

The role of social networks and citizen science in environmental research: the unexpected revival of freshwater mussels in Lake Orta

Social networks are increasingly used for many conservation and environmental educational purposes. The usefulness for ecological studies is exemplified by the casual discovery of the recovery of freshwater mussels in Lake Orta. Mussels were extirpated by severe industrial pollution soon after 1926 and over the following decades their recovery was prevented by acidification and increase of metal concentrations. Even after the improvement of water conditions obtained by limning, the lack of mussels was taken for granted based on the legacy effects of accumulated toxins in the sediments, and on the limited potential for most extirpated species of mussels to naturally recolonize. The probability of mussel's recovery in Lake Orta was considered poor also for the apparent lack of access to restocking populations, which is essential to start the natural recolonization of an area. Because of the assumption that mussels were absent and of the difficulties of locating mussels their recolonization went unnoticed for about 15 years. Only in 2014 the casual discovery of mussels in Lake Orta was made possible thanks to an amateur video posted on YouTube and delivered to one of us through Facebook: this highlights once more the potential role of social networks for conservation and environmental issues. Freshwater mussels are challenging to locate because they are often rare, spatially clustered, and difficult to detect. The recolonization of Lake Orta went unnoticed probably due to the limited extent of the colonized area, low density and, at least initially, the small size of individuals. In such cases the contribution of citizen science can be crucial to provide the reporting even of small populations present in restricted areas and/or not easily accessible. An extensive search along the lake perimeter is being performed through the volunteer collaboration of local SCUBA divers and an online survey through social networks.

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