor TC, McMahon SM, **Smith MN**, Violle C, van Haren J, Simova I, Jardine K, Ferreira L, da Costa L, Meir P, Boyle B, Enquist BJ, Saleska SR. 2018. Isoprene emission structures tropical tree biogeography and community assembly responses to climate. *New Phytologist* (IF: **7.3**). 220(2): 435-446. https://doi.org/10.1111/nph.15304

(12) Hayek MN, Longo M, Wiedemann KT, Wu J, **Smith MN**, Restrepo-Coupe N, Tapajós R, da Silva R, Fitzjarrald DR, Camargo PB, Hutyra L, Alves LF, Daube B, Munger JW, Saleska SR, and Wofsy SC. 2018. Carbon exchange in an Amazon forest: from hours to years. *Biogeosciences* (IF **4.0**). 15: 4833-4848. https://doi.org/10.5194/bg-15-4833-2018

(13) Albert LP, Wu J, Prohaska N, de Camargo PB, Huxman TE, Tribuzy ES, Ivanov VY, Oliveira RS, Garcia S, **Smith MN,** Oliveira RC, Restrepo-Coupe N, da Silva R, Stark SC, Martins GA, Penha DV, Saleska SR. 2018. Age-dependent leaf physiology and consequences for crown-scale carbon uptake during the dry season in an Amazon evergreen forest. *New Phytologist* (IF: **7.3**). 219: 870-884. https://doi.org/10.1111/nph.15056

(14) Sides CB, Enquist BJ, Ebersole JJ, **Smith MN**, Henderson AN, Sloat LL. 2014. Revisiting Darwin's hypothesis: Does greater intraspecific variability increase species' ecological breadth? *American Journal of Botany.* 101(1): 56-62. https://doi.org/10.3732/ajb.1300284

PUBLICATIONS IN REVISION

(15) Vinod N, Slot M, McGregor I, Ordway E, **Smith MN**, Taylor TC, Anderson-Teixeira KJ. Thermal sensitivity across forest vertical profiles: patterns, mechanisms, and ecological implications. (In revision as an invited *Tansley Review* to *New Phytologist*).

PUBLICATIONS IN ADVANCED PREPARATION

(1) **Smith MN**, Stark SC, Schietti J, Gonçalves N, [+ 50 co-authors]. Functionally important biophysical characteristics of Amazon forest canopies are structured by soil environment, hydroclimate, and seasonality gradients. (In preparation for *Global Ecology & Biogeography*).

(2) Pontes-Lopes A, Stark SC, **Smith MN**, [+ 8 co-authors], de Aragão LEOC. Fire in a Central Amazon wet forest: lingering changes in the canopy structure from multitemporal airborne LiDAR. (In preparation for *Journal of Ecology*).

(3) Chen S, Stark SC, Nobre AD, Cuartas A, Restrepo-Coupe N, **Smith MN**, Ko H, Nelson BW, Saleska SR. Distinct ecotypes structure consistent regional differences in Amazon forest drought response. (In preparation for *Nature Climate Change*)

(4) Taylor TC, Alves E, **Smith MN**, de Assis P, Tota J, Oliveira C, de Camargo P, Saleska SR. Isoprenoid emissions map to tree functional strategies and forest structure at a site in the eastern Amazon (In preparation for *New Phytologist*).

(5) Zarakas C, Swann ALS, Koven C, **Smith MN**, Taylor TC. Disentangling the relative impacts of temperature and VPD on tropical forest GPP using a demographic ecosystem model. (In preparation).

GRANTS

2019 Co-author of US National Science Foundation (NSF) DEB Ecosystem Sciences Cluster proposal: "The other side of tropical forest drought: Do shallow water table regions of Amazonia act as large-scale hydrological refugia from drought?", Lead PI: Scott C. Stark; Senior personnel: Flavia R. C. Costa, Juliana Schietti, and Bruce Nelson. Status: **awarded**, start: Feb 2020 (3 yr project). ($1,127,996 total)

2019 Assisted in writing NSF Macrosystems Biology (small award) proposal: "NEON in an era of forest change: quantifying the range of energy and structure alterations, bridging new remote sensing data streams, and detecting ecoclimate teleconnections", Lead PI: Scott C. Stark. Status: declined.

2019 Assisted in writing MSU Plant Resilience Institute proposal: "Resilience and responses to water stress in complex Amazon forest canopies: a unique drone based multispectral and thermal imaging assessment approach", PI: Scott C. Stark. Status: declined.

AWARDS AND FELLOWSHIPS

2019 Smithsonian CTFS-ForestGEO (Center for Tropical Forest Science and the Forest Global Earth Observatory) Annual Analytical Workshop, Nanyang Technological University, Singapore (all expenses paid).
2016 NASA Earth & Space Science Fellowship (NESSF-NNX14AK95H) ($17,588)
2016 U of Arizona Institute of the Environment Travel Award ($300)
2015 BDFFP (Biological Dynamics of Forest Fragments Project) Thomas Lovejoy research fellowship ($2,000)
2013 U of Arizona EEB Graduate Research Fellowship ($1,000)
2013 U of Arizona Eye on the Environment photo competition ($100)
2012 U of Arizona Galileo Circle scholarship ($1,000)
2011 Biosphere 2 & Carson Scholars Science and Society Fellowship ($3,000)
2011 U of Arizona Graduate/Professional Student Council travel grant ($500)
2011 Biosphere 2 Earth Sciences Outreach Fellowship ($43,747)

INVITED PRESENTATIONS

- **Smith MN,** Taylor TC. Nov-Dec 2020 (oral). *Tropical forest responses to climate: physiology, forest structure, and across landscapes.* Zoom presentations to four groups: Carbon Cycle & Ecosystems Group, NASA Jet Propulsion Laboratory, California Institute of Technology, US; TRopical Ecosystems and Environmental Sciences lab, National Institute for Space Research, Brazil; Australian Land-Atmosphere modelling community, University of New South Wales, Australia; Oxford Ecosystems Lab, University of Oxford, UK.
- Taylor TC, **Smith MN.** Nov 2020 (oral). *Tropical forest thermal tolerance: physiology, forest structure, and landscapes.* Evolution of Ecology group, University of Exeter, UK.
- **Smith MN,** Stark SC, Schietti J, Gonçalves N, Minor DM, de Almeida DRA, Rocha DG, Aragón S, Souza MS, Almeida, D., de Lima, N. Z., Torralvo, K., Lima, A., Scoles, R., Menin, M., Guedes, M. C., Tonini, H., da Silva, K. E., Rosa, D. M., Nelson, B., Cordeiro, C. L., de Oliveira, R. C., Shao, G., van Haren, J., Leitold, V., McMahon, S. M., Aragao, L., de Oliveira, G., de Assis, R. L., Camargo, J. L. C., Mesquita, R., Breshears, D. D., Costa, F. R. C., Saleska, S. R. August 2020 (oral). *Shifts in vertical forest structure and light environments across seasons and landscapes in Amazonia.* Ecological Society of America (ESA) Annual Meeting, Salt Lake City and Annual Meeting of the Association for Tropical Biology and Conservation (ATBC), Cartagena, Colombia (latter cancelled due to COVID-19).
- **Smith MN**. Oct 2019 (oral). *Forest structural responses to seasonal, annual, and spatial environmental variation.* Environmental Change Institute, University of Oxford, UK.
- **Smith MN**. 2018 (oral). *Monthly ground-based lidar reveals seasonal and drought related changes in leaf area profiles with dependencies on height and light environment in an Amazon forest.* Centro Forestal Tropical, Universidad del Tolima, Colombia and also given at the Departamento de Ciencias Forestales, Universidad Nacional de Colombia, Medellín, Colombia.
- **Smith MN.** 2018 (oral). *Responses of tropical forest canopy structure and function to high temperatures and drought.* Hanover Forest Science Seminar Series, Department of Forestry, MSU and also given at the Biology Department, University of Miami.
- **Smith, MN,** Stark SC, Woodcock T, Ferreira M, de Oliveira E, Alves L, Restrepo-Coupe N, Taylor TC, Figueira M, Aragao L, de Camargo PB, Falk DA, McMahon SM, Huxman TE, Saleska SR. 2017 (oral). *Seasonal and El Niño changes in LiDAR-derived LAI and leaf area profiles in an Amazonian forest.* ATBC Annual Meeting, Merida, Mexico.

SELECTED CONTRIBUTED PRESENTATIONS (reporting only 2017-2021)

- Chen S, Stark SC, Schietti J, Nobre AD, Cuartas LA, Amore D, Restrepo-Coupe N, **Smith MN**, Ko H, Nelson BW, Saleska SR. Dec 2021 (oral). *Hydrological environments, climate, and traits structure large-scale Amazon forest drought response.* American Geophysical Union (AGU) Fall Meeting, New Orleans.
- Zarakas C, Swann ALS, Koven C, **Smith MN**, Taylor TC. Dec 2021 (oral). *Disentangling the relative impacts of temperature and VPD on tropical forest GPP using a demographic ecosystem model.* American Geophysical Union (AGU) Fall Meeting, New Orleans.
- **Smith MN,** Stark SC, Schietti J, de Almeida DRA, et al. Dec 2020 (oral). *The consequences of anthropogenic disturbances for Amazon forest canopy structure, microenvironments, and resilience to climate change.* British Ecological Society (BES) annual meeting (virtual).
- Taylor TC, **Smith MN,** Visser M, Anderson-Teixeira K, Herrmann V, Kunert N, McMahon S, Muller-Landau H, Stark SC, Duque A, Feeley K. Dec 2020 (oral). *A*

thermal tolerance trait distinguishes microclimatic niches of tropical trees. BES annual meeting (virtual).

- **Smith MN,** Schietti J, Gonçalves N, Minor D et al. Dec 2019 (oral). *Variations in Amazonian forest canopy structure and light environments across environmental and disturbance gradients.* AGU Fall Meeting, San Francisco.
- Taylor TC, **Smith MN,** Visser MD, McMahon S, Anderson-Teixeira KJ, Kunert N, Herrmann V, Muller-Landau HC, Shao G, Stark SC, and Feeley K. Dec 2019 (poster). *A thermal tolerance trait distinguishes microclimatic niches of tropical trees.* AGU Fall Meeting, San Francisco.
- Prohaska N, Restrepo-Coupe N, Penha DV, Albert LP, Brum M, **Smith MN**, Stark SC, Alves L, Tribuzy E, Camargo PB, de Oliveira RC, Ivanov V, Oliveira R, Saleska SR. 2019 (oral). *Scaling from individual to ecosystem responses to El Nino drought in an eastern Amazon forest.* ESA Annual Meeting, Louisville.
- Ivanov, V. Y., Agee, E., Prohaska, N., Taylor, T., Brum, M., Albert, L., Saleska, S. R., Restrepo-Coupe, N., Alves, L. F., de Camargo, P. B., Penha, D., Tribuzy, E., Mauro, J., **Smith, M. N.**, Stark, S. C., de Oliveira, R. C., Garcia, M., Costa, F., Oliveira, R. S., Xu, D., Huang, W., Zhou, W., Fatichi, S. 2019 (poster). *Interconnections among tree hydraulic strategies, response to extreme drought, and growth patterns in an Amazon rainforest.* ATBC Annual Meeting, Antananarivo, Madagascar.
- **Smith, M. N.,** Stark, S. C., Taylor, T. C., Ferreira, M., de Oliveira, E., Restrepo-Coupe, N., Chen, S., Woodcock, T., dos Santos, D. B., Alves, L. F., Figueira, M., Camargo, P. B., de Oliveira, R., Aragao, L., Falk, D., McMahon, S. M., Huxman, T. E., and Saleska, S. R. 2018 (oral). *Monthly ground-based lidar reveals seasonal and drought related changes in leaf area profiles with dependencies on height and light environment in an Amazon forest*. ForestSAT, College Park, Maryland.
- Stark, S. C., Shao, G., McMahon, S. M., Almeida, D. R., **Smith, M. N.** 2018 (oral). *The challenge of detecting size and light environment structured forest dynamics: testing models with a multitemporal multisite Amazon forest dataset.* ForestSAT, College Park, Maryland.
- Shao, G., Stark, S. C., Almeida, D. R., **Smith, M. N.** 2018 (oral). *Towards high throughput assessment of canopy dynamics: the estimation of leaf area variation in Amazonian forests with multi-temporal multi-sensor discrete return lidar.* ForestSAT, College Park, Maryland.
- Stark, S. C., **Smith, M. N.**, Prohaska, P., Shao, G., Wu, J., Albert, L. P, Dahlin, K. M., Serbin, S. P., Almeida, D.R.A., de Oliveira, R. C., and Saleska, S. R. 2018 (oral). *Towards remote estimation of phylloenvironments to assess tropical forest function and dynamics.* ESA Annual Meeting, New Orleans.
- Tyeen, T., McMahon, S., **Smith, M. N.**, Boyle, B., Violle, C., Van Haren, J. L. M., Simova, I., de Camargo, P. B., Ferreira, L., da Costa, A. C. L., Meir, P., Enquist, B. J., Saleska, S. R., Alves, E. G., Slot, M., Tota, J., Guenther, A. B., Feeley, K. 2018 (oral). *The influence of isoprene emission on biogeochemical responses of tropical forests to climate from leaves to ecosystems.* AGU Fall Meeting, Washington, D.C.
- Chen, S., Restrepo-Coupe, N., Stark, S. C., Albert, L. P., **Smith, M. N.**, and Saleska, S. R. 2018 (oral). *Mechanisms of Amazon forest drought responses: Canopy structure versus photosynthetic physiology.* AGU Fall Meeting, San Francisco.
- Taylor, T. C., McMahon, S., **Smith, M. N.**, Violle, C., van Haren, J., Simova, I., de Camargo, P., Ferreira, L., da Costa, A., Meir, P., Boyle, B., Enquist, B., Saleska, S. R. 2017 (oral). *Isoprene emission structures tropical tree biogeography and community assembly responses to climate.* ATBC Annual Meeting, Merida, Mexico.

TEACHING EXPERIENCE

Training:

Sept 2019	Teaching workshop: Backward design and student-focused teaching.
May 2019	Management Basics workshop. Project and team management in and outside of academia.

Guest lectures:

Feb 2020	Wrote and delivered lecture on forest ecosystems for Scott Stark's Graduate Forest Ecology (FOR 804) class at MSU.
Sept 2018	Prepared slides for disturbance lecture for Phoebe Zarnetske's Forest Ecology (FOR 404) class, MSU.
Feb 2018	Applications of Geographic Information Systems to Natural Resources Management (FW 419), MSU.
2015	Ecology (ECOL 302), University of Arizona.
2012	Vertebrate Physiology (ECOL 437), University of Arizona.

Graduate Teaching Associate positions at the University of Arizona:

2010, 2013 & 2015	Ecology (ECOL 302) Taught two lab sections, led field labs, graded section assignments and module exams.
2015	Outreach Scholars STEM Education Preparation Program Helped to design syllabus, schedule, and module materials, organised module speakers and field trips, liaised with University outreach centres to organise student training experiences, advised students on their final projects and outreach experiences, and graded assignments.
2014	Herpetology (ECOL 483) Taught two lab sections, co-led field trips, graded section assignments and module exams, and managed on-line resources.
2012	Vertebrate Physiology (ECOL 437) Taught two lab sections, and graded section assignments and module exams.

MENTORSHIP

Fall 2018-present	Mentoring MSU Forestry Ph.D. students Leonardo Ziccardi and Nathan Gonçalves (main advisor: Dr. Scott Stark).
Summer 2018	Co-advised MSU Forestry undergraduate James Gray with Dr. Scott Stark on a GIS internship to assemble a database of environmental variables across the Amazon basin in the form of geospatial layers.
Spring 2018	Co-advised MSU Forestry undergraduate student Ben Luukkonen with Dr Scott Stark on an honours project for FW 419 (Applications of Geographic Information Systems to Natural Resources Management), comprising a GIS project to map current and future habitat area for an endangered fish species of the Amazon basin.

SERVICE

2020-present	Member, MSU Dept. Forestry's Diversity Equity & Inclusion Committee.
Spring 2021	Member, Search Committee for MSU Dept. Forestry Postdoctoral Researcher position.
Dec 2020	Judge for British Ecological Society student posters.
2018-2020	Judge for MSU Forestry Graduate Student Symposium talks and posters.
Dec 2019	Judge for AGU Outstanding Student Presentation Award (posters).
2019	Panelist for MSU Forestry Graduate Student Organisation's panel providing advice on comprehensive exams.

2017-2018 Member of MSU's Postdoctoral Association.

Reviewer for: *Ecological Applications, Journal of Environmental Management*, *Geophysical Research Letters*, *Methods in Ecology and Evolution,* and *Global Ecology and Biogeography*.

PROFESSIONAL SOCIETY MEMBERSHIP

British Ecological Society (since 2019)
Ecological Society of America (since 2011)
American Geophysical Union (since 2014)
Association for Tropical Biology and Conservation (since 2017)

MEDIA COVERAGE

Smith et al. 2020, *Nature Plants*:

- "Tropical forests can take the heat, study finds. Dryness? Not so much", Mongabay.
- "Biosphere 2 Study Shows Tropical Forests More Resilient To Climate Change Than Predicted", Cronkite News / KJZZ 91.5 FM, Arizona
- "Some tropical forests show surprising resilience as temperatures rise", Nat. Geo.
- "Can tropical forests survive a warmer world?", University of Bristol
- "Rainforest at Biosphere 2 Offers Glimpse into Future of the Amazon", UA News

Smith et al. 2019, *New Phytologist*:

- Commentary by Atkins & Agee: "Phenological and structural linkages to seasonality inform productivity relationships in the Amazon Rainforest", *New Phytologist.*
- "Shade or sun? Forest structure affects tree responses to Amazon drought", Mongabay.
- "Marielle Smith: tracking the Amazon forest with lidar", MSU Today
- "How does the Amazon rain forest cope with drought?", MSU Today.
- "How does the Amazon rainforest cope with drought?", New Phyt blog
- "Seeing the forest through the lidar lens", UA News.

SELECTED PUBLIC SCIENCE COMMUNICATION & OUTREACH

- April 2021. Gave online presentation with Dr. Stark's lab about the Amazon rainforest for the MSU Science Festival.
- March 2021. Wrote blog post: 'Photosynthetic resilience to a warmer world is revealed by a tropical forest under glass' for Nature Research Ecology & Evolution Community.
- May & June 2020. Gave remote presentations about my research in the Amazon to kindergarten class and a group of 2nd graders as part of Skype a Scientist.
- May 2020. Produced online talk and videos about the Amazon rainforest for the MSU Science Festival: "Why the Amazon is More 'The Heart' Than 'The Lungs' of the Earth and How We Can Preserve Its Life-Sustaining Function".
- May 2020. Produced online talk and videos about the Amazon rainforest for the MSU Science Festival. https://www.facebook.com/MsuScienceFestival/videos/530945110904525/
- Jan 2020. Co-author of article: "MSU Researchers discuss recent uptick in Amazon Deforestation and Fires", MSU Today website.
- July 2019. Interviewed by MSU Forestry about my research. Video shared on MSU Forestry's Facebook, Twitter, and Instagram pages, and in the department newsletter: https://youtu.be/8kXoUGEyoNM
- April 2019. Produced a talk for the MSU Science Festival, exploring the past, present, and future of the Amazon rainforest. Included video footage I filmed and edited.

- January 2019. Produced video to accompany Smith *et al.* 2019 *New Phytologist* paper; viewed >1,600 times and promoted by a number of news outlets: "Measuring forest structure through the lidar lens".
- April 2018. Volunteered at the MSU's Science Festival with the Department of Forestry and also participated in a workshop on Google Earth Engine.
- March 2018. Gave a presentation and workshop on tropical forest responses to seasonal dry periods and droughts to Biotech high school students at the Fairchild
- Tropical Botanical Garden (Miami, Florida).
- April 2017. Volunteered at MSU's Science Festival with the Department of Forestry.
- February 2016. Led rainforest tours and hands-on demonstrations for the "What if tropical rainforests are resilient to climate change?" event at Biosphere 2.
- Provided narration to accompany "What Happens in the Rainforest" photo exhibit, Arizona-Sonora Desert Museum.
- Article: "Stories from the field: researching Amazonia", Terrain.org.
- Numerous presentations and hand-on demonstrations given to school and university groups and public audiences in the UK, US, Brazil, and remotely (e.g., *Skype a Scientist*).

FIELD EXPERIENCE

Field campaigns

March-April 2016	Biological Dynamics of Forest Fragments Project, near Manaus, Brazil. Planned and led three 1-week campaigns to collect forest structure and light environment measurements in secondary forest plots, using integrated system comprising ground-based LiDAR, light sensors, and hemispherical camera.
Oct-Nov 2014	Tapajós National Forest, near Santarém, Brazil. Planned and led field work over 2-week period to collect forest structure measurements with ground-based LiDAR.
Aug 2012-Jan 2013	Collaborative field campaign at the Tapajós National Forest, near Santarém, Brazil with other Saleska lab Ph.D. students Loren Albert, Jin Wu, Neill Prohaska, and Ty Taylor, to understand dry season phenology.
May-Aug 2011	Rocky Mountain Biological Laboratory, Colorado, working with Dr. Brian Enquist to investigate intraspecific variation of specific leaf area in herbaceous plants along an elevational gradient.
Oct 2007 – Jan 2008	Mauritian Wildlife Foundation, Mauritius. Member of small team conducting island-wide survey of the Mauritius kestrel.
March-June 2007	La Selva Biological Station, Costa Rica. Field assistant to Ph.D. student Steven Whitfield (Florida International University), investigating causes of amphibian and reptile declines.
June & Sept 2003	A Rocha Portugal, Algarve, Portugal. Field assistant to Dr. Rob Thomas (Cardiff University) on long-term projects investigating migratory bird species (European storm petrels and reed warblers).

Field courses

June-July 2012	Tropical Plant Systematics & Forest Inventory course, Costa Rica. 5-week intensive graduate field course run by the Organization for Tropical Studies to develop skills in tropical plant identification, classification, and phylogenetic analysis, conducting forest inventories, and preparing voucher specimens.
July 2010	Amazon PIRE Field Course, near Manaus, Brazil. 2-week graduate field course which provided instruction on a range of different survey methods and instrumentation relevant to the theme 'Ecology & Biogeochemistry of the Amazon'.

2002-2005	Llysdinam Field Centre, Wales. Numerous field courses to Cardiff University's field centre provided training in plant identification, and the capture and identification of small mammals, birds, insects, reptiles and amphibians.
July 2003	Bialowieza Forest & Biebrza National Park, Poland. Field course with Cardiff University. Conducted surveys of wood boring beetles and aided a researcher assessing weasel populations in the Bialowieza Forest.

PROFESSIONAL SOCIETY MEMBERSHIP

British Ecological Society (since 2019)
Ecological Society of America (since 2011)
American Geophysical Union (since 2014)
Association for Tropical Biology and Conservation (since 2017)

LANGUAGES

English (native), Portuguese (advanced), Spanish (intermediate), French (beginner).