MARÍA CRISTINA RENGIFO-FAIFFER

PERSONAL DETAILS

Nationality: Peruvian
Address: Northern Arizona University
School of Forestry
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EDUCATION

2017-present **Ph.D. Candidate in Forest Science. Ecosystem Science Concentration**
School of Forestry, Northern Arizona University (NAU), USA.
Dissertation*: Climate disturbance effects on moss-dominated biological soil crust communities and traits on Syntrichia spp.*
Dissertation committee: Dr. Matthew Bowker, Dr. Anita Antoninka, Dr. Liza Holeski & Dr. Lloyd Stark

2017-2021 **Applied Statistics Graduate Certificate**
Department of Mathematics and Statistics, NAU

2011-2016 **B.Sc. in Biological Sciences, Botany emphasis**
Facultad de Ciencias Biológicas, Universidad Nacional Mayor de San Marcos, Perú.
Thesis: *Effects of natural disturbances of biological soil crust on herbaceous vegetation in the Lachay Nacional Reserve, Perú.* (In Spanish)
Advisor: M.Sc. Cesar Arana.

LANGUAGES

Spanish Native speaker
English Advance level. TOEFL 100/120
Portuguese Intermediate level

RESEARCH EXPERIENCE

Graduate Research Assistant **Spring 2021**
School of Earth & Sustainability, NAU
Responsible for molecular laboratory work, soil DNA extractions and sequencing of samples of mesocosm experiments. Research led by PhD candidate Kara Gibson and supervised by PhD Anita Antoninka and PhD Nancy Johnson.

Graduate Research Assistant **2017-2020**
School of Forestry, NAU
Dissertation project funds from the Graduate Research Fellowship awarded by the National Science Foundation (NSF). Leading PI is Matthew A. Bowker.

Canyonland Research Center Graduate Research Fellow **2018**
Canyonland Research Center, The Nature Conservancy
Research project focused on understanding the resilience to climate change of key moss component of biocrusts in the Canyonlands region.

Research Collaborator **2014-Present**
Ecology Department, Natural History Museum of Universidad Nacional Mayor de San Marcos

Collaboration in research projects: Biological soil crusts in the desert of the central coast of Peru, Ecology of Psittacidae of Peru, Documenting the Flora and Fauna of Tourist Reserve Rainforest Expeditions, and others.

TEACHING EXPERIENCE

Graduate Teaching Assistant, Microbiology Lab BIO 205L, NAU Flagstaff 2019

- Teaching laboratory techniques relevant to microbiology, covering basic concepts, data collection and analysis to three class sections. Developing a course research project on environmental bacteria identification.

Guest Lecturer, Thesis Seminar, Universidad Nacional Mayor de San Marcos, Perú 2018

- How to develop undergrad research project in the Department of Biological Sciences, with emphasis in Botany.

Guest Lecturer, Thesis Seminar, Universidad Nacional Mayor de San Marcos, Perú 2017

- Overview on Reference Management Software and Citations.

FIELDWORK EXPERIENCE

Field crew leader 2016
Rainforest Expeditions S.A. and Natural History Museum, UNMSM
Field botanist leading the botanical expedition to the project "Biodiversity and Management: Documenting the Flora and Fauna of the Tourist Reserve Rainforest Expeditions S.A.C., Tambopata, Perú."

Field Ecologist consultant 2015-2016
Asociación Ecosistemas Andinos (ECOAN), Perú.
Implementation of biological baseline in the areas of Buenos Aires y Alto Shipasbamba, within the Yambrasbamba project, Amazonas, Perú.

Field Ecologist 2015-2016
Museo de Historia Natural (MHN-UNMSM) and Environmental Ministry of Perú (MINAM)
Field botanist and ecologist evaluating bird habitats for the project "Population study of seven bird species from de *Psittacidae* family."

Junior Consultant 2013
German Development Cooperation (GIZ), Project Co-Management Amazon Region Perú
Providing support to the Project staff and the principal Consultant in performing Biodiversity Fairs in indigenous communities and schools in buffer areas of the Ashaninka and Machiguenga communal reserves.

UNDERGRADUATE MENTORSHIP

2018-2019 Casey Hensen. Intern-to-Scholars program. Biology Department, Northern Arizona University.

2020 Benjy Sedano Herrera. Universidad Nacional Mayor de San Marcos.

AWARDS , FELLOWSHIPS AND SCHOLARSHIPS

2019 American Bryological and Lichenological Society (ABLS). $400
Travel award to attend the ABLS Meeting

2018	Canyonlands Research Center Graduate Research Fellowship The Nature Conservancy	$3,000
2018	American Bryological and Lichenological Society (ABLS). Travel award to attend the ABLS Meeting	$300
2018	International Center for Tropical Botany, Florida International University. Scholarship to attend the Tropical Botany Course by the Botanical Society of America. Miami, FL.	$2,500
2016	BIOCRUST3 (NAU) Scholarship to attend the Third International Workshop on Biological Soil Crusts (BioCrust 3), Moab, UT.	$1,500
2016	Brown University (USA) and Universidad Nacional Mayor de San Marcos (Perú) Scholarship to attend Binational Field Course "The Biology of Desert Plants" in Arequipa, Perú.	-
2015	Missouri Botanical Garden, Perú (JBM) Scholarship to attend Field Course "Andean-Amazonic Ecosystems 2015" at National Park Yanachaga-Chemillén, Perú.	-

PUBLICATIONS

Rengifo-Faiffer, M. C. and Arana, C. 2019. Fossorial birds help shape the plant community of a Peruvian desert, J. Arid Environ., 169, 29–33. DOI: https://doi.org/10.1016/j.jaridenv.2019.104011

Bowker, M.A., **Rengifo-Faiffer, M.C.**, Antoninka, A.J., Grover, H.S., Coe, K.K., Fisher, K., Mishler, B.D., Oliver, M., Stark, L.R. 202x. Community composition influences ecosystem resistance and productivity more than species richness or intraspecific diversity. *Oikos in review*.

PRESENTATIONS

23. Rengifo-Faiffer, M.C. 2020. Biocostras, La Piel del Desierto: Experiencias en Perú y EE.UU. Museo de Historia Natural, Lima, Perú.

22. Rengifo-Faiffer, M.C., Antoninka, A., Hensen, C., Bowker, M. 2019. Mosses under stress: Morphological changes in dryland moss *Syntrichia* under climate disturbances. 15th Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region. Flagstaff, AZ, USA.

21. Rengifo-Faiffer, M. C., Antoninka, A., Reed, S., Duniway, M., Belnap, J., Bowker, M. 2019. Biocrust facing climate disturbances: Community shifts and morphological changes in the Southwest. BioCrust 4. North Stradbroke Island, Australia.

20. Torres-Paucar, A., **Rengifo-Faiffer, M. C.,** Arana, C. 2019. Digging in the biological soil crusts: forms, diggers and density of disturbances in a Peruvian desert. BioCrust 4. North Stradbroke Island, Australia.

19. Arana, C., **Rengifo-Faiffer, M. C.**, Espíndola, W., Torres-Paucar, A., Cisneros, S., Pinchi-Davila, X., Arteaga, R., Grillo, S., Pillaca, L., Carlo, T. A., Salinas, L., Ge, X.J. 2019. Biological soil crust in the Peruvian Atacama Desert: assessments and perspectives. BioCrust 4. North Stradbroke Island, Australia.

18. Cisneros, S. Arana, C., **Rengifo-Faiffer M. C.** 2019. Effect of inorganic phosphorus inclusion on biological soil crust biomass in a Coastal Lomas ecosystem in the central desert of Perú. BioCrust 4. North Stradbroke Island, Australia. (Poster)

17. Rengifo-Faiffer, M.C., Antoninka, A., Hensen, C., Bowker, M. 2019. Dryland mosses under climatic disturbances: Morphological changes in *Syntrichia caninervis* and *Syntrichia ruralis*. Botany 2019. Tucson, AZ, USA.

16. Bowker, M.A., **Rengifo Faiffer, M.C.**, Antoninka, A.J., Belnap, J., Duniway, M.C., Reed, S.C. 2019. Biocrust biodiversity does not provide resistance to perturbation caused by persistent rainfall reduction. Botany 2019. Tucson, AZ, USA.

15. Brencher, G., **Rengifo Faiffer, C**., Antoninka, A., Bowker, M., Stark, L., Coe, K. 2019. Effects of increased aridity on recovery from desiccation in the biocrust moss *Syntrichia caninervis*. . Botany 2019. Tucson, AZ, USA.

14. Hensen, C**.,** Antoninka, A., **Rengifo-Faiffer, M.C**., Bowker, M. 2019. Measuring productivity at varying diversity levels of biocrust communities. Botany 2019. Tucson, AZ, USA. (Poster)

13. **Rengifo-Faiffer, M.C.,** Antoninka, A., Bowker, M. 2018. Does Diversity enhance resilience to Climate Change? A case in Syntrichia-dominated Biocrust. American Bryological and Lichenological Society, University of Colorado Mountain Research Station, CO, USA.

12. **Rengifo-Faiffer, M.C.,** Antoninka, A., Bowker, M. 2018. Does Diversity enhance resilience to Climate Change? A case in Syntrichia-dominated Biocrust. iMOSS. St. Petersburg, FL, USA.

11. **Rengifo, M. C.,** Arana, C. 2017. La interacción entre la costra biológica del suelo y las aves fosoriales incrementa la diversidad vegetal en la Reserva Nacional de Lachay, Perú. XXVI Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

10. **Rengifo, M. C.,** Ore, M. I., Salvador-Montoya, C. A., Arana, C. 2017. Fungi and ecotourism: high macrofungi richness in tourism concession in the Peruvian Amazon. Mycology Society of America. Athens, GA, USA.

9. **Rengifo-Faiffer, M. C.,** Arana, C. 2016. Effects of Natural Disturbances of Biological Soil Crust on moisture retention in fog oasis of the Peruvian Desert. BioCrust 3. Moab, UT, USA.

8. **Rengifo, M. C.,** Arana, C. 2016. Effecto de las pertubaciones naturales en la costra biológica de suelo en la retención de humedad en las lomas de Lachay, Lima. XXV Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

7. **Rengifo, C**., Arana, C., Carlo, T., Salinas, L., Espíndola, W. 2015. Distribución de la Costra Biológica de Suelo en la Reserva Nacional Lomas de Lachay, Lima-Perú. XXIV Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

6. **Rengifo Faiffer, M. C.** 2015. Effecto de la gradiente altitudinal en la abundancia de las familias Cunoniaceae y Chloranthaceae en el Parque Nacional Yanachaga Chemillen, Sector de San Alberto. (Oxapampa, Pasco). XXIV Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

5. **Rengifo Faiffer, M. C.** 2015. Estructura y composicion floristica del bosque amazonico en el Parque Nacional Yanachaga Chemillen, Pasco. XXIV Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

4. Arana, C., Espíndola, W., Pillaca, L., Torres, A., Arteaga, R., **Rengifo, C.,** Peña, K., Romero, J. 2015. Contenido de Carbono de los totorales de *Typha domingensis* PERS. (TYPHACEAE) de la Reserva de Vida Silvestre "Pantanos de Villa". Lima-Perú. XXIV Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

3. Cisneros, S.P., Horna, M., Riesco, F., **Rengifo, M. C.,** Castilla, A., Benites, A., Marcelo, A. 2014. Screening fitoquímico de los extractos hidroalcohólicos de *Phyllanthus niruri, Phyllanthus acuminatus, Ambrosia arborescens, Passiflora quadrangularis* y *Tagetes elliptica* mediante cromatografía de capa fina. XXIII Reunión Científica del Instituto de Investigación de Ciencias Biológicas "Antonio Raimondi". Universidad Nacional Mayor de San Marcos. Perú. (Poster)

2. Cisneros, S.P., Horna, M., Riesco, F., **Rengifo, M.C.,** Castilla, A., Benites, A., Marcelo, A. 2014. Evaluación de la capacidad antioxidante de extractos hidroalcohólicos de *Phyllanthus niruri, Phyllanthus acuminatus, Ambrosia arborescens, Passiflora quadrangularis* y *Tagetes elliptica*. XXIII

Reunión Científica del Instituto de Investigación de Ciencias Biológicas “Antonio Raimondi”. Universidad Nacional Mayor de San Marcos. Perú. (Poster)

1. Cisneros, S.P., Horna, M., Riesco, F., **Rengifo, M.C.,** Castilla, A., Benites, A., Marcelo, A. 2014. Cuantificación de polifenoles totales en plantas de importancia alimenticia y medicinal. XXIII Reunión Científica del Instituto de Investigación de Ciencias Biológicas “Antonio Raimondi”. Universidad Nacional Mayor de San Marcos. Perú. (Poster)

VOLUNTEERING AND SERVICE

- Workshop instructor: *Biological soil crusts (biocrusts) as a model system in science education* at the 15th Biennial Conference of Science & Management on the Colorado Plateau and Southwest Region, 2019 Flagstaff
- Workshop instructor and organizer: *Environmental Education Workshop “Knowing our birds”.* Ornithology Department, Natural History Museum of the National University of San Marcos. 2014 & 2015 Lima, Perú.
- Organizing Committee at XXII ICBAR Scientific Meeting. Scientific Research Institute of Biological Sciences "Antonio Raimondi", Universidad Nacional Mayor de San Marcos, August 2013 Lima, Perú.
- Volunteer at 20th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 20). The United Nations Development Programme (UNDP), 2014 Lima, Perú.

PROFESIONAL SOCIETIES

Ecological Society of America, American Society of Bryology and Lichenology, Botanical Society of America and Association for Tropical Biology and Conservation.

MEDIA COVERAGE

October 2019. Science News
“Burrowing birds create pockets of rich plant life in a desert landscape” – Article by Priyanka Runwal
https://www.sciencenews.org/article/burrowing-birds-owls-plant-life-desert-landscape

October 2019. Science & Tech
“Burrowing birds produce pockets of abundant plant life in a desert landscape”
https://scienceandtechblog.com/burrowing-birds-produce-pockets-of-abundant-plant-life-in-a-desert-landscape/

October 2019. In Defense of Plants blog
“Burrowing Birds, Biocrust, and Biodiversity: A Microclimate Story”
https://www.indefenseofplants.com/blog/2019/10/8/burrowing-birds-biocrust-and-biodiversity-a-microclimate-story

November 2019. Andina (Peruvian News *In Spanish*)
“Investigadores descubren que aves favorecen crecimiento de algunas especies de plantas”
https://andina.pe/agencia/noticia-investigadores-descubren-aves-favorecen-crecimiento-algunas-especies-plantas-775940.aspx

November 2019. The Nature Conservancy
“Grit, Hope and Community. Meet three women fighting to save the Canyonlands”
https://www.nature.org/en-us/about-us/where-we-work/united-states/utah/stories-in-utah/canyonlands-research-center-climate-change/