

## **SILVANA MUNZI**

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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. 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. I ended my PhD research in the University of Lisbon (Portugal). I'm currently working at the University of Lisbon as a Marie Curie fellow.

My research is now focused on lichen physiology, but I also work on biomonitoring and lichen systematic, collecting lichen samples and cooperating in biomonitoring surveys with high level institutions.

### **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-ongoing - Marie Curie International 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 Ecossistema 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

2011 - Scholarship for the research "Estimated relapse of trace metal with LDI and bioaccumulation in lichen thalli -2<sup>nd</sup> year". Promoted by the University of Viterbo

2010 - Scholarship for the research "Estimated relapse of trace metal with LDI and bioaccumulation in lichen thalli- 1<sup>st</sup> year". Promoted by the University of 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.

### **Teaching and supervisory experience**

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

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).

24-27 May 2009 - Taught in a university training course on analytical methods in lichen physiology

organized by the University of Siena (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).

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)

### Other activities

- Member of the Steering Committee and Treasurer of the Italian Lichen Society
- Member of the Steering Committee of the working group for Lichenology of the Italian Botanical Society
- 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
- Reviewer for the scientific journals “Acta Physiologiae Plantarum”, “Environmental Monitoring and Assessment”, “Saudi Journal of Biological Sciences”
- Member of the organizing committee of national and international congresses, workshops and excursions, e.g. Biomap 4 - 4th International Workshop on Biomonitoring of Atmospheric Pollution (2006), the meeting of the Italian Lichenological Society working group for biomonitoring “Determination of Biological Index of Epiphytic Lichens” (2007), several National Congresses of the Italian Lichen Society, the excursion to Oasi di Burano in cooperation with the Italian Botanical Society (2010). Organizer of the weekly “Informal presentation” meetings and journal club of the ESFE group (University of Lisbon, 2011-2012).

### Workshops and Training courses

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)

16 May 2012 - Workshop of the Project (FCT PTDC/BIA-ECS/122214/2010) “In-Nitro: conceptualizing the effects of increased nitrogen availability in a Mediterranean ecosystem” held in the Alambre National Park (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 bryology 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).

### **Publications on International Scientific Journals**

- Munzi S.**, Ravera S., Caneva G., 2007. Epiphytic lichens as indicators of environmental quality in Rome. *Environmental pollution*, 146: 350-358.
- 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.**, 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.
- 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.**, 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2011. Do lichens have "memory" of their native nitrogen environment? *Planta*, 233: 333-342.
- 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..
- 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.
- 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.

- 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.
- Paoli L., **Munzi S.**, Fiorini E., Gaggi C., Loppi S., 2012. 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, DOI 10.1007/s11356-012-0893-1.
- Munzi S.**, Branquinho C., Cruz C., Loppi S., 2012. Nitrogen tolerance in the lichen *Xanthoria parietina*: the sensitive side of a resistant species. Functional Plant Biology (accepted).
- Paoli L., **Munzi S.**, Pisani T., Guttová A., Loppi S., 2012. Freezing of air-dried lichens ensures that thalli remain healthy for later physiological measurements. Plant Biosystem (accepted).
- Munzi S.**, Triggiani D., Ceccarelli D., Climati E., Tiezzi A., Pisani T., Paoli L., Loppi S., 2012. Antiproliferative activity of three lichen species belonging to the genus *Peltigera*. Plant Biosystem (accepted).
- Munzi S.**, Pisani T., Paoli L., Renzi M., Loppi S., 2012. Effect of nitrogen supply on the C:N balance in the lichen *Evernia prunastri* (L.) Ach. Turkish Journal of Biology (accepted).

### **Participation in national and international congresses with oral contribution**

- Munzi S.**, Kotzabasis K., Loppi S., Pirintsos A.S., 2006 - Effects of KNO<sub>3</sub>, NH<sub>4</sub>NO<sub>3</sub> and (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> 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.
- 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 Lichenological Society Congress, Trento, 5-7 October 2006. Notiziario della Società Lichenologica Italiana, 19: 91.
- 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.**, Pisani T., Loppi S., 2008 – Composti azotati ed efficienza foto sintetica: influenza del fattore tempo in esperimenti a medio termine su *Evernia prunastri* e *Xanthoria parietina*. Proceedings of the XXI Italian Lichenological Society Congress. Cogne (AO), 11-13 September 2008. Notiziario della Società Lichenologica Italiana, 21: 54.
- 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 Lichenological Society Congress. Brescia, 9-12 September 2009. Notiziario della Società Lichenologica Italiana, 22: 28.
- 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 “5<sup>th</sup> International Workshop on Biomonitoring of Air Pollution”, Buenos Aires, Argentina, 20-24 September 2009.
- 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<sup>o</sup> Encontro Nacional de Ecologia”, Porto, Portogallo, 18-20 ottobre 2010 (presentazione orale).
- 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.**, 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.**, 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.**, Loppi S., Cruz C., Branquinho C., 2012. Physiological aspects of lichen-nitrogen interaction. In-Nitro Workshop. Alambre National Park, Portugal, 16 May 2012.

**Munzi S.**, Loppi S., Cruz C., Branquinho C., 2012. The physiological response of lichen symbionts to stress conditions. 7<sup>th</sup> International Symbiosis Society Congress, July 22-28, 2012 Krakow, Poland.

### **Participation in national and international congresses with poster contribution**

De Lorenzo G., Cervone F., Armaleo D., Bartoli A., **Munzi S.**, Friedl T., 1998 - Using the known plant-pathogen interactions to probe the unknown alga-fungus interactions in lichen symbiosis. Abstracts of Sixth International Mycological Congress, Jerusalem, Israel 23-28 august, 1998.

Ravera S., **Munzi S.**, Roffilli R., 2003. Contributo alla conoscenza dei licheni epifiti dell'area romana. Proceedings of the Italian Lichenological Society Congress. October 2002. Orto Botanico, Padova. Notiziario della Società Lichenologica Italiana, 16: 77.

Caneva G., Ceschin S., **Munzi S.**, Kumbaric A., Salvadori O., 2005- Ricerche di biologia vegetale applicata alla conservazione dei beni culturali. In: Venturella G., Aleffi M. Bigazzi, Caneva G., Mariotti M. (Eds.) 2005 - Le scienze botaniche nel XXI secolo. Informatore Botanico Italiano, vol. 37: 766-767.

**Munzi S.**, Ravera S., Caneva G., 2005 - Risultati preliminari del monitoraggio della città di Roma tramite IBL. Proceedings of the XVII Italian Lichenological Society Congress, Genova, 30 September-1 October 2004. Notiziario della Società Lichenologica Italiana, 18: 46-47.

Muggia L., Grube M., **Munzi S.**, Tretiach M., 2006 - Analisi filogenetica dei mico- e fotobionti di popolazioni simpatriche di tre varietà di *Tephromela atra* (Huds.) Hafellner. Proceedings of the XVIII Italian Lichenological Society Congress, Trieste, 29-30 settembre 2005. Notiziario della Società Lichenologica Italiana, 19: 15.

**Munzi S.**, Pirintsos S.A., Kotzabasis K., Loppi S., 2006 - Ecophysiological response of the lichens *Pseudevernia furfuracea* (L.) Zopf, *Evernia prunastri* (L.) Ach. and *Xanthoria parietina* (L.) Th. Fr. to excess nitrogen supply. Abstracts of IV Balkan Botanical Congress. Sofia, Bulgaria, June 20-26, 2006, p. 252.

Loppi S., **Munzi S.**, Frati L., Pirintsos A.S., 2006 - Lichens as biomonitors of the effects of reduced nitrogen in the Mediterranean area. Abstracts of the “Reduced Nitrogen in Ecology and the Environment” Congress. Obergurgl, Austria, October 14-18, 2006.

**Munzi S.**, Loppi S., Kotzabasis K., Pirintsos S.A., 2006 - Effetti dell'eccesso di azoto sull'efficienza fotosintetica e ruolo delle poliammine nelle specie licheniche *Evernia prunastri* (L.) Ach. e *Xanthoria parietina* (L.) Th. Fr. In: Proceedings of the 101° Congress of the Italiana Botanical Society, Caserta, 27-29 September 2006, pp. 243.

**Munzi S.**, Pirintsos S.A., Kotzabasis K., Loppi S., 2007 - Effetti dell'eccesso di azoto su alcuni parametri ecofisiologici del lichene *Evernia prunastri* (L.) Ach. Proceedings of the XX Italian Lichenological Society Congress. Siena, 13-14 September 2007. Notiziario della Società Lichenologica Italiana, 20: 35.

Triggiani D., Ceccarelli D., Pizzardi S., Fuschino A., Corsi F., Tiezzi A., **Munzi S.**, Pisani T., Loppi S., 2007 - Valutazione dell'attività antiproliferativa di estratti lichenici su cellule di mieloma murino. Proceedings of the XX Italian Lichenological Society Congress. Siena, 13-14 September 2007. Notiziario della Società Lichenologica Italiana, 20: 22.

Vurro E., Sossi S., Bruno M., Sanità di Toppi L., Pisani T., **Munzi S.**, Gaggi C., Loppi S., 2007 - Effetti di elevate concentrazioni di CO<sub>2</sub> e NH<sub>4</sub> sulle concentrazioni di alcuni elementi in traccia in talli di *Evernia prunastri*. Proceedings of the XX Italian Lichenological Society Congress. Siena, 13-14 September 2007. Notiziario della Società Lichenologica Italiana, 20: 40.

Giordani P., G., Incerti G., Benesperi R., Cristofolini F., Deperis F., Ferretti M., Frati L., Isocrono D., Lazzarin G., Loppi S., Matteucci E., Modenesi P., **Munzi S.**, Onorari M., Paolinelli P., Perotti M., Pisani M., Ravera S., Zieger M., Tretiach M., 2008 – Il contributo italiano alla bozza di norma europea CEN Biomonitoring of air – Determination of biological index of epiphytic lichens. Proceedings of the XXI Italian Lichenological Society Congress. Cogne (AO), 11-13 September 2008. Notiziario della Società Lichenologica Italiana, 21: 49.

**Munzi S.**, Triggiani D., Ceccarelli D., CLimati E., Tiezzi A., Pisani T., Loppi S., 2008 – Effetti di estratti lichenici del genere *Peltigera* su cellule di mieloma murino. Proceedings of the XXI Italian

- Lichenological Society Congress. Cogne (AO), 11-13 September 2008. Notiziario della Società Lichenologica Italiana, 21: 55.
- Pisani T., Zahradnikova M., **Munzi S.**, Loppi S., 2008 – Effetti del boro sul lichene epifita *Xanthoria parietina*. Proceedings of the XXI Italian Lichenological Society Congress. Cogne (AO), 11-13 September 2008. Notiziario della Società Lichenologica Italiana, 21: 60.
- Brunialti G., Cristofolini F., Chiarucci A., Frati L., 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., 2009. Verso una norma europea sul monitoraggio della diversità lichenica: primo test comparativo nazionale. Struttura del progetto e risultati preliminari. Proceedings of XXII the Italian Lichenological Society Congress. Brescia, 9-12 September 2009. Notiziario della Società Lichenologica Italiana, 22: 22.
- Pisani T., Paoli L., **Munzi S.**, Loppi S., 2009. Effetti dell'arsenico nel lichene epifita *Xanthoria parietina* (L.) Th.Fr. Proceedings of the XXII Italian Lichenological Society Congress. Brescia, 9-12 September 2009. Notiziario della Società Lichenologica Italiana, 22: 30.
- Gagliardi M., Zucconi L., Onofri S., Nascetti G., **Munzi S.**, 2010. Contributo alla conoscenza di alcune specie licheniche dal punto di vista fitogeografico. Proceedings of the XXIII Italian Lichenological Society Congress. Pesche (IS), 29 September -1October 2010. Notiziario della Società Lichenologica Italiana, 23: 39.
- Fiorini E., Paoli L., **Munzi S.**, Loppi S., 2011. Effetti del cerio sul lichene *Xanthoria parietina*. Proceedings of the XXIV Italian Lichenological Society Congress. Terni, 28-30 September 2011. Notiziario della Società Lichenologica Italiana, 24:54.
- Munzi S.**, Paoli L., Fiorini E., Loppi S., 2011. Effetti dell'antimonio sul lichene *Xanthoria parietina*. Proceedings of the XXIV Italian Lichenological Society Congress. Terni, 28-30 September 2011. Notiziario della Società Lichenologica Italiana, 24:55.
- Paoli L., **Munzi S.**, Fiorini E., Loppi S., 2011. Influenza dell'esposizione e della distanza dell'albero da una strada a elevato traffico veicolare sulla biodiversità dei licheni epifiti e sulla deposizione di elementi in traccia. Proceedings of the XXIV Italian Lichenological Society Congress. Terni, 28-30 September 2011. Notiziario della Società Lichenologica Italiana, 24:57.
- Matos P., Pinho P., **Munzi S.**, Llop E., Branquinho C., 2012. Lichen functional diversity as a tool for assessing the first effects of climate change: developing an early-warning ecological indicator. Abstracts of the 7<sup>th</sup> IAL Symposium, Bangkok, 9-13 January 2012.
- Munzi S.**, Loppi S., Cruz C., Branquinho C., 2012. The role of lichens in understanding and evaluating the impact of reactive nitrogen forms on the ecosystem. Planet under pressure, 26-29 March 2012, London, UK.

## Other

- Loppi S., Brunialti G., Frati L., **Munzi S.**, 2008. Biomonitoring of air quality with epiphytic lichens in the surroundings of the turbo-gas power plant near the sugar refinery SADAM (Municipality of Jesi). Technical report.
- Loppi S., **Munzi S.**, Pisani T., 2009. Biomonitoring of air quality with epiphytic lichens in the surroundings of the turbo-gas power plant near the sugar refinery SADAM (Municipality of Jesi). Technical report.
- Munzi S.**, Zucconi L., Gagliardi M., Ravera S., 2010. Notulae cryptogamicae 8. *Schismatomma graphidioides* (Leight.) Zahlbr. (*Roccellaceae*). Informatore Botanico Italiano, 42(2): 576.
- Participant, as National expert, in the volume: Blasi C., Marignani M., Copiz R., Fipaldini M., Del Vico E. (Eds), 2010. Le aree importanti per le piante nelle regioni d'Italia. Progetto Artiser, Roma, 224 pp.
- Nascetti G., Onofri S., Zucconi L., Mosesso P., **Munzi S.**, Gagliardi M., Ripa C., Ferrari C., Angeletti D., Scialanca F., Pepe G., 2011. Azioni di monitoraggio ambientale per la valutazione dell'impatto dovuto alla riconversione a carbone della centrale Enel di Civitavecchia "Torvaldaliga nord". Technical report ([http://www.ambientale.org/pdf/RelBiomonit\\_TV.N.pdf](http://www.ambientale.org/pdf/RelBiomonit_TV.N.pdf)).
- Munzi S.**, Zucconi L., Gagliardi M., Ravera S., 2012. Notulae cryptogamicae 16-21. Informatore Botanico Italiano, 44 (1) 191-192.
- Nascetti G., Onofri S., Zucconi L., Mosesso P., **Munzi S.**, Ripa C., Ferrari C., Angeletti D., Scialanca F., Pepe G., Buonadonna P., 2012. Azioni di monitoraggio ambientale per la valutazione dell'impatto dovuto alla riconversione a carbone della centrale Enel di Civitavecchia "Torvaldaliga nord" (2° anno di indagine). Technical report (<http://www.ambientale.org/pdf/BiomonitoraggiReport-finale-2011.pdf>).