

*Consiglio Nazionale delle Ricerche
Istituto di Ricerca sulle Acque*



Curriculum vitae: Anna Barra Caracciolo

Master in Biology (1989), PhD in Ecology (1995)

Researcher since 2001 at Water Research Institute - National Research Council Rome, Italy;

Principal investigator of the soil and groundwater ecology and microbial ecology lab at IRSA-CNR

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Main field of interest

Microbial Ecology regarding soil, sediments and groundwater. Microbial ecology methods for assessing structure (microbial abundance, diversity) and functioning (viability, activity) of microbial communities in soil and water ecosystems.

Xenobiotic fate and their effects on soil and water ecosystems

Interest focused particularly on the study of the fate of organic pollutants (pesticides, biocides, pharmaceuticals, PCB) leaching from soil to surface and groundwater and on the role of the microbial component in their removal.

Bioremediation by using bacterial populations capable to transform and to mineralize xenobiotics and Plant assisted bioremediation.

Environmental Risk Assessment of dangerous substances

She has been involved in the Environmental Risk Assessment of hazardous contaminants (CMR, PBT, vPvB, POP) in the REACH framework and she implemented an ecotoxicological database (DESC) for the Italian Ministry of Environment available on line at: www.dsa.minambiente/sitodesc

She has been involved in national and international projects regarding soil, surface water and groundwater contamination (pesticides, pharmaceuticals and fertilizers, biocides, PCB), environmental risk assessment of hazardous contaminants).

2012 - **“Associate Professor in Ecology”**

2014 - 2016 **Teaching Bioremediation of contaminated soil and water** at Rome Sapienza University - for Ecobiology Master Degree

2010 – 2011 Teaching (Short term Contract Teacher) of **Freshwater Ecology** Course for

Nature Conservation Master Degree at La Tuscia University - Viterbo, Italy

2006 – 2007 Teaching (Short term Contract Teacher) of **Microbial Ecology Method Course** for Ecobiologia Master Degree at Sapienza University - Rome, Italy

2005 – 2006 Teaching (Short term Contract Teacher) of **Microbial Ecology Method Course** for Ecobiologia Master Degree at Sapienza University - Rome, Italy

Project Leader, Coordination, Responsibilities

2013 - 2017 Coordinator of **MicroCokit** - FP7 Project People-2012-Industry-Academia Partnerships and Pathways IAPP – **Microbial Community-based sequencing analysis linked to anthropogenic pressures: MicroCoKit to address the water quality** n° 324518
<http://www.microcokit.eu/>

2013 - 2015 CNR-IRSA Project leader of **Experimental application of low-cost phytoremediation techniques in the ex-campo Cimino– Manganecchia area in Taranto**, funded by CISA Spa.

2014 - 2018 *Management Committee* of **COST Action FP1305: BioLink: Linking belowground biodiversity and ecosystem function in European forests**.
http://www.cost.eu/COST_Actions/fps/FP1305

2008 - 2010 Project Leader of **Development of a database on the ecotoxicological properties of hazardous chemicals** - Italian Project for Italian Ministry of the Environment, Territory and Sea <http://www.dsa.minambiente.it/sitodesc/>.

2008 Project: **Ecological Assessment of a contaminated open quarry in Apulia Region (Southern Italy)** funded by Comune di San Pancrazio (Br).

2008 - 2009 Italian Project leader **Study of the bacterial community involved in degradation of s-triazine herbicides in maize and cane sugar rhizosphere** (CNPq Processo 473931/20087) in collaboration with Prof. Luciane Sene - Universidade Estadual do Oeste do Parana di Cascavel – Brasil.

2006 - 2013 Italian Project leader **Evaluacion del impacto ambiental y recuperacion del medio natural en emplazamientos contaminados** (EIADES) funded by Comunidad de Madrid (IMIDRA), Madrid -Spain.

2007 - 2008 Italian Project Leader **Pesticide adsorption and degradation in soil amended with wood residues: study of the microbial community involved in biodegradation** - Bilateral Agreement Italian IRSA-CNR - Spanish IRNASA-CSIC

2005 - 2007 Project Leader **Technical and scientific support to risk assessment of dangerous substances and definition of emission scenarios for biocides** Project for Italian Ministry of the Environment, Territory and Sea.

2005 - 2006 Project Leader **Molecular probes as biosensor of potential degrading microbial activity in contaminated agricultural soils**. Bilateral Agreement Italian IRSA-CNR - Spanish CENIM-CSIC.

Participation in National and International Projects

2014 - 2018 Participation in TECO Project - **Technological eco-innovation for the quality control and the decontamination of polluted waters and soils** - EU-India Research and

Innovation Partnership Europe - Aid. ID: IN-2008-ENS-2202889961.

2012 - 2016 Italian Flagship Programme RITMARE, Italian research on the sea, SP3-WP2-AZ3-U004 ***Tecnologie di biorisanamento in situ: applicazione di approcci innovativi e decontaminazione biologica***

2007 - 2013 ***Innovative experiments aimed at optimizing the agronomic use of digested residue coming from zootechnical treatment plants through phyto-dishydration and composting processes*** funded by Umbria Region.

2012 - 2014 Participation in the Project: ***Bioremediation and Rhizoremediation of Polychlorinated Biphenyls (PCBs) Contaminated Soils*** - Italian IRSA-CNR - Indian CSIR-NEERI Bilateral Agreement.

2010 - 2014 Working with Edd Topp from the Canadian Agri-Food - Southern Crop Protection and Food Research Center of London Ontario – Canada on ***Assessment of the natural capacity of soil and surface water ecosystems to degrade pharmaceuticals.***

2008 - 2009 Participation in the Working Group ***Sistemi di monitoraggio per Suoli ed Acque*** as part of National Research Council Project Health and Environment.

2003 - 2005 European Project TempQsim: ***Evaluation and improvement of water models for application to temporary waters in Southern European catchments***

2004 - 2006 National Project “Hydrogeological Evaluation Studies” ARPA Umbria Italian CNR Strategic Environment and Territory Project: Study of herbicide biodegradation in presence of nitrogen fertilizers.

From 1996 to 2000 **Assistant Researcher** at Water Research Institute (National Research Council) and participation in several projects such as:

2000 - 2002 Italian CNR Strategic Environment and Territory Project: ***Detection of herbicides and their transformation products in groundwater and terrestrial organisms.***

1998 – 2000 Joint three year Italian Project with the Health Institute: ***The environmental and sanitary problems caused by the occurrence of pesticide transformation products in groundwater***

Tutoring, Scientific Committees, Referee (from 2001 to present):

- Tutor of students for master and PhD degree theses, tutor of research activity of grant holders.

2013 – Teaching and Scientific Committee of the ***International Training Course Contaminated site remediation: Application of advanced tools to control biological processes*** – organized by IRSA-CNR, SETAC IB and EU Project Minotaurus, Rome 27 - 29 Maggio.

- Exam committees: final doctorate exam (at Madrid University), exams for studying grants and contracts, etc.

- Expert consultant in the evaluation of research projects and referee for various international scientific journals

From 2013 - Action Group ***Ecosystem Services for Europe*** (ESE) in the framework of the European Innovation Partnership on Water

From 2013 **Council member European Society of Environmental Toxicology and Chemistry Council (SETAC Europe)** <https://www.setac.org/?page=SECouncil#council>

- **Award Committee** della SETAC Europe
- **Regional Branch Committee** della SETAC Europe
- **Scientific Committee** della SETAC Europe

2011 - 2012 **Vice-President Past-President** Italian Branch of the European Society for Environmental Toxicology and Chemistry- **SETAC IB**

2010 - 2011 **President SETAC IB**

2009 - 2010 **SETAC IB**

2008-2009 Member of the Board of **SETAC IB**

From 2005 Member of the European Society for Environmental Toxicology and Chemistry—SETAC - Ref. Member Number 180381

From 1990 Member of the **Italian Ecology Society** (S.It.E) and of the Italian Microbial Ecology Group

From 2004 Member of the **Pesticide Microbiology Group** - Advisory Group of SETAC Europe

2003 Participation in the National Working Group Biological Methods (Metodi Biologici) Editor Prof. R. Marchetti for Italian Guidelines of Water Biological Indicators- APAT-IRSA CNR 29/2003.

- Scientific expert for **ECHA** (European Chemicals Agency) Database

- Scientific expert for **EFSA** (European Food Safety Authority) Database

Selected publications

Matturro B, Ubaldi C, Grenni P, Barra Caracciolo A, Rossetti S, **2015**. Polychlorinated biphenyl (PCB) anaerobic degradation in marine sediments: microcosm study and role of autochthonous microbial communities. *Environmental Science and Pollution Research*, DOI 10.1007/s11356-015-4960-2

Barra Caracciolo A, Bustamante MA, Nogues I, Di Lenola M, Luprano ML, Grenni P, **2015**. Changes in microbial community structure and functioning of a semiarid soil due to the use of anaerobic digestate derived composts and rosemary plants. *Geoderma*, 245-246: 89-97

Barra Caracciolo A, Topp E, Grenni P, **2015**. Pharmaceuticals in the environment: Biodegradation and effects on natural microbial communities. A Review. *Journal of Pharmaceutical and Biomedical Analysis*, 106: 25-36

Godoi I, Sene L, **Barra Caracciolo A**, **2014**. Assessment of the bacterial community structure in a Brazilian clay soil treated with atrazine. *Annals of Microbiology* 64: 307-311.

Babut M, Arts GH, **Barra Caracciolo A**, Carluer N, Domange N, Friberg N, Gouy V, Grung M, Lagadic L, Martin-Laurent F, Mazzella N, Pesce S, Real B, Reichenbeger S, Roex EWM, Romijn K, Rottele M, Stenrod M, Tournebize F, Vindimian E, **2013**. Pesticide risk assessment and management in a globally changing world – Report from a European interdisciplinary workshop. *Environmental Science and Pollution Research*, 20: 8298-8312.

Barra Caracciolo A, De Donato G, Finizio A, Grenni P, Santoro S, Petrangeli AB, **2013**. A New Online Database on Chemicals in Accordance with REACH Regulation. *Human and Ecological Risk Assessment* 19: 1682-1699.

Di Lenola M, **Barra Caracciolo A**, Falconi F, Cinicia M, Grenni P, 2013. Bacterial community structure and their changes in contaminated ecosystems. *Environmental Engineering and Management Journal*, 12 (S11): 161-164.

Barra Caracciolo A, Bottoni P, Grenni P, 2013. Microcosms studies to evaluate microbial potential to degrade pollutants in soil and water ecosystems. *Microchemical Journal* 107: 126-130.

Grenni P, Patrolecco L, Ademollo N, Tolomei A, **Barra Caracciolo A**, 2013. Degradation of gemfibrozil and naproxen in a river water ecosystem. *Microchemical Journal* 107: 158-164.

Bottoni P, Grenni P, Lucentini L, Barra Caracciolo A, 2013. Terbutylazine and other triazines in Italian water resources. *Microchemical Journal* 107: 136-142.

Patrolecco L, Ademollo N, Grenni P, Tolomei A, **Barra Caracciolo A**, Capri S, 2013. Simultaneous determination of human pharmaceuticals in water samples by solid phase extraction and HPLC with UV-Fluorescence detection. *Microchemical Journal* 107: 165-171.

Grenni P, Rodríguez-Cruz MS, Herrero-Hernández E, Marín-Benito JM, Sánchez-Martín MJ, **Barra Caracciolo A**, 2012. Effects of Wood Amendments on the Degradation of Terbutylazine and on Soil Microbial Community Activity in a Clay Loam Soil. *Water Soil & Air Pollution* 223: 5401-5412.

Artigas J, Arts G, Babut M, **Barra Caracciolo A**, Charles S, et al, 2012. Towards a renewed research agenda in Ecotoxicology. *Environmental Pollution* 160: 201-206

Barra Caracciolo A, Grenni P, Mascolo G, Caputo MC, Uricchio V, 2011. Pharmaceutical waste disposal in a disused open quarry: assessment of its effects on bacterial communities in soil and groundwater. *Chemistry and Ecology* 27: 43-51

Barra Caracciolo A, Grenni P, Saccà ML, 2010. Effect of the Antiviral Drug Oseltamivir (Tamiflu) on the Bacterial Community Structure of a Surface Water Ecosystem Analyzed using Fluorescence *In Situ* Hybridization. *Bulletin of Environmental Contamination and Toxicology* 85: 443-446

Barra Caracciolo A, Grenni P, 2010. Microbial ecology methods for assessing the effects of xenobiotics in water and soil ecosystems. *Comparative Biochemistry and Physiology Part A Molecular & Integrative Physiology* 157, S1–S2: S56

Barra Caracciolo A, Grenni P, Saccà ML, Amalfitano S, Martin M, Gibello A, 2010. The role of a groundwater bacterial community in the degradation of the herbicide terbutylazine. *FEMS Microbiology Ecology* 71: 127-136

Barra Caracciolo A, Bottoni P, Grenni P, 2010. The use of the Fluorescence *In Situ* Hybridization method in soil and water ecosystems: a new approach for studying the effect of xenobiotics on bacterial community structure. *Toxicological & Environmental Chemistry* 92: 567-579

Bottoni P, Caroli S, **Barra Caracciolo A**, 2010. Pharmaceuticals as priority water contaminants *Toxicological & Environmental Chemistry* 92: 549 - 565

Gibello A, Vela AI, Martin M, **Barra Caracciolo A**, Grenni P, Fernandez Garayzabal JF, 2009. Proposal for the classification the genus *Tetrathiobacter* Ghosh et al. 2005 to the genus *Advenella* Coenye et al 2005. *International Journal of Systematic and Evolutionary Microbiology* 59: 1914-1918

Grenni P, **Barra Caracciolo A**, Rodriguez-Cruz MS, Sanchez-Martin MJ 2009. Changes in the microbial activity in a soil amended with oak and pine residues and treated with linuron herbicide. *Applied Soil and Ecology* 41: 2-7.

Grenni P, Gibello A, **Barra Caracciolo A**, Fajardo C, Nande M, Sacca ML, Martinez Inigo MJ, Ciccoli R, Martin M, 2009. A new fluorescent oligonucleotide probe for *in situ* detection of s-triazine-degrading *Rhodococcus wratislaviensis* in contaminated groundwater and soil samples. *Water Research* 43: 2999-3008

Singer AC, Howard M, Johnson A, Accinelli C, Bird S, Boucard T, Boxall A, Brian J, **Barra Caracciolo A** et al, 2008. Meeting report: risk assessment of Tamiflu® use under pandemic conditions. *Environmental Health Perspectives* 116: 1563 - 1567

Amalfitano S, Fazi S, Zoppini A, **Barra Caracciolo A**, Grenni P, Puddu A. 2008. Responses of benthic bacteria to experimental drying in sediments from Mediterranean temporary rivers. *Microbial Ecology* 55: 270-279

- Martín M, Gibello A, Lobo C, Nande M, Garbi C, Fajardo C, **Barra Caracciolo A**, Grenni P, Martínez-Iñigo MJ, **2008**. Application of fluorescence *in situ* hybridization technique to detect simazine-degrading bacteria in soil samples. *Chemosphere* 71: 703-710
- Accinelli C, **Barra Caracciolo A**, Grenni P, **2007**. Degradation of the antiviral drug oseltamivir carboxylate in surface water samples. *International Journal of Environmental Analytical Chemistry* 87: 579-587
- Guzzella L, Capri E, Di Corcia A, **Barra Caracciolo A**, Giuliano G, **2006**. Fate of diuron and linuron in a field lysimeter experiment. *Journal of Environmental Quality* 35: 312-323
- Fava L, Orrù M.A, Crobe A, **Barra Caracciolo A**, Bottoni P, Funari E, **2005**. Pesticides metabolites as contaminants of groundwater resources: assessment of the leaching potential of endosulfan sulfate, 2,6-dichlorobenzoic acid, 3,4-dichloroaniline, 2,4-dichlorophenol and 4-choloro-2-methylphenol. *Microchemical Journal* 79: 207-211
- Barra Caracciolo A**, Giuliano G, Grenni P, Cremisini C, Ciccoli R, Carla U, **2005**. Effect of urea on degradation of terbuthylazine in soil. *Environmental Toxicology and Chemistry* 24: 1035-1040
- Barra Caracciolo A**, Giuliano G, Grenni P, Guzzella L, Pozzoni F, Bottoni P, Fava L, Crobe A, Orrù M, Funari E. **2005**. Degradation and leaching of the herbicides metolachlor and diuron: a case study in an area of Northern Italy. *Environmental Pollution* 134: 525-534
- Barra Caracciolo A**, Grenni P, Ciccoli R, Di Landa G, Cremisini C, **2005**. Simazine biodegradation in soil: analysis of bacterial community structure by *in situ* hybridization. *Pest Management Science* 61: 863-869
- Barra Caracciolo A**, Grenni P, Cupo C, Rossetti S, **2005**. In Situ Analysis of native microbial communities in complex samples with high particulate loads. *FEMS Microbiology Letters* 253: 55-58
- Barra Caracciolo A**, Bottoni P, Fava L, Funari E, Giuliano G, Silvestri C, **2002**. Microbial degradation of two carbamate insecticides and their main metabolites in soil. *Chemistry and Ecology* 18: 245-255
- Barra Caracciolo A**, Giuliano G, Di Corcia A, Crescenzi C, Silvestri C, **2001**. Microbial degradation of terbuthylazine in surface soil and subsoil at two different temperatures. *Bulletin of Environmental Contamination and Toxicology* 67: 815-820
- Fava L, Bottoni P, Crobe A, **Barra Caracciolo A**, Funari E, **2001**. Assessment of leaching potential of aldicarb and its metabolites using laboratory studies. *Pest Management Science* 57: 1135-1141
- Di Corcia A, **Barra Caracciolo A**, Crescenzi C, Giuliano G, Murtas S, Samperi R, **1999**. Subcritical water extraction followed by liquid chromatography mass spectrometry for determining terbuthylazine and its metabolites in aged and incubated soils. *Environmental Science and Technology* 33: 3271-3277