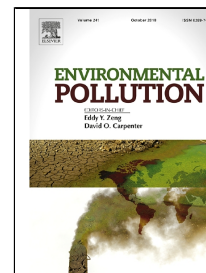


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Relationships Between Plastic Litter And Chemical Pollutants On Benthic Biodiversity



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1 RELATIONSHIPS BETWEEN PLASTIC LITTER AND CHEMICAL POLLUTANTS ON BENTHIC
2 BIODIVERSITY

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23
24 **Abstract**

25
26 Five Descriptors (D) of Marine Strategy Framework Directive (MSFD), marine litter (D10), non-indigenous species
27 (D2) and organic and inorganic pollutants (D8), were estimated in a coastal area of GSA 16 (Augusta harbour, Central
28 Mediterranean Sea) in order to study their effects on the biodiversity (D1) of the benthic community (D6) and to
29 improve data for the MSFD. Investigation of plastic debris had led to the identification of 38 fragments divided into
30 four categories, among which microplastics resulted as the most abundant. Six non-indigenous species, belonging to
31 Polychaeta (*Kirkegaardia dorsobranchialis*, *Notomastus aberans*, *Pista unibranchia*, *Pseudonereis anomala*,
32 *Branchiomma bairdi*) and Mollusca (*Brachidontes pharaonis*) were found. Biodiversity and benthic indices suggested a
33 generalised, slightly disturbed ecological status. Anthracene, Zinc and Chrome were the most abundant chemical
34 compounds in analysed sediments. Significant correlations were found between the abundance of trace elements vs
35 biotic indices and between plastic debris vs biodiversity and benthic indices. This study represents the first report about
36 the abundance of plastic debris and its relationship to contaminants and infauna in Augusta harbour. Our results can
37 provide useful information for national and international laws and directives.

38
39 Capsule: Physical and chemical analyses conducted on sediments of a heavily polluted area, had led to the identification
40 of six NIS and the underlining of the negative effects of plastic litter and chemical compounds on biodiversity.

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