



Paco Melià | *curriculum vitae*

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Current position

Associate Professor of Ecology, Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano

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 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.

Recent research projects

- 2025-2026: Senior research associate in the project *ECHOES-Nosedo: Ecological, Cultural and Hydrological Observatory for Education and Sustainability at Nosedo - Marcita Living Lab*, funded by Politecnico di Milano (Polisocial Award 2024 program)
- 2023-2025: Work package leader and research team leader in the project *Reconnect: Reconciling conservation and exploitation of a keystone species through networks of Marine Protected Areas*, funded by the Italian Ministry of Education, Universities and Research (PRIN 2022 program)
- 2022-2025: Senior research associate for the activities of the *National Biodiversity Future Center (Spoke 5 - Urban biodiversity)*, funded by the Italian National Recovery and Resilience Plan
- 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

A complete list of my research projects is available at melia.faculty.polimi.it/research.htm

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 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 and of Discover Environment since 2024. I have served as a referee for more than 40 peer-reviewed international journals including Journal of Cleaner Production, Science of the Total Environment, Energy, Fish and Fisheries, Global Ecology & Biogeography, Ecography, Biological Conservation, Journal of Applied Ecology, Molecular Ecology, Ecological Applications, Water Resources Research.

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

- 2022-: *Ecology* (2 ECTS credits), high-level training course POLIMI Ambassador in Green Technologies, Politecnico di Milano. Module of the integrated course *Forestry and landscape constructions for urban biodiversity*
- 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*
- 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*
- 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.
- 2019-: lectures on *Environmental economics, ecological economics and sustainability*, 2nd level Master course RIDEF 2.0 (Reinventing energy. Renewables, decentralisation, efficiency and strong sustainability), 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*, Politecnico di Milano

Other teaching activities

I have given lectures about ecology and sustainability topics in several undergraduate, postgraduate and doctoral courses. I have supervised or co-supervised the theses of >80 undergraduate students, >35 postgraduate students and 4 PhD students. In 2007 I have co-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. Sève C., M. Belharet, **P. Melià**, A. Di Franco, A. Calò & J. Claudet (2023) Fisheries outcomes of marine protected area networks: levels of protection, connectivity and time matter. *Conservation Letters* e12983. doi: 10.1111/conl.12983
2. Radici A., J. Claudet, A. Ligas, I. Bitetto, G. Lembo, M.T. Spedicato, P. Sartor, C. Piccardi & **P. Melià** (2023) Assessing fish-fisheries dynamics from a spatially explicit metapopulation perspective reveals winners and losers in fisheries management. *Journal of Applied Ecology* 60(11): 2482-2493. doi: 10.1111/1365-2664.14508
3. Marino I.A.M., M. Schiavina, G. Aglieri, S. Bevilacqua, E. Boscari, L. Congiu, S. Faggion, C. Kruschel, C. Papetti, T. Patarnello, M. Paterno, E. Voutsinas, L. Zane & **P. Melià** (2022) Assessment of connectivity patterns of the marbled crab *Pachygrapsus marmoratus* in the Adriatic and Ionian seas through combination of genetic data and Lagrangian simulations. *Frontiers in Marine Science* 9: 944851. doi: 10.3389/fmars.2022.944851
4. D'Agostino D., D. Parker, **P. Melià** & G. Dotelli (2022) Data on roof renovation and photovoltaic energy production including energy storage in existing residential buildings. *Data in Brief*: 107874. doi: 10.1016/j.dib.2022.107874
5. D'Agostino D., D. Parker, **P. Melià** & G. Dotelli (2022) Optimizing photovoltaic electric generation and roof insulation in existing residential buildings. *Energy and Buildings* 255: 111652. doi: 10.1016/j.enbuild.2021.111652
6. 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* 41(10): 1794-1807. doi: 10.1093/treephys/tpab050
7. 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
8. 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
9. 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
10. **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
11. 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
12. Mari L., **P. Melià**, S. Fraschetti, 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
13. 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
14. 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
15. 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
16. 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
17. 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

18. 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
19. 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
20. 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
21. 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
22. 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
23. **Melià P.**, M. Schiavina, M. Rossetto, M. Gatto, S. Frascchetti & R. Casagrandi (2016) Looking for hotspots of marine metacommunity connectivity: a methodological framework. Scientific Reports 6: 23705. doi: 10.1038/srep23705
24. 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
25. 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
26. 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
27. 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
28. **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
29. **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
30. 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
31. **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
32. 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
33. 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
34. **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
35. Bevacqua D., M. Andrello, **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

36. 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
37. 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
38. 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
39. 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
40. 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
41. 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
42. **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
43. **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
44. **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
45. **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
46. **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
47. **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/publications.htm

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