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Academic Appointments

- 2018-present Associate Professor, Dept. of Chemistry, Life Sciences and Environmental Sustainability, University of Parma.
- 1993 -- 2017 Assistant Professor, Dept. of Life Sciences (formerly Environmental Sciences) University of Parma.
- 1997 Visting Scientist, Prof. Robert E. Ulanowicz's lab, Chesapeake Biological Laboratories, University of Maryland System, Solomons, MD, USA
- 1991-1993 Postdoctoral Associate University of Parma
- 1989-1990 Postdoctoral Fellow Prof. Richard Levins' Laboratory, Department of Population and Interbational Health, Harvard School of Public Health, Harvard University, Boston MA, USA
- 1988. Visting Fellow, Department of Population Sciences, Harvard School of Public Health, Harvard University, Boston MA, USA

Education

1984 M.S. Biological Sciences, University of Parma, Italy.

1989 Ph.D. Environmental Sciences, University of Parma, Italy.

Research Interests

Ecosystem ecology, ecological modelling, network analysis, social and ecological networks, environmental impact assessment, sustainability, environmental justice, political ecology.

Publications

Papers

1. Magri M., Benelli S., Bondavalli C., Bartoli Marco, Christian R. R., Bodini A. (2018). **Benthic N pathways in illuminated and bioturbated sediments studied with network analysis.** LIMNOLOGY AND OCEANOGRAPHY, vol. 63, p. 68-84, ISSN: 0024-3590, doi: 10.1002/lno.10724
2. Bodini A., Rocchi M., Scotti M. (2018). **Insights into the ecology of the Black Sea through the qualitative loop analysis of the community structure.** LIMNOLOGY AND OCEANOGRAPHY, vol. 63, p. 968-984, ISSN: 0024-3590, doi: 10.1002/lno.10713
3. Menta C., Conti F.D., Pinto S., Bodini A. (2018). **Soil Biological Quality index (QBS-ar): 15 years of application at global scale.** ECOLOGICAL INDICATORS, vol. 85, p. 773-780, ISSN: 1470-160X, doi: 10.1016/j.ecolind.2017.11.030
4. Rocchi, M., Scotti, M., Micheli, F., Bodini, A. (2017). **Key species and impact of fishery through food web analysis: A case study from Baja California Sur, Mexico.** Journal of Marine System, 165: 92–102.
5. Bodini, A., Clerici, N. (2016). **Vegetation, herbivores and fires in savanna ecosystems: A network perspective.** Ecological Complexity (in press).
6. Gardi, C., Visioli, G., Conti, F.D., Scotti, M., Menta, C., and Bodini, A. (2016). **High Nature Value Farmland: assessment of soil organic carbon in Europe.** FRONTIERS IN ENVIRONMENTAL SCIENCES, Vol 4., doi:10.3389/fenvs.2016.00047, ISSN=2296-665X.

7. Bellingeri, M. and Bodini, A. (2016). **Food web's backbones and energy delivery in ecosystems.** OIKOS 125: 586–594. doi: 10.1111/oik.02244.
8. Bondavalli, C., Bodini, A.(2014). **How interaction strength affects the role of functional and redundant connections in food webs.** ECOLOGICAL COMPLEXITY, 20: 97-106, ISSN 1476-945X, <http://dx.doi.org/10.1016/j.ecocom.2014.09.004>.
9. Bellingeri M., Bodini A. (2013). **Threshold extinction in food webs** THEORETICAL ECOLOGY (ISSN:1874-1738), 10 (6): 143- 152 (10.1007/s12080-012-0166-0).
10. Bodini A.(2012). **Building a systemic environmental monitoring and indicators for sustainability: what has the ecological network approach to offer?** ECOLOGICAL INDICATORS (ISSN:1470-160X) 15: 140-148 (10.1016/j.ecolind.2011.09.032).
11. Bodini A., Bondavalli C., Allesina S. (2012) **Cities as ecosystems: growth, development and implications for sustainability** ECOLOGICAL MODELLING (ISSN:0304-3800) 14: 185-198 (10.1016/j.ecolmodel.2012.02.022).
12. Bondavalli C., Favilla S., Bodini A. (2009) **Quantitative versus qualitative modelling. A complementary approach in ecosystem study.** COMPUTATIONAL BIOLOGY AND CHEMISTRY (ISSN:1476-9271), 33: 22- 28 (10.1016/j.compbiolchem.2008.07.012).
13. Scotti M., Bondavalli C., Bodini A., Allesina S. (2009) **Using trophic hierarchy to understand food web structure** OIKOS (ISSN:0030-1299) pp.1695- 1702 (118) 10.1111/j.1600-0706.2009.17073.
14. Scotti M., Bondavalli C., Bodini A. (2009) **Linking trophic position and flow structure constraints in ecological networks: energy transfer efficiency or topology effect?** ECOLOGICAL MODELLING (ISSN:0304-3800) pp.3070- 3080 (220)
15. Bodini A., Bellingeri M., Allesina S., Bondavalli C. (2009) **Using food web dominator**
16. **trees to catch secondary extinctions in action** PHILOSOPHICAL TRANSACTIONS OF THE
17. ROYAL SOCIETY OF LONDON SERIES B: BIOLOGICAL SCIENCES (ISSN:0962-8436) pp.1725-1731 7 (364) 10.1098/rstb.2008.0278.
18. Allesina S., Bodini A., Pascual M. (2009) **Functional links and robustness in food webs** PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY OF LONDON SERIES B: BIOLOGICAL SCIENCES (ISSN:0962-8436) pp.1701- 1709 9 (364) 10.1098/rstb.2008.0214.
19. Scotti M., Bondavalli C., Bodini A. (2008) **Ecological footprint as a tool for local sustainability.** ENVIRONMENTAL IMPACT ASSESSMENT REVIEW (ISSN:0195-9255) pp.39-50 12 (29) 10.1016/j.eiar.2008.07.001.

20. Clerici N., Bodini A., Eva H., Grigoire J., Dulieu D., Paolini C. (2007) **Increased isolation of two Biosphere Reserves and surrounding protected areas (WAP ecological complex, West Africa)** JOURNAL FOR NATURE CONSERVATION (ISSN:1617-1381) pp. 26- 40 (15) 10.1016/j.jnc.2006.08.003.
21. Viaroli P., Marinov D., Bodini A., Giordani G., Galbiati L., Somma F., Bencivelli S., Norro A., Zaldivar J.M. (2007) **Analysis of clam farming scenarios in the Sacca di Goro lagoon** TRANSITIONAL WATER MONOGRAPHS (ISSN:1825-2273) , 22 (1) 71- 92 10.1285/i18252273.
22. Bondavalli C., Bodini A., Rossetti G., Allesina S. (2006) **Detecting stress at the whole ecosystem level. The case of a mountain lake: Lake Santo (Italy)** ECOSYSTEMS (ISSN: 1432-9840) pp.768- 787 20 (9) 10.1007/s10021-005-0065-y.
23. Scotti M., Allesina S., Bondavalli C., Bodini A., Abarca-Arenas L. (2006). **Effective trophic positions in ecologicalacyclic networks** ECOLOGICAL MODELLING (ISSN:0304-3800) pp.495- 505 (198).
24. 3800) pp.495- 505 (198).
25. Allesina S., Bodini A., Bondavalli C. (2006) **Secondary extinctions in ecological networks: bottlenecks unveiled** ECOLOGICAL MODELLING (ISSN:0304-3800) pp.150-161
26. Allesina S., Bodini A., Bondavalli C. (2005) **Ecological subsystems via graph theory: the role of strongly connected components** OIKOS (ISSN:0030-1299) pp.164- 176 13 (110) 10.1111/j.0030-1299.2005.13082.x.
27. Allesina S, Bodini A. (2005) **Food web networks: Scaling relation revisited** ECOLOGICAL COMPLEXITY (ISSN:1476-945X) pp.323- 338 (2).
28. Allesina S., Bodini A. (2004) **Who dominates whom in the ecosystem? Energy flow bottlenecks and cascading extinctions** JOURNAL OF THEORETICAL BIOLOGY (ISSN:0022-5193) pp.351- 358 8 (230) 10.1016/j.jtbi.2004.05.009.
29. Clerici N., Bodini A., Ferrarini A. (2004) **Sustainability at the local scale: defining highly aggregated indices for assessing environmental performance. The province of Reggio Emilia (Italy) as a case study** ENVIRONMENTAL MANAGEMENT (ISSN:0364-152X) pp.590- 608 (34).
30. Bodini A., Bondavalli C. (2002) **Towards a sustainable use of water resources: a whole-ecosystem approach using network analysis** INTERNATIONAL JOURNAL OF ENVIRONMENT AND POLLUTION (ISSN:0957-4352) pp.463- 485 (18).
31. Ferrarini A., Bodini A., Becchi M. (2001) **Environmental quality and sustainability in the Province of Reggio Emilia (Italy): using multi-criteria analysis to assess and compare**

municipal performance JOURNAL OF ENVIRONMENTAL MANAGEMENT (ISSN: 0301-4797) pp.117- 131 (63).

- 32.** Bodini A. (2000) **Reconstructing trophic interactions as a tool for understanding and managing ecosystems: application to a shallow eutrophic lake** CANADIAN JOURNAL OF FISHERIES AND AQUATIC SCIENCES (ISSN:0706-652X) pp.1999- 2009 (57).
- 33.** Bondavalli C., Ulanowicz R.E., Bodini A. (2000) **Insights into the processing of carbon in the South Florida Cypress Wetlands: a whole-ecosystem approach using network analysis** JOURNAL OF BIOGEOGRAPHY (ISSN:0305-0270) pp.697- 710 (27).
- 34.** Bodini A., Ricci A., Viaroli P. (2000) **A multimethodological approach for the sustainable management of perfluvial wetlands of the po river** ENVIRONMENTAL MANAGEMENT (ISSN:0364-152X) pp.59- 72 (26 (1)).
- 35.** Bodini A. (1998) **Representing ecosystem structure through signed digraphs. Model reconstruction, qualitative predictions and management: the case of a freshwater ecosystem** OIKOS (ISSN:0030-1299) pp.93- 106 (83).
- 36.** Bodini A. (1996) **Uncertainty and resource exploitation: exploration based on qualitative modelling.** STATISTICA APPLICATA (ISSN:1125-1964) pp.185- 199 (8).
- 37.** Bodini A., Giavelli G.; Rossi O. (1994) **The qualitative analysis of community food webs: implications for wildlife management and conservation** JOURNAL OF ENVIRONMENTAL MANAGEMENT (ISSN:0301-4797) pp.49- 65 (41).
- 38.** Bodini A., Giavelli G. (1992) **Multicriteria analysis as a tool to investigate compatibility between conservation and development on Salina Island, Aeolian Archipelago, Italy** ENVIRONMENTAL MANAGEMENT (ISSN:0364-152X) pp.633- 652 (16 (5)).
- 39.** Bodini A. (1991) **What is the role of predation on stability of natural communities? A theoretical investigation** BIOSYSTEMS 26 (ISSN:0303-2647) pp.21- 30.
- 40.** Giavelli G.; Bodini A. (1990) **Plant-ant-fungus communities investigated through qualitative modelling** OIKOS (ISSN:0030-1299) pp.357- 365 (57).
- 41.** Bodini A., Giavelli G. (1989) **The qualitative approach in investigating the role of species interaction.** BIOSYSTEMS 22 pp. 289–299.

Book Chapters

1. Bodini A. (2018). **The dialectics of sustainability**. In: (T. Awerbuchs M.S. Clack P.J. Taylor, editors), *The truth is the whole*. p. 10-20, Arlington (MA):The Pumping Station, ISBN: 978-0-9988891-0-8
2. Bodini A., Allesina S., Bondavalli C. (2012) **Network science in ecology: the structure of ecological communities and the biodiversity question**. In: Vedres B., Scotti M. (eds.) *Networks in Social Policy Problems*. Cambridge University Press, Cambridge, UK pp. 220-236.
3. Bodini A., Bondavalli C., Allesina S. (2012) **Cities as ecosystems: functional similarities and the quest for sustainability**. In: Jordán F., Jörgensen S.E. (eds.) *Models of the ecological hierarchy from molecules to the ecosphere*. Elsevier, Amsterdam, pp. 297-318.
4. Allesina S., Bodini A. (2008). **Ascendency**. In: JORGENSEN S.E., FATH B. (eds.) *Ecological Indicators*. Encyclopedia of Ecology, Elsevier, pp. 254- 263.
5. Bodini A.; Klotz S. (2002) **The science of ecology for a sustainable world**. In: AA.VV. (eds.) *KNOWLEDGE FOR SUSTAINABLE DEVELOPMENT. An Insight into the Encyclopedia of Life Support System*. EOLSS Publishers Co. Ltd, OXFORD, pp.1- 19.
6. Bodini A., Puccia C.J., Giavelli G. (1991) **Understanding resource management strategies under different ecological constraints: the case of oligotrophic and eutrophic lakes**. In: RAVERA O. (ed.) *Terrestrial and Aquatic Ecosystems Perturbation and Recovery*, Ellis Horwood Limited, LONDON, pp: 583- 592.

Books

1. Bodini A., Bondavalli C., Allesina S. (2007). **L'ecosistema e le sue relazioni. Idee e strumenti per la valutazione di impatto ambientale e di incidenza** (in Italian), Franco Angeli, MILANO 160 pp.

Grants

Teaching Activity

Courses taught at the University of Parma

Environmental and Strategic Impact Assessment (6 CFU);
Ecological Modelling (6CFU);
Data Analysis in Biology (6 CFU)

Courses taught outside the University of Parma

Biodiversity conservation | joint Greek-French M.Sc. University of the Aegean, Mytilini, Lesvos.
Years 2007-2011. Graduate Course. Course module: Theoretical ecology, network analysis.

Environmental Problems and Policies in Europe, Exchange Program between University of Parma and Boston College. Undergraduate Course. Years 2002-2003, 2004-2005, 2005-2007 (1st semester).

Environmental Sciences, Exchange Program between University of Parma and Boston College. Undergraduate Course. Year 2010-2011 (1st semester).

Mentoring

Stefano Allesina (PhD in Ecology) Year 2004. Thesis “Ecological flow networks: topological and Functional Features” (Present Position: Professor, Department of Ecology & Evolution, Computation Institute, The University of Chicago; <http://allesinalab.uchicago.edu/>)

Nicola Clerici (PhD in Ecology) Year 2006. Thesis “Monitoring and assessing fire impacts and land cover change in tropical and subtropical ecosystems using satellite remote sensing and GIS techniques” (Present Position: Profesor Titular, Facultad de Ciencias Naturales y Matematicas, Universidad del Rosario, Bogotá, Colombia)

Marco Scotti (PhD in Ecology) Year 2007. Thesis “Single species features in ecological networks” (Present Position: Researcher at GEOMAR | Helmholtz-Zentrum für Ozeanforschung Kiel
Marine Ökologie: Experimentelle Ökologie - Nahrungsnetze
Düsternbrooker Weg 20, 24105 Kiel)

Michele Bellingeri (PhD in Ecology) Year 2011 Thesis “Secondary Extinctions in food webs”
Present Position:.

Marta Rocchi (PhD in Ecology) Year Thesis "" Present Position: Post-doctoral student,
Department of Arts, University of Bologna)

Editorial Activity

Reviewer: Ecology, Journal of Theoretical Biology, Science of the Total Environment, Water Research, PLOS ONE, Ecological Modelling, Ecological Complexity, Environmental Science and Technology, Ecological Indicators, Water Resource Management, Acta Biologica, Biology and Conservation, Canadian Journal of Fisheries and Aquatic Sciences, Journal of Environmental Planning and Management.

Editor: EOLSS, Encyclopedia for Life Support Systems (<http://www.eolss.net/>) Honorary Theme Editor for the section "Ecology".

Skills

Languages: Italian (mother tongue), English (good knowledge, oral and written) French (scholar level oral and written).

Computer skills: Languages: Fortran, Python. Operating Systems: Windows, Unix. Software and programming: R.