

Walter S. Andriuzzi, Ph.D.

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RESEARCH INTERESTS

I seek to understand how ecological communities respond to environmental conditions and how they contribute to ecosystem functioning. My research to date has focused on soil fauna and above-belowground linkages, but I am driven more by ecological questions than by taxa. Much of my work builds on the analysis of abundance, diversity, and functional traits in communities. Key areas in which I have published include: how soil biota in the Antarctic Dry Valleys are affected by climate change; the effects of mammalian herbivores on abundance and traits of soil organisms; and the role of earthworms in regulating soil functioning and plant growth.

PROFESSIONAL EXPERIENCE

Postdoctoral researcher

July 2015 – June 2018*

Wall Lab, Department of Biology, and School of Global Environmental Sustainability, Colorado State University, USA

My primary tasks were to lead research on Antarctic soil fauna, contribute to experiments on climate change in grasslands, and oversee field work preparations and be the point of contact with the logistical support staff in Antarctica for the McMurdo Dry Valleys LTER Soils team.

* Visiting scientist from July to December 2018

Doctoral researcher

Sept 2011 – June 2015

School of Agriculture & Food Science, University College Dublin, Ireland (2011-2013);

Department of Soil Quality, Wageningen University, the Netherlands (2013-2015)

Joint doctoral degree at University College Dublin and Wageningen University within FP7 project EcoFINDERS. I studied the effects of earthworms on carbon and nitrogen cycling, soil hydrology, plant growth, and microfauna.

EDUCATION

Ph.D. Soil Ecology (2015)

Wageningen University, The Netherlands and University College Dublin, Ireland (double institution degree). Dissertation on the ecological functions of earthworms in soil

Master of Research Ecology & Environmental Sustainability, with Distinction (2011)

University of Aberdeen, United Kingdom. Dissertation on the responses of soil nematode trophic structure to grazing exclusion and nutrient enrichment

M.Sc. and B.Sc. in Natural Sciences, both *cum laude* (2009, 2007)

University of Naples Federico II, Italy

PEER-REVIEWED PUBLICATIONS

2018

Andriuzzi WS, Wall DH. Soil biological responses to, and feedbacks on, trophic rewilding. *Philosophical Transactions B* 373, 1761

Andriuzzi WS, Wall DH. Grazing and resource availability control soil nematode body size and abundance-mass relationship in semi-arid grassland. *Journal of Animal Ecology* 87, 1407-1417

Andriuzzi WS, Stanish LF, Simmons BL, Jaros C, Adams BJ, Wall DH, McKnight DM. Spatial and temporal patterns of microbial mats and associated invertebrates along an Antarctic stream. *Polar Biology* 41, 1911-1921

Andriuzzi WS, Adams BJ, Barrett JE, Virginia RA, Wall DH. Observed trends of soil fauna in the Antarctic Dry Valleys: early signs of shifts predicted under climate change. *Ecology* 99, 312-321

Guan P, Zhang X, Yu J, Cheng Y, Li Q, **Andriuzzi WS**, Liang W. Soil microbial food web channels associated with biological soil crusts in desertification restoration: The carbon flow from microbes to nematodes. *Soil Biology & Biochemistry* 116, 82-90

2017

Knox MA, **Andriuzzi WS**, Buelow HN, Takacs-Vesbach C, Adams BJ, Wall DH. Decoupled responses of soil bacteria and their invertebrate consumer to warming, but not freeze-thaw cycles, in the Antarctic Dry Valleys. *Ecology Letters* 20, 1242-1249

Andriuzzi WS, Pulleman MM, Cluzeau D, Pérès G. Comparison of two widely used sampling methods in assessing earthworm community responses to agricultural intensification. *Applied Soil Ecology* 119, 145-151

Andriuzzi WS, Wall DH. Responses of belowground communities to large aboveground herbivores: meta-analysis reveals biome-dependent patterns and critical research gaps. *Global Change Biology* 23, 3857-3868

Franco ALC, Knox MA, **Andriuzzi WS**, de Tomasel CM, Sala OE, Wall DH. Nematode exclusion and recovery in experimental soil microcosms. *Soil Biology & Biochemistry* 108, 78-83

2016

De Rosa D, **Andriuzzi WS**, Di Febbraro M. Breeding habitat selection of the Black Woodpecker *Dryocopus martius* L. in Mediterranean forests. *Avocetta* 40, 63-69

Andriuzzi WS, Ngo PT, Geisen S, Keith AM, Dumack K, Bolger T, Bonkowski M, Brussaard L, Faber JH, Chabbi A, Rumpel C, Schmidt O (2016) Organic matter composition and the protist and nematode communities around anecic earthworm burrows. *Biology and Fertility of Soils* 52, 91-100

2015

Andriuzzi WS, Schmidt O, Brussaard L, Faber JH, Bolger T (2015) Earthworm functional traits and interspecific interactions affect plant nitrogen acquisition and primary production. *Applied Soil Ecology* 104, 148-156

Andriuzzi WS, Pulleman MM, Schmidt O, Faber JH, Brussaard L (2015) Anecic earthworms (*Lumbricus terrestris*) alleviate negative effects of extreme rainfall events on soil and plants in field mesocosms. *Plant and Soil* 397, 103-113

2014

Andriuzzi WS, Schmidt O (2014) Production of rabbit dung triple-labelled with C, N and S stable isotopes. *Pedobiologia* 57, 155-160

2013

Andriuzzi WS, Keith AM, Bardgett RD., van der Wal R (2013) Soil nematode assemblage responds weakly to grazer exclusion on a nutrient-rich seabird island. *European Journal of Soil Biology* 58, 38-41

Andriuzzi WS, Bolger T, Schmidt O (2013) The drilosphere concept: Fine-scale incorporation of surface residue-derived N and C around natural *Lumbricus terrestris* burrows. *Soil Biology & Biochemistry* 64, 136-138

BOOK CHAPTERS

Sitters J, **Andriuzzi WS**. Impacts of browsing and grazing ungulates on soil biota and nutrient dynamics. Book: *The Impacts of Grazing and Browsing* (eds. Gordon IJ, Prins HHT), in production
Van Gestel N, Natali S, **Andriuzzi WS**, Chapin III FS, Ludwig S, Moore J, Pressler Y, Salmon V, Schuur T, Shaver G, Simpson R, Wall DH. Long-term warming research in high-latitude ecosystems: Responses from polar ecosystems and implications for future climate. Book: *Ecosystem Consequences of Soil Warming* (ed. Mohan JE), in production

PRESENTATIONS AT SCIENTIFIC CONFERENCES

Andriuzzi WS, Adams BJ, Takacs-Vesbach C, Wall DH (2018) *Does warming enhance top-down control in an Antarctic soil food web?* British Ecological Society Annual Meeting 2018, Birmingham, UK (talk)

Andriuzzi WS, Wall DH (2017) *Soil invertebrate biodiversity response to climate change in the Antarctic Dry Valleys*. Entomological Society of America Annual Meeting 2017, Denver, USA (invited talk)

Andriuzzi WS, Wall DH (2017) *Responses of the soil community to mammalian herbivores: how close are we to a global predictive framework?* Ecological Society of America 102nd Annual Meeting, Portland, USA (talk)

Andriuzzi WS, Adams BJ, Barrett JE, Virginia RA, Wall DH (2017) *Observed soil animal community dynamics support predictions of climate change effects in the McMurdo Dry Valleys*. XII Scientific Committee for Antarctic Research Biology Symposium, Leuven, Belgium (talk)

Andriuzzi WS (2016) *Traits, species or functional groups: biological shortcuts to ecosystem functions and services*. Farewell symposium upon the retirement of Prof. Lijbert Brussaard, Wageningen University, The Netherlands (invited talk)

Andriuzzi WS, Knox MA, Adams BJ, Wall DH (2016) *Consequences of altered freeze-thaw cycle frequency on the dominant soil invertebrate in the McMurdo Dry Valleys*. Scientific Committee on Antarctic Research Conference, Kuala Lumpur, Malaysia (talk)

Franco ALC, Knox MA, **Andriuzzi WS**, Tomasel CM, Wall DH (2016) *Nematode exclusion and recolonization for experimental soil microcosms*. Ecological Society of America 101st Annual Meeting, Fort Lauderdale, USA (poster)

Knox MA, **Andriuzzi WS** (speaker), Adams BJ, Wall DH (2016) *Response of an Antarctic soil invertebrate to warming and freeze-thaw cycles*. Ecological Society of America 101st Annual Meeting, Fort Lauderdale, USA (talk)

Andriuzzi WS, Pulleman MM, Schmidt O, Faber JH, Brussaard L (2014) *Can deep-burrowing earthworms counteract the effects of extreme rainfall events on soil and plants?* Netherlands Annual Ecology Meeting, Lunteren, the Netherlands (poster)

Faber J, Pérès G, de Groot A, Krogh PH, Suhadolc M, Jaensch J, Keith AM, Schmidt O, **Andriuzzi WS**, Chabbi A (2014) *Impact of agricultural extensification on the relation between soil biodiversity and ecosystem services (soil structure maintenance, water regulation)*. 1st Global Soil Biodiversity Conference, Dijon, France (poster)

Andriuzzi WS, Pulleman MM, Schmidt O, Faber JH, Brussaard L (2014) *Can deep-burrowing earthworms counteract the effects of extreme rainfall events on soil and plants?* 1st Global Soil Biodiversity Conference, Dijon, France (poster)

Andriuzzi WS, Ngo P, Rumpel C, Bolger T, Faber JH, Brussaard L, Schmidt O (2014) *Earthworm functional diversity affects organic matter incorporation in soil, plant N acquisition and plant growth*. 10th International Symposium on Earthworm Ecology, Athens (GA), USA (talk)

SELECTED GRANTS AND AWARDS

2017: Recipient of National Science Foundation travel award for the XII Scientific Committee for Antarctic Research Biology Symposium

2016: Recipient of National Science Foundation travel award for the Scientific Committee for Antarctic Research Conference

2013: Recipient of “Ulysses” Research Programme grant, Irish Research Council (proposal titled “Interactions of earthworms and soil organic matter”)

2012: Summer Soil Institute Course, Colorado State University

2012: PhD Project Proposal “Digging deeper: unravelling the role of earthworms in soil macropore structure, water infiltration and carbon and nutrient retention”, C. T. De Wit Graduate School for Production Ecology & Resource Conservation, Wageningen University

REVIEWER

Journals: Soil Biology and Biochemistry; Agriculture, Ecosystems & Environment; Applied Soil Ecology; Biology and Fertility of Soils; Ecology; Ecosystems; Environmental Research Letters; European Journal of Soil Science; Functional Ecology; Geoderma; Global Change Biology Bioenergy; Proceedings of the National Academy of Sciences (co-reviewer); Scientific Reports; Ecology and Evolution; Trends in Plant Science; Journal of Animal Ecology

Proposals: National Antarctic Research Program, Italy (PRNA)

TEACHING AND MENTORING

2017: Co-instructor for “Soil Ecology in the Anthropocene” (ECOL 592 Interdisciplinary Seminar), organized by Prof. Diana Wall, Colorado State University

2017: Guest lecturer for “Soil Microbiology” (SOCR 455), Colorado State University

2017: Student presentation judge, “Soil Ecology Society Meeting”, Colorado State University

2017: Student presentation judge, 23rd annual “Front Range Student Ecology Symposium”, Colorado State University

2016: Guest lecturer for MSc degree class “Soil Ecology” (SOCR441), organized by Prof. Mary Stromberger and Prof. Francesca Cotrufo, Colorado State University

2014: Co-supervisor of BSc student Rosanne Michielsen (“Earthworms in European temperate agricultural systems”), Wageningen University, the Netherlands

2013-2014: Tutorials in data analysis with R for the “R Users Group”, Wageningen University, the Netherlands

2012-2013: Teaching Assistant for Dr. Barry McMahon, MSc degree class “Data analysis for biologists”, University College Dublin, Ireland

OUTREACH AND EDUCATION ACTIVITIES

20/11/2018: Invited lecture, “Fauna del suolo e cambiamenti globali – un racconto attraverso tre continenti”, Università degli Studi della Campania Luigi Vanvitelli, Caserta, Italy

2015–2018: Antarctic Lecture Series coordinator, School of Global Environmental Sustainability, Colorado State University

2017: Guest writer for the Global Soil Biodiversity Initiative blog

(<http://blog.globalsoilbiodiversity.org>, posts dated 5 April and 7 April 2017)

2016–2018: Guest writer for Prof. Diana Wall’s lab blog, <https://nemablog.wordpress.com/>

18/04/2016: Invited Speaker, “What happens to soil fauna under climate change?”, 4th Annual Ignite Biodiversity, School of Global Environmental Sustainability, Colorado State University

09/03/2015: Invited Speaker, “In a hole in the ground there lived an earthworm”, Opening symposium, 97th anniversary of Wageningen University, The Netherlands

01/12/2009 – 01/06/2010: Secondary School Amalfi-Massa, Piano di Sorrento, Italy. I taught a soil ecology laboratory course to middle secondary school students, which included soil sampling, identification of invertebrates, and use of a biotic indicator of soil quality.

OTHER MEETINGS ATTENDED

2017: Ecology of Soil Health Summit and The Soil Ecology Society Meeting, Colorado State University

2016: NSF workshop “Environmental Assessment of the McMurdo Dry Valleys: Witness to the Past and Guide to the Future”, Fort Collins, CO, USA

2015: Ecological Society of America annual meeting, Baltimore, MD, USA

2014: 4th Annual EcoFINDERS general meeting, INRA, Dijon, France

2014: 3rd Annual EcoFINDERS general meeting, Manchester, UK

2013: Soil biodiversity and regulation of soil structure and water infiltration, EcoFINDERS working meeting, Flörsheim, Germany

2012: 2nd Annual EcoFINDERS general meeting, Wageningen, The Netherlands

2011: 1st Annual EcoFINDERS general meeting, Coimbra, Portugal

2011: Wageningen Conference on Applied Soil Science, Wageningen, The Netherlands

PROFESSIONAL MEMBERSHIP

Global Soil Biodiversity Initiative (GSBI)

Ecological Society of America (ESA)

British Ecological Society (BES)

Soil Ecology Society

Association of Early Career Polar Scientists (APECS)