

Laureano A. Gherardi

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Academic Background

Ph.D, Biology, 2015, Arizona State University, Arizona, United States
M.Sc, Biology, 2013, Arizona State University, Arizona, United States
B.Sc, Agriculture, 2006, University of Buenos Aires, Buenos Aires, Argentina

Peer Reviewed Publications

- X. Yuan, D. Niu, **L. A. Gherardi**, Y. Liu; Y. Wang and J. Elser 2019. Linkages of stoichiometric imbalances to soil microbial respiration with increasing nitrogen addition: evidence from a long-term grassland experiment. **Soil Biology & Biogeochemistry**. *In Press*
- Franco, A. L. C., **L. A. Gherardi**, C. M. de Tomasel, W. S. Andriuzzi, K. E. Ankrom, E. A. Shaw, E. M. Bach, O. E. Sala, and D. H. Wall. 2019. Drought suppresses soil predators and promotes root herbivores in mesic, but not in xeric grasslands. **Proceedings of the National Academy of Sciences** **116**:12883-12888.
- Gherardi, L. A.**, and O. E. Sala. 2019. Effect of interannual precipitation variability on dryland productivity: A global synthesis. **Global Change Biology** **25**:269-276.
- Crowther, T. W., C. Riggs, E. M. Lind, E. T. Borer, E. W. Seabloom, S. E. Hobbie, J. Wubs, P. B. Adler, J. Firn, **L. A. Gherardi**, N. Hagenah, K. S. Hofmockel, J. M. H. Knops, R. L. McCulley, A. S. MacDougall, P. L. Peri, S. M. Prober, C. J. Stevens, and D. Routh. 2019. Sensitivity of global soil carbon stocks to combined nutrient enrichment. **Ecology Letters** **22**:936-945.
- Corman, J., S. Collins, E. Cook, C. Crenshaw, X. Dong, **L. A. Gherardi**, N. Grimm, R. Hale, T. Lin, J. Ramos, L. Reichmann, and O. Sala. 2019. Foundations and Frontiers of Ecosystem Science: Legacy of a Classic Paper (Odum 1969). **Ecosystems** **22**:1160-1172.
- Petrie, M., D. Peters, J. Yao, D. Burruss, J. Derner, **L. A. Gherardi**, J. Hendrickson, O. E. Sala, P. Starks, and J. Steiner. 2018. Regional grassland productivity responses to precipitation during multi-year above- and below-average rainfall periods: consequences for responses under climate change. **Global Change Biology** **24**:1935-1951.
- Wilcox, K., Z. Shi, **L. A. Gherardi**, N. P. Lemoine, S. E. Koerner, D. L. Hoover, E. Bork, K. Byrne, J. James Cahill, S. L. Collins, S. Evans, A. K. Gilgen, P. Holub, L. Jiang, A. K. Knapp, L. Yahdjian, D. R. LeCain, J. Liang, J. Peñuelas, W. T. Pockman, M. D. Smith, S. R. White, K. Zhu, and Y. Luo. 2017. Asymmetric responses of primary productivity to climate extremes: a synthesis of grassland precipitation manipulation experiments. **Global Change Biology** **23**:4376-4385.
- Gherardi, L. A.** and O. E. Sala. 2015. Enhanced interannual precipitation variability increases plant functional diversity that in turn ameliorates negative impact on productivity. **Ecology Letters** **18**:1293-1300.
- Gherardi, L. A.** and O. E. Sala. 2015. Enhanced precipitation variability decreases grass- and increases shrub-productivity. **Proceedings of the National Academy of Sciences** **112**:12735-12740.
- Sala, O., **L. A. Gherardi**, and D. C. Peters. 2015. Enhanced precipitation variability effects on water losses and ecosystem functioning: differential response of arid and mesic regions. **Climatic Change** **131**:213-227.
- White R.L., Sutton A.E., Salguero-Gómez R., Bray T.C., Campbell H., Cieraad E., Geekiyange N., **Gherardi L.A.**, Hughes A.C., Jørgensen P.S., Poisot T., DeSoto L. & Zimmerman N. 2015. The next generation of action ecology: novel approaches towards global ecological research. **Ecosphere**, **6**, 1-16.

- Jørgensen P.S., Barraquand F., Bonhomme V., Curran T.J., Cieraad E., Ezard T.G., **Gherardi L.A.**, Hayes R.A., Poisot T., Salguero-Gómez R., DeSoto L., Swartz B., Talbot J.M., Wee B. & Zimmerman N. 2015. Connecting people and ideas from around the world: global innovation platforms for Next-Generation ecology and beyond. *Ecosphere* **6** 1-11.
- Yahdjian, L., **L. A. Gherardi**, and O. E. Sala. 2014. Grasses have larger response than shrubs to increased nitrogen availability: a fertilization experiment in the Patagonian Steppe. *Journal of Arid Environments* **102**:17-20.
- Hallett, L. M., J. S. Hsu, E. E. Cleland, S. L. Collins, T. L. Dickson, E. C. Farrer, **L. A. Gherardi**, K. L. Gross, R. J. Hobbs, L. Turnbull, and K. N. Suding. 2013. Biotic mechanisms of community stability shift along a precipitation gradient. *Ecology* **95**:1693-1700.
- Gherardi, L.A.**, O. Sala, and L. Yahdjian. 2013. Preference for different inorganic nitrogen forms among plant functional types and species of the Patagonian steppe. *Oecologia* **173**:1075-1081.
- Cleland, E. E., S. L. Collins, T. L. Dickson, E. C. Farrer, K. L. Gross, **L. A. Gherardi**, L. M. Hallett, R. J. Hobbs, J. S. Hsu, L. Turnbull, and K. N. Suding. 2013. Sensitivity of grassland plant community composition to spatial vs. temporal variation in precipitation. *Ecology* **94**:1687-1696.
- Gherardi, L. A.** and O. E. Sala. 2013. Automated rainfall manipulation system: a reliable and inexpensive tool for ecologists. *Ecosphere* **4**:art18.
- Sala, O. E., **L. A. Gherardi**, L. G. Reichmann, E. Jobbágy, and D. P. C. Peters. 2012. Legacies of precipitation fluctuations on primary production: Theory and data synthesis. *Philosophical Transactions of the Royal Society Series B, Biological Sciences* **367**:3135-3144.
- Yahdjian, L., **L.A. Gherardi**, and O. E. Sala. 2011. Nitrogen limitation in arid-subhumid ecosystems: a meta-analysis of fertilization studies. *Journal of Arid Environments* **75**:675-680.

Submitted Publications

- Gherardi, L.A.**, and O.E. Sala. Global patterns and climatic controls of belowground net carbon fixation. *Nature Communications*. Status: Requested revision 1st round
- Fay, P.A., **L.A. Gherardi**, L. Yahdjian, A.C. Risch, M. Schütz, P.B. Adler, T.E. Huxman, O.E. Sala, E.T. Borer, S. Harpole, E.W. Seabloom, C.A. Arnillas, L. Biederman, M.C. Caldeira, C. Chu, S.L. Collins, P. Daleo, J. Firn, Y. Hautier, R.W. Heckman, K. Kirkman, J.A. Klein, J.M.H. Knops, A. MacDougall, R.L. McCulley, J.W. Morgan, T. Ohlert, P.L. Peri, and M.D. Smith. Nutrient limitation governs the primary productivity-precipitation relationship. *Nature Ecology and Evolution*. Status: Requested revision 1st round
- Sitters J., E.R. Jasper Wubs, E.S. Bakker, T.W. Crowther, P.B. Adler, S. Bagchi, J.D. Bakker, L. Biederman, E.T. Borer, E.E. Cleland, N. Eisenhauer, J. Firn, **L.A. Gherardi**, N. Hagenah, Y. Hautier, S.E. Hobbie, J.M. H. Knops, A.S. MacDougall, R.L. McCulley, J.L. Moore, B. Mortensen, P.L. Peri, S.M. Prober, C. Riggs, A.C. Risch, M. Schütz, E.W. Seabloom, J. Siebert, C.J. Stevens and G.F. (Ciska) Veen. Nutrient availability controls the impact of mammalian herbivores on soil carbon and nitrogen pools in grasslands. *Global Change Biology*. Status: Requested Revision 2nd round
- Bharath, S., E.T. Borer, L. Biederman, D. Blumenthal, P. Fay, **L.A. Gherardi**, J. Knops, A. Leakey, L. Yahdjian, and E.W. Seabloom. Nutrient addition increases grassland sensitivity to droughts. *Ecology*. Status: Requested Revision 2nd round
- Ankrom, K.E., A.L.C. Franco, S.J. Fonte; **L.A. Gherardi**, C. Milano de Tomasel, W.S. Andriuzzi, A. Shaw, O.E. Sala and D.H. Wall. "Ecto- and endoparasitic nematodes differ in response to precipitation across a temporal, but not a spatial gradient". *Oecologia*. Status: In review
- Andriuzzi, W.S., A.L.C. Franco; K.E. Ankrom; S. Cui; C. Milano de Tomasel; P. Guan; **L.A. Gherardi**; O.E. Sala; D.H. Wall. "Body size structure of soil fauna along geographic and temporal gradients of precipitation in grasslands". *Soil Biology and Biogeochemistry*. Status: In review

Extramural Grants

I contributed significantly to the ideas, design and writing of several proposals submitted to different agencies. As a result, successfully funded proposals supported my postdoc position.

2018-23 **Co-author, NSF-LTREB full proposal.** Long-term ecosystem responses to directional changes in precipitation amount and variability in an arid grassland. [PIs: Osvaldo E. Sala and Debra D.C. Peters \$478,000]

2016-19 **Co-author, USDA-NIFA-AFRI grant.** Exotic grass and woody-plant encroachment in Southwestern rangelands: Mechanisms of invasion and opportunities of containment. [PIs: Osvaldo E. Sala and Steve Archer \$500,000]

2015-18 **Co-author, NSF-DEB grant.** Water Availability Controls on Above-Belowground Productivity Partitioning: Herbivory versus Plant Response National Science Foundation. [PIs: Osvaldo E. Sala and Diana H. Wall \$718,935]

Teaching Experience

Human Impacts on Ecosystem Functioning 2015, 2016, 2017, 2018, 2019

Instructor of record, 25-30 advance undergraduate and 1-3 MSc students.
School of Sustainability Arizona State University

General Biology S 2012, S 2013, F 2013

Teaching assistant, three sections of 24 students each.
School of Life Sciences, Arizona State University

Terrestrial Ecology 2018

Guest lecturer, “Climate Change Experiments”

Grassland Ecology 2015

Guest lecturer, “Nitrogen use by grassland plant species”

Ecosystem Ecology 2014

Guest lecturer, “Effects of temporal variability on grassland ecosystems”

Human Impacts on Ecosystems 2010

Teaching assistant, 30 advanced undergraduate students.
Department of Ecology and Evolutionary Biology, Brown University

Mentorship Experience

Gretel Baur (University of San Francisco, REU Summer 2019, Jornada Basin LTER)

Sally Young (University of Texas, Austin, REU Summer 2019, Jornada Basin LTER)

Claire Yager (Montana State University, REU Summer 2019, Jornada Basin LTER)

Marcos Saucedo (Arizona State University, REU Summer 2018, Jornada Basin LTER)

Zoe Bergman (James Madison University, REU Summer 2018, Jornada Basin LTER)

Noah Oas (St. Olaf University, REU Summer 2018, Jornada Basin LTER)

Ernesto Vazquez (Arizona State University, Student helper School year 2017-2018)

Andrew Hallberg (St. Olaf University, REU Summer 2017, Jornada Basin LTER)

Marcos Saucedo (Arizona State University, REU Summer 2017, Konza Prairie LTER)

Alexandra Stettner (Colorado State University, REU Summer 2017, Konza Prairie LTER)

Miranda Vega (Arizona State University, REU Summer 2017, Jornada Basin LTER)

Jake Stoner (Arizona State University, REU Summer 2016, Jornada Basin LTER)

Jennifer Flores (Arizona State University, Student helper 2016-2017)

Alicia Flores (Arizona State University, Student helper 2016-2017)

Invited Seminars

University of California, Berkeley, Department of Environmental Science, Policy, and Management

Climate Variability and Ecosystem Functioning: experimentation, modeling and data synthesis. Host: Albert Ruhi

University of New Mexico, Department of Biology

Precipitation Variability Effect on Ecosystem Functioning: experimentation, modelling and data synthesis from local to global scale. Host: Jennifer Rudgers

National Center for Ecological Analysis and Synthesis

Precipitation Variability Effect on Grassland Ecosystems: from local to global scale.

Host: Lauren M. Hallett

Global Drylands Center

Precipitation variability effect under the pulse reserve paradigm.

Host: Sasha Reed, Scott Collins and Osvaldo Sala.

New Mexico State University, Department of Animal and Range Sciences

Precipitation Variability Effect on Forage Production: experimentation, modelling and data synthesis

Host: Andrés Cibils

New Mexico State University, Department of Animal and Range Sciences

Rangeland Vegetation Measurement Techniques: reconciling forage production and sustainability

Host: Andrés Cibils

Working Groups and Research Coordination Networks

Drought-Net, Research Coordination Network

2017-present

A global Network to assess terrestrial ecosystem sensitivity to drought

National Ecological Observatory Network

2017-present

Integrating NEON ANPP Data with Existing Long-term and Spatially Extensive Data Sets - Providing Context and Testing Theory

National Center for Ecological Analysis and Synthesis

2017-present

Quantifying population and community synchrony across LTER sites

NutNet, Research Coordination Network

2014-present

A Global Research Cooperative to assess the effect of multiple nutrient additions on terrestrial ecosystems

NSF Long-term Ecological Research Network (LTER) cross-site synthesis

2013-2014

Precipitation variability effect on grassland diversity and composition (Participant)

NSF Long-term Ecological Research Network (LTER) cross-site synthesis

2011-2012

Productivity-Diversity-Traits Network (Participant)

Professional activities and service

SEEDS Student Mentor, Mentee: Daimer Castro, University of Puerto Rico

2018- present

Ecological Society of America minority mentoring program

Senior Manager

2017- present

Global Drylands Center, Arizona State University

Subject Matter Editor

2016- present

Ecosphere, Ecological Society of America. Editor in chief: Debra Peters

Working group participant and node for South America International Network of Next Generation Ecologist	2013- present
Asombro Institute for Science Education Contributor on the development of K-12 activities based on current experimental data	2013- 2016
Elected board member International Network of Next Generation Ecologist	2013-2015
Graduate student representative Jornada Basin Long Term Ecological Research	2012-2014
Research and travel grant proposal reviewer Graduate and Professional Student Association.	2011-2014
Ask a Biologist program Writer on ecosystem ecology	2012-2013
Brown University PhD Student in Ecology and Evolutionary Biology	2009-2010
Brown University Research Technician	2008-2009

Intramural Grants

Postdoctoral Research in the Life Sciences Grant. ASU, Research Advancement Office. PI: \$7,500
 Completion RA Award. ASU, School of Life Sciences. PI: \$11,084.50
 Climate Change Science Institute Early Career Award. Oak Ridge National Laboratory. \$500
 Graduate and Professional Student Association. Travel Grant. \$895
 Jornada Basin LTER. Graduate student summer fellowship. \$5700
 Assistance with Facilities Grant. ASU, School of life Sciences. \$1500
 ESA Southwestern Chapter. Travel Award. \$350
 Jornada Basin LTER. Graduate student summer fellowship. \$5000
 Assistance with Facilities Grant. ASU, School of life Sciences. \$1450
 ASU, School of life Sciences. Travel Grant. \$400
 Travel Grant. ASU, Graduate and Professional Student Association. \$475
 Facilities Initiative Grant for Grads. ASU, School of life Sciences. \$1481
 Jornada Basin LTER. Graduate student summer fellowship. \$5000
 Travel Grant. ASU, School of life Sciences. \$400
 Graduate Initiative for Training Grant. ASU, School of life Sciences. \$2500
 Travel Grant. ASU, School of life Sciences. \$400

Supplementary scientific training

Spatial Structures in the Social Sciences (S4) GIS Institute. Dr. Lynn Carlson: DEM and Field data; Dr. Crystal Linkletter: Spatial Analysis, Spatial Statistics; Dr. John Logan: Spatial Analysis, Demography, Research with Spatial/Geography themes; Dr. Rachel Franklin: GIS, Spatial Analysis, Spatial Statistics; Dr. Thomas Stieve: ArcGIS training
R: Computing for Data Analysis. The Johns Hopkins University. Professor: Dr. Roger Peng
Data visualization using R. ESA workshop. Organizer: Dr. Naupaka Zimmerman. Co-organizers: Dr. Andrew Tredennick and Dr. Karthik Ram
Century/DayCent Training Workshop, Colorado State University. Professors: Dr. William Parton, Dr. Cindy Keough, and Dr. Steve DelGrosso

Language proficiency

Spanish: Mother tongue

English: Bilingual

Selected Presentations (*indicates undergraduate mentee)

Cristina Portales-Reyes, Dudley J., Sheppard L.W., Gherardi L.A., Hallett L.M., Castorani M.C.N., Cottingham K.L., Defriez E., Fey S.B., Lany N.K., Reuman D.C., Rypel A., Shoemaker L.G., Suding K.N., Walter J.A., Wang S. and Zhao L. "Parsing resilience to synchronous events in grasslands". 104th Ecological Society of America, Annual Meeting, Louisville, Kentucky, United States. August 2019.

Gherardi, L.A., Sala, O.E., Currier, C.M., Franco, A.L.C. and Wall D.H. "Spatial and temporal controls of water availability on the partitioning of above-belowground productivity". 104th Ecological Society of America, Annual Meeting, Louisville, Kentucky, United States. August 2019.

André L.C. Franco, Cecilia M. de Tomasel, Walter S. Andriuzzi, Katharine E. Ankrom, Elizabeth M. Bach, Laureano A. Gherardi, Osvaldo E. Sala and Diana H. Wall. "Root herbivory controls the effects of precipitation on above-belowground grass biomass partitioning: a greenhouse study". 104th Ecological Society of America, Annual Meeting, Louisville, Kentucky, United States. August 2019.

Lawrence W. Sheppard, Cristina Portales-Reyes, Joan Dudley, Laureano Gherardi, Daniel C. Reuman, Kathryn L. Cottingham, Andrew Rypel and Lauren M. Hallett. "Community synchrony in diverse ecosystems may compromise the portfolio effect of species diversity". 104th Ecological Society of America, Annual Meeting, Louisville, Kentucky, United States. August 2019.

Gherardi, L.A. and Sala, O.E. "Precipitation controls above-belowground partitioning of net primary production across biomes". LTER All Scientists Meeting, Monterrey, California, 2018.

***Sauceda, M.**, Gherardi, L.A. and Sala, O.E. "Calibrating minirhizotron estimates of belowground productivity in North American grasslands". LTER All Scientists Meeting, Monterrey, California, 2018.

***Bergmann, Z.**, Gherardi, L.A. and Sala, O.E. "Precipitation event size controls on soil respiration in the Chihuahuan Desert LTER". All Scientists Meeting, Monterrey, California, 2018. **Poster competition award winner!**

***Castro Vega D.**, Glanville K. "Impact of changing rainfall patterns on denitrification nitrous oxide reductase lag". 103rd Ecological Society of America, Annual Meeting, New Orleans, Louisiana, United States. August 2018.

Gherardi, L.A. and Sala, O.E. "Precipitation controls above-belowground partitioning of net primary production across biomes". 103rd Ecological Society of America, Annual Meeting, New Orleans, Louisiana, United States. August 2018.

Gherardi, L.A., Sala, O.E., Currier A.M., Franco, A.C., and Wall, D. "Partitioning of above-belowground productivity: Spatial and temporal controls of water availability". 102nd Ecological Society of America, Annual Meeting, Portland, Oregon, United States. August 2017.

Gherardi, L.A., Sala, O.E. and Peters, D. "Effects of contrasting rooting distribution patterns on plant transpiration along a precipitation gradient". 101st Ecological Society of America, Annual Meeting, Fort Lauderdale, Florida, United States. August 2016.

Gherardi, L.A. and Sala, O.E. "Contrasting plant-functional type responses to increased interannual precipitation variability". 100th Ecological Society of America, Annual Meeting, Baltimore, Maryland, United States. August 2015.

Gherardi, L.A. and Sala, O.E. "Effects of interannual precipitation variability on plant-species diversity in the Chihuahuan desert". 99th Ecological Society of America, Annual Meeting, Sacramento, California, United States. August 2014.

Gherardi, L.A. and Sala, O.E. "Effects of interannual precipitation variability on plant-species diversity in the Chihuahuan desert". 98th Ecological Society of America, Annual Meeting, Minneapolis, Minnesota, United States. August 2013.

Gherardi, L.A. and Sala, O.E. "Effects of interannual precipitation variability on aboveground net primary production in the Chihuahuan desert". 97th Ecological Society of America, Annual Meeting, Portland, Oregon, United States. August 2012.

Hallett, L.M., Cleland, E.E., Adler, P.B., Collins, S.L., Dickson, T.L., Farrer, E.C., Gherardi, L.A., Gross, K.L., Hsu, J., Turnbull, L., Suding, K.N. "Compensatory dynamics increase along a gradient of precipitation variability in US grasslands". 97th Ecological Society of America, Annual Meeting, Portland, Oregon, United States. August 2012.

Sala, O.E., Gherardi, L.A. and Peters, D. "Effects of Interannual Precipitation Variability on Ecosystem Water Balance and its Consequences for Aboveground Net Primary Production". 97th Ecological Society of America, Annual Meeting, Portland, Oregon, United States. August 2012.

Gherardi, L.A. and Sala, O.E. "Automated Rainfall Manipulation System: a reliable, and inexpensive, tool for experimental ecologists". 96th Ecological Society of America, Annual Meeting, Austin, Texas, United States. August 2011.

Yahdjian, L., Gherardi, L.A. and Sala, O.E. "Grasses and shrubs had different responses to nitrogen fertilization in the arid Patagonian Steppe". 96th Ecological Society of America, Annual Meeting, Austin, Texas, United States. August 2011.

Sala, O. E., Gherardi, L., Peters, D., Knapp, A. and Huang, H. Ecosystem sensitivity to climate warming: A modeling approach. 95th Ecological Society of America, Annual Meeting, Pittsburg, Pennsylvania, United States. August 2010.

Fuchs, M.S., Sala, O.E., Reichmann, L.G., Gherardi, L.A. and Easter, S. Direct and indirect effects of precipitation on soil respiration in an arid ecosystem. 95th Ecological Society of America, Annual Meeting, Pittsburg, Pennsylvania, United States. August 2010.

Easter, S., Sala, O. E., Reichmann, L.G., Fuchs, M.S. and Gherardi, L.A. Past rainfall and drought legacies do not drive patterns in belowground productivity in Southern New Mexico. 95th Ecological Society of America, Annual Meeting, Pittsburg, Pennsylvania, United States. August 2010.

Yahdjian, L., Gherardi, L.A. and Sala O.E. Plant responses to nitrogen fertilization in water-limited ecosystems: A meta-analysis. 94th Ecological Society of America, Annual Meeting, Albuquerque, New Mexico, United States. August 2009.

Gherardi, L. A., Sala O.E. and Yahdjian L. Differential plant preferences for inorganic nitrogen forms in the Patagonian steppe. 93rd Ecological Society of America, Annual Meeting, Milwaukee, Wisconsin, United States. August 2008.