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

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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)

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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

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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/m³). 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

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