



MARINE LITTER: LOOKING FORWARD A NEW WORLD

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PLASTIC AND MICROPLASTIC

Q&A TO MARCO AND CECILIA (ITALY)

WHY DID YOU CHOOSE TO BECOME A MARINE BIOLOGIST?

MARCO: I was born in Roma, which is one of the biggest Italian cities, but I had the possibility to live near the sea every summer for a long period. The more you are in contact with the sea the less you are able to live without falling in love with it. The deterioration of the marine environment that has happened year after year under anthropogenic pressure, pushed me to work in the field of marine pollution.

CECILIA: the word biology comes from the Greek, bios (life) and logos (study), biology is therefore the science that studies life. Since I was a child, I was attracted and intrigued by the life of marine organisms. When, one summer, during a beach holiday, I found myself arguing with a little girl who wanted to take away a starfish, stealing it from the sea, I realized that when I grew up I wanted to do something to protect and safeguard the sea. For this reason, I studied to become a marine biologist.



WHY HAS THE MARINE LITTER BECOME SO IMPORTANT IN RECENT YEARS ONLY?

CECILIA: Jules Verne as early as 1870, in the chapter on the Sargasso Sea, in his famous novel "Twenty Thousand Leagues Under the Sea", provided a graphic description of how floating litter accumulated in ocean gyres. People have always been fascinated by the path that a bottle with a message inside could take to be transported to distant coasts, but the perception that floating litter could be a problem is recent as it is linked to the excessive increase in plastic production. Currently, about 13 million tons of plastic end up every year in the marine environment.

WHY STUDYING MICROPLASTICS IT'S SO IMPORTANT FOR THE MARINE ENVIRONMENT?

MARCO: we defined microplastics as: "Small particles of plastic, less than 5 mm in two of the three dimension or diameter that pass through a 5mm mesh screen but are retained by a lower one, according to the chosen size class". Even if they are less visible than the bigger items as macro-litter elements (e.i. plastic bags; etc.), the bio-availability of the microplastics could be more harmful for marine life. Ingestion by marine organisms is the main problem linked to many different kinds of sub-lethal effects on the individuals. We demonstrated that microplastic are being ingested in fish coming from distinctive marine compartments, from pelagic to demersal or benthic, including sharks collected at 500 m depth.

WHAT HAVE THESE PROJECTS LEFT YOU?

MARCO: both EU projects, INDICIT I and INDICIT II, solved two very important questions we have had for many years. In 2010 I proposed the use of the sea turtle *Caretta caretta* as bio-indicator species for marine litter ingestion in the Mediterranean Sea. INDICIT I project allowed us to validate the indicator and confirm the proposal done. INDICIT II focused on microplastics ingestion by fish and entanglement reducing many gaps on these issues.

My hope for the future is that all the goals we achieved in both EU projects, can increase stakeholders and policy makers awareness on this topic, allowing more direct, incisive measures and laws to fight marine pollution.

CECILIA: this project has grouped different scientific skills which interacted to ensure the achievement of the objectives, thanks to the transversality of the skills I had the opportunity to learn. For a researcher, curiosity is the main ingredient and the exchange of knowledge is essential to grow professionally. I could compare this project to the sea without borders and with high biodiversity.

Carrie

a brave turtle
in a changing world



