



Paco Melià | *curriculum vitae*

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Current position

Associate Professor of Ecology, Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (www.deib.polimi.it)

Qualifications

2021: National scientific qualification as full professor of Ecology in Italian universities

Past positions

2005-2020: Assistant professor, Dipartimento di Elettronica e Informazione, Politecnico di Milano

2002-2005: Postdoctoral fellow, Dipartimento di Elettronica e Informazione, Politecnico di Milano

1999-2001: PhD student, Dipartimento di Scienze Ambientali, Università degli Studi di Parma

1998: Postgraduate fellow, Dipartimento di Elettronica e Informazione, Politecnico di Milano

Education

2001: PhD in Ecology, Università degli Studi di Parma

1996: MSc with honours in Environmental and land planning engineering, Politecnico di Milano

Awards

2000: Premio Marchetti (young researcher paper award) of the Italian Ecological Society

Memberships

Member of the Italian Ecological Society (SIe) since 1999

Member of the Board of Directors of the National Inter-University Consortium for Marine Sciences (CoNISMa) as a representative of the Politecnico di Milano since 2019

Research

Research interests

I am member of the research and teaching group in Ecology (www.ecologia.polimi.it) and the research group in "Planning and management of environmental systems" with the Politecnico di Milano. My main research activities include basic and applied research in ecology, with emphasis on ecological modelling, population demography and conservation biology, sustainable management of natural living resources, environmental impact assessment, life cycle assessment and sustainability indicators.

Research projects

2022-2024: Work package leader and research team leader in the project *Preserving coastal marine ecosystem functions and services under climate change pressure and overfishing*, funded by the Italian Ministry of Education, Universities and Research (PRIN 2020 program)

2021-2025: Task leader and research team leader in the project *SEAwise: Shaping ecosystem based fisheries management*, funded by the H2020 Programme of the European Commission

2016-2019: Work package leader and research team leader in the project *SafeNet: Sustainable fisheries in EU Mediterranean waters through networks of MPAs*, funded by the Directorate-General for Maritime Affairs and Fisheries of the European Commission

2015-2019: Senior research associate in the project *ECOPOTENTIAL: Improving future ecosystem benefits through Earth observations*, funded by the H2020 Programme of the European Commission

- 2012-2016: Senior research associate in the project *CoCoNet - Towards COast to COast NETWORKS of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential*, funded by the 7th Framework Programme of the European Commission
- 2012-2014: Senior research associate in the project *ECO2Clouds - Experimental Awareness of CO2 in Federated Cloud Sourcing*, funded by the 7th Framework Programme of the European Commission
- 2012: Task leader in the research contract *BEMTOOL*, funded by the Directorate-General for Maritime Affairs and Fisheries of the European Commission within the tender *MAREA (Mediterranean hAlieutic Resources Evaluation and Advice)*
- 2011-2012: Senior research associate in the project *Ottimizzazione scientifica della ricerca per la gestione delle risorse della pesca nell'ambito delle politiche ambientali ed economiche*, funded by the Italian Ministry of Agricultural, Food and Forestry Policies
- 2011-2012: Research team leader in the project *Sulla strada della sostenibilità*, funded by Fondazione Cariplo
- 2010-2012: Research associate in the project *The role of spatial connectivity and trophic interactions in the sustainable management of small-scale fisheries through the implementation of networks of Marine Protected Areas*, funded by the Italian Ministry of Education, Universities and Research (PRIN 2008 program)
- 2007-2009: Research associate in the project *An Integrated Approach to the Conservation and Management of the European Eel in the Mediterranean Region*, funded by the Italian Ministry of Education, Universities and Research (PRIN 2006 program)
- 2006-2009: Research associate in the project *Conseguenze ed impatti dei cambiamenti climatici globali sulla gestione e conservazione delle risorse naturali*, funded by the Italian Ministry of Education, Universities and Research (Interlink program)
- 2004-2007: Research associate in the project *Valutazione di stock di alici e sardine nei mari italiani al fine di una gestione razionale della pesca*, funded by the Italian Ministry of Agricultural, Food and Forestry Policies
- 2002-2004: Research assistant in the project *Effetti della molluschicoltura sul riciclo dei nutrienti in lagune costiere distrofiche: strategie di gestione a basso impatto ambientale per gli allevamenti di vongole e il controllo delle fioriture algali*, funded by the Italian Ministry of Agricultural, Food and Forestry Policies
- 2002: Research assistant in the project *Verifica della Rete Natura 2000 in Italia e modelli di gestione*, funded by the Italian Ministry of the Environment
- 2000: Research assistant in the project *Analisi e gestione dei sistemi ecologici*, funded by Politecnico di Milano
- 1999-2002: Research assistant in the project *Supporto conoscitivo, metodologico e modellistico alle Unità Operative impegnate nella valutazione degli stock dei piccoli pelagici*, funded by the Italian Ministry of Agricultural, Food and Forestry Policies

Reviewing and editorial experience

- 2020-2021: member of the advisory committee supporting the environmental and social comparative assessment of alternative scenarios for the decommissioning of ENI offshore oil platforms
- 2018-2019: member of the advisory committee for the recreational fisheries sector of the Interreg MED project *PHAROS4MPAs – Blue economy and marine conservation: safeguarding Mediterranean MPAs to achieve good environmental status*
- 2018: reviewer of HDR thesis and member of the jury for the Habilitation à diriger des recherches, École Doctorale Sciences Fondamentales et Appliquées, Université de Nice Sophia Antipolis
- 2014: reviewer and rapporteur under the programme *Scientific Independence of young Researchers* of the Italian Ministry of Education, Universities and Research (SIR 2014 program)

I am member of the editorial board of the Journal of Limnology since 2012. I have served as a referee for more than 30 peer-reviewed international journals (see verified review record at publons.com/a/1150270/), including Fish and Fisheries, Journal of Applied Ecology, Molecular Ecology, Journal of Cleaner Production, Biological Conservation, Science of the Total Environment, Ecological Applications, Water Resources Research, Environmental Modelling & Software, Scientific Reports. I have been recognized as an outstanding reviewer by the journals Biological Conservation (2017), Journal of Cleaner Production (2018) and Marine Policy (2018).

Organization of scientific events

- 2013: member of the local supporting committee for the organization of the 7th national meeting of the Italian Life Cycle Assessment Network (Milano, 27-28 June 2013)
- 2003: member of the organizing committee of the 13th national meeting of the Italian Ecological Society (Como, 8-10 September 2003) and editor of the meeting proceedings

Teaching

Courses

- 2017-: *Ecology* (4 ECTS credits), postgraduate programme in Landscape Architecture – Land Landscape Heritage, Politecnico di Milano. Module of the integrated course *Ecology and Agronomic Science* (8 ECTS credits)
- 2016-: *General Ecology* (4 ECTS credits), postgraduate programme in Sustainable Architecture and Landscape Design, Politecnico di Milano, polo territoriale di Piacenza. Module of the integrated course *Urban and Landscape Regeneration Studio* (14 ECTS credits)
- 2015-: *Sustainability Metrics, Life Cycle Assessment and Environmental Footprint* (5 ECTS credits), PhD School, Politecnico di Milano (co-teaching with G. Dotelli, M. Lavagna, L. Rigamonti)
- 2013-: *Ecology and sustainability of production systems* (8 ECTS credits), undergraduate programme in Environment and Land Planning Engineering, Politecnico di Milano.
- 2013-2019: lectures on *Ecosystem services and sustainability, Sustainability and production systems, and Life Cycle Assessment*, PhD course in Ecology and Development, Zentrum für Entwicklungsforschung, University of Bonn
- 2009-2015: lectures on *Life Cycle Assessment. Impact indicators for LCA*, course in *Global change and sustainability*, Alta Scuola Politecnica
- 2010-2013: *Ecology* (4 ECTS credits), undergraduate programme in Environmental Architecture, Politecnico di Milano
- 2009-2010: *Assessment and management models for fisheries resources* (1 ECTS credit), postgraduate programme in Marine Biology, Università di Bologna, sede di Ravenna
- 2004-2011: *Fundamentals of environmental impact assessment* (5 ECTS credits), undergraduate programme in Environment and Land Planning Engineering, Politecnico di Milano, sede di Cremona
- 1998-2010: teaching assistant of *Ecology, Modelling and simulation, Ecosystems conservation and management, Systems analysis, Applied Ecology*, undergraduate and postgraduate programmes in Environment and Land Planning Engineering, Politecnico di Milano

Other teaching activities

I have given several lectures about ecology and sustainability topics in different undergraduate, postgraduate and doctoral courses with the Politecnico di Milano. I have supervised or co-supervised the theses of >80 undergraduate students, >30 postgraduate students and 3 PhD students. From 2010 to 2019 I have been member of the selection board for teaching activities of my Department. In 2017 and 2018 I have been member of the selection board for the Honours Programme *Engineering for Sustainable Development* of the Politecnico di Milano. In 2007 I have organized an interdisciplinary PhD course on *Global changes and sustainability*. Between 2010 and 2012 I have been member of the teaching committee of the PhD program in Ecology of the University of Parma.

Invited talks and seminars

- 2021: *The anthropogenic metabolism: industrial ecology*, workshop on "The Anthropocene: a new epoch for the Earth, a new challenge for humanity", Università degli Studi di Milano Bicocca
- 2018: *Ecological connectivity in marine ecosystems*, workshop on "Ecological connectivity: what do we know for the marine environment?", Global Conservation and Development Group, European Commission Joint Research Centre, Ispra
- 2018: *Global change and migratory fish species: the case of the European eel*, workshop on "How to let rivers flow. River connectivity and other management issues", Politecnico di Milano
- 2017: *Le molte dimensioni della sostenibilità: indicatori, conflitti, metodi decisionali*, invited seminar, Università degli Studi di Milano Bicocca
- 2016: *Large-scale management of fisheries*, International Workshop on Decision Models and Population Management, Institut de Mathématiques de Jussieu, Université Pierre et Marie Curie, Paris
- 2016: *Demography, management and conservation of the European eel*, invited seminar, Politecnico di Milano
- 2014: *Intersecare prospettive diverse: indicatori di sostenibilità in una visione a molti obiettivi*, invited seminar, Università degli Studi di Milano Bicocca
- 2013: *Spatial dynamics and applications to biological problems: the oceanic migration of European eel larvae*, invited seminar, Politecnico di Milano
- 2005: *Il concetto di sviluppo sostenibile*, invited seminar, Politecnico di Milano

Selected publications

1. D'Agostino D., D. Parker, **P. Melià** & G. Dotelli (2021) Optimizing photovoltaic electric generation and roof insulation in existing residential buildings. *Energy and Buildings*: 111652. doi: 10.1016/j.enbuild.2021.111652
2. Bevacqua D., **P. Melià**, M. Cividini, F. Mattioli, F. Lescourret, M. Génard & R. Casagrandi (2021) A parsimonious mechanistic model of reproductive and vegetative growth in fruit trees predicts consequences of fruit thinning and branch pruning. *Tree Physiology*: tbap050. doi: 10.1093/treephys/tpab050
3. Mari L., **P. Melià**, M. Gatto & R. Casagrandi (2021) Identification of ecological hotspots for the seagrass *Posidonia oceanica* via metapopulation modelling. *Frontiers in Marine Science* 8: 628976. doi: 10.3389/fmars.2021.628976
4. Casagrande E., F. Recanati, M.C. Rulli, D. Bevacqua & **P. Melià** (2021) Water balance partitioning for ecosystem service assessment. A case study in the Amazon. *Ecological Indicators* 121: 197155. doi: 10.1016/j.ecolind.2020.107155
5. Belharet M., A. Di Franco, A. Calò, L. Mari, J. Claudet, R. Casagrandi, M. Gatto, J. Lloret, C. Sève, P. Guidetti & **P. Melià** (2020) Extending full protection inside existing marine protected areas, or reducing fishing effort outside, can reconcile conservation and fisheries goals. *Journal of Applied Ecology* 57(10): 1948-1957. doi: 10.1111/1365-2664.13688
6. **Melià P.**, R. Casagrandi, A. Di Franco, P. Guidetti & M. Gatto (2020) Protection reveals density-dependent dynamics in fish populations: a case study in the central Mediterranean. *PLoS ONE* 15(2): e0228604. doi: 10.1371/journal.pone.0228604
7. D'Agostino D., D. Parker & **P. Melià** (2020) Environmental and economic data on energy efficiency measures for residential buildings. *Data in Brief* 28: 104905. doi: 10.1016/j.dib.2019.104905
8. Mari L., **P. Melià**, S. Frascchetti, M. Gatto & R. Casagrandi (2020) Spatial patterns and temporal variability of seagrass connectivity in the Mediterranean Sea. *Diversity and Distributions* 26:169-182. doi: 10.1111/ddi.12998
9. D'Agostino D., D. Parker & **P. Melià** (2019) Environmental and economic implications of energy efficiency in new residential buildings: a multi-criteria selection approach. *Energy Strategy Reviews* 26: 100412. doi: 10.1016/j.esr.2019.100412
10. Bevacqua D., **P. Melià**, M. Schiavina, A.J. Crivelli, G.A. De Leo & M. Gatto (2019) A demographic model for the conservation and management of the European eel: an application to a Mediterranean coastal lagoon. *ICES Journal of Marine Science* fsz118. doi: 10.1093/icesjms/fsz118
11. Lloret J., S. Biton-Porsmoguer, A. Carreño, A. Di Franco, R. Sahyoun, **P. Melià**, J. Claudet, C. Sève, A. Ligas, M. Belharet, A. Calò, P. Carbonara, M. Coll, X. Corrales, G. Lembo, P. Sartor, I. Bitetto, D. Vilas, C. Piroddi, G. Prato, E. Charbonnel, O. Bretton, V. Hartmann, L. Prats & T. Font (2019) Recreational and small-scale fisheries may pose a threat to vulnerable species in coastal and offshore waters of the western Mediterranean. *ICES Journal of Marine Science* fsz071. doi: 10.1093/icesjms/fsz071
12. Recanati F., A. Castelletti, G. Dotelli & **P. Melià** (2017) Trading off natural resources and rural livelihoods. A framework for sustainability assessment of small-scale food production in water-limited regions. *Advances in Water Resources* 110: 484-493. doi: 10.1016/j.advwatres.2017.04.024
13. Jahnke M., R. Casagrandi, **P. Melià**, M. Schiavina, S.T. Schultz, L. Zane & G. Procaccini (2017) Potential and realized connectivity of the seagrass *Posidonia oceanica* and their implication for conservation. *Diversity and Distributions* 23:1423-1434. doi: 10.1111/ddi.12633
14. Mari L., L. Bonaventura, A. Storto, **P. Melià**, M. Gatto, S. Masina & R. Casagrandi (2017) Understanding large-scale, long-term larval connectivity patterns: the case of Northern Line Islands in the Central Pacific Ocean. *PLoS ONE* 12(8): e0182681. doi: 10.1371/journal.pone.0182681
15. Paterno M., M. Schiavina, G. Aglieri, E. Boscari, R. Casagrandi, A. Chassanite, M. Chiantore, L. Congiu, G. Guarnieri, C. Kruschel, V. Macic, I.A.M. Marino, C. Papetti, T. Patarnello, J. Ben Souissi, L. Zane & **P. Melià** (2017) Population genomics meet Lagrangian simulations: oceanographic patterns and long larval duration ensure connectivity among *Paracentrotus lividus* populations in the Adriatic and Ionian seas. *Ecology and Evolution* 7:2463-2479. doi: 10.1002/ece3.2844
16. Arrigoni Marocco A., R. Pelosato, **P. Melià**, G. Ruggieri, S. Sabbadini & G. Dotelli (2017) Life cycle assessment of natural building materials: the role of carbonation, mixture components and transport in the environmental impacts of hempcrete blocks. *Journal of Cleaner Production* 149:1051-1061. doi: 10.1016/j.jclepro.2017.02.161
17. Boero F., F. Foglini, S. Frascchetti, P. Goriup, E. Macpherson, S. Planes, T. Soukissian & **the CoCoNet**

- Consortium** (2016) CoCoNet: towards coast to coast networks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential. *SCIRES-IT* 6: 1-95. doi: 10.2423/i22394303v6Sp1
18. Pascual M., M. Rossetto, E. Ojea, N. Milchakova, S. Giakoumi, S. Kark, D. Korolesova & **P. Melià** (2016) Socioeconomic impacts of marine protected areas in the Mediterranean and Black Seas. *Ocean & Coastal Management* 133:1-10. doi: 10.1016/j.ocecoaman.2016.09.001
 19. **Melià P.**, M. Schiavina, M. Rossetto, M. Gatto, S. Fraschetti & R. Casagrandi (2016) Looking for hotspots of marine metacommunity connectivity: a methodological framework. *Scientific Reports* 6: 23705. doi: 10.1038/srep23705
 20. Bevacqua D., **P. Melià**, M. Gatto & G.A. De Leo (2015) A global viability assessment of the European eel. *Global Change Biology* 21(9): 3323-3335. doi: 10.1111/gcb.12972
 21. Rossetto M., I. Bitetto, M.T. Spedicato, G. Lembo, M. Gambino, P. Accadia & **P. Melià** (2015) Multi-criteria decision-making for fisheries management: a case study of Mediterranean demersal fisheries. *Marine Policy* 53: 83-93. doi: 10.1016/j.marpol.2014.11.006
 22. Schiavina M., D. Bevacqua, **P. Melià**, A.J. Crivelli, M. Gatto & G.A. De Leo (2015) A user-friendly tool to assess management plans for European eel fishery and conservation. *Environmental Modelling & Software* 64: 9-17. doi: 10.1016/j.envsoft.2014.10.008
 23. Schiavina M., I.A.M. Marino, L. Zane & **P. Melià** (2014) Matching oceanography and genetics at the basin scale. Seascape connectivity of the Mediterranean shore crab in the Adriatic Sea. *Molecular Ecology* 23(22): 5496-5507. doi: 10.1111/mec.12956
 24. **Melià P.**, A.J. Crivelli, C. Durif, R. Poole & D. Bevacqua (2014) A simplified method to estimate body growth parameters of the European eel *Anguilla anguilla*. *Journal of Fish Biology* 85: 978-984. doi: 10.1111/jfb.12486
 25. **Melià P.**, G. Ruggieri, S. Sabbadini & G. Dotelli (2014) Environmental impacts of natural and conventional building materials: a case study on earth plasters. *Journal of Cleaner Production* 80: 179-186. doi: 10.1016/j.jclepro.2014.05.073
 26. Pujolar J.M., M. Schiavina, A. Di Franco, **P. Melià**, P. Guidetti, M. Gatto, G.A. De Leo & L. Zane (2013) Understanding the effectiveness of marine protected areas using genetic connectivity patterns and Lagrangian simulations. *Diversity and Distributions* 19 (12): 1531-1542. doi: 10.1111/ddi.12114
 27. **Melià P.**, M. Schiavina, M. Gatto, L. Bonaventura, S. Masina & R. Casagrandi (2013) Integrating field data into individual-based models for the migration of European eel larvae. *Marine Ecology Progress Series* 487: 135-149. doi: 10.3354/meps10368
 28. Di Franco A., G. Coppini, J.M. Pujolar, G.A. De Leo, M. Gatto, V. Lyubartsev, **P. Melià**, L. Zane & P. Guidetti (2012) Assessing Dispersal Patterns of Fish Propagules from an effective Mediterranean Marine Protected Area. *PLoS ONE* 7(12): e52108. doi: 10.1371/journal.pone.0052108
 29. Bevacqua D., F. Capoccioni, **P. Melià**, S. Vincenzi, J.M. Pujolar, G.A. De Leo & E. Ciccotti (2012) Fishery-induced selection for slow somatic growth in European eel. *PLoS ONE* 7(5): e37622. doi: 10.1371/journal.pone.0037622
 30. **Melià P.**, M. Petrillo, G. Albertelli, A. Mandich & M. Gatto (2012) A bootstrap approach to account for uncertainty in egg production methods applied to small fish stocks. *Fisheries Research* 117-118: 130-136. doi: 10.1016/j.fishres.2011.05.011
 31. Bevacqua D., M. Andreello, **P. Melià**, A.J. Crivelli & G.A. De Leo (2011) Density-dependent and inter-specific interactions affecting European eel settlement in freshwater habitats. *Hydrobiologia* 671: 259-265. doi:10.1007/s10750-011-0725-1
 32. Bevacqua D., **P. Melià**, G.A. De Leo & M. Gatto (2011) Intra-specific scaling of natural mortality in fish: the paradigmatic case of the European eel. *Oecologia* 165 (2): 333-339. doi:10.1007/s00442-010-1727-9
 33. Bevacqua D., **P. Melià**, G.A. De Leo, M.C. Follesa, M. Gatto & A. Cau (2010) Body growth and mortality of the spiny lobster *Palinurus elephas* within and outside a small marine protected area. *Fisheries Research* 106 (3): 543-549. doi:10.1016/j.fishres.2010.10.008
 34. Bevacqua D., G.A. De Leo, M. Gatto & **P. Melià** (2009) Size selectivity of fyke nets for European eel *Anguilla anguilla* (L.). *Journal of Fish Biology* 74 (9): 2178-2186. doi:10.1111/j.1095-8649.2009.02243.x
 35. Brambilla Pisoni E., R. Raccanelli, G. Dotelli, D. Botta & **P. Melià** (2009) Accounting for transportation impacts in the environmental assessment of waste management plans. *International Journal of Life Cycle Assessment* 14 (3): 248-256. doi:10.1007/s11367-009-0061-0
 36. Bevacqua D., **P. Melià**, A.J. Crivelli, M. Gatto & G.A. De Leo (2007) Multi-objective assessment of

conservation measures for the European eel (*Anguilla anguilla*): an application to the Camargue lagoons. ICES Journal of Marine Science 64 (7): 1472-1482. doi:10.1093/icesjms/fsm126

37. Bevacqua D., **P. Melià**, A.J. Crivelli, G.A. De Leo & M. Gatto (2006) Timing and rate of sexual maturation of European eel in brackish and freshwater environments. Journal of Fish Biology 69 (Supplement C): 200-208. doi:10.1111/j.1095-8649.2006.01265.x
38. **Melià P.**, D. Bevacqua, A.J. Crivelli, J. Panfili, G.A. De Leo & M. Gatto (2006) Sex differentiation of the European eel in brackish and freshwater environments: a comparative analysis. Journal of Fish Biology 69 (4): 1228-1235. doi:10.1111/j.1095-8649.2006.01170.x
39. **Melià P.**, D. Bevacqua, A.J. Crivelli, G.A. De Leo, J. Panfili & M. Gatto (2006) Age and growth of the European eel *Anguilla anguilla* in the Camargue lagoons. Journal of Fish Biology 68 (3): 876-890. doi:10.1111/j.0022-1112.2006.00975.x
40. **Melià P.** & M. Gatto (2005) A stochastic bioeconomic model for the management of clam farming. Ecological Modelling 184 (1): 163-174. doi:10.1016/j.ecolmodel.2004.11.011
41. **Melià P.**, G.A. De Leo & M. Gatto (2004) Density and temperature-dependence of vital rates in the Manila clam *Tapes philippinarum*: a stochastic demographic model. Marine Ecology Progress Series 272: 153-164. doi:10.3354/meps272153
42. **Melià P.**, D. Nizzoli, M. Bartoli, M. Naldi, M. Gatto & P. Viaroli (2003) Assessing the potential impact of clam rearing in dystrophic lagoons: an integrated oxygen balance. Chemistry and Ecology 19 (2-3): 129-146. doi:10.1080/0275754031000119898
43. **Melià P.**, N. Casavola & M. Gatto (2002) Estimating daily egg production of European anchovy in the Adriatic Sea: a critical appraisal. Marine Ecology 23 (Supplement 1): 272-279. doi:10.1111/j.1439-0485.2002.tb00025.x

A complete list of my publications is available at melia.faculty.polimi.it/pubblicazioni.htm

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