

## CURRICULUM VITAE NICOLE PIETRASIAK

Assistant Professor of Environmental Soil Microbiology  
Plant & Environmental Sciences Department, New Mexico State University  
PO Box 30003, MSC 3Q, Las Cruces, NM 88003, USA  
Tel: 575-646-1910; email: drylandalgae@gmail.com  
<https://twitter.com/DrylandAlgae>

### PROFESSIONAL APPOINTMENTS/EMPLOYMENT

- 2015-present: Assistant Professor, Plant & Environmental Sciences Department, New Mexico State University.
- 2015-2015: Research Associate and Lab Manager, The Holden Arboretum, OH.
- 2014-2015: Algae Collection Curator and Research Associate, John Carroll University.
- 2012-2013: Post-Doctoral Researcher, John Carroll University.

### EDUCATION

- 2008-2012: Ph.D., Soil and Water Sciences, University of California – Riverside (UCR).
- 2005-2007: M.S., Biology, John Carroll University (JCU).
- 2002-2003: Study abroad, Geography and Environmental Biology, St. Andrews University, Scotland, UK.
- 1998-2005: Diploma of Geography, Major: Geography, 1<sup>st</sup> Minor: Biology 2<sup>nd</sup> Minor: Geology, University of Leipzig, Germany.

### RESEARCH EXPERTISE

Terrestrial cyanobacteria and algae, biological soil crusts, dryland soil ecology, soil health, microbial biogeography, cyanobacterial systematics and phylogenetics.

### PEER-REVIEWED PUBLICATIONS

**32 publications, 806 citations (Jan. 2021); H index = 18; i10 index = 20.**

\*indicating mentored/co-mentored graduate; \*indicating mentored undergraduate students.

32. Ward, R.<sup>+</sup>, Stajich, J.E., Johansen, J.R., Huntemann, M., Clum, A., Foster, B., Roux, S., Palaniappan, K., Varghese, N., Mukherjee, S., Reddy, T.B.K., Daum, C., Copeland, A., Chen, I-M.A., Ivanova, N.N., Kyrpides, N.C., Shapiro, N., Eloe-Fadrosh, E.A. & **Pietrasiak, N.** Metagenome sequencing to explore phylogenomics of terrestrial cyanobacteria. *Microbiology Research Announcements*, in press.
31. **Pietrasiak, N.**, Reeve, S., Osorio-Santos, K., Lipson, D., Johansen, J.R. *Trichotorquatus* gen. nov. - a new genus of soil cyanobacteria discovered from American Drylands. *Journal of Phycology*, in press. <https://doi.org/10.1111/jpy.13147>
30. Warren, S.D., Rosentreter, R. & **Pietrasiak, N.** Biological soil crusts of the Great Plains. 2020 *Rangeland Ecology & Management*, in press. <https://doi.org/10.1016/j.rama.2020.08.010>
29. Pombubpa, N.\* , **Pietrasiak, N.**, De Ley P. & Stajich, J.E. 2020. Insights into drylands biocrust microbiome: geography, soil depth, and crust type affect biocrust microbial communities and networks in Mojave Desert, USA. *FEMS Microbial Ecology*, 96 (9): fiae125. <https://doi.org/10.1093/femsec/fiae125>
28. Mesfin, M., Johansen, J.R., **Pietrasiak, N.** & Baldarelli, L.M. 2020. *Nostoc oromo* sp. nov. (Nostocales, Cyanophyceae) from Ethiopia: a new species based on morphological and

- molecular evidence. *Phytotaxa*, 433 (2): 81–93. <https://doi.org/10.11646/phytotaxa.433.2.1>
27. Condon, L.A., **Pietrasiak, N.**, Rosentreter, R. & Pyke, D.A. 2019. Passive restoration of biological soil crusts following 80 years of exclusion from grazing across the Great Basin. *Restoration Ecology - Special Issue on Restoration of Biological Soil Crusts*, 28 (S2):75-85. <https://doi.org/10.1111/rec.13021>
  26. **Pietrasiak, N.**, Osorio-Santos, K., Shalygin, S.\* , Martin, M.P. & Johansen, J.R. 2019. When is a lineage a species? A case study in *Myxacorys* gen. nov. (Synechococcales: Cyanobacteria) with the description of two new species from the Americas. *Journal of Phycology*, 55: 976–996. <https://doi.org/10.1111/jpy.12897>
  25. Shalygin, S.\* , Kavulic, K., **Pietrasiak, N.**, Bohunická, M., Vaccarino, M.A., Chesarino, N.M.+ & Johansen, J.R. 2019. Neotypification of *Pleurocapsa fuliginosa* and epitypification of *P. minor* (Pleurocapsales): resolving a polyphyletic cyanobacterial genus. *Phytotaxa*, 392(4): 245–263. <https://doi.org/10.11646/phytotaxa.392.4.1>
  24. Drenovsky, R.E., Short, T. & **Pietrasiak, N.** 2019. Global patterns in plant nutrient resorption plasticity. *Global Ecology and Biogeography*, 28(6): 728-743. <https://doi.org/10.1111/geb.12885>
  23. Shalygin, S.\* , **Pietrasiak, N.**, Gomez, F., Mlewski, C., Gerard, E. & Johansen, J.R. 2018. *Rivularia halophila* sp. nov. (Nostocales, Cyanobacteria): the first species of *Rivularia* described with the modern polyphasic approach. *European Journal of Phycology*, 54: 1–12. <https://doi.org/10.1080/09670262.2018.1479887>
  22. Mai, T.\* , Johansen, J.R., **Pietrasiak, N.**, Bohunická, M. & Martin, M.P. 2018. Revision of the Synechococcales (Cyanobacteria) through recognition of four families including Oculatellaceae fam. nov. and Trichocoleaceae fam. nov. and six new genera containing 14 species. *Phytotaxa*, 365(1): 1–59. <https://doi.org/10.11646/phytotaxa.365.1.1>
  21. Mühlsteinova, R.\* , Hauer, T., De Ley P. & **Pietrasiak, N.** 2018. Seeking the true *Oscillatoria*. A quest for a reliable phylogenetic and taxonomic reference point. *Preslia*, 90:151–169. <https://doi.org/10.23855/preslia.2018.151>
  20. Zanella, A., Fritz, I., **Pietrasiak, N.**, Matteodo, M., Ponge, J.F., Nadporozhskaya, M., Juilleret J., Tatti D., Le Bayon C., Rotschild L. & Mancinelli R. 2018. Para Humus Systems and Forms In HUMUSICA, a new humus manual. *Applied Soil Ecology*, 122:181–199. <https://doi.org/10.1016/j.apsoil.2017.09.043>
  19. Johansen, J.R., Mareš, J., **Pietrasiak, N.**, Bohunická, M., Zima, J., Jr., Štenclová, L. & Hauer, T. 2017. Highly divergent 16S rRNA sequences in ribosomal operons of *Scytonema hyalinum* (Cyanobacteria). *PLOS ONE*, 12(10): e0186393. <https://doi.org/10.1371/journal.pone.0186393>
  18. Shalygin, S.\* , Shalygina, R., Johansen, J.R., **Pietrasiak, N.**, Berrendero, E., Bohunická, M., Mareš, J. & Sheil, C.A. 2017. *Cyanomagarita* gen nov. (Nostocales, Cyanobacteria): Convergent evolution resulting in a cryptic genus. *Journal of Phycology*, 53: 762–777. <https://doi.org/10.1111/jpy.12542>
  17. Hentschke, G. S. \* , Johansen, J. R., Rigonato, J., Fiore, M., **Pietrasiak, N.** & Sant’Anna, C. L. 2017. *Komarekiella atlantica* gen. et sp. nov. (Nostocaceae, Cyanobacteria): a new subaerial taxon from the Atlantic Rainforest and Kauai, Hawaii. *Fottea*, 17(2): 178–190. <https://doi.org/10.5507/fot.2017.002>
  16. Miscoe, L.H.\* , Johansen, J.R., Vaccarino, M.A., **Pietrasiak, N.** & Sherwood, A.R. 2016. Novel cyanobacteria from caves on Kauai, Hawaii. *Biblioteca Phycologica*, 120: 75–152. <https://www.schweizerbart.de/publications/detail/isbn/9783443600471>

15. Hentschke, G. S.\*, Johansen, J. R., **Pietrasiak, N.**, Fiore, M. de F., Rigonato, J., Sant'Anna, C.L. & Komárek, J. 2016. Phylogenetic placement of *Dapisostemonum* gen. nov. and *Streptostemon*, two tropical Microchaetacean genera (Cyanobacteria). *Phytotaxa*, 245: 129-143.  
<https://doi.org/10.11646/phytotaxa.245.2.4>
14. Burke, D.J., **Pietrasiak, N.**, Situ, S.F., Abenojar, E.C., Porche, M., Kraj, P., Lakliang, Y. & Samia, A.C.S. 2015. Iron Oxide and titanium dioxide nanoparticle effects on plant performance and root associated microbes. *International Journal of Molecular Sciences*, 16: 23630–23650.  
<https://doi.org/10.3390/ijms161023630>
13. García, V.\*, Aranibar, J. & **Pietrasiak, N.** 2015. Multiscale effects on biological soil crust cover and distribution in the central Monte Desert. *Acta Oecologica*, 69: 35–45.  
<https://doi.org/10.1016/j.actao.2015.08.005>
12. Bohunická, M., **Pietrasiak, N.**, Johansen, J.R., Berrendero Gomez, E., Hauer, T., Gaysina, L. & Lukešová, A. 2015. *Roholtiella*, gen. nov. (Nostocales, Cyanobacteria) - a tapering, filamentous cyanobacteria within the Nostocaceae. *Phytotaxa*, 197: 84–103.  
<https://doi.org/10.11646/phytotaxa.197.2.2>
11. **Pietrasiak, N.**, Mühlsteinová, R.\*, Siegesmund, M. & Johansen, J.R. 2014. Phylogenetic placement of *Symplocastrum* (Phormidiaceae, Cyanobacteria) with descriptions of two new species: *S. flechtnerae* and *S. torsivum*. *Phycologia*, 53: 529–541. <https://doi.org/10.2216/14-029.1>
10. Osorio-Santos, K., **Pietrasiak, N.**, Bohunická, M., Miscoe, L.H.\*, Kovácik, L., Martin, M.P. & Johansen, J.R. 2014. Seven new species of *Oculatella* (Pseudanabaenales, Cyanobacteria). *European Journal of Phycology*, 49: 450–470. <https://doi.org/10.1080/09670262.2014.976843>
9. Patzelt, D.J., Hodač, L., Friedl, T., **Pietrasiak, N.** & Johansen, J.R. 2014. Biodiversity of soil cyanobacteria in the hyper-arid Atacama Desert, Chile, assessed by culture dependent and independent approaches. *Journal of Phycology*, 50: 698–710. and independent approaches. *Journal of Phycology*, 50: 698–710. <https://doi.org/10.1111/jpy.12196>
8. Mühlsteinová, R.\*, Johansen, J.R., **Pietrasiak, N.**, Martin, M.P., Osorio-Santos, K. & Warren, S.D. 2014. Polyphasic characterization of *Trichocoleus desertorum* sp. nov. (Pseudanabaenales, Cyanobacteria) from desert soils and phylogenetic placement of the genus *Trichocoleus*. *Phytotaxa*, 193: 241–261. <https://doi.org/10.11646/phytotaxa.163.5.1>
7. Mühlsteinová, R.\*, Johansen, J.R., **Pietrasiak, N.** & Martin, M.P. 2014. Polyphasic characterization of *Kastovskya adunca* gen. et comb. nov. (Oscillatoriales, Cyanobacteria) from desert soils of the Atacama Desert, Chile. *Phytotaxa*, 193: 216–228. <https://doi.org/10.11646/phytotaxa.163.4.2>
6. **Pietrasiak, N.**, Drenovsky, R.E., Santiago, L.S. & Graham, R.C. 2014. Biogeomorphology of a Mojave Desert Landscape – configurations and feedbacks of abiotic and biotic land surfaces during landform evolution. *Geomorphology*, 206: 23–36.  
<https://doi.org/10.1016/j.geomorph.2013.09.015>
5. **Pietrasiak, N.**, Regus, J.U., Johansen, J.R., Lam, D.<sup>+</sup>, Sachs, J.L. & Santiago, L.S. 2013. Biological soil crust community types differ in key ecological functions. *Soil Biology and Biochemistry*, 65: 168–171. <https://doi.org/10.1016/j.soilbio.2013.05.011>
4. Martínez-Berdeja, A.\*, **Pietrasiak, N.**, Tamase, A.<sup>+</sup>, Ezcurra, E. & Allen, E.B. 2013. Living where others dare not: Microhabitat distribution and seed retention in *Chorizanthe rigida*, a basicarpic desert annual. *Journal of Arid Environments*, 97: 120–126.  
<https://doi.org/10.1016/j.jaridenv.2013.05.010>
3. Flechtner, V.R., **Pietrasiak, N.** & Lewis, L.A. 2013. Newly revealed diversity of eukaryotic algae from wilderness areas of Joshua Tree National Park (JTNP). *Monographs of the Western North American Naturalist*, 6: 43–63. <https://doi.org/10.3398/042.006.0103>

2. **Pietrasiak, N.**, Johansen, J.R., La Doux, T. & Graham, R.C. 2011. Spatial distribution and comparison of disturbance impacts to microbiotic soil crust in the Little San Bernardino Mountains of Joshua Tree National Park, California. *Western North American Naturalist*, 71: 539–552. <https://scholarsarchive.byu.edu/wnan/vol71/iss4/12>
1. **Pietrasiak, N.**, Johansen, J.R. & Drenovsky, R.E. 2011. Geologic composition influences distribution of microbiotic crusts in the Mojave and Colorado Deserts at the regional scale. *Soil Biology and Biochemistry*, 43: 967–974. <https://doi.org/10.1016/j.soilbio.2011.01.012>

#### IN PEER-REVIEW

\*indicating mentored/co-mentored graduate; †indicating mentored undergraduate students.

4. Pombubpa, N.\*, **Pietrasiak, N.**, De Ley P. & Stajich, J.E. Temporal weather variation influences biocrust bacterial dynamic changes at Joshua Tree National Park, USA. *Geoderma*, in review.
3. Lovett, B.B.\*, **Pietrasiak, N.**, Pan, Z., Lehnhoff, E.A., Truscott, T.T. Heat and light response of *Microcoleus vaginatus* (Cyanobacteria). *Geoderma*, in review.
2. Stovall, M.\*, Ganguli, A.G., Faist, A., Schallner, J.W., Yu, Q. & **Pietrasiak, N.** Can biological soil crusts still be prominent landscape components in rangelands? A case study from New Mexico, USA. *Geoderma*, in review.
1. Omari, H.\*, **Pietrasiak, N.**, Ferrenberg, S., Nishiguchi, M.K. A spatiotemporal framework reveals contrasting factors shaping biocrust microfloral and microfaunal assemblages in the Chihuahuan Desert. *Geoderma*, in review.

#### OTHER PUBLICATIONS

4. Pombubpa, N., Kurbessoian, T., Stajich, J.E. **Pietrasiak, N.** & La Doux, T. 2020. Exploring the microbial diversity in biological soil crusts at Joshua Tree National Park. *Joshua Tree Science*. <https://www.nps.gov/articles/exploring-the-microbial-diversity-in-biological-soil-crusts-at-joshua-tree-national-park.htm>
3. Bowker, M. A., Belnap, J., Büdel, B., Sannier, C., **Pietrasiak, N.**, Eldridge, D., Rivera-Aguilar, V. 2016. Chapter 10. Controls on distribution patterns of biological soil crusts at the micro- to global scales. In: Belnap, J. & Lange, O. (eds.): *Biological soil crusts: structure, function and management*. Springer. 3<sup>rd</sup> edition.
2. **Pietrasiak, N.** 2014. Field guide to classify biological soil crusts for ecological site evaluation. *USDA-NRCS Technical Reference*. The current version can be viewed at: [http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/ref/#field\\_guides](http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/ref/#field_guides)
1. **Pietrasiak, N.** & Johansen, J.R. 2014. Microbiotic soil crust communities in California’s deserts are ecologically critical. *Fremontia* 42: 18–19.

#### FUNDED GRANTS AND CONTRACTS

**EXTERNAL (Research Credit: \$1,133,385; Total Award Involvement: \$13,830,426):**

- 2020:
- Subaward PI with Jin, L. (Lead-PI), Darrouzet-Nardi, A., Lougheed, V., McLaren, J., Ma, L., Xu, J., Engle, M., Gutierrez, H., Karplus, M., Tweedie, C. E., Mauritz-Tozer, M., Warak, M.C., Gill, T., Pierce, J., Zhu, M., Curry, M.: “Network Cluster: Patterns and Controls of Ecohydrology, CO<sub>2</sub> Fluxes, and Nutrient Availability in Pedogenic Carbonate-Dominated Dryland Critical Zones.” NSF & University of Texas, El Paso (Research Credit: \$210,279; Total Award: \$5,269,319).
  - Co-PI with Peters, D. (Lead-PI), Bestelmeyer, B., Hanan, N., Archer, S., Bestelmeyer, S., Brungard, C., Garcia-Pichel, F., Herrick, J., Monger, C., Okin, G., Sala, O., Schooley, R., Tweedie, C. & Vivoni, E.: “Long –Term Research at the Jornada Basin (LTER VII).” NSF (Research Credit:

- \$300,533; Total Award: \$ 4,508,000).
- 2019: • Co-PI with Ferrenberg, S., Faist, A., Holguin, O., Bailey, D.: "Investigating the role of the soil surface microbiome in germination, establishment, and growth of rangeland plants." USDA NIFA (Research Credit: \$93,748; Total Award: \$749,982).
- 2018: • PI: "BPSS: Floristic inventory of Organ Mountains cryptogams – a first step towards monitoring soil and air health." US DOI/BLM (Total Award: \$45,000).  
 • PI with Bailey, D., Johansen, J.R. & Polle, J.: "CSP-New Investigator: Understanding phylogenomic relationships and photosynthetic pigment evolution in terrestrial cyanobacteria." Joint Genome Institute (JGI) (Total Award Estimated: \$21,000).  
 • Co-PI with Hom, E. (Lead-PI) & Stajich, J.E.: "CSP-FICUS: Probing microbial interactions and coordinated trophic responses in biological soil crusts." JGI and EMSL (Total Award Estimated: \$136,202).  
 • Co-PI with Ganguli, A. (Lead-PI): "Ecosystem Health in the Rio Puerco Watershed." USDA/Natural Resources Conservation Service (Research Credit: \$15,000; Total Award: \$75,000).  
 • Co-PI with Peters, D. (Lead-PI), Bestelmeyer, B., Hanan, N., Archer, S., Bestelmeyer, S., Brungard, C., Garcia-Pichel, F., Herrick, J., Monger, C., Okin, C, Sala, O., Schooley, R., Tweedie, C. & Vivoni, E.: "Long –Term Research at the Jornada Basin (LTER VII)." NSF (Research Credit: \$150,267; Total Award: \$2,254,000).
- 2017: • PI: "Development of a Soil Crust Identification Guide for White Sand National Monument Citizen Science Program". US DOI/NPS (Total Award: \$99,930).  
 • PI: Amendment to: "Application of an Area-Based Quality Index (ABQI) to assess & manage biological soil crusts in the Mojave & Sonoran Deserts." US DOI/BLM (Total Award: \$53,772).  
 • Co-PI with Fuentes-Soriano, S. (Lead-PI), Bailey, D. & Ganguli, A.: "Consolidating, modernizing and harnessing the full potential of two herbaria collections at New Mexico State University." NSF (Research Credit: \$42,296; Total Award: \$422,960).  
 • Co-PI with Lehnhoff, E.A. (Lead-PI), Libbin, J., Sanogo, S., Thomas, S., Idowu, O. & Schutte, B.: "Cover crops in the southwest: Obtaining ecosystem services while minimizing water use." USDA NIFA (Research Credit: \$7,480; Total Award: \$149,601).  
 • Co-PI with Brungard, C.W. (Lead-PI): "Tools and Techniques for Biological Soils Crust Survey." US DOI/BLM (Research Credit: \$13,195; Total Award: \$65,978).
- 2016: • Co-PI with Ganguli, A. (Lead-PI) & Young, K.: "Effects of conservation practices on ecosystem health in the Rio Puerco Watershed." USDA NRCS (Research Credit: \$15,000; Total Award: \$50,000).
- 2015: • PI: "Application of an Area-Based Quality Index (ABQI) to assess & manage biological soil crusts in the Mojave & Sonoran Deserts." US DOI/BLM (Total Award: \$23,000).
- 2013: • PI: UCR, Nematology Department, Research Contract (Total Award: \$42,000).  
 • PI: UCR, Environmental Science Department, Research Contract (Total Award: \$6,970).
- 2012: • PI: PSA Grant in Aid of Research, Phycological Society of America. (Total Award: \$1,500).  
 • PI: California Desert Research Fund, The Community Foundation, serving Riverside and San Bernardino Counties (Total Award: \$3,634).
- 2009: • Co-PI with R.C. Graham (Lead-PI): Desert Southwest Cooperative Ecosystem Studies Fund, NRCS-USDA (Total Award: \$40,000).
- 2007: • PI: JTNP Graduate Student Research Grant, JTNP Association (Total Award: \$2,000).  
 • PI: California Desert Research Fund, The Community Foundation, serving Riverside and San Bernardino Counties (Total Award: \$2,000).
- 2006: • PI: California Desert Research Fund, The Community Foundation, serving Riverside and San

Bernardino Counties (Total Award: \$4,000).

**INTERNAL (Total Award Involvement: \$185,804)**

- 2021: • Awarded as PI with R. Heerema & J. Randall: "Mycorrhizal fungi of NM Pecan Crops." NMSU AES Graduate Research Award (Total Award: \$40,000).  
• Awarded as PI with A. Ulery, A. Romero-Olivares, M. Hoellrich, & J. Mikenas: "Plant the Moon Challenge Student Competition." NM Space Grant (Total Award: \$10,000).
- 2020: • Awarded as Co-PI with R.J. Heerema & J.J. Randall: "Revealing the New Mexico pecan root-soil microbiome to improve plant health and productivity." (Total Award: \$49,903).
- 2019: • Awarded as PI with A. Darrouzet-Nardi and C.E. Tweedie: "Carbon cycling dynamics in Chihuahuan Desert biological soil crusts." Graduate research fellowship program Jornada Basin LTER & NMSU (Total Award: \$6,000).
- 2017: • Awarded as Co-PI with E.A. Lehnhoff, D. Bailey, B. Bestelmeyer and D. Burke: "Understanding the Role of the Soil Microbial Community in Driving Plant Invasions." NMSU Impact Grant (Total Award: \$39,901).
- 2016: • Awarded as PI: "Relationships and Feedbacks between the Exotic *Eragrostis lehmaniana*, the Native *Bouteloua eriopoda*, and their Associated Soil Microbial Communities in Chihuahuan Desert Landscapes." NMSU AES Graduate Research Award (Total Award: \$40,000).

**AWARDS AND HONORS**

- 2019: • Early Career for the University Research Council Award for Exceptional Achievements, Office of the Vice President for Research and Graduate School.  
• Global Activity Award, College of ACES, NMSU.
- 2016: • Editor's Citation for Excellence in Manuscript Review Award. SSSAJ.
- 2008-2012: • Graduate Student Fellowship: \$134K, Graduate School, UCR.
- 2011: • Bingham Fellowship \$2,000, Environmental Sciences Department, UCR.  
• Outstanding Teaching Assistant Award, UCR.
- 2010: • SSSA 05 Division Grad. Student Oral Presentation Competition 3<sup>rd</sup> Place.  
• Bingham Fellowship \$1,350, Environmental Sciences Department, UCR.
- 2005-2007: • Graduate Assistantship Scholarship: \$18K. Graduate School, JCU.

**TEACHING EXPERIENCE**

**Instructor**

- Spring 2021-2018, Fall 2016: • Soils (SOIL2110 & SOIL2110L).
- Biannual since 2017: • Soil Microbiology (SOIL476 & SOIL476L).
- Spring 2020: • Internship in Environmental Science (ES391).
- Fall 2019: • Special Research Programs: Advanced Soil Microbiology (SOIL598).
- Spring 2019: • Special Topics: Phylogenetics of epilithic cyanobacteria (SOIL450).
- Spring 2019, 2018: • Special Topics: Biological Soil Crusts (SOIL500).
- Fall 2018: • Special Topics: Cyanobacteria from Yosemite NP (SOIL450).
- Spring 2016: • Preparing a thesis proposal (SOIL599).

**Guest Lecturer**

- Spring 2021, Fall 2019: • Arid Lands (GEOG 4307, UTEP), Topic: Biological Soil Crusts.
- Fall 2018: • Experimental Systems in Genetics (GENE110), Topic: The desert soil microbiome – utilizing genetics to discover and understand desert

microbes.

- Fall 2017: • Experimental Systems in Genetics (GENE110), Topic: Phylogenetics of terrestrial cyanobacteria - Utilizing genes to describing new species in cyanobacteria.
- Spring 2016: • Soils SOIL252), Topic: Physical, chemical, and biological weathering; Soil taxonomy (total of 2 lectures).  
• Environmental Behavior of Pesticides (EPWS420), Topic: Understanding the ecology of microbes in situ.

### MENTORING/ADVISING EXPERIENCE

- 2015-present: • Committee chair and mentor to graduate students: J. Korfhage (M.S. graduate of Spring 2017), M. Stovall (M.S., graduate of Fall 2018), A. Dominguez (M.S., graduate of Fall 2019), A. Swanson (M.S., graduate of Spring 2021, Co-Chair), M. Hoellrich (M.S., in progress), J. Mikenas (M.S. in progress).  
• Research mentor to graduate students: H. Omari, T. Mai, M. Omer, N. Pombubpa, B. Palmer.  
• Research mentor to undergraduate students: M. Stovall, F. Hansen, C. Chavez, M. Estrada, A. Granite, R. Ward, C. Simpson, D. Matta, S. Stinson, T. Watson, K. Tovar, N. Luke, D. Palacios.  
• Research mentor to NSF REU undergraduate students: F. Hansen (NMSU), H. Dallas (CSU), C. Villalobos (UTEP), S. Stinson (NMSU), A. Tafoya, (NMSU).  
• Research mentor to HHMI and Honors College undergraduate student: F. Hansen (NMSU, graduate of Spring 2019), T. Watson (NMSU, graduate of Fall 2021).
- 2019-present: • Supervisor and mentor to research assistant A. Dominguez.
- 2018: • Supervisor and mentor to research assistant J. Kilgore.
- 2017: • Research mentor of international student S. Shalygin.
- 2012-2015: • Committee member and mentor of two M.S. graduate students, mentor to 6 graduate M.S. & 9 undergraduate students in research at JCU.

### ORAL PRESENTATIONS (30 presentations, 19 as invited speaker)

- 2021: • **Invited speaker:** “The backstage crew - How soil microbes keep dryland ecosystems running smoothly”. Departmental Seminar, Biology Department, Idaho State University, Pocatello, ID.  
• **Invited speaker:** “Friends or Foes – The Impact of the Biocrust Soil Microbiome to Aeolian Processes”. WMO SDS-WAS Pan-America Center and NASA Dust research working group meeting, Virtual Meeting.
- 2020: • “Dryland soils: A cornucopia of cyanobacterial diversity”. Virtual Annu. Meet., ASA-CSSA-SSSA.  
• “New Insights from Jornada Microbes”. Jornada LTER Annual Meeting, Las Cruces, NM.  
• “Fantastic Microbes And Where To Find Them”. Plant and Environmental Sciences Department Graduate Student Seminar Series, NMSU, Las Cruces, NM.
- 2019: • **Invited speaker:** “Unearthing desert microbes”, NMSU's Research and Creativity Week. University Research Council, NMSU, Las Cruces, NM.  
• **Invited speaker:** “Get to know your desert soil microbes!”, Plant Pathology seminar series, Department of Microbiology and Plant Pathology, University of California, Riverside, Riverside.  
• “Living the gypsy life – Community ecology of gypsum biocrusts along a dune age gradient in the Chihuahuan Desert”. BIOCRUST4, Queensland, Australia.  
• “True slimers – A systematic study of desert *Hormoscilla* and Synechococcaceae-like

- cyanobacteria". IAC21, Queensland, Australia.
- "Stranger things – Terrestrial cyanobacterial diversity of White Sands National Monument, New Mexico, USA". IAC21, Queensland, Australia.
- 2018: • **Invited speaker:** "First patterns from Jornada Microbes". Jornada LTER Annual Meeting, Las Cruces, NM.
- "And you see your gypsy – A study of terrestrial cyanobacterial communities from gypsum soils". Joint PSA and ISOP Meeting, Vancouver, Canada.
- 2017: • **Invited speaker:** "Biological soil crust - an integral part of the desert landscape". Graduate Student Seminar, Geology Dept., UTEP, El Paso, TX.
- **Invited speaker:** "Diversity and distribution of soil Cyanobacteria in South Western U.S.". 14<sup>th</sup> Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region, Flagstaff, AZ.
  - **Invited speaker:** "Demystifying the microbial black box – first insights". Jornada LTER Annual Meeting, Las Cruces, NM.
  - **Invited speaker:** "Illuminating the diversity of soil cyanobacteria from North America". Annu. Meet., PSA, Monterey Bay, CA.
  - **Invited speaker:** "Exploring Dry Microbes - You won't believe how much fun you can have studying dryland algae". Mega Micro Seminar, Biology Dept., NMSU, Las Cruces, NM.
- 2016: • **Invited speaker:** "A voyage into the extreme – Exploring dryland algae". Ludwig Maximilian University, Munich.
- **Invited speaker:** "The Jornada – a playground for biocrust research." Jornada LTER Annual Meeting, Las Cruces, NM.
- 2014: • **Invited speaker:** "The biocrust, nematode, landscape love triangle - insights into a complex relationship." IANIGLA, Centro Científico Tecnológico, Mendoza, Argentina.
- 2013: • "Biodiversity of cyanobacteria in biological soil crusts of the Mojave Desert." IAC19, Cleveland, OH.
- **Invited speaker:** "Desert biota, soils, and the landscape - a different evolutionary story. Biology Department Seminar, John Carroll University, Cleveland, OH.
- 2012: • **Invited speaker:** "Linking biological soil crusts, ecosystem functions and landforms." The 2<sup>nd</sup> Biennial California Desert Research Symposium, Redlands, CA.
- **Invited speaker:** "The effects of geomorphology and associated soil properties on biological soil crust abundance and distribution". ESA Annual Meeting, Portland OR.
- 2010: • "Recognizing Biological soil crusts in Southern CA - A Field Guide for Soil Surveys". Intern. Annu. Meet., ASA-CSSA-SSSA, Long Beach, CA.
- **Invited speaker:** "Biogeomorphology of biological soil crusts in the Mojave Desert". BIOCRUST1, Retzbach-Zellingen, Germany.
- 2009: • **Invited speaker:** "Biogeography of biological soil crusts in the Mojave Desert". CNPS Mojave Desert Chapter Meeting, Victorville College, Victorville, CA.
- **Invited speaker:** "Ecology and Diversity of Soil Algae of the Mojave Desert". Mojave National Preserve Soils Scoping Session, Barstow, CA
- 2008: • "Ecology and Diversity of Biological Soil Crusts in Joshua Tree National Park". Seminar in the Soil and Water Science Program, University of California, Riverside, CA.
- "Microbiotic crust distribution and development in diverse Mojave Desert plant communities". The 1st Biennial California Desert Research Symposium Contributing to the Understanding and Conservation of Desert Wilderness, Redlands, CA.

## POSTER PRESENTATIONS (12 presentations)



\* indicating mentored graduate; † indicating undergraduate students

- 2020: • **Pietrasiak, N.**, Watson, T. †, Condon, L.: “First insights into the cyanobacterial diversity from biocrusts of the Great Basin Desert”. Virtual Annu. Meet., ASA-CSSA-SSSA.
- **Pietrasiak, N.**, Granite, A. †, Stovall, M.S. †, Shalygin, S.\* & Johansen, J.R.: “Revealing the cyanobacterial diversity of a wet rock wall at Vernal Falls, Yosemite National Park, CA.” Botany 2020. Virtual Meeting.
- 2019: • **Pietrasiak, N.**, Hauer, T., Mühlsteinová, R.\*, Michaud, G.: “Scraping the surface of cyanobacterial diversity from wet rock walls in New Mexico, USA.” IAC21, Queensland, Australia.
- 2016: • **Pietrasiak, N.**, Stovall, M.\*, Shalygin, S.\* & Johansen, J.R.: “Subaerial epilithic cyanobacteria from Yosemite National Park, California, USA.” IAC20, Innsbruck, Austria.
- 2015: • Korfhage, J.†, **Pietrasiak, N. (Presenter)**, Hillery, J. †, Reider, I. †, De Ley, P., Short, T., Johansen J.R.: “Shall we eat? – A desert tardigrade’s question in front of an algae dish.” In PSA Abstracts, 50<sup>th</sup> Annu. Meet., PSA, Philadelphia, PA.
- 2013: • **Pietrasiak, N.**, Mühlsteinová, R\* & Johansen, J.R.: “Would the real *Microcoleus steenstrupii* stand up?”. IAC19, Cleveland, OH.
- **Pietrasiak, N.**, Martin, M.P. & Johansen, J.R.: “*Myxacorys* gen. nov. (Pseudanabaeanales): A new cyanobacterium from desert soils in the western hemisphere”. IAC19, Cleveland, OH.
- 2012: • De Ley, P. **Pietrasiak, N.**, Tandingan De Ley, I., Flor-Peregrin, M.E., Gow, J. & Graham, R.C.: “Nematode community analyses in five mesoscale landforms from a piedmont fan skirt in the Mojave Desert”. California Desert Research Symposium, Redlands, CA.
- 2011: • **Pietrasiak, N.**, Johansen, J.R. & Graham, R.C.: “Microbiotic soil crust abundance and community diversity varies according to mesoscale landform pattern in the Mojave Desert”. Joint. Annu. Meet., PSA/ISoP Seattle, WA.
- 2008: • **Pietrasiak, N.**, Johansen, J.R., La Doux, T. & Graham, R.C.: “Biogeography of microbiotic soil crust in high vs. low recreational use areas within the Wonderland of Rocks of Joshua Tree National Park, California”. Annu. Meet., PSA/ASBP Honolulu, HA.
- **Pietrasiak, N.**, Hirmas, D.R., Graham, R.C. & Bozhilov, K.N.: “Mineralogy of a paralithic horizon (well weathered bedrock) in the Mojave Desert”. Joint. Annu. Meet., GSA/ASA /CSA/SSSA/GCAGS/HGS, Houston, TX.
- 2007: • **Pietrasiak, N.**, Johansen, J.R., La Doux, T.: “Biogeography of microbiotic crusts in Joshua Tree National Park”. ESA/SER Annual Joint Meeting, San Jose, CA.

#### ORAL PRESENTATIONS BY MENTORED STUDENTS

\* indicating mentored graduate; † indicating undergraduate students

- 2021: • Martin, D.†, Stajich, J.E., Pietrasiak, N., Kurbessoian, T.\*, Ward, R.†: “Surf or Turf: Comparative analysis of carotenoid genes from Cyanobacteria isolated from biological soil crusts”. Photosynthesis Mini Symposium, UC Davis, Virtual Meeting.
- Hoellrich, M.\*, Ferrenberg, S., Darrouzet-Nardi, A., Pietrasiak, N.: “Linking Biogeochemical Function and Microbial Diversity in Chihuahuan Desert Biocrusts”. NMSU Plant and Environmental Sciences Department Graduate Student Seminar, Las Cruces, NM.
- 2020: • Omer, M.\*, Guldan, S.J., VanLeeuwen, D., Pietrasiak, N., Idowu, O.J., Ulery, A.L.: “Soil Biological Measurements Under Different Management Systems in an Irrigated Arid Agroecosystem”. Tri Societies (Agronomy, Crop Science, Soil Science) Annual Joint Meeting, Virtual Meeting.
- Pombubpa, N.\*, Pietrasiak, N., Stajich, J.: “Temporal Variability in Weather Impacts Biocrust Microbial Communities at Joshua Tree National Park, CA, USA.” Virtual Annu. Meet., ASA-CSSA-SSSA.

- Watson, T.<sup>+</sup> Pietrasiak, N., Condon, L.: “Revealing Cyanobacterial Diversity in the Great Basin Desert”. HHMI Symposium, Las Cruces, NM.
  - Hoellrich, M.\*: “Linking Biogeochemical Function and Microbial Diversity in Chihuahuan Desert Biocrusts.” Jornada LTER Annual Meeting, Las Cruces, NM.
  - Stinson, S.<sup>+</sup>: “Do Biological Soil Crust Mediate Germination and Growth of Native and Invasive Grasses?” Jornada LTER Annual Meeting, Las Cruces, NM.
- 2019:
- Dominguez, A.\*, Lehnhoff, E., Pietrasiak, N.: Contrasting the grass rhizosphere microbial communities of the invasive *Eragrostis lehmanniana* and native *Bouteloua eriopoda*, and investigating their responses to climate manipulation”. NMSU Biosymposium, Las Cruces, NM.
  - Pombubpa, N.\*, Pietrasiak, N., De Ley, P., Stajich, J.: “Fungal-Bacterial Networks structuring biocrust in Mojave Desert, USA. 87<sup>th</sup> Annual meeting of the MSA, Minneapolis, MN.
  - Hansen, F.<sup>+</sup>: “Characterizing and linking the soil microbial communities of the Chihuahuan Desert to environmental factors and physical disturbance”. Megamicro Seminar Series, Biology Department, NMSU, Las Cruces, NM.
  - Estrada, M.,<sup>+</sup> Pietrasiak, N., Hanan, N, Burke, D.: “Comparing rhizosphere microbial communities in Creosote, Tarbush, and Mariola”. Annu. Meet., SRM, Minneapolis, MN.
  - Stovall, M., Pietrasiak, N., Ganguli, A., Schallner, J.: “The role of biological soil crusts in the management of the Rio Puerco watershed”. Soils across latitudes, 2018-2019 International Soils Meeting, San Diego, CA.
- 2018:
- Omari, H., Pietrasiak, N., De Ley, P., Ferrenberg, S., Nishiguchi, M.: “Spatiotemporal variations of microorganismal communities within biological soil crusts at the Jornada Rangeland”. Joint PSA and ISOP Meeting, Vancouver, Canada.
  - Lovett, B., Pietrasiak, N. & Truscott, T.: “Unraveling the motility of the terrestrial cyanobacterium *Microcoleus vaginatus*”. Joint PSA and ISOP Meeting, Vancouver, Canada.
  - Pombubpa, N.: “Comprehensive bioinformatics analysis pipeline development to study soil microbial communities of Jornada Basin LTER”. Jornada LTER annual meeting, Las Cruces, NM.
  - Omari, H.: “Spatiotemporal variations of microorganismal communities within biological soil crusts”. Jornada LTER annual meeting, Las Cruces, NM.
  - Omari, H., Pietrasiak, N., Nishiguchi, M.: “Microorganismal communities of biocrusts in the Chihuahuan Desert”. NMSU Biosymposium, Las Cruces, NM.
  - Stovall, M., Pietrasiak, N., Ganguli, A.: “Distribution of biological soil crusts and their influence on soil stability in the Rio Puerto watershed”. NMSU Biosymp., Las Cruces, NM.
- 2017:
- Mai, T., Johansen, J.R., Pietrasiak, N, Bohunická, M., Martin, M.P.: “Subaerophytic cyanobacteria from wet rockwalls in Utah”. Joint PSA and ISOP Meeting, Annu. Meet., PSA, Monterey Bay, CA.
  - Shalygin, S., The first steps towards the revision of the polyphyletic genus: *Pleurocapsa* (Cyanobacteria). Annu. Meet., PSA, Monterey Bay, CA.

#### **POSTER PRESENTATIONS BY MENTORED STUDENTS**

\* indicating mentored/co-mentored graduate; <sup>+</sup> indicating undergraduate students

- 2021:
- Hoellrich, M.\*, Darrouzet-Nardi, A., Santiago, L., Pietrasiak, N.: “Biocrust Community Composition and Implications for Carbon Flux Under Timed Light Incubation”. 59th Annual Northeast Algal Symposium, Virtual Online Meeting.
  - Hoellrich, M.\*, Darrouzet-Nardi, A., Santiago, L., Pietrasiak, N.: “Biocrust carbon flux under timed light incubation”. NMSU Biosymposium, Las Cruces, NM. (Voted best poster presentation).

- 2020:
- Hoellrich, M., Darrouzet-Nardi, A., Ferrenberg, S. & Pietrasiak, N.: "Biocrust carbon fixation under timed light incubation." Virtual Annu. Meet., ASA-CSSA-SSSA.
  - Swanson, A., Pietrasiak, N., Pruitt, D. & Cormier, J.: "Soil health parameter and PLFA trends under different management practices: A case study." Virtual Annu. Meet., ASA-CSSA-SSSA.
  - Kurbessoian, T., Pombubpa, N., Pietrasiak, N., Coleine, C., Selbmann, L. & Stajich, J.E.: "Black yeast as desert sunscreen: Assessing the genetic composition of black yeasts found within biological soil crusts." Virtual Annu. Meet., ASA-CSSA-SSSA.
  - Martin, D., Kurbessoian, T., Nguyen, T., Pietrasiak, N., Holm, E., Ward, R. & Stajich, J.E.: Surf or Turf: Comparative analysis of carotenoid genes from Cyanobacteria isolated from biological soil crusts." Virtual Annu. Meet., ASA-CSSA-SSSA.
  - Watson, T. <sup>+</sup>, Pietrasiak, N., Condon, L. "Characterization and Description of Soil Cyanobacteria in the Great Basin Desert". Virtual NMSU Research and Creativity Week, Las Cruces, NM.
  - Swanson, A.\* , Jha, G., Pietrasiak, N., Creegan, E., Guzman, I., Ulery, A. "NMSU Composting Club: Teaching through Hands-On Experience". 2020 NACTA Virtual Conference.
  - Watson, T. <sup>+</sup>, Pietrasiak, N., Condon, L. "Revealing cyanobacterial diversity from biocrusts after 80-years of grazing recovery in the Great Basin Desert". URCAS, Las Cruces, NM.
- 2019:
- Dominguez, A., Pietrasiak, N., Estrada, M.<sup>+</sup>, Burke, D., Hanan, N. P. "First Insights into the Rhizosphere Microbiomes of Four Native Chihuahuan Desert Shrubs: Creosote, Mariola, Mesquite, and Tarbush". Annu. Meet., ASA/CSA/SSSA, San Antonio, TX.
  - Hoellrich, M.<sup>+</sup>, Young, K., Pietrasiak, N., Darrouzet Nardi, A.: "Comparative nitrogen fixation rates in biocrusts". UTEP Campus Office of Undergrad Research Initiatives, El Paso, TX.
  - Kurbessoian, T.\* , Pombubpa, N.\* , Pietrasiak, N., Stajich, J., Coleine, C., Selbmann, L.: "Just deserts? Exploring the diversity of melanized fungi in rocks and biological soil crusts". 87<sup>th</sup> Annual meeting of the Mycological Society of America, Minneapolis, MN.
  - Hansen, F.<sup>+</sup>: "Characterizing and linking the soil microbial communities of the Chihuahuan Desert to environmental factors and physical disturbance". URCAS, Las Cruces, NM.
  - Estrada, M.<sup>+</sup>, Pietrasiak, N., Hanan, N, Burke, D.: "Comparing rhizosphere microbial communities in Creosote, Tarbush, Mesquite and Mariola". URCAS, Las Cruces, NM.
  - Granite, A., Pietrasiak, N. Stovall, M., Shalygin, S., Ward, R., Johansen J.: "Discovering cyanobacterial diversity from Vernal Falls, Yosemite. URCAS, Las Cruces, NM.
  - Dominguez, A.\* , Pietrasiak, N., Lehnhoff, E., Burke, D., Kyker, S.: "Revealing the rhizosphere microbial communities of the invasive *Eragrostis lehmanniana* and native *Bouteloua eriopoda* in a climate manipulation study". Soils across latitudes, 2018-2019 International Soils Meeting, San Diego, CA.
  - Hansen, F.<sup>+</sup> Pietrasiak, N., Peters, D., Anderson, J., Stajich, J., Pombubpa, N.\*: "The effect of vegetation zones, abiotic variables, and physical disturbance on soil microbial communities of the Chihuahuan Desert". Soils across latitudes, 2018-2019 International Soils Meeting, San Diego, CA.
- 2018:
- Villalobos, C.<sup>+</sup>, Dominguez, A.\* , Lehnhoff, E.A., Pombubpa, N.\* , Pietrasiak, N.: "Soil Microbial Diversity Patterns at the Jornada Basin LTER, NM". SACNAS, San Antonio, TX.
  - Omari, H.\* , Ferrenberg, S., De Ley, P., Pietrasiak, N., Nishiguchi, M.K.: "Spatiotemporal variations of microbial communities in biological soil crusts at the Jornada LTER". LTER All Scientist Meeting, Pacific Grove, CA.
  - Taylor, M., Pietrasiak, N., Fučíková, K.: "A novel cryptic species of green algae from the California Desert". Joint PSA and ISOP Meeting, Vancouver, Canada.
  - Hansen, F.<sup>+</sup>, Pietrasiak, N., Peters, D., Anderson, J., Stajich, J., Pombubpa, N.\*: "Revealing

microbial diversity from biological soil crusts of Jornada Basin vegetative zones". NMSU-HHMI Gala, NMSU, Las Cruces, NM.

- Dominguez, A.\* , Pietrasiak, N., Lehnhoff, E., Burke, D., Kyker, S.: "Comparing the rhizosphere microbial communities of the invasive lovegrass and native black grama". Jornada LTER annual meeting, Las Cruces, NM.

- Hansen, F. +, Pietrasiak, N., Peters, D., Anderson, J., Stajich, J., Pombubpa, N.\*: "Revealing microbial diversity from biological soil crusts of Jornada Basin vegetative zones". Jornada LTER annual meeting, Las Cruces, NM.

- Pombubpa, N.\* , De Ley, P., Pietrasiak, N., Stajich, J.: "Biological soil crusts microbial diversity in Mojave Desert, USA". 11th International Mycological Congress, International Mycological Association, San Juan, Puerto Rico.

- Dominguez, A.\* , Pietrasiak, N., Lehnhoff, E., Kyker, S.: "A comparison of the rhizosphere microbial communities of the invasive lovegrass and native black grama". First ACES open house, NMSU, Las Cruces, NM.

- Taylor, M., Pietrasiak, N., Fučíková, K.: "A novel cryptic species of green algae from the California Desert". NEAS Symposium, University of New Haven, New Haven, CT.

- Mai, T.\* , Pietrasiak, N., Bailey, D.: "Blue, green and beyond – The search for pigment related genes in Cyanobacteria genomes of the family Oculatellaceae". 13th Annual New Mexico Bioinformatics, Science and Technology Symposium, Santa Fe, NM.

- Dallas, H. +, Herrick, J., Van Zee, J., Pietrasiak, N.: "Long-term ecosystem resilience to anthropogenic disturbance in Southwestern New Mexico". CURC Awards Ceremony, Colorado State University, Fort Collins, CO.

- Dallas, H. +, Herrick, J., Van Zee, J., Pietrasiak, N.: "Long-term effects of anthropogenic disturbance in the Chihuahuan Desert". Student Ecology Symp., CSU, Fort Collins, CO.

- Schallner, J.W.\* , Ganguli, A.C., Pietrasiak, N., Strait, R.: "Monitoring the Impacts of Conservation Practices on Ecosystem Health in the Rio Puerco Watershed". Annu. Meet., SRM, Sparks, NV.

2017: • Keller, L.\* , Ulery, A. L., Idowu, O. J., Brewer, C. E., Holguin, F. O., Pietrasiak, N.: "Biochar potential in arid agricultural soils". NM Sustainable Agriculture Conference, USDA Western SARE, Los Lunas, NM.

- Omer, M.N.\* , Idowu, O.J., Ulery, A., VanLeeuwen, D., Guldán, S.J., Pietrasiak, N., Marsalis, M.A.: "Impacts of crop management systems on arid land soil quality". Joint. Annu. Meet., ASA-CSSA SSSA, Tampa, FL.

- Stovall, M.S.\* , Pietrasiak, N., Ganguli A.C., Schallner J.: "Biological soil crust communities in conjunction with soil stability in the Rio Puerco watershed". Annu. Meet., PSA, Monterey Bay, CA.

- Schallner, J.W. \* , Ganguli, A.C., Pietrasiak, N., Young, K.R.: "Effects of conservation practices on ecosystem health in the Rio Puerco watershed". Annu. Meet., SRM, St. George, UT.

2016: • Baldarelli, L.M.\* , Johansen, J.R. & Pietrasiak, N.: "*Nostoc* and *Mojavia* species isolated from the soils of the Atacama Desert, Chile". BIOCRUST3, Moab, UT.

- Korfhage J.\* , Pietrasiak, N., Johansen, J.R. & De Ley, P.: "Tardigrades display preferential grazing of soil algae". BIOCRUST3, Moab, UT.

- Pombubpa N.\* , De Ley, P., Pietrasiak, N. & Stajich, J.E.: "Biological soil crusts microbiome diversity at Joshua Tree National Park, Granite Mountain, and Kelso Mountain". BIOCRUST3, Moab, UT.

- Hentschke, G. S. \* , Johansen, J. R., Rigonato, J., Fiore, M., Pietrasiak, N. & Sant'Anna, C.L.: "*Komarekiella atlantica* gen. et sp. nov. (Nostocaceae, Cyanobacteria): a new subaerial taxon

from the Tropics". IAC20, Innsbruck, Austria.

- Johansen, J.R., Pietrasiak, N., Shalygin, S.\*: "Aerotope production in the benthic genus *Nostoc*: Molecular confirmation that *N. kihlmanii* belongs to *Nostoc sensu stricto*". Annu. Meet., PSA, Cleveland, OH.

- Mai, T.\*, Bohunická, M., Pietrasiak, N., Johansen, J.R.: "Understanding the deep phylogenetic relationships of the thin filamentous Synechococcales (Cyanobacteria)". Annu. Meet., PSA, Cleveland, OH.

2015: • Mai, T.\*, Bohunická, M., Pietrasiak, N., Johansen, J.R.: "Taxonomic study of simple filamentous cyanobacteria from wet rock habitat in Utah". In PSA Abstracts, 50<sup>th</sup> Annu. Meet., PSA, Philadelphia, PA.

2014: • Korfhage, J. +, Hillery, J. +, Pietrasiak, N., De Ley, P., Johansen J.R.: "What's for dinner? Feeding behavior of desert tardigrades and nematodes using algae". A Celebration of Scholarship, JCU, Cleveland, OH.

- Miscoe, L.H.\* , Johansen, J.R., Pietrasiak, N. & Sherwood, A.R.: "*Stenomitos rutilans* Miscoe et Johansen gen. et sp. nov.: A new taxon from Waikapala'e cave, Kauai, Hawaii". IAC19<sup>th</sup>, Cleveland, OH.

- Mühlsteinova, R.\* , Johansen, J.R., Pietrasiak, N. & Martin, M.P.: "Polyphasic characterization of *Kastovskia adunca* gen. et comb. nov. (Oscillatoriales, Cyanobacteria) from desert soils of the Atacama Desert, Chile". IAC19<sup>th</sup>, Cleveland, OH.

## MEDIA COVERAGE

2020: • Interviewed by Elizabeth Miller for New Mexico Magazine: White Sands Power Plants: <https://www.newmexico.org/nmmagazine/articles/post/plants-at-white-sands-national-park>.

- Interview for Nature Notes: Biocrusts: A Hidden World at Our Feet:

<https://marfapublicradio.org/blog/nature-notes/biocrusts-a-hidden-world-at-our-feet/>.

- Cyanobacterial culture collection featured in The Conversation:

[https://www.youtube.com/watch?v=VSCM-GYmCsE&feature=emb\\_logo](https://www.youtube.com/watch?v=VSCM-GYmCsE&feature=emb_logo).

2019: • Featured in Las Cruces Sun News:

[https://www.lcsun-news.com/story/news/local/2019/08/03/research-yields-valuable-information-public-land-management/1910835001/?cid=twitter\\_CrucesSunNews](https://www.lcsun-news.com/story/news/local/2019/08/03/research-yields-valuable-information-public-land-management/1910835001/?cid=twitter_CrucesSunNews).

2018: • Featured in NMSU Newsletter, GYPWORLD research initiative:

<https://newscenter.nmsu.edu/Articles/view/13304/nmsu-biologists-take-part-in-eu-funded-research-on-new-mexico-s-unique-gypsum-ecosystems>.

## OUTREACH

2020: • Outreach activity: "Girls Can!" Career Exploration Conference, for 6<sup>th</sup> grade girls in Dona Ana County organized by the American Association of University Women, held at Dona Ana Community College East Mesa Campus. We were talking about why recycling is important, how engineers can develop ways to reuse old materials, and as an application were making new paper from scrap paper.

2012-2019: • Biological Soil Crust of Joshua Tree National Park, 1 credit unit workshop UCR Extension, offered at Desert Institute, Joshua Tree National Park, California.

2019: • Invited instructor: "Chihuahuan Desert biocrusts – diversity and ecological importance", Jornada Basin LTER Desert Ecology Short Course.

- Workshop Organizer with Sara Fuentes (NMC herbarium) for a workshop on lichen morphology and identification. Assisted instructor Sergio Muriel, PhD candidate, in

- instructing the workshop. 15 NMSU graduate students from the College of ACES and CAS participated.
- 2018:
- Invited talk: “A closer look into the cryptogam diversity at White Sands National Monument”, Native Plant Society New Mexico, Las Cruces Chapter.
  - One-hour outreach activity to 4H youth: “Soil and the Amazing World of Desert Plants”, State 4-H Conference, NMSU, Las Cruces, NM.
  - Soil biology outreach activity to East Picacho Elementary School 1st graders, NMSU.
- 2017:
- Invited talk: “The Hidden World of Biological Soil Crusts”, Native Plant Society New Mexico, Las Cruces Chapter.
- 2016:
- Sigma Xi’s Science Café talk on: “Exploring the world of desert soil and rock algae”, Las Cruces Museum of Nature and Science.
- 2008-2010:
- Biological Soil Crust of Joshua Tree National Park, 1-day workshop open to public, Desert Institute, Joshua Tree National Park, CA.
- 2013:
- Project ¿QUE?, tutored a 1-week long science camp for 7<sup>th</sup> grade middle school Hispanic children, John Carroll University, OH.
- 2013:
- Field class, organized and taught a 1.5 hr outdoor field class to 2<sup>nd</sup> grade students Our Shepherd Lutheran School, Painesville, OH.
- 2011:
- Training on classification and identification of biological soil crusts, USDA-NRCS Victorville Service Center, Victorville, California, Training on classification and identification of biological soil crusts.

#### **PROFESSIONAL AND UNIVERSITY SERVICE**

- 2015-present:
- Developer and curator of the living algae culture collection at NMSU currently housing >500 strains of terrestrial cyanobacteria and algae.
  - Serving in two departmental committees (currently: Retention; Awards; past: Graduate Studies, Curriculum, Ad Hoc Space) and one interdisciplinary committee (Molecular Biology Recruitment and Admission).
- 2020:
- Judge for the undergraduate and graduate student oral and poster competition at the NMSU University Research and Creativity Week.
  - 1-day BLM NM AIM field crew training in recognizing Biocrusts of the Chihuahua Desert.
- 2019:
- Invited instructor: A five-day course with the title: “Biological Soil Crust - Ecology and Diversity.” to IANIGLA staff and students. Instituto Argentino de Nivología y Glaciología y Ciencias Ambientales (IANIGLA), Centro Científico Tecnológico, Mendoza, Argentina, 6 participants.
  - Member of search committee for Microbiology Assistant Professor, Biology Dept., NMSU.
  - Poster Judge for the graduate student poster competition at the NMSU University Research and Creativity Week.
  - One-week training of postdoc Christy Meredith (Jornada Basin LTER) in molecular biology (“wet lab”) methods.
  - Co-organized and coordinated the Jornada Basin LTER Desert Ecology Short Course for >30 undergraduate and graduate students involved in research at the JER, NM.
  - Two-day training of graduate student Jessica Castro, NMSU in soil biological field sampling and biological soil crust identification.
  - Host of visiting scholar K. Fuciková (Assumption College, MA) and her undergraduate student V. Williamson for 1 week. Organized and lead field sampling campaign of soil algae collections in the Organ Mountain Desert Peak Monument as well as White Sands National Monument and provided logistic support.

- 1-day BLM NM AIM field crew training in recognizing Biocrusts of the Chihuahua Desert.
  - 1-day BLM NM AIM crew lead briefing in Biocrusts of the Chihuahua Desert.
  - Host of visiting international scholars K. Knudsen and J. Kocourková (Czech University of Life Sciences Prague, Czech Republic) during their 1-month field collection trip. Provided logistic support for lichen collections in Organ Mountain Desert Peak Monument as well as White Sands National Monument.
- 2018:
- 6 weeks training of visiting scholars R. Mühlsteinová and T. Hauer (Czech Republic) in soil biology field sampling as well as molecular lab techniques in next gen. amplicon sequencing.
  - 1-week training in biocrust community classification and identification to research members of the GYPWORLD global initiative.
  - Member of search committee for Assistant Professor/Project Manager for the Jornada Basin LTER program.
  - 1-day training of undergraduate student M. Campbell, The University of Mississippi, in soil biological field sampling and biocrust identification.
  - 3-day training of USGS scientist L. Condon in cyanobacteria biology and morphology, microscopy, and the moistened soil method.
  - 2-day training of graduate student B. Lovett and Dr. T. Truscott, Utah State University, Engineering Dept., in aseptic techniques in Microbiology, preparing agarose pads to apply to microscope slides, and compound microscopy.
  - Guest lectures for the USDA-NRCS Soil Geomorphic Institute training workshop 2018, presented on biological soil crust as an important landscape component.
  - Poster Judge at the 31st NMSU Biosymposium, Biology Department, NMSU.
  - Poster Judge at the Final Project poster presentation for Dr. I. Guzman's HORT 420, Postharvest Biology and Technology class. (May 8, 2018).
- 2017:
- Invited instructor: Biological Soil Crust - Ecology and Diversity. A four-day workshop, Instituto Argentino de Nivología y Glaciología y Ciencias Ambientales (IANIGLA), Centro Científico Tecnológico, Mendoza, Argentina.
  - Training of Dr. F. J. Gomez and his Geomicrobiology and Biochemistry group in microbiological and phylogenetic culturing techniques at the University of Cordoba, Argentina.
  - Training of graduate students N. Pombubpa and J. Adams at Dr. J. Stajich Fungal Genomics lab in soil algae identification and microscopy techniques, UCR, CA.
  - Training of graduate student B. Lovett in microbiological and phylogenetic techniques at Dr. T. Truscott Mechanical & Aerospace Engineering, Utah State University, Logan, UT.
  - Host and mentor of visiting Ph.D. student A. M. Foronda Vasquez (Spain), 3-months summer internship, project: The role of plant and cryptogam gypsum soil specialist species in structuring diversity of gypsum plant communities in the Chihuahuan Desert.
- 2016:
- Host and mentor of visiting Ph.D. student R. Mühlsteinová (Czech Republic), 3-months summer internship working on the project: Seeking the true *Oscillatoria*? Understanding the diversity and distribution of thick morphotypes in the genus *Oscillatoria*.
  - Host of visiting scholar P. De Ley, UCR for three months of a sabbatical. Provided training on algal isolation from soil samples, algal cultivation, and field classification and identification of biological soil crusts.
- 2014:
- 4-week field trip to the Monte Desert (Argentina) including training of Dr. J. Aranibar and undergraduate student V. García (University of Mendoza) in biocrust community type identification and establishing collaboration with Dr. J. Aranibar and Dr. S. Tabeni.
- 2013:
- 1-week field trip to the White Mountains and Mojave Desert conducting a biological soil crust

survey in collaboration of Dr. R.C. Graham (UCR) and Dr. P. De Ley (UCR), field work training of undergraduate student J. Korfhage (JCU).

- 2 weeks training of visiting scholar G. Scotta Hentschke from Brazil in phylogenetic analyses and secondary structure folding of cyanobacteria.

- 2 months laboratory training of visiting scholar B. Zhang from China in algal culturing and molecular methods.

2012: • 1-week field trip to the White Mountains assisting Dr. R.C. Graham with research, training of M.S. student A. Frisbie (UCR) in vegetation and biocrust surveys.

- 2-week field trip to the Chaco and Monte Deserts (Argentina) training and assisting Dr. P. De Ley with research involving biocrusts in nematode diversity studies as well as establishing collaboration with Dr. F. Gomez and Dr. M. Doucet, University of Cordoba.

## ACADEMIC SERVICE

2021 – present: • Invited to associate editor for *Phycologia* (January 1, 2021 – present).

2020 – present: • Nominated and elected to the Editorial Board of the Journal of Phycology.

2019 – present: • Women in Soil Ecology mentor to PhD student Brianne Palmer (San Diego State University)

2012 – present: • Peer Reviewer of 58 manuscript reviews including journals such as *Journal of Phycology*, *SSSAJ*, *Geoderma*, *Soil Biology and Biochemistry*, *Journal of Applied Phycology*, *Soil Biology and Biochemistry*, *New Phytologist*, *Nature Scientific Reports*.

2020: • Ad hoc grant proposal reviewer for NSF, Washington, DC.

2020 – 2018: • Guest Editor "Ecological Development and Functioning of Biological Soil Crusts After Natural and Human Disturbances". Special issue: *Frontiers in Ecology and Evolution*.

2019: • Ad hoc permit application reviewer for National Park Service, reviewed a permit application of algae sampling in Yellowstone National Park.

- Poster Judge for the graduate student poster competition in Soil Restoration Ecology at the SSSA Soils Across Latitudes International Soil Conference, San Diego, CA.

2018: • Ad hoc and panel grant proposal reviewer for NSF, Washington, DC (total of 32 proposals reviewed).

- Ad hoc grant proposal reviewer for the Global Drylands Center at Arizona State University and Ben Gurion University.

- Session chair and moderator in the contributed paper session: "Diversity and Ecology" at Joint PSA/ISOP meeting, Vancouver, CA.

2017: • Mentored three grad students in peer reviewing for *Phytotaxa*, *Journal of Phycology*, and *Plant Ecology & Diversity*.

- Organized and instructed a 3-day workshop on Biological Soil Crusts at IANIGLA, Centro Científico Tecnológico, Mendoza, Argentina.

- Symposium organizer and moderator of "Terrestrial Algae" at the Annual Meeting of PSA 2017, Monterey Bay, California.

2013: • Organizing Committee and web designer for The 19<sup>th</sup> Symposium of the International Society for Cyanophyte Research.

2009: • Consulted in a conservation project with Tom Mulroy (Principal Scientist, SAIC): *Biological soil crust abundance and distribution in the Santa Ana River Woolly Star Preserve Area, California*.



**PROFESSIONAL SOCIETY MEMBERSHIPS**

- Member of American Society of Microbiology
- Member of Phycological Society of America
- Member of Soil Science Society of America
- Member of Ecological Society of America
- Member of Soil Ecology Society
- Member of Sigma Xi