Sergio Velasco Ayuso

Assistant Researcher
Laboratorio de interacciones entre Clima, Ecosistemas y Biodiversidad (iCEB Lab)
Centro de Investigaciones del Mar y la Atmósfera (CIMA/UBA–CONICET)
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Departamento de Ecología, Genética y Evolución (DEGE)
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MAIN RESEARCH LINES

- Microbial ecology
- Terrestrial ecology
- Global change
- Soil degradation
- Ecological restoration
- Drylands
- Aquatic resources management
- Water quality
- Limnology
- Groundwater ecology
- Industrial microbiology

WORK EXPERIENCE

Lecturer, Department of Ecology, Genetics and Evolution, School of Exact and Natural Sciences, University of Buenos Aires — July 2022-Onwards
Biometry

Assistant Researcher, Center for Research in Oceanic and Atmospheric Sciences, National Research and Technology Council of Argentina — September 2021-Onwards
Microbial ecology, climate, biological soil crusts, marine microbial communities, land use, global change

R+D+i Lab Manager, Kernel Mycofoods — June 2020-June 2021 (12 months)
Filamentous fungi, eukaryotes, mycoproteins, microbial industrial production, food sovereignty, bioreactors

Research Assistant, Department of Ecology, Genetics and Evolution, School of Exact and Natural Sciences, University of Buenos Aires — April 2019-May 2020 (13 months)
Global change, ocean, heterotrophic microorganisms, cyanobacteria, data bases, data sharing, large-scale distribution models, neural networks

Postdoctoral Research Associate, Department of Ecology, Faculty of Agronomy, University of Buenos Aires — October 2016-December 2018 (26 months)
Drylands, biological soil crusts, soil degradation, grazing, aridity, soil gas emissions, nutrient inputs, grasslands

Postdoctoral Research Associate, School of Life Sciences, Arizona State University — July 2013-July 2016 (36 months)
Drylands, biological soil crusts, soil degradation, soil restoration, soil fertility, 16S rRNA gen

Research Technician, Institute for Water Research, University of Granada — March 2012-June 2013 (15 months)
High-mountain lakes, microbial food webs, extracellular enzyme activities, UV radiation, nutrient inputs, global change

Research Assistant, Department of Ecology, Faculty of Sciences, University of Granada — September 2011-November 2011 (3 months)
High-mountain lakes, microbial food webs, water quality, hydrology

Technical Consultant, Center for Hydrographic Studies, CEDEX, Spanish Ministry of Public Works — March 2007-February 2011 (48 months)
Global change, water quality, limnology, species distribution, European Water Framework Directive

Research Assistant, Department of Ecology, Faculty of Sciences, Autonomous University of Madrid — January 2007-February 2007 (2 months)
Alien species, Mediterranean marshes, water quality, aquatic resources management

Ph.D. Student, Department of Ecology, Faculty of Sciences, Autonomous University of Madrid — November 2002-October 2006 (48 months)
Groundwater ecology, groundwater microbial communities, hydrogeology, sandy aquifers, extracellular enzyme activities

Research Assistant, Department of Ecology, Faculty of Sciences, Autonomous University of Madrid — July 2002-August 2002 (2 months)
Water quality, aquatic resources management

Research Assistant, Department of Ecology, Faculty of Sciences, Autonomous University of Madrid — July 2001-August 2001 (2 months)
Water quality, aquatic resources management

EDUCATION

- Ph.D. in Biological Sciences (2010). Faculty of Sciences, Autonomous University of Madrid. *The Aquifer of Doñana as an Ecological System: Structure and Function of its Microbial Communities*
- M.Sc. in Ecology and Environmental Sciences (2005). Faculty of Sciences, Autonomous University of Madrid. *The Functional Role of the Microbial Community in the Aquifer of Almonte-Marismas in Doñana (Huelva, Spain)*
- Graduate in Biology (2001). Faculty of Sciences, Autonomous University of Madrid

TEACHING EXPERIENCE

- Lecturer, *Biometry* (2025). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)
- Lecturer, *Biometry* (2024). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)
- Lecturer, *Biometry* (2023). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)
- Co-lecturer, *Soil Microbiology* (2023). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)
- Lecturer, *Biometry* (2022). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)

- Co-lecturer, *General Ecology* (2022). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)
- Co-lecturer, *Soil Microbiology* (2022). School of Exact and Natural Sciences, University of Buenos Aires (undergraduate students)
- Co-lecturer, *General Ecology* (2018). Faculty of Agronomy, University of Buenos Aires (undergraduate students)
- Co-lecturer, *General Ecology* (2017). Faculty of Agronomy, University of Buenos Aires (undergraduate students)
- Co-lecturer, MIC 205 *General Microbiology* (2016). School of Life Sciences, Arizona State University (undergraduate students)
- Co-lecturer, *International Course on General and Applied Hydrology, Unit IV* (2010). Center for Hydrographic Studies, CEDEX, Spanish Ministry of Public Works (graduate students)
- Co-lecturer, *Master in Water Management and Rivers, Unit V* (2009). Department of Applied Economy, Faculty of Economy, University of Zaragoza (master students)
- Co-instructor, *Microbial Ecology Lab* (2005). Faculty of Sciences, Autonomous University of Madrid (undergraduate students)
- Co-instructor, *Limnology Lab* (2005). Faculty of Sciences, Autonomous University of Madrid (undergraduate students)

HUMAN RESOURCES TRAINING

- Advisor, undergraduate student *Florencia Gantovnik* (2024-2025). School of Exact and Natural Sciences, University of Buenos Aires
- Advisor, undergraduate student *Candela Cepeda* (2024-2025). School of Exact and Natural Sciences, University of Buenos Aires
- Co-director, PhD student *Pablo Calzada* (2023-2027). School of Exact and Natural Sciences, University of Buenos Aires
- Co-director, master student *Juan Ignacio Martínez* (2022-2023). School of Exact and Natural Sciences, University of Buenos Aires
- Advisor, lab researcher *Alejandra Ivetth Pérez Álvarez* (2020-2021). Kernel Mycofoods
- Co-advisor, master student *Kira Sorochkina* (2014-2016). School of Life Sciences, Arizona State University
- Co-advisor, lab technician *Corey J. Nelson* (2013-2015). School of Life Sciences, Arizona State University

HONORS AND AWARDS

- *Ecological Research Award* (2015). The Ecological Society of Japan
- *Second Best Ph.D. Thesis Award* (2012). The Iberian Limnological Society

PROJECTS

1. *Biocrust Genetic Diversity and Climatic Fingerprint* (2025-2026). Centre National de la Recherche Scientifique (AAP-PIB-MITI-BLANC-2025.1), main researcher
2. *Response and Evolution of Aquatic Communities in Extreme Saline Shallow Lakes to Climate Change* (2024-2027). Spanish Ministry of Science, Innovation and Universities (8968146641-146641-4-823), associate researcher
3. *Fertility and Biological Soil Crusts in Drylands: the Effects of Land Use and Climate Change towards a Sustainable Development Goal* (2023-2024). Argentinean Agency for the Promotion of Research, Technological Development and Innovation (PICT 2021-GRF-TI-00137), main researcher

4. *Biological Soil Crusts, the Living Skin of Soils that Alleviates the Effects of Desertification in Drylands: Present and Future Climatic and Land Use Conditions* (2021-2022). Centre National de la Recherche Scientifique (CNRS MITI-AAP-2020), associate researcher
5. *Characterization of a Sector of the Pampean Aquifer with high As concentrations using Hydrogeophysical, Hydrogeochemical and Water Datation Techniques* (2021-2023). Argentinean Agency for the Promotion of Research, Technological Development and Innovation (PICT 04422/2019), associate researcher
6. *Marine Heterotrophic Bacteria: Abundance Global Patterns and Future Scenarios of Global Change* (2018-2021). Argentinean Agency for the Promotion of Research, Technological Development and Innovation (PICT 2017-3020), assistant researcher
7. *Integrating Climate, Biodiversity and the Carbon Cycle*. ECOS-Sud and Argentinean National Research and Technology Council (ECOS-Sud A18ST08), assistant researcher
8. *Impacts of Changes in Precipitation Regimes on the Functioning of Ecosystems in Argentina* (2017-2019). University of Buenos Aires (UBACyT 20020160100139BA), assistant researcher
9. *Land-use Intensification in the Pampean Region under a Global Change Scenario* (2016-2018). Argentinean National Research and Technology Council (CONICET PIP 112-2015-0100709), assistant researcher
10. *The BioDesert Project. Biological Feedbacks and Ecosystem Resilience under Global Change: a new Perspective on Dryland Desertification* (2016-2020). European Research Council (ERC-H2020-EU.1.1-EXCELLENT SCIENCE), assistant researcher
11. *Nutrient and Grazing effects on the Functioning of Flooded Pampean Grasslands: Implications for Production and Conservation* (2014-2017). University of Buenos Aires (UBACyT 20020130100423BA), assistant researcher
12. *Resources and Grazing as Control Factors of the Biodiversity and Functioning in Pampean Grasslands* (2014-2017). Argentinean Agency for the Promotion of Research, Technological Development and Innovation (PICT 2014-2016), associate researcher
13. *Achieving Dryland Restoration through the Deployment of Enhanced Biocrusts to Improve Soil Stability, Fertility and Native Plant Recruitment* (2013-2018). US Department of Defense (SERDP RC02-046), associate researcher
14. *Litter Decomposition in Arid Systems* (2013-2015). US National Science Foundation (NSF DEB-1256129), assistant researcher
15. *Microbial Ecosystem Services: Control of Eutrophication Processes in Mediterranean Continental Waters* (2010-2013). Andalucía Regional Government (P09-RNM-5376), associate researcher
16. *Accumulative Impact of Several Stressors on Trophic Interactions in Aquatic Systems: Solving non-Additive Ecological Surprises* (2008-2012). Spanish Ministry of Science and Innovation (CICYT CGL2008-01127/BOS), associate researcher
17. *Effects of Dams and Reservoirs in the Estuary of the Guadiana River (Huelva, Spain)* (2008-2010). Spanish Ministry of Public Works (CEDEX 44-407-1-003), assistant researcher
18. *Updating of Ecotypes of Continental Water Bodies and Technical Assistance in the Classification of their Ecological Status. Reference Conditions and Characterization of Continental Water Bodies: Rivers, Lakes and Reservoirs* (2008-2012). Spanish Ministry of Public Works (CEDEX 44-407-1-002), associate researcher
19. *Analysis of the Autoecological Information of Biological Indicators and their Response Under Different Scenarios of Climate Change* (2008-2012). Spanish Ministry of Public Works (CEDEX 44-407-1-001), associate researcher
20. *Disturbances in the Ecological Resilience of a Mediterranean Marsh Ecosystem Caused by the Presence of an Alien Species, the American Red Crayfish (*Procambarus clarkii*)* (2006-2009). Spanish Ministry of Education and Science (CICYT CGL2006-14121/BOS), assistant researcher

21. *Management and Conservation Tools for Water Resources in the Area of Doñana Using Wetland Functional Evaluation Techniques* (2002-2006). Spanish Ministry of Science and Technology (CICYT REN2001-1293-C02/HDI), associate researcher
22. *Evaluation of Ecological and Biogeochemical Functions in Wetlands of the Doñana Area (Huelva, Spain)* (2000-2004). Spanish Ministry of Science and Technology (CICYT HID97-0321-C02-01), assistant researcher
23. *Evaluation of Biological and Chemical Quality in Waters and Sediments of the El Raposo Spa (Badajoz, Spain)* (2000-2000). General Foundation of the Autonomous University of Madrid (FUAM 22/01), assistant researcher

PUBLICATIONS

1. F. Spirito, **S. Velasco Ayuso**, P. M. Tognetti, M. S. Campana & L. Yahdjian (2025). Long-term grazing and short-term nutrient addition determine C sequestration in humid grasslands. *Ecosystems, manuscript in preparation*
2. P. Calzada, P. Flombaum, A. M. Godeas, F. M. Ibarbalz, V. Silvani, L. Yahdjian, R. R. Ruscica & **S. Velasco Ayuso** (2025). Biological soil crusts and plants maintain soil surface stability and alleviate desertification: a field approach across Argentinean drylands. *Drylands, manuscript in preparation*
3. **S. Velasco Ayuso**, E. Filippini, A. Navas Romero, E. Mlewski, P. Calzada Giuntini, R. García & I. Garibotti (2025). Discovering a hidden ecological treasure: biological soil crusts of Argentina. *Ecología Austral, 35: 210-235* [pdf]
4. **S. Velasco Ayuso**, G. R. Oñatibia & L. Yahdjian (2024). Soil multifunctionality increases after grazing cessation in semiarid rangelands. *Applied Soil Ecology, 201: 105522* [pdf]
5. F. T. Maestre, Y. Le Bagousse-Pinguet, M. Delgado-Baquerizo, D. J. Eldridge, H. Saiz, M. Berdugo, B. Gozalo, V. Ochoa, E. Guirado, M. García-Gómez, E. Valencia, J. J. Gaitán, S. Asensio, B. J. Mendoza, C. Plaza, P. Díaz-Martínez, A. Rey, Hang-Wei Hu, Ji-Zheng He, Jun-Tao Wang, A. Lehamnn, M. C. Rillig, S. Cesarz, N. Eisenhauer, J. Martínez-Valderrama, E. Moreno-Jiménez, O. Sala, …, **S. Velasco Ayuso**, … (2022). Livestock grazing and ecosystem service delivery in global drylands. *Science, 378: 915-920* [pdf]
6. F. M. Ibarbalz, J. J. Pierella-Karlusich, **S. Velasco Ayuso**, N. Visintini, L. Guidi, C. Bowler & P. Flombaum (2022). Phytoplankton community composition in the SW South Atlantic in the context of the global ocean. *Ecología Austral, 85: 835-848* [pdf]
7. L. Yahdjian, L. Carboni, **S. Velasco Ayuso** & G. R. Oñatibia (2022). Intensification of livestock farming in times of climate change. *Mètode Science Studies Journal, https://doi.org/10.7203/metode.13.21553* [pdf]
8. A. M. Faist, C. J. Tucker, S. C. Reed, A. J. Antoninka, M. A. Bowker, N. N. Barger, K. Dohrenwend, N. Day, S. Bellagamba, J. Belnap, M. C. Duniway, S. Fick, A. M. Giraldo Silva, C. J. Nelson, J. Bethany, **S. Velasco Ayuso** & F. García-Pichel (2020). *Operation Manual for Biocrust Restoration in Drylands*. Wildlife Conservation Society & Doris Duke Charitable Foundation, pp. 37
9. R. Ochoa-Hueso, E. T. Borer, E. W. Seabloom, S. E. Hobbie, A. C. Risch, S. L. Collins, J. Alberti, H. A. Bahamonde, C. Brown, M. Caldeira, P. Daleo, C. R. Dickman, A. Ebeling, N. Eisenhauer, E. Esch, A. Eskelinen, V. Fernández, S. Güsewell, B. Gutiérrez-Larruga, K. Hofmockel, R. Laungani, E. Lind, A. López, R. McCulley, J. Moore, P. Peri, S. A. Power, J. Price, S. M. Prober, C. Roscher, J. Sarneel, M. Schütz, J. Siebert, R. Standish, **S. Velasco Ayuso**, R. Virtanen, G. M. Wardle, G. Wiehl, L. Yahdjian & T. Zamin (2020). Microbial processing of plant remains is co-limited by multiple nutrients in global grasslands. *Global Change Biology, 26: 4572-4582* [pdf]

10. **S. Velasco Ayuso**, A. M. Giraldo Silva, N. N. Barger & F. García-Pichel (2020). Microbial inoculum production for biocrust restoration: testing the effects of common versus native soil on yield and community composition. *Restoration Ecology, 28: 194-202* [pdf]
11. A. M Faist, A. J. Antoninka, J. Belnap, M. A. Bowker, M. C. Duniway, F. García-Pichel, C. J. Nelson, S. C. Reed, A. M. Giraldo Silva, **S. Velasco Ayuso** & N. N. Barger (2020). Inoculum and habitat amelioration efforts demonstrate variable influences on biological soil crust recovery across hot and cold deserts. *Restoration Ecology, 28: 96-105* [pdf]
12. **S. Velasco Ayuso**, G. R. Oñatibia, F. T. Maestre & L. Yahdjian (2020). Grazing pressure interacts with aridity to determine the development and diversity of biological soil crusts in Patagonian rangelands. *Land Degradation and Development, 31: 488-499* [pdf]
13. N. M. Machado de Lima, V. M. C. Fernandes, D. W. Roush, **S. Velasco Ayuso**, J. Rigonato, F. García-Pichel & L. H. Zanini Branco (2019). The compositionally distinct cyanobacterial biocrusts from Brazilian savanna and their environmental drivers of community diversity. *Frontiers in Microbiology, 10: 2798* [pdf]
14. D. W. Roush, A. M. Giraldo Silva, V. M. C. Fernandes, N. M. Machado de Lima, C. J. Nelson, S. McClintock, **S. Velasco Ayuso**, K. Klicki, B. Dirks, K. Sorochkina & F. García-Pichel (2018). Cydrasil: a comprehensive phylogenetic tree of cyanobacterial 16S rRNA gene sequences. *GitHub repository* [link] [pdf]
15. K. Sorochkina, **S. Velasco Ayuso** & F. García-Pichel (2018). Establishing rates of lateral expansion of biological soil crusts for optimal restoration of degraded lands. *Plant and Soil, 429: 199-211* [pdf]
16. **S. Velasco Ayuso**, J. M. Medina-Sánchez, R. Guénon & P. Carrillo Lechuga (2017). Ectoenzyme activity ratios reveal interactive effects of nutrient inputs and UVR in a Mediterranean high-mountain lake. *Biogeochemistry, 132: 71-85* [pdf]
17. **S. Velasco Ayuso**, A. M. Giraldo Silva, C. J. Nelson, N. N. Barger & F. García-Pichel (2017). Microbial nursery production of high-quality biological soil crust biomass for restoration of degraded dryland soils. *Applied and Environmental Microbiology, 83: e02179-16* [pdf]
18. R. Guénon, T. A. Day, **S. Velasco Ayuso** & R. Gros (2017). Mixing Aleppo Pine and Holm Oak litters increases biochemical diversity and alleviates N-limited microbial activities. *Soil Biology and Biochemistry, 105: 216-226* [pdf]
19. Y. Kamarianakis, **S. Velasco Ayuso**, M. E. Cristóbal Rodríguez & M. Toro Velasco (2016). Water temperature forecasting for Spanish rivers by means of nonlinear mixed models. *Journal of Hydrology: Regional Studies, 5: 226-243* [pdf]
20. K. D. Doherty, A. J. Antoninka, M. A. Bowker, **S. Velasco Ayuso** & N. C. Johnson (2014). A novel approach to cultivate biocrusts for restoration and experimentation. *Ecological Restoration, 33(1): 13-16* [pdf]
21. M. E. Cristóbal Rodríguez, **S. Velasco Ayuso**, A. Justel & M. Toro Velasco (2014). Robust optima and tolerance ranges of biological indicators: a new method to identify sentinels of global warming. *Ecological Research, 29: 55-68* [pdf]
22. M. Toro Velasco, **S. Velasco Ayuso** & M. E. Cristóbal Rodríguez (2012). *Impacts of Climate Change on Water Resources and Water Bodies: Study of the Effect of Climate Change on the Ecological Status of Water Bodies*. Technical Report. Center for Hydrographic Studies, CEDEX, Spanish Ministry of Public Works, pp. 520
23. **S. Velasco Ayuso**, A. I. López-Archilla, C. Montes del Olmo & M. C. Guerrero (2011). Regulation and spatiotemporal patterns of extracellular enzyme activities in a coastal, sandy aquifer system (Doñana, SW Spain). *Microbial Ecology, 62: 162-176* [pdf]

24. **S. Velasco Ayuso**, A. I. López-Archilla, C. Montes del Olmo & M. C. Guerrero (2010). Microbial activities in a coastal, sandy aquifer system (Doñana Natural Protected Area, SW Spain). *Geomicrobiology Journal, 27: 409-423* [pdf]
25. M. Toro Velasco, S. Robles, I. Tejero, M. E. Cristóbal Rodríguez, **S. Velasco Ayuso**, J. R. Sánchez González & A. Pujante (2009). Freshwater ecosystems. Group 32. Inland running waters – lotic ecosystems. Ecological types: 1-32 (30 technical files). In VV. AA. *Preliminary Ecological Basis for the Conservation of Habitats of Community Interest in Spain.* Madrid, Spanish Ministry of the Environment, ISBN: 978-84-491-0911-9, pp. 135-554
26. **S. Velasco Ayuso**, M. C. Guerrero, C. Montes del Olmo & A. I. López-Archilla (2009). Spatiotemporal distribution of a microbial community in a coastal, sandy aquifer system (Doñana, SW Spain). *Geobiology, 7: 66-81* [pdf]
27. **S. Velasco Ayuso**, P. Acebes, A. I. López-Archilla, C. Montes del Olmo & M. C. Guerrero (2009). Environmental factors controlling the spatiotemporal distribution of a microbial community in a coastal, sandy aquifer system (Doñana, SW Spain). *Hydrogeology Journal, 17: 767-780* [pdf]
28. A. I. López-Archilla, D. Moreira, **S. Velasco Ayuso** & P. López-García (2007). Archaeal and bacterial community composition of a pristine coastal aquifer in Doñana National Park, Spain. *Aquatic Microbial Ecology, 47: 123-139* [pdf]

ORGANIZATION OF EVENTS IN MEETINGS

1. *Biocrusts in South America: the Importance of a Poorly Known Community in Drylands* (2025). *RAE XXXI Meeting*, Ecological Society of Argentina, National University of Cuyo, Mendoza, Mendoza, Argentina, 5-10 October, symposium

CONTRIBUTIONS TO MEETINGS AND WORKSHOPS

1. **S. Velasco Ayuso** (2025). Biocrusts in Argentina: challenges and opportunities. *RAE XXXI Meeting*, Ecological Society of Argentina, National University of Cuyo, Mendoza, Mendoza, Argentina, 5-10 October, oral presentation
2. C. B. Cepeda, **S. Velasco Ayuso** & P. Fombaum (2025). Historical overview of the study of biocrusts in South America. *RAE XXXI Meeting*, Ecological Society of Argentina, National University of Cuyo, Mendoza, Mendoza, Argentina, 5-10 October, poster
3. **S. Velasco Ayuso**, P. Calzada, F. M. Ibarbalz, R. C. Ruscica, L. Yahdjian, V. Silvani, A. M. Godeas, C. Bowler, A. M. Giraldo Silva & P. Flombaum (2024). Climate determines the structure of biocrusts across a subcontinental scale in Argentina. *BioCrust 5 International Congress*, University of Chihuahua, Chihuahua, Mexico, 4-9 April, oral presentation
4. P. Calzada, V. Silvani, A. M. Godeas, P. Flombaum & **S. Velasco Ayuso** (2023). The importance of biocrusts in the soil surface stability in drylands of Argentina. *XVIII Meeting of the International Center of Earth Sciences*, National University of Cuyo, Malargüe, Mendoza, Argentina, 21-24 November, oral presentation
5. **S. Velasco Ayuso**, J. I. Martínez, A. M. Godeas, F. M. Ibarbalz, V. Silvani, L. Yahdjian, R. C. Ruscica, P. Calzada & P. Flombaum (2023). Climate drives the estructure and functioning of biological soil crusts. *RAE XXX Annual Meeting*, Ecological Society of Argentina, National University of Río Negro, San Carlos de Bariloche, Río Negro, Argentina, 17-20 October, oral communication
6. P. Calzada, **S. Velasco Ayuso**, S. Utge Perri, R. Colombo, Alicia M. Godeas, P. Flombaum & V. Silvani (2023). Interactions among mycorrhizae, vegetation and biological soil crusts and their role in soil surface stability in drylands of Argentina. *XXXIX Argentinean Botanical Meeting,* University of Catamarca, San Fernando del Valle de Catamarca, Catamarca, Argentina, 19-23 September, poster presentation

7. **S. Velasco Ayuso**, J. I. Martínez, P. Calzada, F. Ibarbalz, R. C. Ruscica, L. Yahdjian, V. Silvani, A. M. Godeas, P. Flombaum (2023). Climate drives the structure and functioning of biological soil crusts across large geographical gradients in Argentinean drylands. *III ISME-Lat Congress*, International Society of Microbial Ecology, University of Quilmes, Buenos Aires Province, Argentina, 7-10 August, oral presentation
8. J. I. Martínez, **S. Velasco Ayuso**, R. C. Ruscica, F. Ibarbalz, L. Yahdjian & P. Flombaum (2022). Uncertainties in the carbon flux mediated by biological soil crusts in arid and semiarid ecosystems of Argentina. *XIV Congress of the Argentinean Meteorological Society*, University of Buenos Aires, Buenos Aires, Argentina, 7-11 November, poster presentation
9. **S. Velasco Ayuso**, J. I. Martínez, F. Ibarbalz, R. C. Ruscica, L. Yahdjian & P. Flombaum (2022). Favoring the dialogue between Climatology and Ecology to study biological soil crusts: the SouthSkin project. *XIV Congress of the Argentinean Meteorological Society*, University of Buenos Aires, Buenos Aires, Argentina, 7-11 November, poster presentation
10. A. M. Giraldo Silva, C. Nelson, J. Bethany, **S. Velasco Ayuso**, N. N. Barger & F. García-Pichel (2019). Development and application of inoculum for biological soil crust restoration in drylands. *4th International Workshop on Biological Soil Crusts*, The University of Queensland, North Stradbroke Island (Minjerrabah), Queensland, Australia, 25-30 August, oral communication
11. L. Yahdjian, F. Spirito, S. Campana, **S. Velasco Ayuso**, P. Tognetti, X. López Zieher, N. Weigandt & E. J. Chaneton (2018). Soil carbon storage in grazed grasslands of the Pampas: an ecosystem service. *RAE XXVIII Annual Meeting*, Ecological Society of Argentina, National University of Mar del Plata, Mar del Plata, Buenos Aires, Argentina, 29 October-2 November, oral communication
12. L. Carboni, M. Ciavattini, G. R. Oñatibia, **S. Velasco Ayuso** & L. Yahdjian (2018). Community idiosincrasia determines the grazing impact on vegetation. *RAE XXVIII Annual Meeting*, Ecological Society of Argentina, National University of Mar del Plata, Mar del Plata, Buenos Aires, Argentina, 29 October-2 November, poster presentation
13. **S. Velasco Ayuso**, G. R. Oñatibia, L. Carboni, M. Ciavattini & L. Yahdjian (2018). Grazing reduces biocrusts biomass and cover across a regional aridity gradient in Patagonian rangelands. *RAE XXVIII Annual Meeting*, Ecological Society of Argentina, National University of Mar del Plata, Mar del Plata, Buenos Aires, Argentina, 29 October-2 November, oral communication
14. F. García-Pichel, A. M. Giraldo Silva, **S. Velasco Ayuso**, C. J. Nelson (2017). Bioprospecting for the right cyanobacteria in ecological arid soil restoration. *111th International Phycological Congress*, International Phycological Society, University of Szczecin, Szczecin, Poland, EU, 13-17 August, oral communication
15. L. Yahdjian, F. Spirito, X. M. López Zieher, S. Campana, **S. Velasco Ayuso** & E. J. Chaneton (2017). Seasonal grazing mitigates ecosystem impacts of nutrient additions in wet grasslands of Eastern Argentina. *ESA 102nd Annual Meeting*, Ecological Society of America, Portland, OR, USA, 6-11 August, poster presentation
16. A. M. Faist, A. J. Antoninka, N. N. Barger, J. Belnap, M. A. Bowker, M. C. Duniway, A. M. Giraldo Silva, F. García-Pichel, C. J. Nelson, S. C. Reed & **S. Velasco Ayuso** (2016). Advances in biological soil crusts rehabilitation in North American drylands. *ESA 101st Annual Meeting*, Ecological Society of America, Fort Lauderdale, FL, USA, 7-12 August, oral communication
17. F. García-Pichel, A. M. Giraldo Silva, **S. Velasco Ayuso**, C. J. Nelson & N. N. Barger (2016). Ecological dermatology: products to restore the soil skin of arid lands to its natural state and beauty. *ESA 101st Annual Meeting*, Ecological Society of America, Fort Lauderdale, FL, USA, 7-12 August, oral communication

18. C. J. Nelson, A. M. Giraldo Silva, **S. Velasco Ayuso**, N. N. Barger & F. García-Pichel (2016). Creating the seeds of restoration: two approaches to producing compositionally explicit, location-specific biological soil crusts inoculum. *3rd International Workshop on Biological Soil Crusts*, USGS, Moab, UT, USA, 26-30 September, oral communication
19. N. M. Machado de Lima, **S. Velasco Ayuso**, V. M. C. Fernandes, D. W. Roush, L. H. Zanini Branco & F. García-Pichel (2016). Diversity and ecology of cyanobacteria of biological soil crusts in Brazilian savannah. *3rd International Workshop on Biological Soil Crusts*, USGS, Moab, UT, USA, 26-30 September, oral communication
20. K. S. Sorochkina, **S. Velasco Ayuso** & F. García-Pichel (2016). Biological soil crust dispersal rate. *3rd International Workshop on Biological Soil Crusts*, USGS, Moab, UT, USA, 26-30 September, poster presentation
21. N. M. Machado de Lima, **S. Velasco Ayuso**, V. M. C. Fernandes, D. W. Roush, L. H. Zanini Branco & F. García-Pichel (2016). Diversity and ecology of cyanobacteria of biological soil crusts in the Brazilian savannah. *12th Workshop on Cyanobacteria*, Arizona State University, Tempe, AZ, USA, 19-22 May, poster presentation
22. A. Faist, A. J. Antoninka, C. Nelson, A. Giraldo Silva, **S. Velasco Ayuso**, M. A. Bowker, S. C. Reed, M. Duniway, F. García-Pichel, J. Belnap & N. N. Barger (2016). Biocrust inoculum development and soil stabilization strategies to promote biocrust restoration. *3rd International Workshop on Biological Soil Crusts*, USGS, Moab, UT, USA, 26-30 September, oral communication
23. **S. Velasco Ayuso**, A. M. Giraldo Silva, C. J. Nelson & F. García-Pichel (2016). Restoration in arid lands: can we produce biocrusts in greenhouse facilities? *55th Annual Meeting of the American Society of Microbiology: Arizona/Southern Nevada Branch*, American Society for Microbiology, Tempe, AZ, USA, April 16th, poster presentation
24. **S. Velasco Ayuso**, A. M. Giraldo Silva, C. J. Nelson, N. N. Barger, A. J. Antoninka, M. A. Bowker & F. García-Pichel (2016). Key factors controlling the growth of biological soil crusts: towards a protocol to produce biocrusts in greenhouse facilities. *EGU General Assembly*, European Geophysical Union, Vienna, Austria, EU, 17-22 April, oral communication
25. **S. Velasco Ayuso**, A. M. Giraldo Silva, C. J. Nelson, N. N. Barger, A. J. Antoninka, M. A. Bowker & F. García-Pichel (2015). Key factors controlling the growth of biological soil crusts: a protocol to produce biocrust in greenhouse facilities. *13th Biennial Conference of Science and Management on the Colorado Plateau and Southwest Region*, Northern Arizona University, Flagstaff, AZ, USA, 5-8 October, oral communication
26. **S. Velasco Ayuso**, A. M. Giraldo Silva, C. J. Nelson & F. Garcia-Pichel (2015). Water, light and nutrients contribute to the growth of biological soil crusts: towards a protocol to produce biocrusts in greenhouse facilities. *115th ASM General Meeting*, American Society for Microbiology, New Orleans, LA, USA, May 30-June 2, poster presentation
27. F. García-Pichel, A. J. Antoninka, M. A. Bowker, A.M. Giraldo Silva, **S. Velasco Ayuso**, N. N. Barger, J. C. Belnap, S. C. Reed & M. C. Duniway (2015). Restoring the biological crust cover of soils across biomes in arid North America. *EGU General Assembly*, European Geophysical Union, Vienna, Austria, EU, 12-17 April, oral communication
28. **S. Velasco Ayuso**, J. M. Medina-Sánchez & P. Carrillo Lechuga (2015). Extracellular enzyme activities in response to UVR and C:N:P ratios in a high-mountain lake. *ASLO Aquatic Sciences Meeting*, American Society for Limnology and Oceanography, University of Granada, Granada, Spain, EU, 22-27 February, oral communication
29. A. I. López-Archilla, M. C. Coleto, S. Álvarez, **S. Velasco Ayuso**, S. Molla, M. C. Guerrero, F. Barajas, A. Baltanás, C. Montes del Olmo & P. Alcorlo (2014). Towards a functional model of Santa Olalla shallow lake (aeolian sands of Doñana Natural Area)

through the quantification of matter and energy flows. *Workshop on Research and Management in Doñana*, University of Sevilla, Sevilla, Spain, EU, 6-7 February, poster presentation

30. **S. Velasco Ayuso**, M. E. Cristóbal Rodríguez, M. Peg Cámara & M. Toro Velasco (2010). Effects of climate change on freshwater biological communities: a case study in the Júcar River basin (Spain). *BioFresh Project Workshop (Biodiversity of Freshwater Ecosystems)*, University of Barcelona, Barcelona, Spain, EU, 13-15 October, oral communication
31. M. E. Cristóbal Rodríguez, **S. Velasco Ayuso,** M. Peg Cámara & M. Toro Velasco (2010). Effects of climate change on the variables that control the spatial and temporal distributions of benthic macroinvertebrate communities in Spanish streams. *BioFresh Project Workshop (Biodiversity of Freshwater Ecosystems)*, University of Toulouse, Toulouse, France, EU, 12-14 July, oral communication
32. M. E. Cristóbal Rodríguez, A. Justel, M. Toro Velasco & **S. Velasco Ayuso** (2009). Taxon tolerance and ecological optima in limnological studies. *XII Spanish Conference on Biometry*, Spanish Society for Biometry, University of Cádiz, Cádiz, Spain, EU, 23-25 September, oral communication
33. M. E. Cristóbal Rodríguez, **S. Velasco Ayuso** & M. Toro Velasco (2008). Effects of climate change on the ecological status of water bodies. *Climate Change and Continental Water Bodies Workshop*, Center for Hydrographic Studies, CEDEX, Spanish Ministry of Public Works, Madrid, Spain, EU, October 14th, oral communication
34. M. E. Cristóbal Rodríguez & **S. Velasco Ayuso** (2008). Effects of climate change on the ecological status of water bodies. *Workshop on River Ecology*. Department of Ecology, Faculty of Sciences, Autonomous University of Madrid, Madrid, Spain, EU, 29 February, oral communication
35. M. E. Cristóbal Rodríguez, **S. Velasco Ayuso** & M. Toro Velasco (2008). Fluvial macroinvertebrate autoecology information and climate change. *XIV Conference of the Iberian Limnological Society*, Iberian Limnological Society, University of Huelva, Huelva, Spain, EU, 12-18 September, poster presentation
36. **S. Velasco Ayuso**, M. E. Cristóbal Rodríguez & M. Toro Velasco (2008). Proposal of hydrological variables ecologically relevant in the distribution of fluvial benthic macroinvertebrate communities. *XIV Conference of the Iberian Limnological Society*, Iberian Limnological Society, University of Huelva, Huelva, Spain, EU, 12-18 September, poster presentation
37. **S. Velasco Ayuso**, A. I. López-Archilla, C. Montes del Olmo & M. C. Guerrero (2005). The functional role of the microbial community in the Almonte-Marisma´s aquifer system (Doñana, SW Spain). *ASLO Summer Meeting*, American Society for Limnology and Oceanography, University of Santiago de Compostela, Spain, EU, 19-24 June, poster presentation
38. P. Acebes, **S. Velasco Ayuso**, A. I. López-Archilla, M. C. Guerrero & C. Montes de Olmo (2004). The microbial community in the Almonte-Marisma´s aquifer system (SW Spain). *XII Conference of the Spanish Society for Limnology*, Spanish Society for Limnology, University of Porto, Porto, Portugal, EU, 5-9 July, oral communication
39. **S. Velasco Ayuso**, P. Acebes, A. I. López-Archilla, C. Montes del Olmo & M. C. Guerrero (2003). The microbial community of the Almonte-Marisma´s aquifer system: an ecological overview. *XIX National Conference on Microbiology*, Spanish Society for Microbiology, University of Santiago de Compostela, Spain, EU, 21-25 September, poster presentation
40. **S. Velasco Ayuso**, P. Acebes, A. I. López-Archilla, M. C. Guerrero & C. Montes del Olmo (2003). Hydroecological aspects of the microbial community in the Almonte-Marisma´s aquifer system (Doñana, SW Spain). *Symposium for European Freshwater Sciences*

(SEFS3), Society of European Freshwater Sciences, University of Edinburgh, Scotland, UK, 13-18 July, poster presentation

INVITED ORAL COMMUNICATIONS

1. **S. Velasco Ayuso** (2023). *Climate and Biological Soil Crusts in Argentina*. Research and Development Center for Industrial Fermentations, National University of La Plata, September 15th
2. **S. Velasco Ayuso** (2023). *Climate, Land Use and Biological Soil Crusts: Argentina as a Model*. Department of Biodiversity, Ecology and Evolution. Faculty of Biological Sciences, Complutense University of Madrid, November 22nd
3. **S. Velasco Ayuso** (2023). *Climate, Land Use and Biological Soil Crusts: Argentina as a Model*. Department of Ecology, Faculty of Sciences, Autonomous University of Madrid, September 17th
4. **S. Velasco Ayuso** (2019). *Degradation and Restoration in Drylands: Biological Soil Crusts*. Department of Biodiversity, Ecology and Evolution. Faculty of Biological Sciences, Complutense University of Madrid, November 27th
5. **S. Velasco Ayuso** (2019). *Life in the Depths of the Planet: Aquifers as Ecological Systems*. Institute of Hydrology of Plains, Faculty of Agronomy, National University of the Central Buenos Aires Province, September 3rd
6. **S. Velasco Ayuso** (2018). *Grazing Intensity, not Aridity, Controls the Biomass, Abundance and Type Richness of Biological Soil Crusts in Rangelands of the Patagonian Steppe.* Department of Ecology, Faculty of Agronomy, University of Buenos Aires, May 3rd
7. **S. Velasco Ayuso** (2017). *Biological Soil Crusts: How to Use Them for Restoring Degraded Dryland Soils.* Department of Ecology, Faculty of Agronomy, University of Buenos Aires, June 9th
8. **S. Velasco Ayuso** (2016). *Biological Soil Crusts: a Mantle of Fertility in Arid and Semiarid Regions.* Department of Biology, Faculty of Sciences, Autonomous University of Madrid, September 16th
9. **S. Velasco Ayuso** (2016). *Restoring the Living Skin of the Earth through the Deployment of Cultivated Biological Soil Crusts.* Institute of Botany, Czech Academy of Sciences, University of South Bohemia, April 25th
10. **S. Velasco Ayuso** (2016). *Fitting Models to Data to Understand Ecological Communities over Space and Time.* School of Mathematical and Statistical Sciences, Arizona State University, Tempe, March 28th

OUTREACH ACTIVITIES

1. **S. Velasco Ayuso**, Romina C. Ruscica, Nicolás J. Cosentino (2025). Desertification: a problem that ends up reaching your place. Editorial, December 2025, Bulletin of the Argentinean Ecological Society (link)
2. F. Weyland, **S. Velasco Ayuso**, P. Fergnani, J. Medrano & M. F. Reyes (2025). Times are changing: the scientific vocation in ecology beyond the current context in Argentina. Editorial, September 2025, Bulletin of the Argentinean Ecological Society (link)
3. **S. Velasco Ayuso** (2024). *Biological Soil Crusts: Natural heritage of Lihué Calel NP*. Virtual campus of the Protected Areas Training and Capacity Center (CFyCAP), Argentinean National Park Service (APN), Buenos Aires (link)
4. **S. Velasco Ayuso** (2023). *Introduction to the academic world for high school students (ACAP)*. School of Exact and Natural Sciences, University of Buenos Aires

5. J. I. Martínez, P. Calzada & **S. Velasco Ayuso** (2022). *Biological Soil Crusts at the Geological Scale*. Late Night at Museums, School of Exact and Natural Sciences, University of Buenos Aires
6. J. I. Martínez, P. Calzada & **S. Velasco Ayuso** (2022). *Biological Soil Crusts*. Biology Week, School of Exact and Natural Sciences, University of Buenos Aires (link)
7. P. Flombaum, F. M. Ibarbalz & **S. Velasco Ayuso** (2021). *The Future of the Microbial Unseen World*, Ciencia Hoy 29(174): 41-45 (link)
8. **S. Velasco Ayuso** (2019). *Cover Picture, December 2019 (#213)*. Electronic Monthly Agenda of News in Ecology (AMEN), Ecological Society of Argentina (AsAE) (link)
9. **S. Velasco Ayuso** (2018). *Patagonia: it is Possible to Produce and Preserve Simultaneously?* Press and Outreach Activities Service, Faculty of Agronomy, University of Buenos Aires (link) (link)
10. F. García-Pichel, **S. Velasco Ayuso** & A. M. Giraldo-Silva (2014). *A Microscopic Issue of Unknown Consequences*. The New York Times (link)

ASSISTANCE TO CONFERENCES AND WORKSHOPS

1. *1st Meeting on Arsenic in Pampean Plains*. Institute of Hydrology of Plains, National University of the Central Buenos Aires Province, Azul, Argentina, 4-8 November 2019
2. *Human Health: Challenges and Opportunities in the -Omic Era*. Science Communication Center (C3), CONICET, Autonomous City of Buenos Aires, Argentina, 2 October 2017
3. *12th Biennial Conference of Science and Management on the Colorado Plateau and Southwest Region.* Northern Arizona University, Flagstaff, AZ, USA, 5-8 October 2013
4. *Second International Workshop on Biological Soil Crusts: Biological Soil Crusts in a Changing World*. Complutense University of Madrid, Madrid, Spain, EU, 10-13 June 2013
5. *I Spanish National Conference on Climate Change*. Carlos III University, Getafe, Spain, EU, 25-27 April 2007
6. *Scientific Conference on the Green Project of River Guadiamar: an Answer to the Aznalcóllar Mine Spill*. Autonomous University of Madrid, Madrid, Spain, EU, 20-23 April 2000
7. *The Origin of Species.* La Caixa General Foundation, Alcobendas, Spain, EU, 8-10 March 1999

ASSISTANCE TO COURSES

1. *Applied Programming with R* (2023). Redes-CONICET Learning Center, CABA, Argentina, 18-30 October (80 hours)
2. *Software Carpentry* (2016). European Molecular Biology Laboratory, Heidelberg, Germany, EU, 19-21 September (20 hours)
3. *Analysis of Ecological Data Using R* (2012). General Foundation of The University of Granada, Granada, Spain, EU, 22-26 October (32 hours)
4. *A Short Introduction to R: Data Management, Plots and Regression* (2011). Remedinal-2 Foundation, Autonomous University of Madrid, Madrid, Spain, EU, 24-26 January (9 hours)
5. *Statistical Methods for Quality Control* (2010). CEDEX, Spanish Ministry of Public Works, Madrid, Spain, EU, 13-17 September (20 hours)
6. *II International Course on Multivariate Analysis for the Study of Biological Communities* (2009). Institute of Environmental Hydraulics, University of Cantabria, Santander, Spain, EU, 14-17 September (32 hours)
7. *III International Course on Ecological Modelling* (2008). Catalan Insititute for Agriculture Research, San Carles de la Ràpita, Tarragona, Spain, EU, 10-15 November (50 hours)

8. *Basic Access* (2007). CEDEX, Spanish Ministry of Public Works, Madrid, Spain, EU, 15-19 October (25 hours)
9. *Advanced Excel* (2007). CEDEX, Spanish Ministry of Public Works, Madrid, Spain, EU, 1-11 October (30 hours)
10. *Programming with R* (2007). CEDEX, Spanish Ministry of Public Works, Madrid, Spain, EU, 25-28 September (20 hours)
11. *XIII Course on Applied Limnology: Reservoirs, Wetlands and Rivers* (2007). Center for Hydrographic Studies, CEDEX, Spanish Ministry of Public Works, Madrid, Spain, EU, 26-30 March (35 hours)
12. *Statistical Methods Applied to Environmental Sciences* (2002). Spanish National Museum of Natural History, Madrid, Spain, EU, 24-29 June (32 hours)
13. *Water and Wastewater Quality* (2001-2002). Department of Employment, Regional Government of Madrid, Madrid, Spain, EU, November 2001-February 2002 (250 hours)
14. *Introduction to Techniques and Applications of Remote Sensing in Ecological Sciences* (2001). Spanish National Museum of Natural History, Madrid, Spain, EU, 3-5 December (20 hours)
15. *Introduction and Applications of Geographical Information Systems in Ecological Sciences* (2001). Spanish National Museum of Natural History, Madrid, Spain, EU, 19-30 November (45 hours)

ADDITIONAL INFORMATION

- Member of the Directive Board of the *Argentinean Ecological Society* since 2024
- *Drylands*, Associate Editor since 2023
- *Algal Research, Applied Soil Ecology, Archives of Agronomy and Soil Sciences, Austral Ecology, BioScience, Biogeosciences, Catena, Earth-Sciences Review, Ecosphere, Funcional Ecology, Geomicrobiology, Hydrogeology Journal, Journal of Arid Environments, Journal of Hydrology, Journal of Vegetation Science, Plant and Soil, Rangeland Ecology and Management, Restoration Ecology, Science of the Total Environment* and *Scientific Reports* reviewer
- Member of the *Iberian Ecological Society* (SIBECOL) since 2014
- Member of the *Ecological Society of America* (ESA) since 2016
- Member of the *Argentinean Ecological Society* (AsAE) since 2018

REFERENCES

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- *Ferran García-Pichel*. Professor, School of Life Sciences, Arizona State University. Telephone: +1 480 727 7534, e-mail: ferran@asu.edu
- *Presentación Carrillo Lechuga*. Professor, Department of Ecology, University of Granada. Telephone: +34 958 241 000, e-mail: pcl@ugr.es
- *Manuel Toro Velasco*. Head of the Department of Hydric Environment and Ecology, Center for Hydrographic Studies, CEDEX, Spanish Ministry of Public Works. Telephone: +34 913 358 001, e-mail: manuel.toro@cedex.es

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