

Supplementary Information for

Quantification of Microplastics in North-Western Mediterranean Harbors: Seasonality and Biofilm-Related Metallic Contaminants

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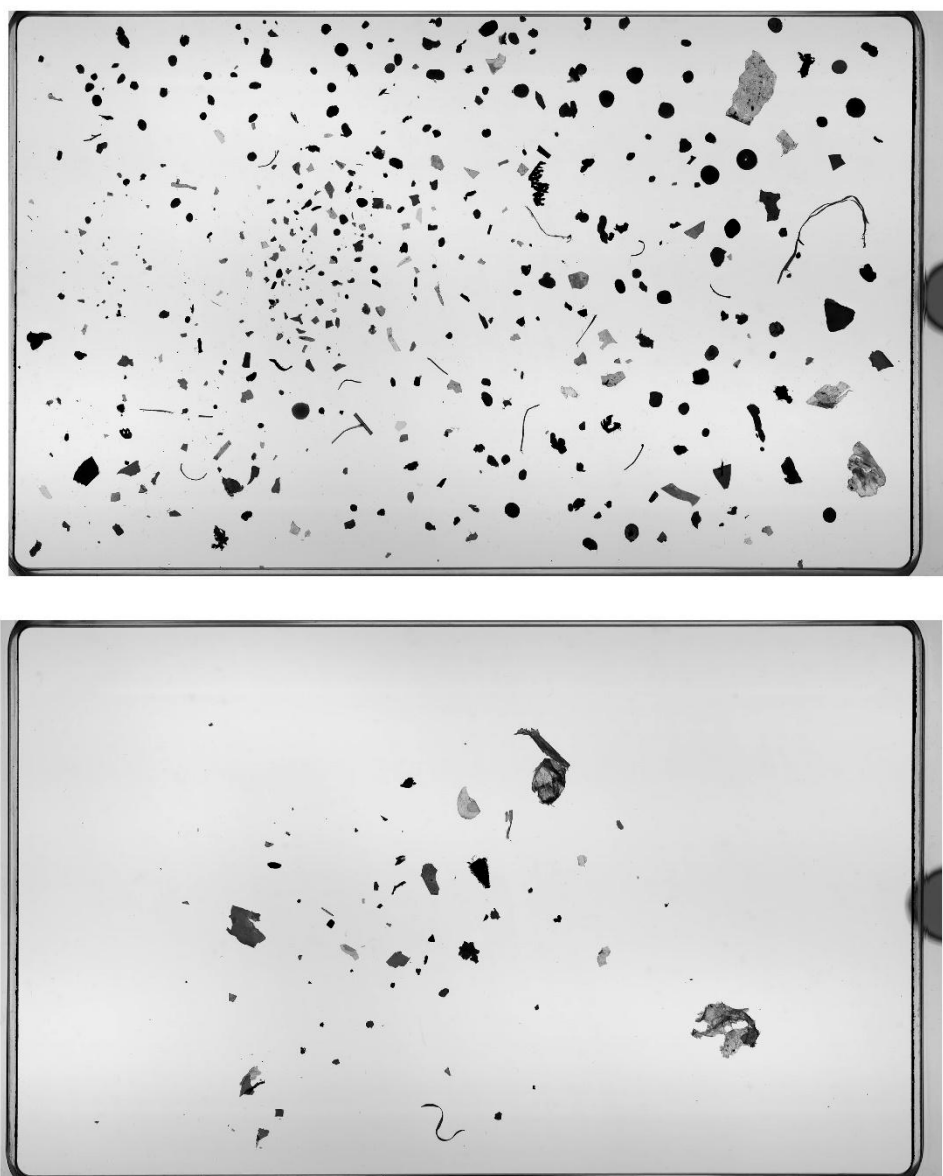


Figure S1. Microplastics digital records using a Zooscan. The upper figure refers to the sample collected in the inner part of the Genova harbor (GEN-S-Inner West) and, on the bottom, the sample collected in the inner part of Toulon harbor (TLN-S-Inner), both during summer.

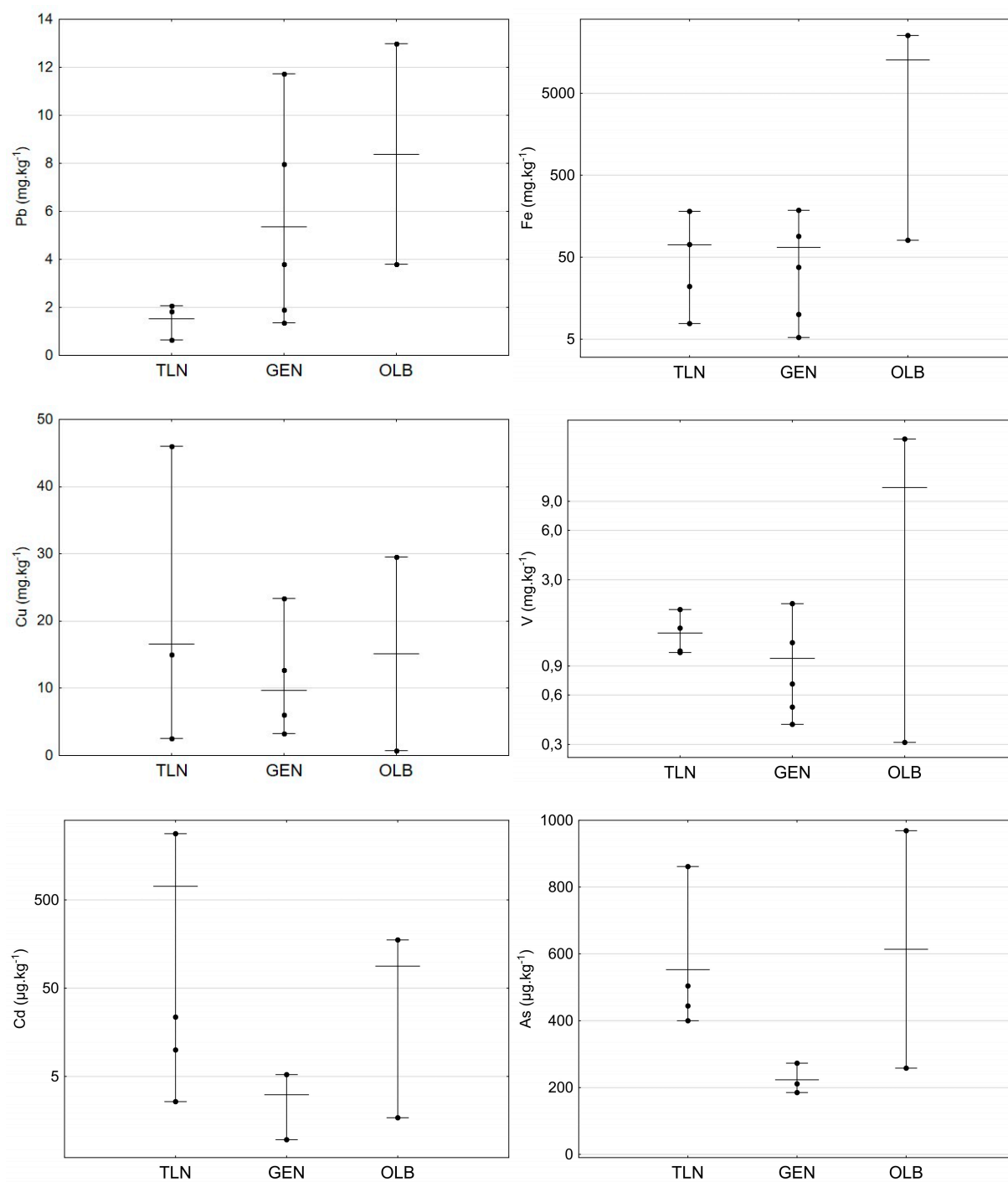


Figure S2. Boxplot of trace metal concentrations bioaccumulated into MPs normalized over MPs mass in Toulon (TLN), Genova (GEN) and Olbia (OLB). The average value is represented with a horizontal bar while raw data is represented by black dots.

Table S1. Percentage of contribution of microplastics size fractions (300–500µm, 500–1000µm, 1000–2000µm, 2000–3000µm, 3000–4000µm, 4000–5000µm) to the total sampled fraction at the different sites (TLN: Toulon, GEN: Genova and OLB: Olbia), zones (Inner and Outer) and seasons (W: winter and S: summer).

Sample	300–500 µm	500–1000 µm	1000–2000 µm	2000–3000 µm	3000–4000 µm	4000–5000 µm
TLN-W-Inner	22.22	9.26	20.37	18.52	20.37	9.26
TLN-W-Outer	40.00	0.00	20.00	10.00	30.00	0.00
<i>TLN-W Average</i>	<i>31.11</i>	<i>4.63</i>	<i>20.19</i>	<i>14.26</i>	<i>25.19</i>	<i>4.63</i>
TLN-S-Inner	5.88	23.53	33.82	25.00	4.41	7.35
TLN-S-Outer	8.20	22.95	18.03	27.87	13.11	9.84
<i>TLN-S Average</i>	<i>7.04</i>	<i>23.24</i>	<i>25.93</i>	<i>26.43</i>	<i>8.76</i>	<i>8.59</i>
GEN-W-Inner East	15.79	15.79	0.00	15.79	21.05	31.58
GEN-W-Inner West	0.00	2.44	36.59	31.71	19.51	9.76
GEN-W-Outer	5.56	0.00	33.33	38.89	16.67	5.56
<i>GEN-W Average</i>	<i>7.12</i>	<i>6.08</i>	<i>23.31</i>	<i>28.80</i>	<i>19.08</i>	<i>15.63</i>
GEN-S-Inner East	6.25	10.00	17.50	35.00	18.75	12.50
GEN-S-Inner West	5.68	13.41	21.36	28.64	19.77	11.14
<i>GEN-S Average</i>	<i>5.97</i>	<i>11.70</i>	<i>19.43</i>	<i>31.82</i>	<i>19.26</i>	<i>11.82</i>
OLB-W-Inner	8.00	33.00	40.00	11.00	5.00	3.00
OLB-W-Outer	3.85	42.31	34.62	15.38	3.85	0.00
<i>OLB-W Average</i>	<i>5.92</i>	<i>37.65</i>	<i>37.31</i>	<i>13.19</i>	<i>4.42</i>	<i>1.50</i>

Table S2. Bioconcentration factors (BCF) of trace metals in biofilm extracted from microplastics at the different sites (TLN: Toulon, GEN: Genova and OLB: Olbia), seasons (W: winter and S: summer), zones (Inner and Outer).

Sample	Pb L.kg ⁻¹	Fe L.kg ⁻¹	Cu L.kg ⁻¹	V L.kg ⁻¹	Cd L.kg ⁻¹	As L.kg ⁻¹
TLN-W-Inner	5.19×10^4	7.44×10^3	2.83×10^4	8.57×10^2	3.24×10^2	6.63×10^2
TLN-W-Outer	<DL	6.14×10^4	5.11×10^5	1.11×10^3	3.53×10^5	3.08×10^2
TLN-S-Inner	1.89×10^4	2.62×10^3	1.67×10^5	6.23×10^2	2.94×10^3	3.42×10^2
TLN-S-Outer	5.93×10^4	2.41×10^4	2.86×10^4	6.10×10^2	1.25×10^3	3.88×10^2
GEN-W-Inner West	3.35×10^5	3.03×10^4	6.67×10^4	1.21×10^3	<DL	1.42×10^2
GEN-W-Inner East	1.08×10^5	1.27×10^4	1.42×10^5	2.23×10^2	<DL	<DL
GEN-W-Outer	2.28×10^5	6.32×10^4	2.59×10^5	6.99×10^2	<DL	<DL
GEN-S-Inner West	3.84×10^4	3.38×10^3	3.61×10^4	3.93×10^2	6.56×10^2	2.10×10^2
GEN-S-Inner East	5.41×10^4	1.77×10^3	3.61×10^4	2.84×10^2	1.20×10^2	1.62×10^2
OLB-W-Inner	1.08×10^5	2.72×10^4	8.08×10^3	1.73×10^2	2.13×10^2	1.99×10^2
OLB-W-Outer	3.71×10^5	8.58×10^6	3.29×10^5	1.21×10^4	2.20×10^4	7.45×10^2

Table S3. Trace metal surface-related concentrations in biofilm extracted from microplastics and macroplastics in Genova. H = Kruskal-Wallis χ^2 statistics, F = ANOVA's Fisher statistics and p = p-value.

Sample	Type	Pb ng.cm ⁻²	Fe ng.cm ⁻²	Cu ng.cm ⁻²	V ng.cm ⁻²	Cd pg.cm ⁻²	As ng.cm ⁻²
GEN-W-Inner West	Microplastics	56.8	435	29.1	10.4	<DL	0.897
GEN-W-Inner East	Microplastics	23.8	237	80.1	2.50	<DL	<DL
GEN-W-Outer	Microplastics	40.8	959	120	6.39	<DL	<DL
GEN-S-Inner West	Microplastics	14.6	109	35.3	7.62	57.0	2.97
GEN-S-Inner East	Microplastics	37.6	104	64.6	10.1	19.1	4.20
GEN-MACRO1	Macroplastics	0.803	25.5	6.61	0.733	5.53	0.264
GEN-MACRO2	Macroplastics	2.39	5.18	1.77	0.430	10.2	0.211
GEN-MACRO4	Macroplastics	4.00	36.7	42.3	1.18	<DL	0.198
GEN-MACRO6	Macroplastics	1.01	106	5.07	1.23	2.39	0.973
Analysis of variance		H = 6.00	H = 4.86	F = 6.46	F = 15.77	H = 3.00	H = 13.13
		$p < 0.05$	$p < 0.05$	$p < 0.05$	$p < 0.05$	$p = 0.083$	$p = 0.077$