

# Víctor Hugo Gutiérrez-Vélez

## August 2023

### EDUCATION

- 2013            **Columbia University.** New York, NY. USA.  
Doctor of Philosophy.  
Ecology and Evolutionary Biology.
- 2010            **Columbia University.** New York, NY. USA.  
Master of Philosophy.  
Ecology and Evolutionary Biology.
- 2007            **Clark University.** Worcester, MA. USA.  
Master of Arts  
Geographic Information Science for Development and Environment.
- 2000            **National University of Colombia.** Medellin, Colombia.  
Bachelor of Science  
Forestry.

### DOCTORAL DISSERTATION

*Oil palm expansion and land cover changes in the Peruvian Amazon: implications for forest conservation and fire mitigation.* 2013. Advisor: Ruth DeFries.

### POSITIONS HELD

- 2023-Present    **Associate Professor.** Department of Geography and Urban Studies. Temple University.
- 2016-2023      **Assistant Professor.** Department of Geography and Urban Studies. Temple University.
- 2018-Present    **Faculty Fellow.** Center for Sustainable Communities. Temple University
- 2013-2015      **Postdoctoral Research Scientist.** Columbia University- Center for International Forestry Research (CIFOR). Developing Systems for reducing emissions from land use.
- 2009-2013      **Graduate Research Assistant.** NSF, Coupled Natural-Human Systems. Columbia University: Fires in Western Amazonia: Understanding and Modeling the Roles of Climatic, Social, Demographic, and Land-Use Change. New York, NY.
- Spring 2012     **Teaching Assistant.** Columbia University. E3B Department. Undergraduate course on Environmental Biology. New York, NY.

- Spring 2010     **Teaching Assistant.** Columbia University. E3B Department. Graduate seminar: Topics on Conservation Biology. New York, NY.
- Spring 2009     **Teaching Assistant.** Columbia University. E3B Department. Undergraduate course: Science for Sustainable Development. New York, NY.
- 2007-2008     **Graduate Research Assistant.** University of Maryland. Department of Geography. College Park, MD.
- 2003-2005     **Executive Director.** Carbono & Bosques. Research Center on Ecosystems and Global Change (C&B). Medellin-Colombia. 2003 –2005.
- 2003-2005     **Chief editor.** Cambium. Newsletter on Global Change of the Research Center on Forest and Global Change. Medellin-Colombia. 2003 – 2005.
- 2002-2003     **Research Director.** Carbono & Bosques. Research Center on Ecosystems and Global Change (C&B). Medellin-Colombia. 2002 –2003.

## PUBLICATIONS

### ARTICLES IN PEER-REVIEWED JOURNALS PUBLISHED OR IN PRESS:

David M. Lapola, Patricia Pinho, Hannah Liddy, Luiz. E. O. C. Aragão, Ane A. C. Alencar, Liana O. Anderson, Dolors Armenteras P., Jos Barlow, Erika Berenguer, Victor Brovkin, Kim Calders, Rachel Carmenta Jeffrey Chambers, Louise Chini, Marcos H. Costa, Philip M. Fearnside, Joice Ferreira, Luciana Gatti, **Victor H. Gutierrez-Velez**, Zhangang Han, Kathy Hibbard, Charles Koven, Peter Lawrence, Bruno T. T. Portela, Carlos A. N. Quesada, Mark Rounsevell, Alex Ruane, R. Schaldach, Sonaira S. da Silva, Celso von Randow, Wayne Walker. 2023. The drivers and impacts of Amazon forest degradation. *Science*.379:6630. 11p.

Contribution: 10% team effort

Lara Henao W<sup>†</sup>, Londoño-Murcia MC, Gonzalez Garzón, I; **Gutierrez Velez, VH\*\*\***. 2022. ecochange: An R-package to derive biodiversity indicators processing spatial ecosystem variables. *Methods in Ecology and Evolution*. 13:11, 2379-2388

\*\*\*Senior Author (FLAE norm) <sup>†</sup>advisee

**Gutierrez-Velez VH**, Gilbert MR, Kinsey D, Behm JE. 2022. Beyond the urban and the rural: conceptualizing a new generation of infrastructure systems to enable rural-urban sustainability. *Current Opinion in Environmental Sustainability*. 56, 101177.

Karkun SS, Pearsall H, **Gutierrez-Velez VH**, Gilbert MR. 2021. Measuring Equity through Spatial Variability of Infrastructure Systems across the Urban-Rural Gradient. *Land* 10.

**Gutierrez-Velez VH**, Rodriguez J, Lara W, Sarmiento V. 2021. Probabilistic approximation to change and no change in multispectral remote sensing. *International Journal of Remote Sensing*. 42:19, 7428-7453

- Estupinan-Suarez LM, Gans F, Brenning A, **Gutierrez-Velez VH**, Londono MC, Pabon-Moreno, DE, Poveda G, Reichstein M, Reu B, Sierra CA. 2021. A regional Earth system data lab for understanding ecosystem dynamics: An example from northern South America. *Frontiers in Earth Science* 9, 574.
- Pearsall H, **Gutierrez-Velez VH**, Gilbert MR, Hoque S, Eakin H, Brondizio ES, Solecki W, Toran L, Baka JE, Behm JE. 2021. Advancing equitable health and well-being across urban-rural sustainable infrastructure systems. *npj Urban Sustainability* 1, 1–6.
- Wiese D<sup>†</sup>, Stroup AM, Maiti A, Harris G, Lynch S, Vucetic S, **Gutierrez-Velez VH**, Henry KA. 2021. Measuring Neighborhood Landscapes: Associations between neighborhood's landscape characteristics and colon cancer survival. *International Journal of Environmental Research and Public Health*. 18. 4728.
- <sup>†</sup> *Advisee*
- Gutierrez-Velez VH** & Wiese D. 2020. Sampling bias mitigation for species occurrence modeling using Machine Learning Methods. *Ecological informatics*. 58. 101091.
- Anaya JA, **Gutiérrez-Vélez VH**, Pacheco-Pascagaza AM, Palomino-Ángel S, Han N, Balzter H. 2020. Drivers of forest loss in a megadiverse hotspot on the Pacific Coast of Colombia. *Remote Sensing*. 12(1235).
- Mahecha MD, Gans F, Brandt, G, Christiansen R, Cornell SE, Fomferra N, Kraemer G, Peters J, Bodesheim P, Camps-Valls G, Donges JF, Dorigo W, Estupinan-Suarez LM, Gutierrez-Velez VH, Gutwin M, Jung M, Londoño MC, Miralles DG, Papastefanou P, Reichstein M. 2020. Earth system data cubes unravel global multivariate dynamics. *Earth System Dynamics* 11, 201–234.
- Wiese D<sup>†</sup>, Escalante A, Murphy H, Henry K, **Gutierrez-Velez, VH\*\*\***. 2019. Integrating environmental and neighborhood factors in MaxEnt modeling to predict species distributions: A case study of *Aedes albopictus* in southeastern Pennsylvania. *PLOS ONE*. 14(10): e0223821.
- \*\*\**Senior Author (FLAE norm)*
- <sup>†</sup> *advisee*
- Glinskis E<sup>†</sup>, **Gutierrez-Velez VH**. 2019 Quantifying and understanding carbon emissions from land cover changes between large and small oil palm expansion regimes in the Peruvian Amazon. *Land Use Policy*. **80**: 95-106
- <sup>†</sup> *advisee*
- Croog R, Hayes-Conroy A, **Gutierrez-Velez VH**, Saenz-Montoya A. 2018. Real world food justice and the enigma of the scholar-activist label: A reflection on research values. *ACME*. **17**(4): 1024:1044.
- Bolivar JM., **Gutierrez-Velez VH**, and Sierra CA. 2018. Carbon stocks in aboveground biomass for Colombian mangroves with associated uncertainties. *Regional Studies in Marine Science* **18**:145-155.
- Schwartz NB, Uriarte M, DeFries R, Bedka K., Fernandes K., **Gutierrez-Velez V.**, Pinedo-Vásquez M. 2017. Fragmentation increases wind disturbance impacts on forest structure

- and carbon stocks in a western Amazonian landscape". *Ecological applications*. 27: 1901–1915.
- Schwartz, NB, Uriarte, M, DeFries., **Gutierrez-Velez, V.**, Pinedo-Vásquez, M. 2017. Land-use dynamics influence estimates of carbon sequestration potential in tropical second-growth forest. *Environmental Research Letters* **12**(7).
- Sierra CA, Mahecha M, Poveda G, Álvarez-Dávila E, **Gutierrez-Velez VH**, Reu B, Feilhauer H, Anáya J, Armenteras D, Benavides AM, Buendía C, Duque Á, Estupiñán-Suarez LM, González C, Gonzalez-Caro S, Jimenez R, Kraemer G, Londoño MC, Orrego S.A, Posada JM, Ruiz-Carrascal D, Skowronek S. 2017. Monitoring ecological change during rapid socio-economic and political transitions: Colombian ecosystems in the post-conflict era. *Environmental Science & Policy* **76**:40-49.
- Fernandes, K, Verchot, L., Baethgen, W, **Gutierrez-Velez, V**, Pinedo-Vasquez, M. Martius, C. 2017. Heightened fire probability in Indonesia in non-drought conditions: the effect of increasing temperatures. *Environmental research letters*. 12(5): 054002
- Hergoualc'h K, **Gutierrez-Velez VH**, Menton M, Verchot LV. 2017. Characterizing peat palm forest degradation in the Peruvian Amazon from space and on the ground: An exploratory study in the Peruvian Amazon. *Forest Ecology and Management*. **393**: 63-73
- Baptiste B, Pinedo-Vasquez M, **Gutierrez-Velez V**, Andrade GI, Vieira P, Ming Lee T, Estupiñán L. 2017. Greening Peace in Colombia. *Nature Ecology and Evolution*. **2**: 0102.
- Schwartz NB, Uriarte M, **Gutierrez-Velez VH**, Baethgen W, DeFries R, Fernandes K, Pinedo-Vasquez M. 2015. Climate, landowner residency, and land cover predict local scale fire activity in the Western Amazon. *Global Environmental Change*. **31**: 144-153.
- Gutierrez-Velez VH**, Uriarte M, DeFries RS, Pinedo-Vasquez M, Fernandes K, Ceccato P, K, Baethgen WE, & Padoch C. 2014. Land cover change interacts with drought severity to change fire regimes in Western Amazonia. *Ecological Applications*. **24**: 1323-1340.
- Meyfroidt P, Carlson KM, Fagan ME, **Gutiérrez-Vélez VH**, Macedo MN, Curran LM, DeFries RS, Dyer GA, Gibbs HK, Lambin EF, Morton DC, Robiglio V. 2014. Multiple pathways of commodity crop expansion in tropical forest landscapes. *Environmental Research Letters*. 9. **13**.
- Gutiérrez-Velez VH**, DeFries R. 2013. Annual multi-resolution detection of land cover conversion to oil palm in the Peruvian Amazon. *Remote Sensing of Environment*. 129: 154-167.
- Uriarte M, Pinedo-Vasquez M, DeFries RS, Fernandes K, **Gutierrez-Velez V**, Baethgen WE, & Padoch C. 2012. Depopulation of rural landscapes exacerbates fire activity in the Western Amazon. *Proceedings of the National Academy of Science (PNAS)*. **109**: 21546-21550.
- Gutiérrez-Velez VH** & Pontius Jr. RG. 2012. Influence of carbon mapping and land change modelling on the prediction of carbon emissions from deforestation. *Environmental Conservation*. **39**: 325-336.

**Gutiérrez-Velez VH**, DeFries R, Pinedo-Vasquez M, Uriarte, M, Padoch C, Baethgen W, Fernandes K & Lim Y. 2011. High-yield oil palm expansion spares land at the expense of forests in the Peruvian Amazon. *Environmental Research Letters*. **6**. 5pp

**Gutiérrez-Velez VH** & MacDicken K. 2008. Quantifying the Direct Social and Governmental Costs of Illegal logging in the Bolivian, Brazilian and Peruvian Amazon. *Forest Policy and Economics*. **10**: 248-256.

**Gutiérrez V**, Zapata M, Usma C, Laguado W & Santacruz A. 2006. Maximizing the profitability of forestry projects under the Clean Development Mechanism using a forest management optimization model. *Forest Ecology and Management*. **226**: 341-350.

**Gutiérrez V** & Lopera G. 2003. El árbol de área basal promedia como predictor del volumen por usos del rodal. *Revista de la Facultad Nacional de Agronomía*. **55**: 1683-1693.

### **BOOK CHAPTERS**

Lopera G & **Gutiérrez V**. 2003. Fijación de carbono en plantaciones tropicales de *Pinus patula*. In: Orrego, S, del Valle, J & Moreno, F. (eds.). *Medición de la captura de carbono en ecosistemas forestales tropicales de Colombia*. Universidad Nacional de Colombia, Centro Andino para la Economía del Medio Ambiente.

### **CONFERENCE PROCEEDINGS**

**Gutiérrez V** & Lopera G. 2003. El árbol de área basal promedia como predicción del volumen por usos del rodal. *Proceedings: primer simposio forestal DCF. Medellín*. Pg. 110-116.

**Gutiérrez V** & Lopera G. 2002. Metodología para la cuantificación de existencias y flujo de carbono en plantaciones forestales. In Gayoso, J & Jandl, R (eds.). *IUFRO World Series*. 13: 75-86. International Union of Forest Research Organization (IUFRO). Vienna.

Lopera G & **Gutiérrez V**. 2002. Flujo de carbono y respuesta a diferentes estrategias de manejo en plantaciones tropicales de *Pinus patula*. In Gayoso, J & Jandl, R (eds.). *IUFRO World Series* 13: 127-138. International Union of Forest Research Organization. IUFRO. Vienna.

**Gutiérrez V** & Lopera G. 2002. Valoración económica de la fijación de carbono en plantaciones tropicales de *Pinus patula*. In Gayoso, J & Jandl, R (eds.). *IUFRO World Series*. 13: 63-74. International Union of Forest Research Organization IUFRO. Vienna.

Lopera G & **Gutiérrez V**. 2000. Viabilidad técnica y económica de la utilización de plantaciones de *Pinus patula* como sumideros de CO<sub>2</sub>. *Proceedings: V congreso nacional de ciencia y tecnología del carbón*. Universidad Popular del Cesar. Valledupar. Pg. 61-64.

### **DATA, SOFTWARE AND INFRASTRUCTURE DEVELOPMENT**

Lara Henao W, Gutierrez-Velez VH, Gonzalez I, Londoño M. 2023. ecoChange: Computing Essential Biodiversity Variables from Global Forest Change Data. Software. Version 2.9.3.1 <https://cran.r-project.org/web/packages/ecochange/index.html>

Gonzalez, I. Lara-Henao, W., Rodriguez Escobar, J., Gutierrez-Velez, V. H. (2022). Integración de observaciones de la tierra para la toma de decisiones sobre biodiversidad

en Colombia. Data. Infrastucture <http://ec2-3-137-83-192.us-east-2.compute.amazonaws.com:3838/ssd/>

Rodriguez Escobar, J., Lara-Henao, W., Gutierrez-Velez, V. H. (2022). Armonización mapas de bosque/no-bosque GLAD-SMBYC. Dataset [https://github.com/Cumaribo/Forest\\_homologation](https://github.com/Cumaribo/Forest_homologation)

## OTHER WORKS PUBLISHED OR IN PRESS

Marcus M<sup>†</sup>, **Gutierrez-Velez VH** and Cronkleton P. 2020. Land use change in four landscapes in the Peruvian Amazon. Working Paper 260. Bogor, Indonesia: CIFOR.  
<sup>†</sup>Advisee

Hergoualc'h, Kristell, **V. H. Gutierrez-Velez**, M. Menton, and Louis V. Verchot. 2017. Caracterización de la degradación de los pantanos de palmeras turbosos desde el espacio y sobre el terreno: Un estudio exploratorio en la Amazonia peruana. CIFOR. Bogor. Documentos ocasionales. Vol. 179.

Lara W, **Gutiérrez V**, Zapata-Arbeláez B, Santacruz AM, Laguado WG, Sierra A. Bustamante CM, Yepes A, Black T, Arjona, F. 2011. Priority areas for implementing the CDM to forest restoration projects in conservation corridors of the Andes. In Newton, AC, & Tejedor, N. (eds). *Principles and Practice of Forest Landscape Restoration: Case studies from the drylands of Latin America*. IUCN. Gland, Switzerland. P 292-293.

**Gutierrez-Velez VH**, Harris NL, Pearson TRH, Petrova S, Grimland S & Brown S. 2009. USAID Forest Carbon Calculator: Data and Equations for the Agroforestry Tool. Submitted by Winrock International under USAID Cooperative Agreement No. EEM-A-00-06-00024-00.

Laguado W, **Gutiérrez V** & Santacruz A. 2005. Estado del arte en la formulación y aprobación de proyectos forestales bajo el MDL. *Cambium*. 3(5): 1-6.

**Gutiérrez V**. 2004. Las actividades forestales y la mitigación del cambio climático en el contexto político y ambiental internacional: Entrevista de Víctor Gutiérrez, director de Carbono & Bosques a la Dra. Sandra Brown: Mexico Noviembre 2004. *Cambium*. 3(1): 1-5.

**Gutiérrez V**. 2004. Implicaciones de las decisiones adoptadas en COP9 en el diseño y manejo de proyectos MDL forestales. *Cambium*. 2(2): 3-4.

Santacruz A, **Gutiérrez V** & Laguado W. 2004. Controversia internacional sobre los proyectos forestales en el MDL luego de COP9. *Cambium*. 2(4): 3-4.

**Gutiérrez V**. 2003. Permanencia del carbono en actividades de aforestación y reforestación dentro del marco del mecanismo de desarrollo limpio. *Cambium*. 1(6): 3.

**Gutiérrez V**. 2003. Alteraciones del ciclo del nitrógeno y cambio global. *Cambium*. 1(7): 3-4.

## WORKS SUBMITTED FOR PUBLICATION

Marcus, M<sup>†</sup>, Hergoualc'h K., Honorio-Coronado E., **Gutierrez-Vélez V.H.** Degradation and Deforestation of palm swamp peatlands in Peruvian Amazonia and resulting carbon emissions. *Global Change Biology*

<sup>†</sup>Advisee

Calderón-Caro J, Morales LM, **Gutierrez-Velez VH**, González-Caro S, Benavides AM. Modeling proximate causes of deforestation in Antioquia, Colombia. *Forest Ecosystems*.

Wiese D<sup>†</sup>, Borchardt P, **Gutierrez-Velez VH**, Schickhof U. Human and environmental drivers for the distribution of plant communities on summer pastures in SW Kyrgyzstan. *Remote Sensing*.

<sup>†</sup>Advisee

## RESEARCH IN PROGRESS:

**Gutierrez-Velez VH**, Mejía-Gonzalez, A, Rodriguez, J, McNellis, C. Londoño MC. Under preparation. Towards an integration of national and global forest change products.

Mejía Gonzalez A<sup>†</sup>, **Gutierrez-Velez VH**. Under preparation. Effectiveness of peasant reserve zones-zonas de reserva campesina- for reducing deforestation in Colombia.

<sup>†</sup>Advisee

Rodriguez-Escobar J<sup>†</sup>, **Gutierrez-Velez. VH**. Mapping land cover trajectories associated with agricultural expansion and abandonment in the Colombian Eastern Plains, 2003-2019.

<sup>†</sup>Advisee

Topete-Pozas C<sup>†</sup>, **Gutierrez-Velez VH**, Lara Henao W, Rosan C. To be submitted. Fragmented forest and urban expansion in Mexico City metropolitan area.

<sup>†</sup>Advisee

Wiese DM, Massey J, Gutierrez-Velez VH, Jemal A, Islami F. To be submitted. Evaluating the effect of neighborhood built and green environment on life expectancy at birth in the United States.

## PAPERS PRESENTED AT PROFESSIONAL MEETINGS (AS FIRST AUTHOR)

**Oral presentation.** NASA Biodiversity and Ecological Conservation Meeting. *Advancing tools for an integrated biodiversity monitoring system for Colombia's protected areas*. College Park, MD. May 2023.

**Oral presentation.** NASA Biodiversity and Ecological Forecasting Meeting. *Modeling and Decision support tools for the Colombia Biodiversity Observation Network*. College Park, MD. September 2022.

**Oral presentation.** NASA Biodiversity and Ecological Forecasting Meeting. *A Suite of Tools to Support Biodiversity Assessment and Decision Making*. Washington DC. October 2021.

**Oral presentation.** Annual meeting of the American Geophysical Union. *Integrated cloud infrastructure for characterizing and reporting biodiversity change at the national and regional levels*. San Francisco, CA. December 2020.

**Oral presentation.** GEOBON Open Science Conference & All Hands Meeting. *Integrated cloud infrastructure for characterizing and reporting biodiversity change at the national and regional levels.*, Leipzig, Germany (virtual). July 2020

**Poster presentation.** Annual meeting of the American Geophysical Union. *Automated time-series mapping of ecosystem extent via optimized relative radiometric normalization.* San Francisco, CA. December 2019.

**Oral presentation.** NASA Biodiversity and Ecological Forecasting Meeting. *Integrating Earth observations with user needs for biodiversity decision-making in Colombia.* Washington DC. May 2019.

**Oral presentation.** Centennial meeting of the American Geophysical Union. *Integrating Earth observations with user needs for biodiversity decision-making in Colombia.* AGU. Washington DC. December 2018.

**Oral presentation.** Annual meeting of the Association of American Geographers. *Suitable bias and accuracy assessments for spatial predictive forecast models.* AAG. New Orleans. LA. April 2018.

**Oral presentation.** Annual meeting of the Association of American Geographers. *Understanding and anticipating risk for mosquito borne diseases in Eastern US.* AAG. Boston. MA. April 2017.

**Oral presentation.** Symposium: Conceptual Design of an Ecological Observatory System for Colombia. Universidad Nacional de Colombia. *Bases for social-ecological monitoring in Colombia.* Medellín. November 2016.

**Oral presentation.** Annual meeting of the Association of American Geographers. *Understanding climatic, socio-demographic, and land-use drivers of fires in Western Amazonia* AAG. Chicago. IL. April 2015.

**Oral presentation.** 51th annual meeting of the Association for Tropical Biology and Conservation. *Land cover change interacts with drought severity to change fire regimes in Western Amazonia.* ATBC. Cairns. Australia. July 2014.

**Oral presentation.** ForestSat Conference. *Annual multi-resolution detection of forest conversion to oil palm in the Peruvian Amazon.* Oregon State University. Corvallis, OR. September 2012.

**Oral presentation.** 49th annual meeting of the Association for Tropical Biology and Conservation. *High-yield oil palm expansion spares land at the expense of forests.* ATBC. Bonito. Brazil. June 2012.

**Oral presentation.** Annual meeting of the Association of American Geographers. *Influence of carbon mapping and land change modeling on the prediction of carbon emissions from deforestation.* AAG. New York. US. February 2012.

**Poster presentation.** Fall meeting of the American Geophysical Union. *Improving oil palm classification in the Peruvian Amazon by combining active and passive remote sensing data.* AGU. San Francisco. US. December 2011.



**Poster presentation.** NCAR ASP Colloquium 2007 – Regional Biogeochemistry: Needs and Methodologies. *Influence of land change prediction on the estimation of carbon disturbed by deforestation in the Brazilian Amazon.* NCAR. Boulder, CO. June 2007.

**Oral presentation.** Forest Symposium DCF. *Escenarios de mercado viables para la implementacion de proyectos forestales bajo el MDL en Colombia II.* National University of Colombia. Medellín. Colombia. September 2005.

**Oral presentation.** CASFOR II International Conference: Modeling Carbon Sequestration at the Landscape Level: Techniques, models and policy relevance. *Maximizing the profitability of forestry projects under the Clean Development Mechanism (CDM) using a forest management optimization model.* UNAM – ECOSUR - Wageningen University. Palenque. México. November 2004.

**Oral presentation.** Forest Symposium DCF. *El árbol de area basal promedio como predictor del volumen por usos del rodal.* Department of Forest Sciences. National University of Colombia. Medellín. Colombia. March 2003.

**Oral presentation.** National Congress of Science and Technology of Carbon. *Viabilidad Técnica y Económica de la Utilización de Plantaciones de Pinus patula como Sumideros de CO<sub>2</sub>.* Valledupar. Colombia. November 29 – December 2 2000.

#### INVITED ADDRESSES

**Invited colloquium speaker.** Bringing together geospatial information and decision needs for ecological conservation in tropical South America. Department of Geography, Villanova University. Philadelphia. September 2022.

**Invited speaker.** Integration of satellite data and spatial analysis for the prediction and mitigation of air contamination due to biomass burning. Regional course on the use of remote sensing for the identification of sources and receptors of air contamination. Polytechnic Institute, Jaime Isaza Cadavid. Medellín. Nov 23-24. 2021(in Spanish:  
<https://www.youtube.com/watch?v=oTi9NoMfEH0> )

**Invited speaker.** GEO BON Webinars on Supporting Implementation of Post-2020 Global Biodiversity Framework: Ecosystem extent and integrity. Improving capacity for monitoring ecosystem extent and integrity through the integration of global and national spatial data products. Online. September 27, 2021  
(<https://www.youtube.com/watch?v=dIF07I063vw&t=1343s>).

**Panel participant.** Symposium on transdisciplinary Sustainability Science. Temple University. Philadelphia. March 2018.

**Panel discussant.** Extreme weather or extreme politics? Climate change, urban planning and the 2017 hurricane season. College of Liberal Arts. Temple University. Philadelphia. September 2017.

**Invited speaker.** Forum on research and knowledge foundations for sustainable agricultural development in Orinoquia, Colombia. Department of Vichada, Colombia November 2015

**Invited speaker.** Forum on sustainable development: Foundations and goals for territorial competitiveness based on science, technology and innovation. *Development and socio-environmental integrity in Amazonia*. Department of Guaviare. San José del Guaviare, Colombia. August 2015.

**Invited speaker.** International Workshop on New Perspectives on the Land Sparing vs Land Sharing debate. *Broadening the dimensions of the land sparing/land sharing debate*. PAR-IKAP. Chiang Mai, Thailand. June 2013.

**Invited seminar speaker.** *Oil palm expansion and land cover changes in the Peruvian Amazon: implications for forest conservation and fire mitigation*. Max Planck Institute for Biogeochemistry. Jena, Germany. May 2013.

**Invited Speaker.** Seminário Clima, Dinâmica e Biodiversidade de Florestas Amazônicas. *Expansión de palma en países amazónicos y lecciones de la experiencia en el sudeste asiático*. Embrapa - INPE. Belem. Brazil. June 2012

**Invited speaker.** Conference: Fires in Western Amazonia: The Effects of Climatic, Social, Demographic, and Land Use Changes on Fire Incidence and Fire Hazard. *Land cover changes and fire transitions in the Peruvian Amazon*. Columbia University-CIFOR. Lima-Pucallpa. Peru. August 2011.

**Invited opening address.** International Symposium on Ecosystems and Global Change in the Neotropics. *Ecosistemas y cambios ambientales en el neotrópico*. Carbono & Bosques- National University of Colombia. Medellín. Colombia. May 2010.

## GRANTS AND CONTRACTS

### EXTERNALLY FUNDED

**Principal Investigator (NASA).** Integrated multi-project impact assessment for the contribution of NASA Earth Observation products to support biodiversity decision-making in Colombia. \$114,890. Start date to be defined. Co-Is: Maria Cecilia Londoño, Patrick Jantz, Mary Blair.

**Institutional Principal Investigator (NASA).** Advancing tools to support and test an integrated biodiversity monitoring system for Colombia's Protected Areas. \$200,839 (Temple's budget). Start date: November 2021. Award: 80NSSC21K1351. Co-Is: Mary Blair (PI), Elkin Noguera-Urbano, Maria Cecilia Londoño Murcia, Ned Horning, Matt Aiello-Lammens, José Manuel Ochoa, Daniel Fernando López-Lozano. Percentage of effort: 20% academic year 1, 0.5 mo summer for three years.

**Principal Investigator. National Aeronautics and Space Administration (NASA).** Integration of Earth observations for decision making on biodiversity management and conservation in Colombia: Consolidation of the Colombian Biodiversity Observation Network. \$689,631. March 2018-March 2023. Award: 80NSSC18K0339. CoIs: Wilson Lara, Maria Cecilia Londoño, Miguel Mahecha, Lina Estupiñan. Percentage of effort: 45% academic year, 50% summer for three years.

**Principal Investigator. Center for International Forest Research (CIFOR).** Characterization and mapping of degradation of palm swamp peatlands in the Peruvian Amazon. \$34,346. March-December 2021.  
Percentage of effort: 5% academic year.

**Principal Investigator. Center for International Forest Research (CIFOR).** Characterizing and Assessing Palm Swamp Degradation in the Peruvian Amazon. \$109,421. May 2020-December 2021.  
Percentage of effort: 5.5% academic year + 0.5 mo summer.

**Senior Personnel. National Science Foundation (NSF).** How Does Infrastructure Shape Equity and Well-being across the Urban-Rural Gradient?. \$50,000. June 01, 2020 – September 30, 2020. Award: 1929834. CoIs: Mellisa Gilbert (PI), Eduardo Brondizio, Simi Hoque, William Solecki, Laura Toran, Hamil Pearsall.

**Principal Investigator. Center for International Forest Research (CIFOR).** Characterization of multiannual land cover changes in the Peruvian Amazonia. \$33,000. December 2017- March 2018.  
Percentage of effort: 2.2% academic year.

**Sponsor and co- Investigator. National Academies of Sciences - USAID.** Implementation of Essential Biodiversity Variables for biodiversity assessment and monitoring at the subnational level in Colombia. \$154,000. Start date: December 2018. CoIs: Maria Cecilia Londoño, Lina Estupiñan.  
Percentage of effort: 2% academic year.

**Co- Investigator. University of Medellin, Colombia.** Spatial and temporal analysis of pressures on Colombian Ecosystems. Start date: January 2019.  
Percentage of effort: 1% academic year.

**Co- Investigator. German Ministry of Education and Research – Colombian Administrative Department of Science, Technology and Innovation.** Assessing biodiversity change (ABC): Workshop on the integration of ground-based and satellite-derived information to detect changes in ecosystem functioning in Colombia. €33,355 (total). November 2016.  
Percentage of effort: 1% academic year.

**Research Advisor. Columbia University. LDEO summer intern program.** Is Sustainable Agricultural Development Possible? Monitoring environmental changes from large-scale cropping in the Eastern Savannas of Colombia. \$10,000. Summer 2016.  
Percentage of effort: 1% academic year.

**Principal Investigator. Department of Vichada, Colombia.** Research, training and outreach program for the characterization, monitoring and prediction of water quality and offer in the Department of Vichada, Colombia. \$2,000,000. (Withdrawn)

**Principal Investigator. Columbia University. Institute for Latin American Studies.** Annual faculty grant competition. Workshop on emerging social, ecological and climatic challenges for natural conservation and rural development in post-conflict landscapes in Colombia. \$2,000.  
May 2015.

**Principal Investigator. Columbia University. Earth Institute.** Cross Cutting Initiative. Laying the foundations for the implementation of a collaborative research/training program for monitoring agricultural expansion in the tropical Eastern savannas of Colombia. \$5,000. July 2014.

#### **INTERNAL AWARDS**

**Co-principal Investigator. Temple University, Office of the Vice-president for Research, College of Liberal Arts.** Catalytic Collaborative Funding Initiative – The CAT Program. Catalyzing convergence research on health and well-being through a Bio3Science-Sustainability framework. U.S. \$195,000. Start date: January 7, 2022.

**Co-principal Investigator. Temple University, Office of the Vice-president for Research, College of Liberal Arts.** Catalytic Collaborative Funding Initiative – The CAT Program. Resilience of Forest Ecosystem Services to Global Change: the IGER Initiative. U.S. \$130,000. Start date: January 7, 2022.

**Mentor.** Liberal Arts Undergraduate Research Award. College of Liberal Arts. Summer 2022.

**Mentor.** Liberal Arts Undergraduate Research Award. College of Liberal Arts. Summer 2020.

**Mentor.** Liberal Arts Undergraduate Research Award. College of Liberal Arts. Fall 2020.

**Principal Investigator. Temple University, Office of the Vice-president for Research, College of Liberal Arts, College of Public Health, College of Science and Technology.** Big Data Science Applications for Understanding Social and Environmental Risks for the Transmission of Zika and Other Mosquito Borne Diseases in Eastern U.S. \$111,950.76. Start date: July 1, 2016.  
Percentage of effort: 38% academic year 1, 5% academic year 2

#### **SCHOLARSHIPS AND FELLOWSHIPS**

**Postdoctoral fellow. Center for International Forest Research (CIFOR).** Developing systems for reducing emissions from land use. Grantee \$243,251 (\$218,251 direct grant + \$25,000 additional research expenses). April 2013.

**Faculty fellow. Columbia University. E3B department.** Aug 2008-Dec 2013. Jan 2008.

**Awardee. The National Center for Atmospheric Research-NCAR.** Advanced Study Program. Summer Colloquium 2007: Regional Biogeochemistry: Needs and Methodologies. NCAR. June 2007.

**Awardee. Clark University. GISDE Department.** Scholarship in Geographic Information Sciences for Development and the Environment. \$47,658.5. Jan 2006.

#### **TEACHING**

## **COURSES TAUGHT IN THE LAST FIVE YEARS**

- Remote Sensing/Environmental Remote Sensing (designed course undergraduate/graduate)
- Advanced Remote Sensing (designed course -undergraduate/graduate)
- Sustainable Natural-Human Systems (designed course -graduate)
- Land system Science (designed course -undergraduate)
- Applied Machine Learning for Spatial Analysis (designed course -graduate)
- Spatial Statistics (undergraduate/graduate)

## **INVITED LECTURES**

**Columbia University.** Department of Ecology, Evolution and Environmental Biology. Ecological perspectives of food production. New York, NY. June 2014.

**Temple University.** Department of Geography and Urban Studies. Undergraduate course on Digital Mapping. Philadelphia. PA. April 2011.

**PROFAFOR–CORDELIM.** International course in the development of reforestation and bioenergy projects under the Clean Development Mechanism (CDM). Quito, Ecuador. March 2004.

**National University of Colombia - ACEE.** Seminar-workshop on the formulation of forestry-based carbon mitigation projects under the Clean Development Mechanism (CDM). Medellín. Colombia. April 2002.

## **POSTDOCTORAL SCHOLARS SUPERVISED**

|                   |                                       |           |
|-------------------|---------------------------------------|-----------|
| Wilson Lara Henao | Postdoctoral Advisor                  | 2018-2021 |
| Carlos Topete     | Postdoctoral Visiting Scholar Advisor | 2018-2020 |

## **DISSERTATIONS SUPERVISED**

**Matthew Marcus.** Environmental degradation of the palm swamps in the Peruvian Amazon: Incorporating perspectives from remote sensing, spatial statistics, sustainability science, and political ecology. 2017-Present

**Jerónimo Rodríguez.** Land of Men for Men without land. Agricultural commodity investment and land use change in a frontier region. Drivers, spatial dynamics and land use decision making in the Colombian. 2016-Present

## **MASTER'S THESES SUPERVISED**

**Anthony Hughes.** Development of a protocol for spatial data sampling for remote sensing Analysis. 2018-2019

**Claude Schrader.** Applications of Deep Learning for Image Classification. 2018-2019

## **OTHER DOCTORAL STUDENTS SUPERVISED**

|                    |             |              |
|--------------------|-------------|--------------|
| Angela Mejia       | PhD Advisor | 2020-Present |
| Victoria Sarmiento | PhD Advisor | 2019-Present |

### DOCTORAL COMMITTEE SERVICE

|                 |     |              |
|-----------------|-----|--------------|
| Shrobona Krakun | PhD | 2018-Present |
| Sina Razzaghi   | PhD | 2022-present |
| Austin Martin   | PhD | 2022-present |
| Savannah Cooley | PhD | 2022-Present |
| Daniel Wiese    | PhD | 2017-2021    |
| Alexis Saenz    | PhD | 2017-2020    |

### UNDERGRADUTE STUDENTS SUPERVISED

|                   |                           |           |
|-------------------|---------------------------|-----------|
| Chandler McNellis | LAURA scholarship advisor | 2022      |
| Evely Gorey       | LAURA scholarship advisor | 2020      |
| Emmalina Glinskis | Undergraduate Advisor     | 2015-2017 |
| Kimberly Myers    | Undergraduate Advisor     | 2015-2016 |

### INDEPENDENT STUDY COURSES DIRECTED

**Angela Mejía.** Time series analysis of land cover change in the San Lucas region of Colombia. Fall 2021.

**Victoria Sarmiento.** Land cover change and landscape ecology in the Montes de Maria region of Colombia. Fall 2020

**Evelyn Gorey.** Mapping forest loss due to agricultural expansion in a hotspot of ecosystem change in Colombia. Fall 2020

**Victoria Sarmiento.** Ecosystem changes in tropical dry forest ecosystems of Colombia. Fall 2019.

**Jerónimo Rodriguez.** Land change characterization in tropical savannas. Fall 2018. Graduate level

**Jerónimo Rodriguez.** Digital image processing in tropical savannas. Fall 2017. Graduate level

**Matthew Marcus.** Land change characterization in tropical rain forests Fall 2018. Graduate level

## SERVICES

### SERVICE TO THE PROFESSION

#### Reviewer of scholarly manuscripts for:

- Biotropica
- Carbon Management
- Climate and development
- Current Opinion in Environmental Sustainability
- Ecological Applications
- Environmental Research Letters
- Food Security
- International Journal of Remote Sensing
- JAMIA

- Journal of the American Medical Informatics Association
- Journal of Arid Environments
- Journal of Land Use Science
- Land Change Policy
- Landscape Ecology
- Plos One
- Remote Sensing
- Remote Sensing of Environment
- World development

**Organization of academic events and sessions.**

**Co-organizer.** Meeting of the Bio3Science Network: building ideas to integrate biology, biogeography and biosphere in studies on human health and well-being. Medellin, Colombia. July 27, 2023.

**Co-organizer.** Summer course on Bio3Science. Universidad de Antioquia, Medellin, Colombia. July 17, 19, 24, 2023.

**Co-organizer and moderator.** Workshop for Advancing tools for an integrated biodiversity monitoring system for Colombia's protected areas. National Science Foundation. National Park System of Colombia. Bogotá, June 26-28, 2023

**Organizer.** GEO BON Webinars on Supporting Implementation of Post-2020 Global Biodiversity Framework: Ecosystem extent and integrity. Online. September 27, 2021.

**Co-organizer and moderator.** Sustainable Urban Systems Workshop: How Does Infrastructure Shape Equity and Well-being across the Urban-Rural Gradient? National Science Foundation. Temple University. Philadelphia. September 11-13, 2019

**Co-organizer.** NASA-GEO Workshop. Temple University-von Humboldt Institute for Biological Resources. Bogotá. August 2019.

**Organizer.** Workshop on Integration of Earth Observations for biodiversity decision-making in Colombia. Integración de observaciones de la tierra para la toma de decisiones en biodiversidad en Colombia. Temple University-von Humboldt Institute for Biological Resources. Bogotá. July 2018.

**Organizer and moderator.** Annual meeting of the Association of American Geographers. *Panel on Conceptual, operational and practical challenges for transdisciplinary sustainability science research.* AAG. New Orleans. LA. April 2018.

**Organizer and moderator.** Workshop on the future agenda of sustainability research. Temple University. Philadelphia, PA, March 2018.

**Co-organizer and participant.** Symposium on Transdisciplinary Sustainability Science, Temple University. Philadelphia, PA, March 2018.

**Co-organizer and moderator.** Workshop on the social, environmental, cultural, and political dimensions of global sustainability. Center for Sustainable Communities, Temple

University. Philadelphia, PA, October 2017.

**Co-organizer and participant.** International workshop and seminar on the design of an ecological observatory system for Colombia. Medellin, Colombia, November 2016.

**Organizer and participant.** Forum on research and knowledge foundations for sustainable agricultural development in the Department of Vichada, Colombia, November 2015

**Organizer and moderator.** Workshop on emerging social, ecological and climatic challenges for natural conservation and rural development in post-conflict landscapes in Colombia. Columbia University. New York, NY. May 2015

**Co-organizer and chair:** Annual meeting of the Association of American Geographers. Changing landscapes and livelihoods general session 2: Bridging top-down approaches of environmental change with bottom-up socio-ecological adaptation approaches. AAG. Chicago, IL. April 2015

**Organizer and instructor.** Center for International Forestry Research (CIFOR) - Comisión Inter-regional de la Amazonia (CIAM). Training workshop on fire management and prevention systems in the Peruvian Amazon. Pucallpa, Peru. July 2013.

**Convener and chairperson.** Fall meeting of the American Geophysical Union. Special session: *Drivers of Land Change in Mountain and Tropical Ecosystems and Impacts on Climate and Other Environmental Changes*. AGU. San Francisco, CA. December 2011.

**Chairperson.** Fall meeting of the American Geophysical Union. Poster session: *Land use change III*. AGU. San Francisco, CA. December 2011.

**Organizer.** International Symposium on Ecosystems and Global Change in the Neotropics. Carbono & Bosques- National University of Colombia. Medellín - Colombia. May 2010.

**Coordinator.** XVII National Congress of the National Association of Students of Biological Sciences. Working board on forest and climate change. ANECB. Medellín - Colombia. October 2003.

**Organizer and coordinator.** Seminar on Ecosystems and Global Change: Cycle II. Graduate Program on Forests and Environmental Conservation. National University of Colombia. Research Center on Ecosystems and Global Change (C&B). Medellín. Colombia. February – June 2003.

**Organizer and coordinator.** Seminar on Ecosystems and Global Change: Cycle I. Graduate Program on Forests and Environmental Conservation. National University of Colombia. Research Center on Ecosystems and Global Change (C&B). Medellín - Colombia. September – December 2002.

## **SERVICE TO THE UNIVERSITY**

**Co-organizer** of the Symposium on Transdisciplinary Sustainability Science at Temple University. March 22-23, 2018



**Organizer and moderator** of the workshop on the future agenda of sustainability research. March 23, 2018

**Panel participant:** Sustainability research at Temple University as part of the Symposium on Transdisciplinary Sustainability Science. March 23, 2018.

### **SERVICE TO THE COLLEGE**

Steering Committee Member. Undergraduate program on Latin American Studies. Fall 2022- Present

Faculty fellow. Center for Sustainable Communities. 2018-present

Member of the Latin American Studies Taskforce. Fall 2021

Co-organizer of the National Science Foundation Workshop on Sustainable Urban Systems. September 2019

Co-organizer of Invited Colloquium Speaker. Karen Seto. Spring 2019.

Co-organizer of Invited Colloquium Speaker. Eduardo Brondizio. Spring 2019

Co-organizer and moderator of the Sustainable Urban Systems Workshop: How Does Infrastructure Shape Equity and Well-being across the Urban-Rural Gradient? National Science Foundation. September 11-13, 2019

Strategic Planning for the Center for Sustainable Communities. 2017-Present.

Co-organizer and moderator of the CLA Workshop on the social, environmental, cultural, and political dimensions of global sustainability. October 25<sup>th</sup>, 2017

### **SERVICE TO THE DEPARTMENT**

Undergraduate Committee Member. 2022-Present

Executive Committee Member 2022-Present

Organization of Invited Colloquium Speaker. Jesus Anaya. Fall 2018.

Committee for the creation of a Professional Science Master's program on Geospatial Data Science. Department of Geography and Urban Studies. Fall 2019-Present.

Faculty Search Committee for Tenure Track Position. Fall 2018.

Faculty Search Committee for Tenure Track Position. Fall 2017.

Faculty Search Committee for Tenure Track Position. Fall 2016.

Organization of Invited Speaker Presentation. Brigitte Baptiste. Institute von Humboldt, Colombia. Spring 2016.

Member of the Faculty Committee of the Professional Science Master's Program on GIS. Spring (2016).

Proposal Writing for the creation of a Center on Integrated Social and Environmental Research

### **SERVICE TO THE COMMUNITY**

National Aeronautics and Space Administration NASA. Biological Diversity Program. Panel Reviewer. 2020.

Microsoft's AI for Earth - Group on Earth Observations-Biodiversity Observation Network (GEOBON). Reviewer of proposals submitted for the program "Essential Biodiversity Variables in the Cloud". June 2020.

National Science Foundation. SBE Directorate. Ad hoc reviewer. 2020.

National Science Foundation. SBE Directorate. Panel reviewer. 2019.

Member of the Platform for Ecological Analyses on Colombian Ecosystems. 2016 – 2019.

### **PAID CONSULTANCIES**

Center for International Forestry Research (CIFOR). Building capacity for the implementation of a research program on socio-environmental changes in post-conflict landscapes in Colombia September – October 2015

USAID - Winrock International. Global Climate Change – Carbon Reporting Initiative Cooperative agreement. Tool development and data underlying tools on agroforests and forest plantations. June 2008.

Center for International Forestry Research (CIFOR). Identification of peatland degradation in the Peruvian Amazon. October 2012 – July 2013.

Winrock international. Turners Falls, MA. June – July 2006.

Conservation International – ACEE - C&B. Identification and evaluation of optimal areas for the implementation of a carbon sequestration project under the Clean Development Mechanism (CDM) as a support for biodiversity conservation in the North Andean biological corridors of South America. August – December 2005.

PROCUENCA-ACEE – C&B. Implementation of a carbon sequestration project under the Clean Development Mechanism (CDM) in the watershed of the Chinchina river-Colombia. Phase I. July – September 2005.

Water Utility Company of the City of Bogota-ACEE – C&B. Feasibility study for the implementation of a carbon sequestration project under the Clean Development Mechanism (CDM) in strategic areas for the conservation of fresh water resources in the city of Bogota-Colombia. February – June 2005.

Ministry of Agriculture of Colombia-ACEE – C&B. Technical and economic feasibility for the implementation of a carbon sequestration project under the Clean Development Mechanism (CDM) in the project: The Renaissance of the Orinoco Savannas of Colombia. February – June 2005.

Municipality of Tauramena - ACEE– C&B. Pre-feasibility study for the restoration of the Mata de la Urama locality through the implementation of a conservation corridor under the Umbrella of the Clean Development Mechanism (CDM) in the Tauramena Municipality. December 2004 – February 2005.

PROCUENCA - ACEE – C&B. Pre-feasibility study for the implementation of a carbon sequestration project under the Clean Development Mechanism (CDM) in the watershed of the Chinchina River. September 2003 – February 2004.

Government of the Department of Cundinamarca - ACEE - C&B. Pre-feasibility study for the implementation of a carbon sequestration project under the Clean Development Mechanism (CDM) in public lands of the government of the Department of Cundinamarca. April – August 2003.

National University of Colombia. Department of Forest Science. Alternative financial model for the sustainable management of the forests of the San Nicolas Valley. Medellin-Colombia. June-December 2002.

National University of Colombia. Forest management plan for current and projected tree plantations of the public utility company of Medellín-Colombia. April – September 2003.

National University of Colombia - Public Utility Company of Medellín. Characterization and quantification of potentialities of water conservations forests October 2001 – February 2002.

National University of Colombia - Public Utility Company of Medellín. Forest inventory. Alternative financial model for the sustainable management of the forest of the San Nicolas Valley. February 2002.

## **MEDIA COVERAGE**

**IDEA marketplace:** Striking back at Zika. May 2019.

[https://www.fox.temple.edu/posts/2019/05/striking-back-zika/?fbclid=IwAR3TXF5hxwm4zLpb9qIRNMN4O3xEfPtv1Vk233ZVQBS4ps5O0oH\\_XkUhfTk](https://www.fox.temple.edu/posts/2019/05/striking-back-zika/?fbclid=IwAR3TXF5hxwm4zLpb9qIRNMN4O3xEfPtv1Vk233ZVQBS4ps5O0oH_XkUhfTk)

**ALDIA news:** Mapping the future of biodiversity in Colombia. March 2018.

<http://aldianews.com/articles/education/mapping-future-biodiversity-colombia/52169>

**The Temple News:** Professor connects science and ecological decision-making in Colombia. February 2018.

<https://temple-news.com/professor-connects-science-and-ecological-decision-making-in-colombia/>

**Temple Now:** Geographer to lead NASA-funded project in Colombia. January 2018.

<https://news.temple.edu/news/2018-01-23/nasa-grant-geography-urban-studies-research-colombia-biodiversity>

**State of the planet:** What Do Wildfires Have to Do With Climate Change?. October 2014

<http://blogs.ei.columbia.edu/2014/10/13/what-do-wildfires-have-to-do-with-climate-change/>

**State of the planet:** Making progress on deforestation. June 2014.

<http://blogs.ei.columbia.edu/2014/06/23/making-progress-on-deforestation/>

**Forest news:** Forging fire resilience on Amazon forest fringes in Peru. January 2014.

<http://blog.cifor.org/20925/forging-fire-resilience-on-amazon-forest-fringes-in-peru#.UtAPq431vxg>

**Mongabay:** Palm oil company destroys 7,000 ha of Amazon rainforest in Peru. March 2013.

<http://news.mongabay.com/2013/0304-palm-oil-peru.html>

**BBC.** Palma aceitera, "agente de deforestación en Perú". May 4 2012.

[http://www.bbc.co.uk/mundo/noticias/2012/05/120503\\_peru\\_palma\\_aceitera\\_am.shtml](http://www.bbc.co.uk/mundo/noticias/2012/05/120503_peru_palma_aceitera_am.shtml)

**Forest news:** Land sharing and land sparing? Reconciling agriculture and biodiversity conservation. March 2012.

<http://blog.cifor.org/8110/land-sharing-or-land-sparing-reconciling-agriculture-and-biodiversity-conservation>

**Mongabay.** La producción industrial de aceite de palma en el Perú se expande a costa de los bosque tropicales. January 19 2012.

[http://es.mongabay.com/news/2012/es0110-peru\\_palm\\_oil.html](http://es.mongabay.com/news/2012/es0110-peru_palm_oil.html)

**Environmental Research Web.** More intensive oil-palm farming may not spare rainforest. January 17 2012.

<http://environmentalresearchweb.org/cws/article/news/48305>

**Mongabay.** Industrial palm oil production expands at expense of rainforests in Peru. January 10 2012.

[http://news.mongabay.com/2012/0110-peru\\_palm\\_oil.html](http://news.mongabay.com/2012/0110-peru_palm_oil.html)

## **PROFESSIONAL MEMBERSHIPS**

American Geophysical Union (AGU)

## **LANGUAGES**

English, native fluency in Spanish and academic proficiency in Portuguese.