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Esperienze e approcci innovativi per la conoscenza e la salvaguardia degli ecosistemi acquatici

Established in 2018, the Marine Social Sciences Network (MarSocSci) is a growing international community of researchers, policy-makers, practitioners and other stakeholders operating in the marine and coastal sector aimed at understanding the relationship between global society and the ocean, coasts and seas. Facilitating collaboration and dialogue across marine social sciences, economics, arts and humanities, MarSocSci seeks to promote the key role that social sciences can play in management and decision-making for our global seas and coastlines. The Network is rapidly expanding by initiating regional chapters focused on creating local synergies in the marine sector. Italy is the first country to establish a chapter in the Mediterranean Sea, where a social perspective is particularly important given the cultural richness across this shared basin. Considering its central position, Italy plays a strategic role in the management and conservation of the Mediterranean basin and all the consequent implications on the welfare of its coastal communities. Therefore, the MarSocSci Italian chapter has significant potential to initiate an effective dialogue among the actors involved in research and practice related to ocean literacy, blue economy, marine policy and public engagement at national and basin level that can contribute to sustainably change the management policies.

Genetic differentiation between the wild and hatchery Marble trout (*Salmo marmoratus* Cuvier 1829), and limited presence of released hatchery-produced individuals into the wild: a case study from Toce river (Piemonte, Italy)

Tommaso Righi (1)[*], Emanuele Fasola (2), Mattia Iaia (1), Vanessa De Santis (1), Fabrizio Stefani (2), Pietro Volta (1)

(1) Water Research Institute - National Research Council (IRSA - CNR); Largo Tonolli, 50, 28922 Verbania Pallanza (VB), Italy
(2) Water Research Institute - National Research Council (IRSA - CNR); Via del Mulino, 19, 20861 Brugherio (MB), Italy
* email corresponding author: tommaso_righi@yahoo.com

Fish stocking, that is the introduction into wild populations of hatchery-produced fish, constitutes nowadays, the most common practice for fish stocks enhancement in rivers and lakes, typically performed by angling associations. The marble trout, *Salmo marmoratus* Cuvier 1829, a critically endangered subendemic salmonid in Northern Italy, and an iconic species for recreational fishing and conservation, has been object of intense aquaculture over the past several decades. Toce river is the second largest tributary of Lake Maggiore and is heavily stocked with hatchery trouts (*S. marmoratus*, *S.ghigii* and *S. trutta*) for fishery supplementation. To date, very limited information on marble trout population genetics inhabiting this basin is available. To fill this gap, molecular analysis based on mitochondrial (D-loop) and nuclear (12 microsatellites) markers on 405 samples was performed to characterize the wild and hatchery trout individuals and to investigate the effectiveness of stocking activities. Our results highlight a high level of introgression of non-native traits in both wild and hatchery samples. Significant differentiation between wild and domestic marble trout was also detected. Furthermore, the limited presence of domestic marble trout in the wild suggests a limited survival of these fish and the ineffectiveness of restocking activities to increase the stock.

Plastic debris in freshwater systems worldwide

Veronica Nava (1)*, Julian Aherne (2), María B. Alfonso (3), Ana M. Antão-Geraldes (4), Katrin Attermeyer (5,6), Roberto Bao (7), Mireia Bartrons (8), Stella A. Berger (9), Marcin Biernaczyk (10), Raphael Bissen (11), Justin Brookes (12), David Brown (13), Giulia Candian (1), Miguel Cañedo-Argüelles (14), Moisés Canle (7), Camilla Capelli (15), Rafael Carballeira (7), José Luis Cereijo (7), Sakonvan Chawchai (16), Guangjie Chen (17), Søren T. Christensen (18), Kirsten S. Christoffersen (19), Elvira de Eyto (20), Jorge Delgado (7), Tyler

Dornan (12), Jonathan P. Doubek (21), Julia Dusaucy (22), Oxana Erina (23), Zeynep Ersoy (24), Heidrun Feuchtmayr (25), Fabio Lepori (15), Maria Luce Frezzotti (1), Silvia Galafassi (26), David Gateuille (22), Vitor Gonçalves (27), Hans-Peter Grossart (9,28), David P. Hamilton (29), Ted Harris (30), Külli Kangur (31), Gökben Başaran Kankılıç (32), Rebecca Kessler (30), Christine Kiel (9), Edward M Krynak (33), Àngels Leiva-Presa (8), Miguel Matias (24), Shin-ichiro S. Matsuzaki (34), Yvonne McElarney (35), Mark Mitchell (36), Beata Messyasz (37), Musa Mlambo (38), Samuel N. Motitsoe (39), Caroline Owens (40), Deniz Özkundakci (41), Solvig Pinnow (9), Agnieszka Pociecha (42), Pedro Raposeiro (27), Eva-Ingrid Rõõm (43), Federica Rotta (15), Nico Salmaso (44), Facundo Scordo (33), Claver Sibomana (45), Daniel Siewert (46), Katarzyna Stepanowska (10), Chandra Sudeep (33), Ülkü Nihan Tavşanoğlu (47), Maria Tereshina (23), James Thompson (35), Monica Tolotti (44), Amanda Valois (48), Piet Verburg (48), Brian Wesolek (49), Gesa Weyhenmeyer (50), Naicheng Wu (51), Edyta Zawisza (52), Lauren Zink (53), Barbara Leoni (1)

(1) University of Milano-Bicocca, Department of Earth and Environmental Sciences, Italy.
(2) Trent University, School of Environment, Ontario, Canada.
(3) Instituto Argentino de Oceanografía, Bahía Blanca, Argentina.
(4) Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Bragança, Portugal.
(5) WasserCluster Lunz - Biologische Station, Lunz am See, Lower Austria, Austria.
(6) University of Vienna, Department of Functional and Evolutionary Ecology, Vienna, Austria.
(7) University of A Coruña, A Coruña, Spain.
(8) University of Vic - Central University of Catalonia, Biosciences Department, Vic, Spain.
(9) Leibniz Institute of Freshwater Ecology and Inland Fisheries, Department of Plankton and MIcrobial Ecology Stechlin, Germany.
(10) West Pomeranian University of Technology in Szczecin, Faculty of Food Science and Fisheries, Szczecin, Poland.
(11) Chulalongkorn University, Department of Mining and Petroleum Engineering, Bangkok, Thailand.
(12) The University of Adelaide, School of Biological Science North terrace, Adelaide, Australia.
(13) Horizons Regional Council, Department of Environmental Data, Palmerston North, New Zealand.
(14) FEHM Lab, Institute of Environmental Assessment and Water Research (IDAEA-CSIC), Jordi Girona, 18-26, 08034 Barcelona, Spain.
(15) SUPSI, Institute of Earth Sciences, Mendrisio, Switzerland.
(16) Chulalongkorn University, Department of Geology, Bangkok, Thailand 10330.
(17) Yunnan Normal University, Faculty of Geography, Yunnan, China.
(18) CPH Business Laboratory and Environment, Hillerød, Denmark.
(19) University of Copenhagen, Department of Biology, Copenhagen, Denmark.
(20) Marine Institute, Furnace, Newport, Co. Mayo.
(21) Lake Superior State University, School of Natural Resources & Environment and Center for Freshwater Research and Education, Sault Sainte Marie, Michigan, USA.
(22) Savoie Mont Blanc University, CNRS, Univ. Grenoble Alpes, EDYTEM, Chambéry, France.
(23) Lomonosov Moscow State University, Department of Hydrobiology, Moscow, Russian Federation.
(24) Universidade de Évora, MED - Mediterranean Institute for Agriculture, Environment and Development, Rui Nabeiro Biodiversity Chair, Évora, Portugal.
(25) UK Centre for Ecology & Hydrology, Lake Ecosystems Group, Lancaster, United Kingdom.
(26) Water Research Institute - National Research Council, Verbania, Italy.
(27) Universidade dos Açores, Centro de Investigação em Biodiversidade e Recursos Genéticos - CIBIO, Ponta Delgada, Portugal.
(28) Potsdam University, Institute for Biochemistry and Biology, Potsdam, Germany
(29) Australian Rivers Institute, Griffith University, Brisbane, Queensland, Australia.
(30) Kansas Biological Survey, University of Kansas, Lawrence, Kansas, USA.
(31) Estonian University of Life Sciences, Centre for Limnology, Rannu, Tartumaa, Estonia.
(32) Kırıkkale University, Faculty of Arts and Sciences, Biology Department, Kırıkkale, Turkey.
(33) University of Nevada, Reno, Global Water Center, Reno, NV, USA.

(34) National Institute for Environmental Studies, Biodiversity Division, Tsukuba, Ibaraki, Japan.

(35) Agri-Food & Biosciences Institute, Fisheries & Aquatic Ecosystems, Belfast, Northern Ireland.

(36) Horizons Regional Council, Department of Science and Innovation, Palmerston North, New Zealand.

(37) Adam Mickiewicz University, Institute of Environmental Biology, Department of Hydrobiology, Poznań, Poland.

(38) Albany Museum, Department of Freshwater Invertebrates, Grahamstown, Eastern Cape, South Africa.

(39) Rhodes University, Department of Zoology and Entomology, South Africa.

(40) University of California, Santa Barbara, Department of Ecology, Evolution, and Marine Biology, USA.

(41) Te Aka Mātuatua – School of Science, University of Waikato School of Science, Hamilton, New Zealand.

(42) Institute of Nature Conservation, Polish Academy of Sciences, Department of Freshwater Biology, Kraków, Poland.

(43) Estonian University of Life Sciences, Institute of Agricultural and Environmental Sciences, Chair of Hydrobiology and Fishery Kreutzwaldi, Tartumaa, Estonia.

(44) Research and Innovation Centre, Fondazione Edmund Mach, S. Michele all'Adige, Trento, Italy.

(45) Center for Research in Natural Sciences and Environment, Faculty of Sciences, University of Burundi, Bujumbura, Burundi.

(46) Wdecki Park Krajobrazowy, Osie, Poland.

(47) Çankırı Karatekin University, Department of Biology, Çankırı, Turkey.

(48) National Institute of Water and Atmospheric Research, Freshwater Ecology, Wellington, Wellington, New Zealand.

(49) Bay Mills Indian Community, Biological Services Department, Brimley Michigan, USA.

(50) Uppsala University, Dept. Ecology and Genetics/Limnology, Uppsala, Sweden.

(51) Department of Geography and Spatial Information Techniques, Center for Land and Marine Spatial Utilization and Governance Research, Ningbo University, Ningbo, China.

(52) Institute of Geological Sciences, Polish Academy of Sciences, Warsaw, Poland.

(53) University of Lethbridge, Department of Biological Sciences, Lethbridge, Alberta, Canada.

* email corresponding author: veronica.nava@unimib.it

Plastic debris is widespread in freshwater ecosystems, but a rigorous assessment of its global distribution has been hindered by a lack of comprehensive and comparable data. We performed the first standardized global survey of lakes to assess the quantity and type of plastics (>250µm). We included 38 lakes located in 23 different countries distributed across five continents, spanning different environmental gradients and varying levels of anthropogenic stress. All samples were collected by horizontal trawling of a plankton net and subsequently treated with hydrogen peroxide. We identified 9425 plastic particles, which were classified based on shape, color, and size. Polymer identification was carried out using Raman micro-spectroscopy. Our results showed that the concentration of plastics spanned four orders of magnitude (10^{-3}-10^{1} particles/m^3). Fibers (49%) and fragments (41%) were the most frequently detected particles, suggesting a secondary origin of plastic contamination. The most commonly identified polymers were polyester (30%), polypropylene (20%), and polyethylene (16%), which are widely used in short life-cycle products and account for the majority of global plastic production. Further, we found that urban-related attributes of lakes/watersheds influenced the occurrence and type of plastics in lentic systems and larger and deeper lakes with higher retention times are accumulating plastic debris at higher concentrations.

Vertical dispersion of microplastics in the marine environment. A modelling approach

Simone Zazzini*, Paolo Bello, Agnese Pini, Paolo Monti & Giovanni Leuzzi

University of Rome "La Sapienza", Faculty of Civil and Industrial Engineering, Department of Civil, Constructional and Environmental Engineering (DICEA), Via Eudossiana, 18 - 00184 Rome, Italy
* email corresponding author: simone.zazzini@uniroma1.it