

SILVANA MUNZI

Centre for Ecology, Evolution and Environmental Changes (cE3c)
Faculdade de Ciências da Universidade de Lisboa
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CURRENT POSITION: Researcher Assistant at the Universidade de Lisboa (Portugal)

I'm a biologist, working on lichens since 1997. Since then, I'm attending regularly national and international conferences, workshops and updating courses on several aspects of lichen symbiosis.

Firstly, I was focused on lichen systematic, collecting samples and taking care of the herbarium in the University of Roma Tre (Italy). I've also worked on molecular interactions between algal and fungal partners. Then, I started studying lichens as bioindicators and bioaccumulators. Argument of my degree thesis was the use of epiphytic lichens as biomonitors of environmental quality in Rome, and I took part in several biomonitoring surveys in different Italian regions. In 2005-2006, I spent some months in Crete (Greece), working on the effects of nitrogen excess on lichens. After that, I obtained a PhD scholarship in the University of Siena, where I developed my research on eco-physiological parameters in lichens under nitrogen stress. During my PhD, I spent 6 months at the University of Lisbon (Portugal) to deepen some physiological aspects of lichens-nitrogen interaction.

After that, I've been involved in several projects focused on the impact of nitrogen on lichens and I worked for two years at the University of Lisbon as a Marie Curie fellow investigating the mechanisms of nitrogen tolerance/sensitivity in lichens. Currently I'm Assistant Researcher at the same institution.

My research is now focused on the study of symbiotic systems, namely lichens and mycorrhizas, from a molecular and physiological point of view, aiming at understanding the mechanisms responsible for their ability to cope with environmental stresses. I also work on biomonitoring (pollution, climatic change, nitrogen stress) with a focus on urban environment.

EDUCATION

April 9, 2010 - PhD degree (*Doctor Europaeus*) in Environmental Science at the Scuola Superiore S.Chiera, University of Siena with the thesis "Sensitive organisms (lichens) as monitors of biological effects of nitrogen pollution".

July 14, 2003 - Laurea in Biology (110 cum laude) at the University of Roma Tre with the thesis "Biomonitoring of lichens diversity in Rome as air quality indicator".

SCHOLARSHIPS RECEIVED

April 2012-March 2014 - Marie Curie Intra-European Fellowship for the project "REAL TUNE - Role of enzymatic activity in lichen tolerance under nitrogen stress" promoted by European Commission

December 2011- February 2012 - Post-Doc scholarship under the framework "Modelação da Estrutura e Diversidade Funcional do Ecosistema como indicadores de alerta-precoce de Desertificação e Degradação do Solo – do nível regional para o local", (PTDC/AAC-CLI/104913/2008) promoted by the University of Lisbon

2010 – 2011 - Scholarship for the research "Estimated relapse of trace metal with LDI and bioaccumulation in lichen thalli". Promoted by the University of La Tuscia, Viterbo

2009 - Erasmus Scholarship. Promoted by the European Union and the University of Siena

2006-2009 - PhD Scholarship in the University of Siena. Promoted by the Italian Ministry of Education

2006 - Scholarship "Research in Italy and in foreign countries". Promoted by the University of Roma Tre (Rome, Italy)

2005 - Scholarship under the framework “Pythagoras II – Investigation of possible relationships between genetic diversity and abundance-distribution patterns of endemic plant species in Mediterranean Ecosystems”, supported by Educational Ministry of Greece and European Community

WORKSHOPS AND TRAINING COURSES

- 31 January 2019 – Training session about the platform CIÊNCIAVITAE, Universidade de Lisboa
- 14 December 2018 – Training session about the funding program FETOpen, Enspire Science, Universidade de Lisboa
- 12 December 2018 - Training session about the funding program ERC, Enspire Science, Universidade de Lisboa
- 28-29 June 2018 – Workshop with the working group for biomonitoring of the Italian Lichen Society for the definition of a standard protocol for bioaccumulation using lichens.
- 9 May 2018 – Workshop of presentation and public discussion of the FCT agenda for research and innovation “Agroalimentar, florestas e biodiversidade”, INIAV, Oeiras (Portugal).
- 12-13 April 2018 – Workshop with the working group for biomonitoring of the Italian Lichen Society for the definition of a standard protocol for bioaccumulation using lichens.
- 28 March 2018 – “Nitrogen Cycle Workshop – Biochemistry, Environmental Impacts and Biotechnological Applications”, Universidade Nova de Lisboa.
- 21 March 2018 – “Formação Scopus” and “SciVal essentials” with Scopus and Elsevier consultants, Universidade de Lisboa.
- 18-19 January 2018 – Workshop with the working group for biomonitoring of the Italian Lichen Society for the definition of a standard protocol for bioaccumulation using lichens.
- 9 October 2017 - Workshop “Nitrogen in soil, water and GHG” under the project NitroPortugal, Évora (Portugal).
- 19-28 February 2017 – Short term mission at the Centre for Ecology and Hydrology, Edinburgh, Scotland, to learn the AMFIA method for ammonia determination under the project NitroPortugal.
- 20 October 2016 - 1ª Colégio F3 - Food, Farming and Forestry annual conference “Produção e consumo de leguminosas: un passado com futuro?”, Universidade de Lisboa (Portugal).
- 10-14 October 2016 – 3rd GreenInUrbs Training School “From Brownfields to Green infrastructure and urban forests”, organized by the COST Action GreenInUrbs, Duisburg (Germany).
- 22 September 2016 - “Vamos à Fava! Leguminosas em Letras”, organized by the “Colégio F3 - Food, Farming and Forestry”, Lisbon (Portugal).
- 14 October 2015 - Mini-Curso de Microscopia Electrónica de Bancada, organized at the Universidade de Lisboa by Scansci – Equipamentos de Laboratório, Lda, Lisbon (Portugal).
- 7 October 2015 – Seminar “Horizonte 2020 Aspectos Legais e Financeiros”, Universidade de Lisboa (Portugal).
- 13 February 2015 - Workshop “LTsER Montado”, Universidade de Lisboa (Portugal).
- 24-28 November 2014 – Advanced course “R without fear: an R course in evolutionary ecology” organized by CBA at the Universidade de Lisboa (Portugal) and directed by Dr Jordi Moya-Laraño (Estación Experimental de Zonas Áridas - CSIC).
- 17 July 2014 – Workshop “Science in2 Business” organized by Tec Labs – centro de inovação, Campus da FCUL, Universidade de Lisboa (Portugal).
- 3 April 2014 - Porque devemos preservar a biodiversidade? Uma análise etica da conservação, Universidade de Lisboa (Portugal).
- 25 February 2014 – COST ES1104 Workshop on Desertification & Restoration, Universidade de Lisboa, Lisbon (Portugal).
- 8 October 2013 – “Strategies to increase the quality and the impact of scientific publications” organized by Elsevier and the Universidade de Lisboa, Lisbon (Portugal).
- 22-24 May 2013 – Studied techniques of mycobiont isolation with Prof. Peter Crittenden, University of Nottingham (UK).
- 15-19 February 2013 – International “Training course in meta-analysis and systematic reviews” organized by CBA at the Universidade de Lisboa (Portugal) and directed by Prof. Dr Jessica Gurevitch (University of New York).

- 19-21 November 2012 – International course “Downscaling isoscapes to community level” held at the University of Lisbon (Portugal).
- 10-15 September 2012 - International workshop “Ecophysiology Techniques Workshop” organized by the British Ecological Society and Society for Experimental Biology and held in Lisbon (Portugal).
- 17 December 2011 – International Meeting on the development of “Urban and peri-urban Forestry Guidelines for Mediterranean region” organized by FAO and the Italian Academy of Forest Science and held in Florence (Italy).
- 16 December 2011 – International workshop “Guidelines and common routes for the future challenges of Urban and Peri-urban forests in Mediterranean cities” and held in Florence (Italy).
- 24-27 January 2011 – Training course “Introduction to geometric morphometrics applied to botany” held in Isernia (Italy) and organized by the University of Molise.
- 22-26 June 2009 - Workshop “Towards an international standard for lichen monitoring – what’s the application problems?” held in Monterotondo Marittimo (Grosseto, Italy) and organized by TerraData.
- 14-16 November 2008 - Training course on lichen genus *Anaptychia* Körb., *Heterodermia* Trevis., *Phaeophyscia* Moberg, *Physcia* (Schreb.) Michx. and *Physconia* Poelt with Prof. R. Moberg (University of Uppsala) and organized by Bryolich, Swiss Association of briology and lichenology.
- 29-30 November 2007 - Meeting of the Italian Lichenological Society working group for biomonitoring “Determination of Biological Index of Epiphytic Lichens”, held in Foiano della Chiana (Arezzo, Italy).
- 28-30 June 2007 – Meeting on intercalibration of instruments used to measure photosynthetic activity, held in Passo Pura (Udine, Italy) and organized by the University of Florence.
- 10-16 June 2007 - “*Bacidia* and *Micarea*” workshop held by Brian Coppins and organized by the British Lichen Society in the Dunstaffnage Marine Laboratory, Oban (Scotland).
- 27-28 October 2006 - Participant in the scientific meeting of the working groups for Floristics, Nature Conservancy and Micology of the Italian Botanical Society on “Implementation in Italy of categories and criterion IUCN (2001) for new red lists creation”, held in Rome.
- 12-16 June 2006 - Training course “The use of lichens in environmental biomonitoring surveys”, held in Candriai (Trento, Italy) and organized by the Italian Lichen Society, Botanical Society and Istituto Agrario di San Michele all’Adige.
- 12 -13 November 2005 - Workshop “The genus *Usnea* in Switzerland” organized by the Swiss Association of Bryology and Lichenology (Bryolich) in Lugano and directed by Philippe Clerc.
- 16-17 March 2005 - Seminar “L’immagine... svelata... - Fluorescence Microscopy in Life Science and not: from the acquisition to the restitution”, organized by the Electronic Microscopy Center (Ce.M.E.) of CNR in Sesto Fiorentino (Firenze, Italy)
- 24-25 February 2005 - Workshop on Biomonitoring “Critical aspects in the interpretation of biomonitoring data with lichens” held in Genova and organized by the Italian Lichenological Society.
- 18 November 2004 - Workshop on “Vegetal bioindicators for the environmental complexity” organized by the Italian Botanical Society and held in Bologna (Italy).
- 13-18 September 2004 - Specialization course on “DNA Analysis Techniques in Lichenology” with Prof. Martin Grube, Institute of Botany, Karl-Franzens-University (Graz), organized by Italian Lichen Society with University of Trieste.
- 26-27 March 2004 - Workshop on Biomonitoring held in Trento and organized by the Italian Lichen Society.
- 24-27 February 2004 - Specialization course on “Histological and histochemical techniques in Lichenology”, organized by the Italian Lichen Society and held in Genova by Prof. Paolo Modenesi (DIP.TE.RIS., University of Genova).
- 10 December 2003 - Participated in seminar “Index of Lichen Diversity – Methodological instruments and applications” organized by the Centro Tematico Nazionale Atmosfera Clima Emissioni with ARPA (Regional Agency for Environment Protection) Lazio in Rome (Italy).

TEACHING AND SUPERVISORY EXPERIENCE

Approved

2019-2021 – Supervising the Marie Skłodowska-Curie Individual Fellowship project “Assessing the interactive effects on N addition and climate change on soil processes through the biological soil crust in Mediterranean ecosystems” at the Universidade de Lisboa (Portugal).

Realized and ongoing

- 2014-ongoing – Lecturer in the Ecology course at the Universidade de Lisboa (Portugal).
- 2016- ongoing – Co-supervisor of a PhD student of the Università del Molise (Italy).
- July – September 2018 - Supervising an Erasmus student from the Università di Viterbo (Italy).
- June 2018 – Teaching at the cE3c advanced course “Stable isotopes in Ecology and Environment: a tool to integrate scales and complexity”, Faculdade de Ciência da Universidade de Lisboa, Portugal.
- February- June 2018 – Supervising two students in the course “Estudo orientado” in Molecular Biology and Genetics at the Universidade de Lisboa (Portugal).
- April – June 2018 - Supervising an Erasmus student from the Università di Bologna (Italy).
- November 2017 – March 2018 - Supervising an Erasmus PhD student from the Università del Molise (Italy).
- 15 May 2017 - March 2018 - Supervised a fellowship (master degree) at the Faculdade de Ciências da Universidade de Lisboa for research under the project “The secret of a winning strategy: common mechanisms in different symbioses”.
- August-September 2017 – Supervising an Erasmus PhD from the Università di Sassari (Italy).
- 01 July – 31 August 2017 - Supervising 3 Erasmus students from the Università di Viterbo (Italy).
- 10-14 July 2017 – Organized and taught in the cE3c advanced course “Lichens as a tool for interpretation of environmental changes and management” 5th edition. University of Lisbon (Portugal).
- March-July 2017 – Supervising an Erasmus student from the University of Zagreb (Croatia).
- February- June 2017 – Supervising two students in the course “Estudo orientado” in Molecular Biology and Genetics at the Universidade de Lisboa (Portugal).
- February 2014-June 2017 - Co-supervising a PhD student of the Università di Sassari (Italy).
- 15-26 May 2017 – Teaching in the Training school “Global and long-term effects of nitrogen on ecosystems”, Universidade de Lisboa, Portugal, under the project NitroPortugal.
- 18 December 2015-18 December 2016 - Supervised a fellowship (master degree) at the Faculdade de Ciências da Universidade de Lisboa for research under the project “The secret of a winning strategy: common mechanisms in different symbioses”.
- 26-28 September 2016 – Teaching at the “International Lichenology course and workshop: Lichens as a tool for air pollution research”, University of Zagreb, Croatia.
- 6 June-6 August 2016 – Supervising a PhD student from the Università del Molise (Italy) during an Erasmus TUCEP training period.
- 11-15 July 2016 – Organized and taught in the cE3c advanced course “Lichens as a tool for interpretation of environmental changes and management” 4th edition. University of Lisbon (Portugal).
- February-July 2016 – Co-supervising two students in the course “Estudo orientado” in Molecular Biology and Genetics at the Universidade de Lisboa (Portugal).
- 9-13 June 2015 – Organized and taught in the cE3c advanced course “Lichens as a tool for interpretation of environmental changes and management” 3rd edition. University of Lisbon (Portugal).
- March-June 2015 – Co-supervising a student of “Estudo orientado” in Molecular Biology and Genetics, Universidade de Lisboa (Portugal).
- 23 June – 12 July 2014 - Supervising a post-doc fellow during the STSM number ES1104-15661 under the COST action “Arid Lands Restoration and Combat of Desertification”.
- 13 January-15 February 2014 - Supervising a post-doc fellow during the STSM number ES1104-15661 under the COST action “Arid Lands Restoration and Combat of Desertification”.
- 27-31 January 2014 – Organized and taught in the CBA advanced course “Lichens as a tool for interpretation of environmental changes and management” 2nd edition. Universidade de Lisboa (Portugal).
- May 2013-January 2014 – Supervising a CBA volunteer internship.
- May 2013- Co-supervisor in the STSM “Use of lichens as ecological indicators of atmospheric nitrogen deposition and organic pollutants” under the COST Action TD1105.
- 28 January -1 February 2013 – Organized and taught in the CBA advanced course “Lichens as a tool for interpretation of environmental changes and management” 1st edition. University of Lisbon (Portugal).
- 16 January 2012-1 June 2012 - Supervisor of a graduate student in the University of Lisbon under the framework “Porta la Laurea in Azienda” promoted by the University of Genova (Italy).
- 4-8 May 2009 - Taught in the training course “Epiphytic lichens as biomonitors of air quality” - Montecatini Terme, organized by the Regional Environmental Protection Agency of Tuscany (Italy).
- 24-27 May 2009 - Taught in a university training course on analytical methods in lichen physiology organized by the University of Siena (Italy).
- June 2009 - Gave a cycle of lectures, labs and field training on lichen determination and the use of lichens as

biomonitors in a course organized by the University of Siena (Italy).
2007 - Supervised two students in the University of Siena (Italy) in developing their degree thesis on lichen physiology.

ORGANIZATION OF SCIENTIFIC MEETINGS

- Member of the scientific and organizing committee of the third “Committee on Air Pollution Effects Research in Mediterranean Environment” meeting held in Pamplona, Spain, 20-21 June 2018.
- Member of the scientific and organizing committee of the second “Committee on Air Pollution Effects Research in Mediterranean Environment” meeting held in Brescia, Italy, 28-30 June 2016.
- Member of the scientific and organizing committee of the 8th Congress of the International Symbiosis Society held in Lisbon, Portugal, 12-18 July 2015.
- Member of the organizing committee of annual national congresses of the Italian Lichen Society held at Siena (Italy), 13-14 September 2007, Rome (Italy), 2-5 October 2012 and Montecatini Terme (Italy), 15-17 October 2014.
- Member of the organizing committee of the first “Committee on Air Pollution Effects Research in Mediterranean Environment” meeting held in Lisbon, Portugal, 3-4 July 2014.
- Member of the organizing committee of the post-docs meeting “Time for Science”, 1 June 2012, University of Lisbon (Portugal).
- Organizer of the excursion to Oasi di Burano in cooperation with the Italian Lichen Society and the Italian Botanical Society, 2010.
- Member of the organizing committee of the meeting of the Italian Lichenological Society working group for biomonitoring “Determination of Biological Index of Epiphytic Lichens”, Foiano (Italy), 2007.
- Secretariat at the Biomap 4 - 4th International Workshop on Biomonitoring of Atmospheric Pollution, Agios Nikolaos, Greece, 2006.

OTHER ACTIVITIES

- Member of the Executive Committee and Secretary of the International Symbiosis Society (July 2018-ongoing).
- Co-author of the national guidelines “Air Quality — Biomonitoring with lichens — Accumulation of atmospheric contaminants in lichen transplants: from the collection to the preparation of samples” in cooperation with the Italian Lichen Society and ISPRA - Italian National Institute for Environmental Protection and Research (2018-2019).
- Evaluator of the PhD thesis “Use of tree bark to study the distribution and concentration of trace elements in the atmosphere”, Università di Genova (2017).
- Editor of the scientific journal “Symbiosis” (2015-ongoing).
- Member of the International Symbiosis Society (2015-ongoing).
- Member of the cE3c Scientific Committee, Universidade de Lisboa, Portugal (2014-ongoing)
- Member of the Italian Lichen Society (1998 – ongoing).
- Member of the Steering Committee and Treasurer of the Italian Lichen Society (2008-2017).
- Member of the Italian Lichen Society Congresses Scientific Committee (2008-2017).
- Member of the CBA Scientific Committee, Universidade de Lisboa, Portugal (2012-2014).
- Organizer of the weekly internal seminars and journal club of the “Environmental Stress & Functional Ecology” group (University of Lisbon, 2011-2014).
- Member of the Communication group of the Italian Lichen Society (2013-ongoing).
- Translator from Portuguese to Italian for the company Science4you.
- Reviewer for the scientific journals (<https://www.reviewerrecognition.elsevier.com/#/profile/aef648c0-5d82-46e5-b96b-d904897e8c9f>): “Acta Agriculturae Scandinavica”, “Acta Physiologiae Plantarum”, “American Journal of Agricultural and Biological Sciences”, “Biologia- Bratislava”, “Ecotoxicology and Environmental Safety”, “Environmental and Experimental Botany”, “Environmental Monitoring and Assessment”, “Environmental Pollution”, “Environmental Science and Pollution Research”, “Forest Ecology and Management”, “International Journal of Biodiversity and Conservation”, “Journal of Arid

Environment”, “Landscape Research”, “Lichenologist”, “Plant Biosystems”, “Saudi Journal of Biological Sciences”, “Waste Management”, “Water, Air, & Soil Pollution” (2011-2016); “Acta Botanica Croatica”, “Biologia-Bratislava”, “Environmental Monitoring and Assessment”, “Ecological Indicators”, “Journal of the Air & Waste Management Association”, “Water, Air, & Soil Pollution” (2016); “Environmental and Experimental Botany”, “Environmental Monitoring and Assessment”, “Environmental Science and Pollution Research”, “Science of the Total Environment”, “Symbiosis” (2017); “Atmospheric Pollution Research”, “Basic and Applied Ecology”, “Chemosphere”, “Environmental Monitoring and Assessment”, “Science of the Total Environment”, “Urban Forestry & Urban Greening” (2018); “Chemosphere” (2019).

- Member of the Italian Lichen Society working group for Biomonitoring, National representative in the European Committee for Standardization (CEN) for: biomonitoring methods with mosses and lichens. CEN/TC 264/WG 31: Biomonitoring of air - determination of biological index of epiphytic lichens.
- Member of the Steering Committee of the working group for Lichenology of the Italian Botanical Society.
- Representative of PhD students in the Department Council of the University of Siena and in the Students’ Residence Santa Chiara (2007-2009).

AWARDS AND GRANTS

Awarded a travel grant for participating in the 3rd GreenInUrbs Training School funded by the COST Action “GreenInUrbs”, 10-14 October 2016, Duisburg, Germany.

Awarded the “Prémio de Investigação Cidade de Almada (Research prize of Almada city)”, 17 July 2015, with the project “Bioindicadores ecológicos em meio urbano: uma nova abordagem metodológica aplicada à cidade de Almada (Munzi S., Correia O., Branquinho C., Pinho P.)”.

Awarded a Symposium Grant for participating in the British Lichen Society International Symposium, 10-11 January 2014, Nottingham, UK.

Second prize for the best poster "Paoli L., Munzi S., Fiorini E., Sorbo S., Basile A., Loppi S., 2012. Antimony toxicity in the lichen *Xanthoria parietina* (L.) Th.Fr." awarded during the 6th International Workshop on Biomonitoring of Atmospheric Pollution, 15-19 October 2012, Çeşme-İzmir, Turkey.

Prize for the best oral presentation (presented by C. Branquinho) “Branquinho C., Augusto S., Pinho P., Munzi S., 2012. Biomonitoring – uma ferramenta de gestão da qualidade do ar”. Seminário de Sustentabilidade promovida pela empresa SECIL, 5-6 Junho de 2012, Centro de Formação de Maceira, Maceira, Portugal.

LANGUAGE

Italian: mother tongue

English: fluent in written and spoken

Portuguese: fluent in written and spoken

PROJECTS AS PI

2014 July - 2019 July – “The secret of a winning strategy: common mechanisms in different symbioses” (Secret Mechanisms IF/00964/2013) funded by the Fundação para a Ciência e a Tecnologia (Portuguese Science and Technology Foundation).

2015 May – “Protecting the lichens of the Shennongjia Reserve (China) in order to protect the endangered Golden Snub-nosed Monkey” under the SYNTHESYS Project (EU FP7 Integrating Activity Programme, www.synthesys.info).

2014 September-November – Proponent of the project “Lichens as a tool for environmental management in urban forests: the case study of Parco Nord Milano” under the COST action FP1204.

2012 April-2014 March - Marie Curie Intra-European Fellowship. Role of enzymatic activity in lichen tolerance under nitrogen stress (EU FP7 PIEF-GA-2011-301785).

2013 March – 2013 December - Transnational Access in the Increase Project (An Integrated Network on Climate Research Activities on Shrubland Ecosystems) (EU FP7 <http://www.increase-infrastructure.eu/>).

2013 May – 2013 November - Examining cellular and enzymatic activity and proteomics in nitrogen-treated lichens (EU FP7 ExpeER 2013 - <http://www.expeeronline.eu>).

2012 May - Long-term effects of Nitrogen deposition in lichen ecophysiology (EU FP7 ExpeER 2012 - <http://www.expeeronline.eu>).

PROJECTS AS PARTICIPANT

2016-2018 - ChangeTracker-Tracking climate change in drylands based on ecological indicators. Science and Technology Foundation (PTDC/AAG-GLO/0045/2014).

2015-2018 - Strengthening Portuguese research and innovation capacities in the field of excess reactive nitrogen (NitroPortugal), TWINNING project (TWINN 692331).

2016-2017 - Disentangling evolutionary relationships across morphologically and ecologically diverse lichen genus *Solenopsora*. Bilateral program Portugal-Slovak Republic.

2014-2017 – Consultant in the project “Effects of climate change and nitrogen deposition on establishment, growth and nutrition composition of some epiphyte lichens in a high-altitude mountain” with the Prof. Chuanhua Wang, Three Gorges University, Yichang, China. Visiting period 20 May-13 June 2014.

July 2012 - ÉCLAIRE project: Effects of Climate Change on Air Pollution and Response Strategies for European Ecosystems (FP7-ENV-2011 n° 282910).

2011-2015 - In-Nitro: conceptualizing the effects of increased nitrogen availability in a Mediterranean ecosystem. Fundação para a Ciência e a Tecnologia (PTDC/BIA-ECS/122214/2010).

2010-2012 – Stima delle ricadute di metalli in traccia mediante la valutazione dell'IBLe del bioaccumulo nei talli lichenici. In cooperation with the University of La Tuscia (Viterbo, Italy).

2011 - 2012 - Modeling Ecosystem Structure and Functional Diversity as early-warning indicators of Desertification and Land-degradation: from regional to local level. PTDC/AAC-CLI/104913/2008. Funding entity: Portuguese Government. Coordinated by Centro de Biologia Ambiental da FCUL; Partners: Autoridade Florestal Nacional (AFN) and Centro de Recursos Naturais e Ambiente - Instituto Superior Técnico (CERENA/IST).

2010-2011- GISA – Integrated Management of Environment and Health in the Alentejo Litoral Region. Financing: by Private companies: Petróleos de Portugal-PETROGAL, S.A.; REPSOL Polímeros, Lda.; Administração do Porto de Sines, S.A.; Águas de Santo André, S.A.; Apiparques–Gestão de Parques Industriais, S.A.; Carbogal–Carbonos de Portugal, S.A.; EDP–Gestão da Produção de Energia, S.A.; EuroRinas-Indústrias Químicas, S.A.; Kimaxtr –Produtos de Construção S.A.; Repsol Polímeros, Lda.; REN–

Atlântico, Terminal de GNL, S.A. Local authorities: Municipality of Sines, Santiago do Cacém, Odemira, Grândola and Alcácer do Sal. Project Coordinated by: CCDDR-A. CBA-FCUL Financing: 200 061 €. CBA-FCUL. Coordinator: Cristina Branquinho. Other Scientific Partners: INESRE, a CCDDR-A, o IST-CERENA, o ISCTE, ARS Lisboa e Vale do Tejo e a ARS Alentejo.

Part of the Italian Lichenological Society working group on the setting of international standard for lichen monitoring (CEN-European Committee for Standardization).

2011 – Studying the impact of climate change and of its vulnerabilities in several ecological indicators in an urban environment. Project between the Almada municipality and the CBA. Coordinator: Otilia Correia.

2010-2013 – “Evaluating the atmospheric deposition of heavy metals and PCDD/Fs in the surroundings of the SECIL-Outão industry using biomonitors”; Funding entity: Companhia Geral de cimento SECIL. Coordinator: Cristina Branquinho, CBA-FCUL.

2010-2012 – “Lichen and Plant biodiversity of a Cu mine site in the south of Portugal” by SOMINCOR, sociedade mineira de Neves Corvo, SA. Coordinator: Cristina Branquinho.

2010 - Transnational cooperation between Portugal and Italy (CNR). Biomonitoring of soil and atmospheric pollution at mine sites in Mediterranean areas: responses from cellular to ecosystem level. Financed by FCT-Portugal and CNR-Italy. Portuguese coordinator: Cristina Branquinho, CBA-FCUL.

2008 - National expert for lichens in the project "Le aree importanti per le piante nelle regioni d'Italia" (Important plant areas in Italian regions), by the Italian Ministry of Environment, Italian Botanical Society and the University "La Sapienza".

December 2005 - July 2006 - Cooperation with Prof. Stergios A. Pirintsos of the Department of Biology, University of Crete, Greece in the project "Pythagoras II - Investigation of possible relationships between genetic diversity and abundance-distribution patterns of endemic plant species in Mediterranean Ecosystems".

March - July 2004 - Working on the project "Rete di Biomonitoraggio permanente in Italia centrale con l'Indice di Biodiversità Lichenica (IBL). Progetto pilota per l'Umbria", by University "La Sapienza" and the Regional Agency for Environmental Protection.

September 2003 – September 2006 - Working in the University of Roma Tre on the project “Indice di Biodiversità Lichenica (IBL) nella città di Roma: determinazione e analisi dei fattori correlati” (Index of Lichen Diversity in the city of Rome: analysis of correlated factors).

DISSEMINATION ACTIVITIES

17 September 2018 – Presenting at the International Microorganism Day the activity “Simbioses: Consegues viver, aprender, brincar sozinho? Onde estão os teus amigos?”, Centro Ciência Viva de Lagos, Portugal.

29 September 2017 – Participant at the European Researchers' Night with the activity “I can't live without you!”.

24-28 July 2017 - Scientific Summer Camp “Ciência Viva no laboratório”: one-week lab activity with young students “Quem diz que os líquenes não “falam”? Interpretar os sinais destes bioindicadores sobre o ecossistema”, 5th edition.

10 July 2017 – “Líquenes, as sentinelas da natureza” IV Encontro Internacional Casa das Ciências - Educação científica e desenvolvimento económico, Universidade de Lisboa.

November-December 2016 – Consultant in the project “LICHENAIR - Wear your Lichen” developed in the Master course “MA Material Futures” (<http://davidepiscitelli.com/lichenair.html>).

8 July 2016 – Participation in the scientific week “Verão na Ulisboa” with the activity “Lichens, sentinels of the environment”.

- 18-22 July 2016 - Scientific Summer Camp “Ciência Viva no laboratório”: one-week lab activity with young students “Quem diz que os líquenes não “falam”? Interpretar os sinais destes bioindicadores sobre o ecossistema”, 4th edition.
- 20-24 July 2015 – Scientific Summer Camp “Ciência Viva no laboratório”: one week lab activity with young students “Quem diz que os líquenes não “falam”? Interpretar os sinais destes bioindicadores sobre o ecossistema”, 3rd edition.
- February-June 2015 – “Ciência Viva nos patios” a programme developed for primary schools.
- 26 September 2014 – Participant at the European Researchers' Night with the activity “Diz-me o que vês, dir-te-ei o que respiras”.
- 2011-ongoing – Creator and administrator of the official and unofficial Facebook pages of the Italian Lichen Society.
- 2013-2016 – Creator and administrator of the Facebook page “3D my Marie Curie fellowship” (<https://www.facebook.com/3dmariecurie?ref=hl>) and administrator of the page of the Environmental Stress and Functional Ecology group.
- 7-11 July 2014 – Scientific Summer Camp “Ciência Viva no laboratório”: one-week lab activity with young students “Quem diz que os líquenes não “falam”? Interpretar os sinais destes bioindicadores sobre o ecossistema”, 2nd edition.
- 2012-2013 – Participation in the project “Uma mina de biodiversidade” (A mine of biodiversity), a series of dissemination activities including the production of a printed guide, a website (<http://biodiversidade-somincor.pt/web/index.php/en/>), a wildlife film (<https://vimeo.com/78904290>; English version: <https://vimeo.com/92727893>) and a workshop.
- 24-28 July 2013 – Scientific Summer Camp “Ciência Viva no laboratório”: one-week lab activity with young students “Quem diz que os líquenes não “falam”? Interpretar os sinais destes bioindicadores sobre o ecossistema”, 1st edition.
- July 2013 – Summer Science “Ciência Viva no Verão”: field excursion “Flora da Duna de Montalvo: viver com os pés na areia”.
- 31 May-1 June 2013 – Workshop “Biominar” about the biodiversity of Neves-Corvo Region, funded by Somincor-Sociedade Mineira de Neves Corvo and Lundim-Mining Corporation. The field tour “Líquenes: Os vigilantes da Natureza” was guided by S. Munzi and P. Pinho for participants.
- 4-17 March 2013 – Training tutor of 10 students from Puskás Tivadar Technical High School (Romania) under the Leonardo da Vinci Mobility Programme.
- 15 March 2013 – Presenting my work to a visiting class of a high school of Leiria (Portugal).
- September 2012 – Summer Science “Ciência Viva no Verão”: field excursion with lab activity “Investigação e Aplicação da ciência nos habitats do Sul de Portugal num percurso pelo montado”.
- June 2010 – Field excursion to Oasi di Burano (Tuscany, Italy) in cooperation with the Italian Lichen Society and the Società Botanica Italiana.

PUBLICATIONS ON INTERNATIONAL SCIENTIFIC JOURNALS

2019

Munzi S., Branquinho C., Cruz C., Máguas C., Leith I., Sheppard L., Sutton M., 2019. $\delta^{15}\text{N}$ in lichens reflects the isotopic signature of ammonia source. *Science of the Total Environment*, 653: 698-704 <https://doi.org/10.1016/j.scitotenv.2018.11.010>

2018

Fačková Z., Ongaro S., Martellos S., Paoli L., **Munzi S.**, Guttová A., 2018. Ecological variation of lichen congeners with a strong link to Mediterranean-type ecosystems: a case study of the genus *Solenopsora* on Apennine peninsula. *The Lichenologist*, *in press*.

Wang C-H., **Munzi S.**, Wang M., Jia Y-Z., Tao W., 2018. Increasing nitrogen depositions can reduce lichen viability and limit winter food for an endangered Chinese monkey. *Basic and Applied Ecology*, <https://doi.org/10.1016/j.baae.2018.10.006>.

2017

- Munzi S.**, Ochoa-Hueso R., Gerosa G., Marzuoli R., 2017. (E)merging directions on air pollution and climate change research in Mediterranean Basin ecosystems. Editorial of the special issue of Environmental Science and Pollution Research, 24(34): 26155–26159.
- Munzi S.**, Cruz C., Maia R., Máguas C., Perestrello-Ramos M.M., Branquinho C., 2017. Intra- and inter-specific variations in chitin in lichens along a N-deposition gradient. Environmental Science and Pollution Research, 24(36): 28065-28071.
- Dias T., Crous C.J., Liberati D., **Munzi S.**, Gouveia C., Ulm F., Afonso A.C., Ochoa-Hueso R., Manrique E., Sheppard L., Martins-Loução M.A., Bernardes da Silva A., Cruz C., 2017. Alleviating nitrogen limitation in Mediterranean shrubland leads to ecological degradation. Land Degradation & Development, 28(8): 2482-2492. DOI: 10.1002/ldr.2784
- Paoli L., Pinho P., Branquinho C., Loppi S., **Munzi S.**, 2017. The influence of growth form and substrate on lichen ecophysiological responses along an aridity gradient. Environmental Science and Pollution Research, 24(34): 26206-26212.
- Ochoa-Hueso* R., **Munzi*** S., et al., 2017. Ecological impacts of atmospheric pollution and interactions with climate change in terrestrial ecosystems of the Mediterranean Basin: Current research and future directions. Environmental Pollution, 227: 194-206. (*first authors)
- Santos A., Pinho P., **Munzi S.**, Botelho M.J., Palma J.M., Branquinho C., 2017. The role of forest in mitigating the impact of heavy metal pollution deposition in a mixed landscape. Environmental Science and Pollution Research, 24(13): 12038-12048.
- Lo Cascio M., Morillas L., Ochoa-Hueso R., **Munzi S.**, Roales J., Hasselquist N.J., Manrique E., Spano D., Abou Jaoudé R., Mereu S., 2017. Contrasting effects of nitrogen deposition on soil respiration in two Mediterranean ecosystems. Environmental Science and Pollution Research, 24(34), 26160-26171.
- Munzi S.**, Sheppard L.J., Leith I.D., Cruz C., Branquinho C., Bini L., Gagliardi A., Cai G., Parrotta L., 2017. The cost of surviving nitrogen excess: energy and protein demand in the lichen *Cladonia portentosa* as revealed by proteomic analysis. Planta, 245(4): 819-833.

2016

- Pinho P., Correia O., Lecoq M., **Munzi S.**, Vasconcelos S., Gonçalves P., Rebelo R., Antunes C., Silva P., Freitas C., Lopes N., Santos-Reis M., Branquinho C., 2016. Evaluating green infrastructure in urban environments using a multi-taxa and functional diversity approach. Environmental Research, 147: 601-610.
- Munzi S.**, Cruz C., Selosse M-A., Rodriguez R., 2016. Symbiotic lifestyle - 8th International Symbiosis Society (ISS) congress, Lisbon (Portugal), 12–18 July 2015. Symbiosis, 68: 1-3.

2015

- Paoli L., **Munzi S.**, Guttová A., Senko D., Sardella G., Loppi S., 2015. Lichens as suitable indicators of the biological effects of atmospheric pollutants around a municipal solid waste incinerator (S Italy). Ecological Indicators, 52: 362–370.
- Wang C., Yang L., Yuan Q., **Munzi S.**, Liu M., 2015. Nitrogen sensitivity of four epiphytic lichens from habitats of *Rhinopithecus roxellana* in Shennongjia Nature Reserve. Chinese Journal of Ecology, 34(3): 626-633.

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- Munzi S.**, Correia O., Silva P., Lopes N., Freitas C., Branquinho C., Pinho P., 2014. Lichens as ecological indicators in urban areas: beyond the effects of pollutants. Journal of Applied Ecology, 51: 1750-1757.
- Paoli L., Fiorini E., **Munzi S.**, Sorbo S., Basile A., Loppi S., 2014. Uptake and acute toxicity of cerium in the lichen *Xanthoria parietina*. Ecotoxicology and Environmental Safety, 104: 379-385.
- Munzi S.**, Cruz C., Branquinho C., Pinho P., Leith I.D., Sheppard L.J., 2014. Can ammonia tolerance amongst lichen functional groups be explained by physiological responses? Environmental Pollution, 187: 206-209.
- Munzi S.**, Triggiani D., Ceccarelli D., Climati E., Tiezzi A., Pisani T., Paoli L., Loppi S., 2014. Antiproliferative activity of three lichen species belonging to the genus *Peltigera*. Plant Biosystems, 148(1): 83-87.

2013

- Paoli L., Fiorini E., **Munzi S.**, Sorbo S., Basile A., Loppi S., 2013. Antimony toxicity in the lichen *Xanthoria parietina* (L.) Th. Fr. *Chemosphere*, 93: 2269-2275.
- Munzi S.**, Pisani T., Paoli L., Renzi M., Loppi S., 2013. Effect of nitrogen supply on the C:N balance in the lichen *Evernia prunastri* (L.) Ach. *Turkish Journal of Biology*, 37: 165-170.
- Paoli L., **Munzi S.**, Pisani T., Guttová A., Loppi S., 2013. Freezing of air-dried lichens ensures that thalli remain healthy for later physiological measurements. *Plant Biosystems*, 147(1): 141-144.
- Munzi S.**, Branquinho C., Cruz C., Loppi S., 2013. Nitrogen tolerance in the lichen *Xanthoria parietina*: the sensitive side of a resistant species. *Functional Plant Biology*, 40: 237-243.
- Paoli L., **Munzi S.**, Fiorini E., Gaggi C., Loppi S., 2013. Influence of angular exposure and proximity to vehicular traffic on the diversity of epiphytic lichens and the bioaccumulation of traffic-related elements. *Environmental Science and Pollution Research*, 20(1): 250-259.

2012

- Munzi S.**, Paoli L., Fiorini E., Loppi S., 2012. Physiological response of the epiphytic lichen *Evernia prunastri* (L.) Ach. to ecologically relevant nitrogen concentrations. *Environmental Pollution*, 171: 25-29.
- Basile A., Sorbo S., Pisani T., Paoli L., **Munzi S.**, Loppi S., 2012. Bioaccumulation and ultrastructural effects of Cd, Cu, Pb and Zn in the moss *Scorpiurum circinatum* (Brid.) Fleisch. & Loeske. *Environmental Pollution* 166: 208-211.
- Brunialti G., Frati L., Cristofolini F., Chiarucci A., Giordani P., Loppi S., Benesperi R., Cristofori A., Critelli P., Di Capua E., Genovesi V., Gottardini E., Innocenti G., **Munzi S.**, Paoli L., Pisani T., Ravera S., Ferretti M., 2012. Can we compare lichen diversity data? A test on skilled teams. *Ecological Indicators*, 23: 509-516.

2011

- Ravera S., Nimis P.L., Brunialti G., Frati L., Isocrono D., Martellos S., **Munzi S.**, Nascimbene J., Potenza G., Tretiach M., 2011. The role of lichens in selecting Important Plant Areas in Italy. *Fitosociologia*, 48(2): 145-153.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2011. Do lichens have “memory” of their native nitrogen environment? *Planta*, 233: 333-342.
- Pisani T., **Munzi S.**, Paoli L., Bačkor M., Kovačik J., Piovar J., Loppi S., 2011. Physiological effects of mercury in the lichens *Cladonia arbuscula* subsp. *mitis* (Sandst.) Ruoss and *Peltigera rufescens* (Weiss) Humb. *Chemosphere*, 82: 1030-1037.
- Pisani T., **Munzi S.**, Paoli L., Bačkor M., Loppi S., 2011. Physiological effects of arsenic in the lichen *Xanthoria parietina* (L.) Th. Fr. *Chemosphere*, 82: 963-969.

2007-2010

- Munzi S.**, Pisani T., Paoli L., Loppi S., 2010. Time- and dose-dependency of the effects of nitrogen pollution on lichens. *Ecotoxicology and Environmental Safety*, 73: 1785-1788.
- Paoli L., Pisani T., **Munzi S.**, Gaggi C., Loppi S., 2010. Influence of sun irradiance and water availability on lichen photosynthetic pigments during a Mediterranean summer. *Biologia*, 65(5): 776-783.
- Pisani T., **Munzi S.**, Paoli L., Bačkor M., Loppi S., 2009. Physiological effects of a geothermal element: boron excess in epiphytic lichen *Xanthoria parietina* (L.) Th. Fr. *Chemosphere*, 76: 921-926.
- Munzi S.**, Pisani T., Loppi S., 2009. The integrity of lichen cell membrane is a suitable parameter for monitoring early biological effects of nitrogen pollution. *Ecotoxicology and Environmental Safety*, 72: 2009-2012.
- Pirintsos S.A., **Munzi S.**, Loppi S., Kotzabasis K., 2009. Do polyamines alter the sensitivity of lichens to nitrogen stress? *Ecotoxicology and Environmental Safety*, 72: 1331-1336.
- Munzi S.**, Pirintsos S.A., Loppi S., 2009. Chlorophyll degradation and inhibition of polyamine biosynthesis in the lichen *Xanthoria parietina* under nitrogen stress. *Ecotoxicology and Environmental Safety*, 72 (2): 281-285.
- Triggiani D., Ceccarelli D., Tiezzi A., Pisani T., **Munzi S.**, Gaggi C., Loppi S., 2009. Antiproliferative activity of lichen extracts on murine myeloma cells. *Biologia*, 64 (1): 59-62.
- Munzi S.**, Ravera S., Caneva G., 2007. Epiphytic lichens as indicators of environmental quality in Rome. *Environmental pollution*, 146: 350-358.

INVITED PRESENTATIONS

- Munzi S.**, 2018. “Can lichen $\delta^{15}\text{N}$ provide a suitable tool for the interpretation of the spatial distribution of NH_3 sources?” at the cE3c advanced course “Stable isotopes in Ecology and Environment: a tool to integrate scales and complexity”, 7 June 2018, Faculdade de Ciência da Universidade de Lisboa, Portugal.
- Munzi S.**, 2018. Doctoral seminar, 2 May, 2018, Faculdade de Ciência da Universidade de Lisboa, Portugal.
- Munzi S.**, 2017. “Physiological indicators of excessive nitrogen in lichens” at the Air & Ecosystems Thematic Workshop in the framework of NitroPortugal: Strengthening Portuguese research and innovation capacities in the field of excess reactive nitrogen (H2020-TWINN-2015), 14 May 2017, Universidade de Lisboa, Portugal.
- Munzi S.**, 2016. “Using physiology and molecular technics to study lichen-nitrogen interaction” at the “International Lichenology course and workshop: Lichens as a tool for air pollution research”, 26-28 September 2016, University of Zagreb, Croatia.
- Munzi S.**, 2016. “Towards a deeper understanding of lichen response to nitrogen”. cE3c “Encontro Scientia”, 25 February 2016, Faculdade de Ciência da Universidade de Lisboa, Portugal.
- Munzi S.**, 2015. Seminario doutoral, 7 December, 2015, Faculdade de Ciência da Universidade de Lisboa, Portugal.
- Munzi S.**, 2015. “What to do with lichens? - Applied lichenology at the Centre for Ecology, Evolution and Environmental Change”. Life Science seminar at the Museum of Natural History, 15 May 2015, London, UK.
- Munzi S.**, 2015. “Using lichens as biomonitoring tools - an overview”. Iranian Research Organization for Science and Technology, 13 January 2015, Tehran, Islamic Republic of Iran.
- Munzi S.**, 2015. Workshop “Using lichens as biomonitors of air pollution”. 3rd National Conference on Air and Noise Pollution and Management, 14-15 January 2015, Tehran, Islamic Republic of Iran.
- Munzi S.**, 2014. Doctoral seminar, 23 April, 2014, Faculdade de Ciência da Universidade de Lisboa, Portugal.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2012. “Physiological aspects of lichen-nitrogen interaction”. In-Nitro Workshop, 16 May 2012, Alambre National Park, Portugal.
- Munzi S.**, 2012. “Physiological aspects of lichen-nitrogen interaction”. CBA “Encontro Scientia”, 9 May 2012, Faculdade de Ciência da Universidade de Lisboa, Portugal.

PARTICIPATION IN NATIONAL AND INTERNATIONAL CONGRESSES WITH ORAL CONTRIBUTION

- Munzi S.**, Gouveia C., Cruz C., Branquinho C., Varela Coelho A., 2019. Proteomic analysis contributes to unveil the mechanisms of nitrogen tolerance in the lichen *Xanthoria parietina*. Book of abstracts of the 1st Meeting of the Iberian Ecological Society & XIV AEET Meeting, 4-7 February 2019, Barcelona, Spain, p.337.
- Munzi S.**, Gouveia C., Cruz C., Branquinho C., Varela Coelho A., 2018. Proteomic analysis contributes to unveil the mechanisms of nitrogen tolerance in the lichen *Xanthoria parietina*. Book of abstracts of the XXXI Italian Lichen Society Congress, 26-28 September 2017, Pistoia (Italy). Notiziario della Società Lichenologica Italiana, 31:23.
- Munzi S.**, Branquinho C., Cruz C., Máguas C., Leith I.D., Sheppard L.J., Sutton M.A., 2018. $\delta^{15}\text{N}$ in lichens reflects the isotopic signature of ammonia source. Book of abstracts of the 8th International Workshop on Biomonitoring of Atmospheric Pollution (BIOMAP 8), Joint Institute for Nuclear Research, Dubna (Russian Federation), 2-7 July 2018, p.39.
- Munzi S.**, Branquinho C., Cruz C., Máguas C., Leith I.D., Sheppard L.J., Sutton M.A., 2018. $\delta^{15}\text{N}$ in lichens reflects the isotopic signature of ammonia source. Book of abstracts of the 3rd Capermed Meeting, 20-21 June, Pamplona, Spain, p.20.
- Munzi S.**, Cruz C., Maia R., Máguas C., Perestrello-Ramos M. M., Branquinho C., 2017. Intra- and inter-specific variation in chitin in lichens along a N-deposition gradient. Book of abstracts of the XXX Italian Lichen Society Congress, 13-15 September 2017, Torino (Italy). Notiziario della Società Lichenologica Italiana, 30:26.
- Munzi S.**, Gouveia C., Cruz C., Maia R., Máguas C., Perestrello-Ramos M. M., Branquinho C., 2017. Effects of nitrogen excess on lichens: from the ecological to the molecular level. Book of Abstracts of the 3rd cE3c annual meeting “Frontiers in e3”, 5 – 6 June, Ponta Delgada, Portugal, p. 8.

- Munzi S.**, Branquinho C., Colangelo G., Sanesi G., 2017. Assessing the ecological status of urban forest in Parco Nord Milano (Italy) combining lichen and tree response. Book of abstracts of the final conference of the COST Action FP1204 GreenInUrbs: “Green infrastructure: Nature based solutions for sustainable and resilient cities”, 4-7 April 2017, Orvieto, Italy, p.309.
- Munzi S.**, Branquinho C., Cruz C., Máguas C., Leith I., Sheppard L., Sutton M., 2016. Can we use $\delta^{15}\text{N}$ in lichens as an indicator of nitrogen pollution and a surrogate of nitrogen atmospheric isotopic composition? Book of abstracts of the XXIX Italian Lichen Society Congress, 28-30 September 2016, Trieste (Italy). Notiziario della Società Lichenologica Italiana, 29: 16.
- Munzi S.**, Branquinho C., Cruz C., Máguas C., Leith I., Sheppard L., 2015. Can we use $\delta^{15}\text{N}$ in lichens as an indicator of nitrogen pollution and a surrogate of nitrogen atmospheric isotopic composition? Ecology at the Interface, 21-25 September 2015, Rome, Italy.
- Munzi S.**, Sheppard L., Cruz C., Branquinho C., Bini L., Parrotta L., Cai G., 2015. How does *Cladonia portentosa* respond to nitrogen? Effect of form, dose, time of exposure, and PK addition on protein expression. Proceedings of the XXVIII Italian Lichen Society Congress, 9-11 September 2015, Lanciano (Italy). Notiziario della Società Lichenologica Italiana, 28: 25.
- Munzi S.**, Branquinho C., Cruz C., Máguas C., Leith I., Sheppard L., 2015. Tracking nitrogen pollution using $\delta^{15}\text{N}$ in lichens: potentials and limitations. Book of Abstracts of the 1st cE3c annual meeting “Frontiers in e3”, 19-20 June 2015, Lisbon, Portugal, p.9.
- Munzi S.**, Branquinho C., Cruz C., Máguas C., Leith I., Sheppard L., 2015. Tracking nitrogen pollution using $\delta^{15}\text{N}$ in lichens: potentials and limitations. Book of Abstracts of the 4^o Congresso Ibérico de Ecologia, 16-19 June 2015, Coimbra, Portugal, p. 265.
- Munzi S.**, Cruz C., Branquinho C., Pinho P., Ramos A., Pereira M.J., Loppi S., Paoli L., 2014. Physiological response of epiphytic lichens to combined climatic and nitrogen gradients in dry environments of Southern Portugal. Proceedings of the XXVII Italian Lichen Society Congress, 15-17 October, Montecatini Terme (Italy). Notiziario della Società Lichenologica Italiana, 27: 21.
- Munzi S.**, Cruz C., Branquinho C., Cai G., Faleri C., Leith I.D., Sheppard L.J., 2014. Physiological response of lichens to long- and short-term nitrogen treatments under controlled conditions. CAPERs’ 40th Anniversary Symposium - The global impact of pollutants on ecosystems, 14-16 April 2014, Lancaster University (UK). Book of abstract, p.17.
- Munzi S.**, Cruz C., Branquinho C., Cai G., Faleri C., Leith I.D., Sheppard L.J., 2014. Lichen physiological response to long- and short-term nitrogen treatment and role of potassium and phosphorus external supply. Symposium abstracts of the British Lichen Society meeting. Nottingham, 10-11 January 2014, p. 9.
- Munzi S.**, Costa R., Cruz C., Maguas C., Branquinho C., 2013. Lichen tales from the Po Valley. ÈCLAIRE 3rd General Assembly, 22-24 October 2013, Zagreb (Croatia).
- Munzi S.**, Cruz S., Branquinho C., Cai G., Faleri C., Leith I.D., Sheppard L.J., 2013. Physiological performance of *Cladonia portentosa* after 11 years of wet ammonium and nitrate deposition and role of potassium and phosphorus external supply. Proceedings of the XXVI Italian Lichenological Society Congress. Piacenza, 2-4 October 2013. Notiziario della Società Lichenologica Italiana, 26: 21.
- Munzi S.**, Correia O., Branquinho C., Pinho P., 2012. Evaluating the impact of urbanization in urban and peri-urban forests using lichen functional groups. Book of abstracts of the 6th International Workshop on Biomonitoring of Atmospheric Pollution, 15-19 October 2012, Çeşme-İzmir, Turkey, p. 40.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2012. The physiological response of lichen symbionts to stress conditions. Book of Abstracts of the 7th International Symbiosis Society Congress, July 22-28, 2012 Krakow, Poland, p. 203.
- Munzi S.**, Branquinho C., Pinho P., Antunes C., Novais B., Lecoq M., Vasconcelos S., Rebelo R., Correia O., Santos-Reis M. 2011. Biodiversity in urban and peri-urban environments: a case-study of fragmentation and connectivity from Portugal. International Meeting on the development of “Urban and peri-urban Forestry Guidelines for Mediterranean region” organized by FAO and the Italian Academy of Forest Science. Florence, Italy, 17 December 2011.
- Munzi S.**, Cruz C., Branquinho C., Loppi S., 2011. Il lato sensibile di una specie tollerante: influenza dell’ambiente sui meccanismi di resistenza all’azoto in *Xanthoria parietina*. Proceedings of the XXIV Italian Lichenological Society Congress. Terni, 28-30 September 2011. Notiziario della Società Lichenologica Italiana, 24: 36.

- Munzi S.**, Cruz C., Branquinho C., Loppi S., 2010. Meccanismi intraspecifici di tolleranza all'azoto in *Xanthoria parietina*. Proceedings of the XXIII Italian Lichenological Society Congress. Pesche (IS), 29 September -1October 2010. Notiziario della Società Lichenologica Italiana, 23: 30.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2010. Important variables in bioindication of nitrogen pollution by means of epiphytic lichens. Abstracts of the "12° Encontro Nacional de Ecologia", Porto, Portogallo, 18-20 ottobre 2010.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2009. An overview of the effects of nitrogen deposition on ecophysiological parameters in lichens. Abstracts of the "5th International Workshop on Biomonitoring of Air Pollution", Buenos Aires, Argentina, 20-24 September 2009.
- Munzi S.**, Cruz C., Branquinho C., Pisani T., Loppi S., 2009. Meccanismi di risposta dei licheni ad alcuni composti azotati. Proceedings of the XXII Italian Lichen Society Congress. Brescia, 9-12 September 2009. Notiziario della Società Lichenologica Italiana, 22: 28.
- Munzi S.**, Pisani T., Loppi S., 2008 – Composti azotati ed efficienza fotosintetica: influenza del fattore tempo in esperimenti a medio termine su *Evernia prunastri* e *Xanthoria parietina*. Proceedings of the XXI Italian Lichen Society Congress. Cogne (AO), 11-13 September 2008. Notiziario della Società Lichenologica Italiana, 21: 54.
- Triggiani D., Ceccarelli D., Tiezzi A., Pisani T., **Munzi S.**, Gaggi C., Loppi S., 2008 - Antiproliferative activity of lichen extracts on murine myeloma cells. Proceedings of the Phytochemical Society of Europe Young Scientists' Meeting "Future trends in phytochemistry: compounds – enzymes – genes", Bad Herrenalb, 26-29 March 2008.
- Munzi S.**, Loppi S., Kotzabasis K., Pirintsos S.A., 2006 - Efficienza fotosintetica e attività biologica delle poliammine in licheni esposti ad eccesso di azoto lungo un gradiente di intensità luminosa. Proceedings of the XIX Italian Lichen Society Congress, Trento, 5-7 October 2006. Notiziario della Società Lichenologica Italiana, 19: 91.
- Munzi S.**, Kotzabasis K., Loppi S., Pirintsos A.S., 2006 - Effects of KNO₃, NH₄NO₃ and (NH₄)₂SO₄ on the N-sensitive *Evernia prunastri* and the N-tolerant *Xanthoria parietina* lichens, and the role of polyamines. Abstracts of the "Reduced Nitrogen in Ecology and the Environment" Congress. Obergurgl, Austria, October 14-18, 2006.

PARTICIPATION IN NATIONAL AND INTERNATIONAL CONGRESSES WITH POSTER CONTRIBUTION

- Caporale S., Marchetti M., **Munzi S.**, Ravera S., 2018. Variation of physiological parameters in the lichen *E. prunastri* (L.) Ach. exposed to different environmental stressors in Molise (central Italy). Proceedings of the 113° congress of the Società Botanica Italiana, 12-15 September 2018, Fisciano (Italy), p.81.
- Munzi S.**, Varela Z., Paoli L., 2018. Photosynthesis reactivation in lichens and mosses after dry periods of different length. Book of abstracts of 4th cE3c Annual Meeting, 9-10 July, Universidade de Lisboa (Portugal), p.71.
- Munzi S.**, Varela Z., Paoli L., 2018. Does duration matter? Photosynthesis reactivation in lichens and mosses after drought of different length. Book of abstracts of the 3rd Capermed Meeting, 20-21 June, Pamplona (Spain), p.36.
- Mereu S., Morillas L., Lo Cascio M., **Munzi S.**, 2018. Hardly detectable effects of N depositions on the productivity of a Mediterranean ecosystem: what are we missing and where should we look? Book of abstracts of the 3rd Capermed Meeting, 20-21 June, Pamplona, Spain, p.35.
- Gouveia C., Cruz C., **Munzi S.**, 2017. O efeito da temperatura e azoto no fotobionte dos líquenes *Flavoparmelia caperata* e *Parmotrema hypoleucinum*. Book of abstracts of the 16° Encontro Nacional de Ecologia, 9-10 November 2017, Lisbon (Portugal), p.12.
- Lo Cascio M., Morillas L., Mereu S., Ochoa-Hueso R., Manrique E., **Munzi S.**, Roales, J., Spano D., Cruz C., Dias T., Gallardo A., Delgado-Baquerizo M., 2017. Nitrogen deposition impacts on microbial abundance and decomposition in three Mediterranean sites: a coordinated study using the NitroMed network. Book of abstracts of the XIV MEDECOS & XIII AEET meeting "Human driven scenarios for evolutionary and ecological changes", 31 January - 4 February 2017, Seville (Spain), p.117.
- Munzi S.**, Cruz C., Máguas C., Leith I., Sheppard L., Sutton M., 2016. Is lichen $\delta^{15}\text{N}$ an indicator of nitrogen pollution and a surrogate of nitrogen atmospheric composition? Evidence from manipulative experiments. Proceedings of the 2016 International Nitrogen Initiative Conference, "Solutions to improve nitrogen use efficiency for the world", 4 – 8 December 2016, Melbourne (Australia).

- Munzi S.**, Branquinho C., Colangelo G., Sanesi G., 2016. Combining lichen and tree response to evaluate the status of urban forests in Parco Nord Milano (Italy). Book of abstracts of the XXIX Italian Lichen Society Congress, 28-20 September 2016, Trieste (Italy). *Notiziario della Società Lichenologica Italiana*, 29: 44.
- Ravera S., Isocrono D., Brunialti G., Cataldo D., Ciotti R., Giordani P., Guttová A., Matteucci E., **Munzi S.**, Paoli L., 2016. Nuovi dati sulla presenza di *Arthopyrenia* sensu lato in Italia. Book of abstracts of the XXIX Italian Lichen Society Congress, 28-20 September 2016, Trieste (Italy). *Notiziario della Società Lichenologica Italiana*, 29: 52.
- Munzi S.**, Cruz C., Sheppard L.J., Leith I.D., Bini L., Gagliardi A., Cai G., Parrotta L., Gouveia C., Varela Coelho A., Branquinho C., 2016. Molecular clues on eco-physiological response of lichens to nitrogen. Book of abstracts of the 8th Congress of the International Association of Lichenology, 1-5 August 2016, Helsinki, Finland, p. 141.
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