SUPPORTING INFORMATION

Impacts of discarded plastic bags on marine assemblages and ecosystem functioning

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This file contains 5 pages (cover page included), containing 2 figures and 1 table:

Figure S1: Metadata on weather conditions during the experiment.

Figure S2 (a-f): Close-up images of plastic bags after 63 days of exposure in the marsh.

Table S1 (a-c): Results of *simper* (similarity percentages) analysis of assemblages.

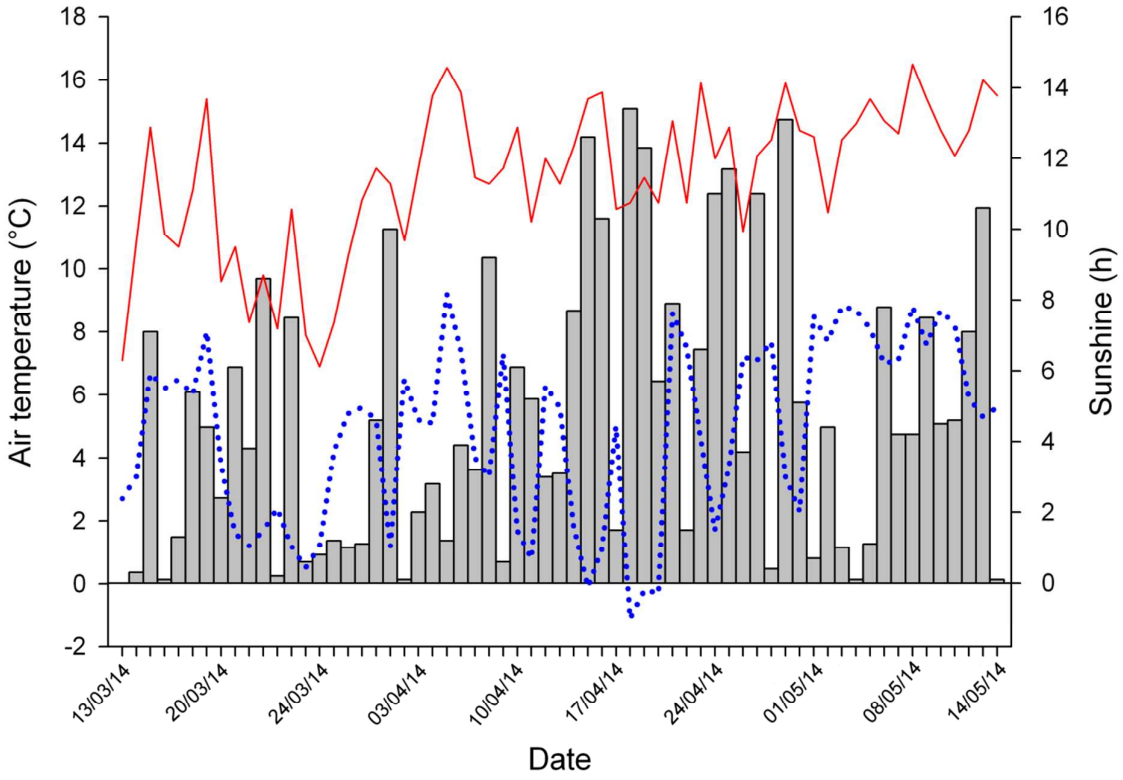

Figure S1. Maximum (red solid line), minimum (blue dotted line) daily air temperature and hours of sunshine during in Dublin, Ireland during the experimental period. Source: Met Éireann, Dublin, Ireland; www.met.ie.

Conventional Biodegradable

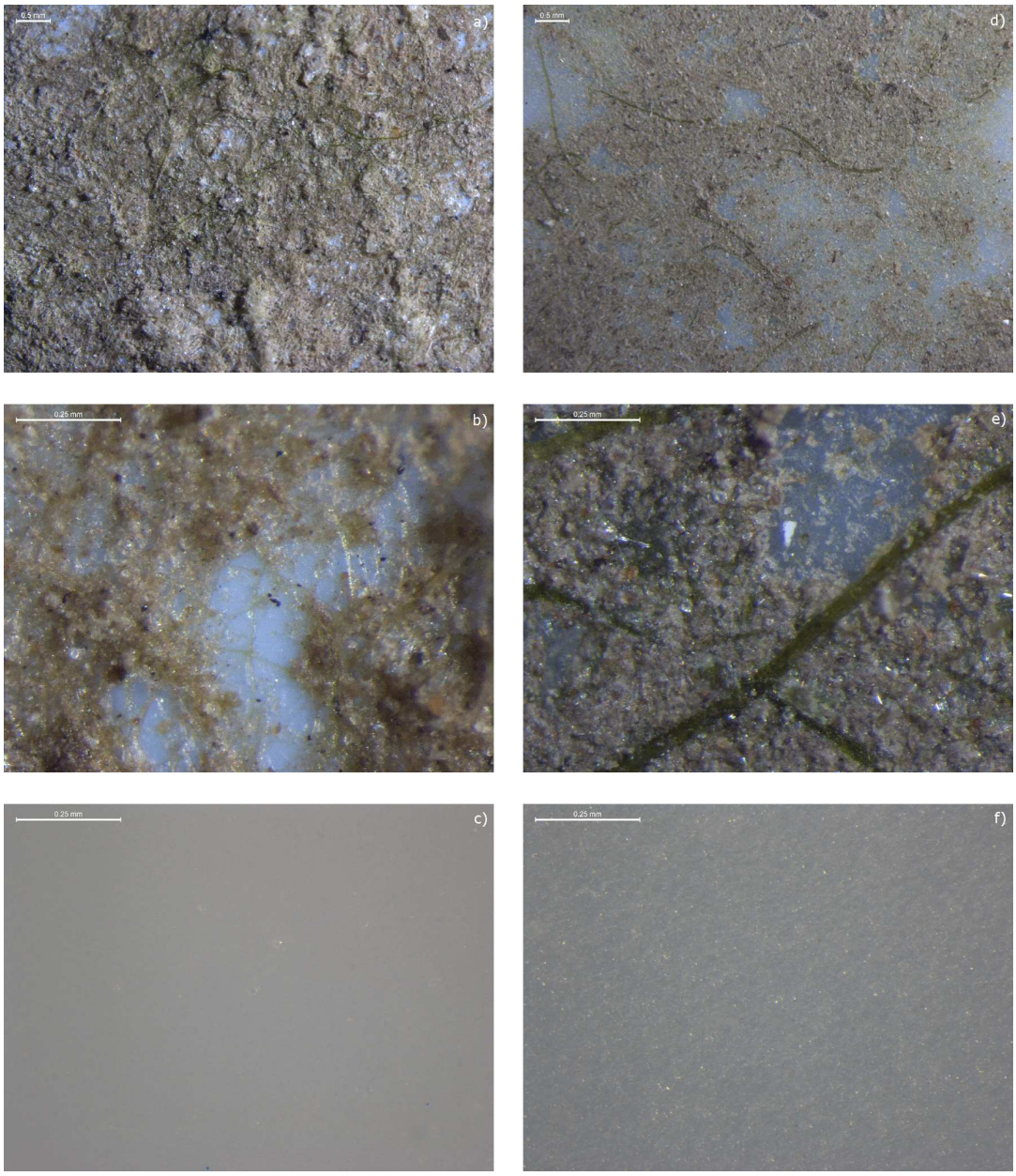

Figure S2. Examples of the surface of a conventional plastic bag left for 63 days in a coastal marsh (a) 2x zoom, (b) 12x zoom, (c) unused (clean); and a biodegradable plastic bag left for 63 days in a coastal marsh (d) 2x zoom and (e) 12x zoom, (f) unused (clean). All photographs were taken from air-dried samples without further treatment and include a scale bar.

Table S1. Similarity percentage (*simper*) results showing the percentage which identified group contributed to differences between sediment infaunal assemblage structure under the biodegradable (Bio) and conventional (Cov) plastic bags and untreated controls (Con) based on Bray-Curtis dissimilarities (av.diss) of 4th root transformed abundance data, n = 10).

a) Contrast between biodegradable plastic bags and the controls (av. diss. = 27.4)

Invertebrate ID	Contrib.[1)]	St.dev[2)]	Ratio[3)]	av. Con[4)]	av. Bio[5)]	ΣCum[6)]
Nematoda	6.02	2.99	2.02	11.76	7.05	21.95
Capitella capitata	4.56	2.24	2.03	9.47	5.88	38.56
Turbellaria	4.33	2.43	1.78	4.69	1.35	54.34
Hydrobia ulvae	3.87	2.60	1.49	7.37	4.76	68.46
Harpacticoid copepods	3.14	2.37	1.33	4.05	2.68	79.90
Nemertea	1.45	1.46	0.99	0.48	1.14	85.20
Tubificidae	1.38	1.19	1.16	3.44	2.42	90.22
Chironomidae	1.31	0.80	1.63	6.05	5.22	95.00
Carcinus maenas	0.46	0.97	0.47	0.00	0.37	96.67
Crangon crangon	0.32	0.96	0.33	0.24	0.00	97.82
Phyllodocidae	0.31	0.93	0.33	0.24	0.00	98.95
Mytilus edulis	0.29	0.87	0.33	0.24	0.00	100.00
Platyhelminthes	0.00	0.00	-	0.00	0.00	100.00
Corophium volutator	0.00	0.00	-	0.00	0.00	100.00

b) Contrast between conventional plastic bags and the controls (av. diss. = 28.4)

Invertebrate ID	Contrib.	St.dev	Ratio	av. Con	av. Cov	ΣCum
Nematoda	6.42	3.38	1.90	11.76	6.89	22.64
Capitella capitata	5.31	2.51	2.12	9.47	5.47	41.37
Hydrobia ulvae	4.47	3.10	1.44	7.37	4.08	57.13
Turbellaria	3.01	2.27	1.33	4.69	2.53	67.73
Harpacticoid copepods	2.97	2.42	1.23	4.05	2.39	78.21
Tubificidae	1.52	1.35	1.13	3.44	2.41	83.56
Chironomidae	1.48	1.18	1.26	6.05	5.02	88.78
Carcinus.maenas	0.89	1.37	0.65	0.00	0.71	91.92
Nemertea	0.76	1.30	0.59	0.48	0.24	94.61
Platyhelminthes	0.32	0.98	0.33	0.00	0.24	95.75
Crangon crangon	0.32	0.97	0.33	0.24	0.00	96.88
Phyllodocidae	0.31	0.94	0.33	0.24	0.00	97.98
Mytilus edulis	0.29	0.88	0.33	0.24	0.00	99.00
Corophium volutator	0.28	0.85	0.33	0.00	0.24	100.00

c) Contrast between biodegradable and conventional plastic bags (av. dissimilarity = 21.1)

Invertebrate ID	Contrib.	St.dev	Ratio	av. Bio	av. Cov	ΣCum
Harpacticoid copepods	3.49	2.80	1.25	2.68	2.39	16.54
Turbellaria	3.06	2.44	1.25	1.35	2.53	31.06
Nematoda	2.85	2.12	1.35	7.05	6.89	44.57
Hydrobia ulvae	2.58	2.57	1.00	4.76	4.08	56.79
Capitella capitata	2.26	1.61	1.40	5.88	5.47	67.49
Nemertea	1.85	1.88	0.98	1.14	0.24	76.25
Chironomidae	1.53	1.22	1.26	5.22	5.02	83.52
Carcinus maenas	1.38	1.77	0.78	0.37	0.71	90.08
Tubificidae	1.31	1.54	0.85	2.42	2.41	96.30
Platyhelminthes	0.42	1.28	0.33	0.00	0.24	98.31
Corophium volutator	0.36	1.08	0.33	0.00	0.24	100.00
Mytilus edulis	0.00	0.00	-	0.00	0.00	100.00
Crangon crangon	0.00	0.00	-	0.00	0.00	100.00
Phyllodocidae	0.00	0.00	-	0.00	0.00	100.00

[1)] Average contribution (%) to dissimilarity between the groups
[2)] Standard deviation of contribution
[3)] Ratio between contribution and standard deviation of contribution
[4)] Average abundance (4^{th} root transformed) in group a
[5)] Average abundance (4^{th} root transformed) in group b
[6)] Summed cumulative contribution (%) to dissimilarity between groups