Preliminary Results on Marine Debris Classification in The Island of Mykonos (Greece) via Coastal and Underwater Clean Up Over 2016-20. A Successful Case of Recycling Plastics into Useful Daily Items.

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Abstract— The last 20 years marine debris has been identified as one of the main marine pollution sources caused by anthropogenic activities. Plastics has reached the farthest marine areas of the planet affecting all marine trophic levels including the, recently discovered, amphipoda *Eurythenes plasticus* inhabiting Mariana Trench to large cetaceans, marine reptiles and sea birds causing immunodeficiency disorders, deteriorating health and death overtime. The time period 2016-20, in the framework of the national initiative 'Keep Aegean Blue", All for Blue team has been collecting marine debris (coastline and underwater) following a modified in situ MEDSEALITTER monitoring protocol from eight (8) Greek islands. After collection, marine debris was weighted, sorted and categorised according to material; plastic (PL), glass (G), metal (M), wood (W), rubber (R), cloth (CL), paper (P), mixed (MX). The goal of the project included the documentation of marine debris sources, human trends, waste management and public marine environmental awareness. Waste management was focused on plastics recycling and utilisation into daily useful products. This research is focused on the island of Mykonos due to its continuous touristic activity and lack of scientific information. In overall, a field work area of 1.832.856 m2 was cleaned up yielding 5092 kg of marine debris. The preliminary results indicated PL as main source of marine debris (62,8%) followed by M (15,5%), GL (13,2%) and MX (2,8%). Main items found were fishing tools (lines, nets), disposable cutlery, cups and straws, cigarette butts, flip flops and other items like plastic boat compartments. In collaboration with a local company for plastic management and the Circular Economy and Eco Innovation Institute (Sweden), all plastic debris was recycled. Granulation process was applied transforming plastic into building materials used for refugees' houses, litter bins bought by municipalities and schools and, other items like shower components. In terms of volunteering and attendance in public awareness seminars, there was a raise of interest by 63% from different age ranges and professions. Regardless, the research being fairly new for Mykonos island and logistics issues potentially affected systemic sampling, it appeared that plastic debris is the main littering source attributed, possibly to the intense touristic activity of the island all year around. However, marine environmental awareness activities were pointed out to be an effective tool in forming public perception against marine debris and, alter the daily habits of local society. Since the beginning of this project, three (3) new local environmental teams were formed against marine pollution supported by the local authorities and stakeholders. The continuous need and request for the production of items made by recycled marine debris appeared to be beneficial socio-economically to the local community and actions are taken to expand the project nationally. Finally, as an ongoing project and whilst, new scientific information is collected, further funding and research is needed.

Keywords— Greece, marine debris, marine environmental awareness, Mykonos island, plastics debris, plastic granulation, recycled plastic, tourism, waste management.

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