Marine Protected Areas (MPAs) off Italian coasts, using both nets. In the lab, samples were analyzed for their plastic content and potential MPs were categorized according to shape, size and polymer type using Fourier-Transform Infrared (FT-IR). Differences in sample composition were assessed using Principal Component Analysis (PCA). The results highlight the need for unique and standardized procedures, otherwise we should always be careful when comparing and drawing conclusions. Overall, MPs were found in all the sampling stations, with remarkable values in areas highly populated and industrialized (e.g. Portici) but also in MPAs (e.g. Tremiti). This finding demonstrates the ubiquity of plastic pollution from which even MPAs, supposed to be pristine, are not immune.

Keywords: Mediterranean Sea, water sampling techniques, microplastic analysis, FTIR spec- troscopy

∗Speaker

Assessment of semi-persistent and emerging pollutants in microplastics on four Canary Islands beaches

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Microplastics represent a growing environmental concern for the oceans due to their capacity to adsorb chemical pollutants. The aim of this study was to monitor a wide suite of chemicals in stranded plastic (pellets and fragments) from different beaches of the Canary Islands. A total of 77 chemical substances were determined by gas chromatography-mass spectrometry. Thus, we quantify adsorbed persistent organic pollutants such as organochlorine pesticides (OCPs) and polychlorinated biphenyls (PCBs), as well as semi-persistent contaminants such as polycyclic aromatic hydrocarbons (PAHs) and polybrominated diphenyl ethers (PBDEs). In addition, we included a panel of selected emerging contaminants such as chemical sunscreens (UVFs) and organophosphorous flame retardans (OPFRs). For this purpose, we collected samples from four beaches of three islands (Gran Canaria, Lanzarote and La Graciosa). All the selected beaches had a N or NE orientation attending to the prevalent marine current of this region. All samples showed contamination by several chemicals of each group of pollutants analysed and statistical differences were observed among beaches. In Figure 1 we show the general results considering the sums per group of pollutants. Thus,

the sum of PCBs and OCPs were significant higher in both beaches from Gran Canaria, the island most industrialized. In addition, the sum of UV filters was higher in those beaches more frequented (Famara and Las Canteras) than those beaches occasionally visited (Cuervitos) and remote visited (Lambra). A similar trend was also observed for sum of semi-persistent pollutants (ΣPAHs and ΣBDEs). In the case of BDEs, especially in preproduction resin pellets. Furthermore, the sum of OPFRs was significant higher in a city beach (Las Canteras), in both pellets and fragments, than the others beaches studied. Further investigation is necessary to understand the relationship between plastic types and adsorption for different pollutants.

Keywords: POLLUTANTS, PELLETS, FRAGMENTS, EMERGING POLLUTANTS

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The retention time of microplastics in barnacle naupliar larvae

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Microplastic pollution is a growing global problem. High concentration of microplastic particles smaller than 50μm has been detected in Arctic sea ice, indicating that very small microplastics may be a serious problem in future. However, little is known about how long do these small microbeads will retain in marine larvae. In the present study, we evaluated the retention time of four sizes polystyrene microbeads (diameter 1.0, 6.8, 10, 20 μm respectively) in four different species of barnacle naupliar larvae (The intertidal barnacles Amphibalanus amphitrite and Fis- tulobalanus albicostatus The turtle barnacle Chelonibia testudinaria, and the coral inhabiting barnacle Darwiniella angularis). Totally, there is a trend that smaller microplastics(1.0, 6.8 μm) took longer retention time than larger microplastics (10, 20 μm)t. Except for A. Amphitrite lar- vae which showed similar time to egest four different sizes microbeads. Despite the same trend, the duration to egest microplastics is quite different among different species. The retention time of A. amphitrite larvae is shortest, all of the four sizes microplastics can be egested within 90 minutes. C. testudinaria and F. albicostatus took longer, around 2 hours to egest microplastics. However, for coral inhabited barnacle Darwiniella, it took more than 5 hours to egest all the microplastics. This indicated that the impact of microplastics may be species dependent and we urgently need more studies to have a better understanding of the true effect of microplastic pollution.