

Online Supplement to:

Marine microplastic: Preparation of relevant test materials for laboratory assessment of ecosystem impacts

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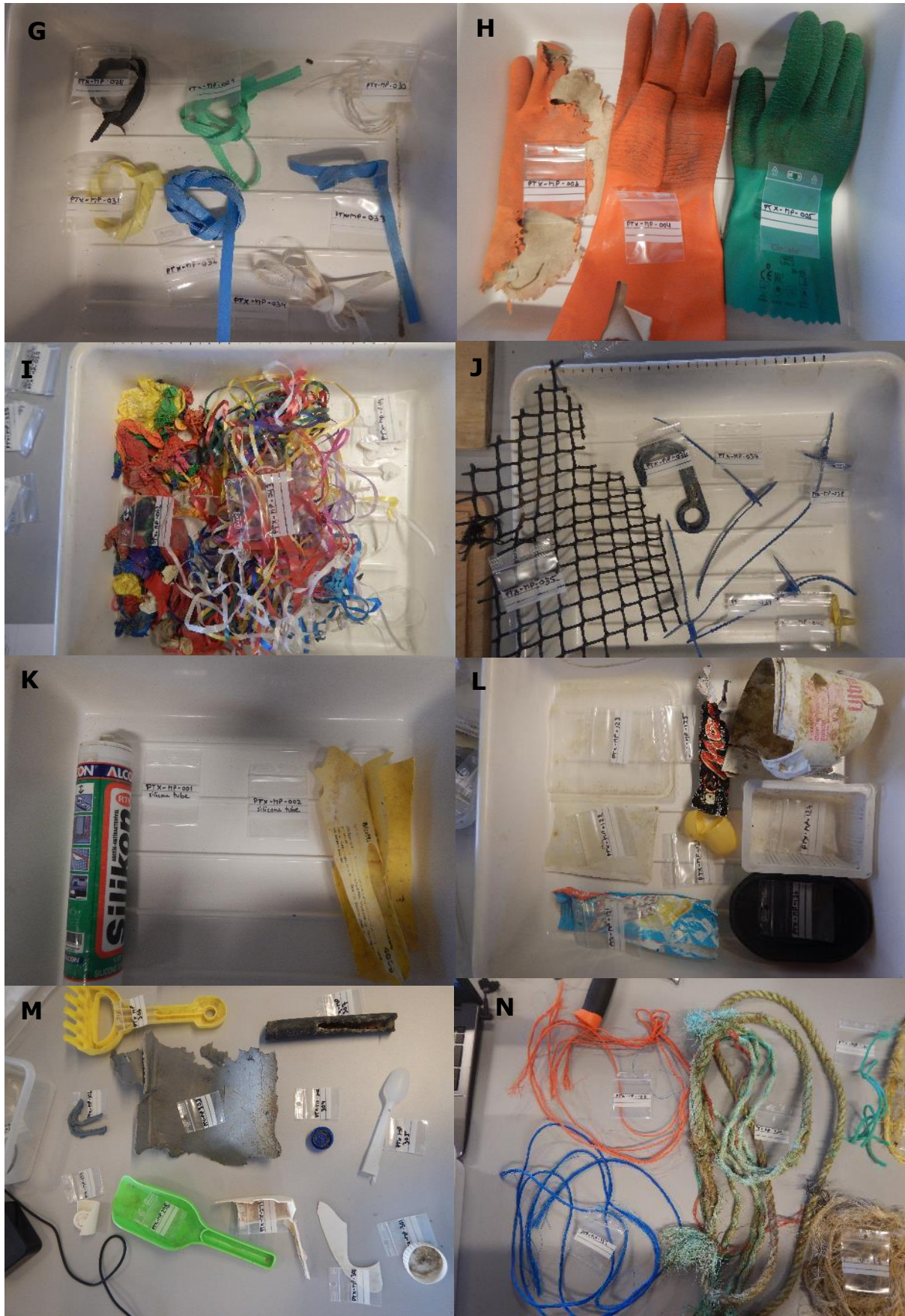
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Online Supplement 1. Preparation of the sample mix

Online Supplement Figure 1.1. Exemplary pictures of debris items collected on the beach before milling. From the top left to right: **A. Foam** (Expanded styrene foam and polyurethane foam from filling material); **B. Drink bottles (transparent, green and blue ones, different sizes)**; **C. Other bottles** (for cleaning, washing detergents etc.); **D. Fish boxes** (differently coloured fish transport crates); **E. Jerry cans** (different types and sizes for transport of fluids); **F. Sheets** (plastic bags, foil balloons and agricultural foils); **G. Strap bands and 6-pack rings** (for packaging of larger items and beverage can rings); **H. Working gloves** (rubbery, sturdy gloves mainly used in fisheries); **I. Balloons** (latex, polymer ribbons and valves); **J. Other fishing gear** (polymer hooks, oyster nets, net floaters, etc.); **K. Silicone tubes** (silicone putty or grease tubes); **L. Food packaging** (yoghurt beakers, food containers, candy wrappers, etc.); **M. Miscellaneous** (items that not belong to other categories, e.g. baskets, buoys, beach toys, caps, etc.) and **N. Ropes and nets** (fishing nets, dolly ropes, ropes from a broad maritime sector).

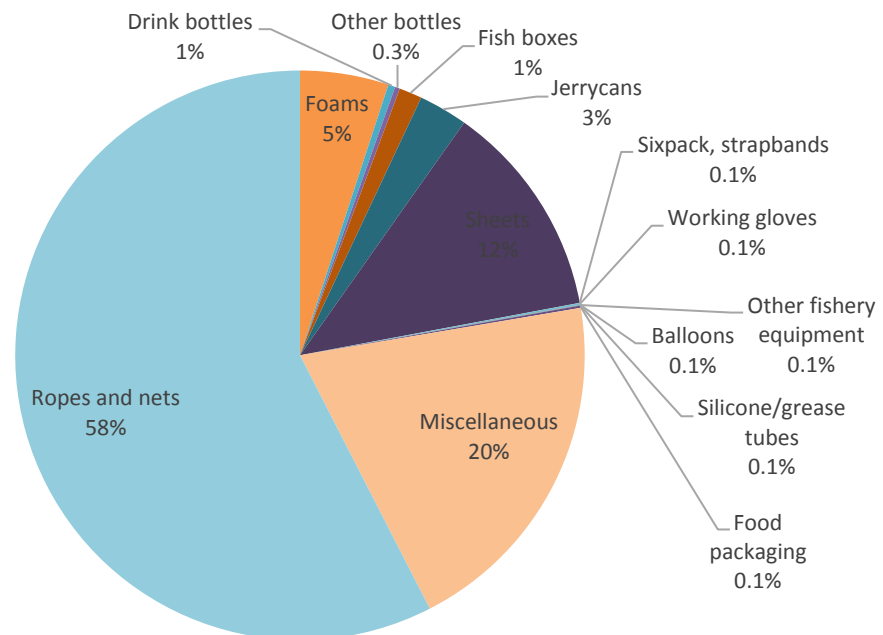




Online Supplement Figure 1.2. Picture of one kilogram of the marine debris sample, sorted by category (from top left) before milling: Nets and ropes, Sheets, Foam, Miscellaneous, Fish boxes, drink bottles, jerry cans, Food packaging, Strap bands and 6-pack rings, fishery gloves, Silicone tubes, Other bottles, Other fishing gear, Balloons. Below: Percentage of different plastic categories (in means of mass) contributing to one kg of the sample mix



Online Supplement Figure 1.3. Contribution of each category to the microplastic mixture based on data of an earlier beach clean-up on Texel, the Netherlands in 2005.



Online Supplement 2. Recovery rate cryo-milling

By using a high speed laboratory rotor mill the temperature can rise to about 50 °C. The sample mix was therefore milled in nitrogen at -196 °C. At this temperature plastic is brittle. For easier milling items were sorted according to their shape (threads, sheets, foam and rigid plastics).

Online Supplement Table 2.1. The rate of return of the cryo-milling process is shown. The loss of some material can be related to the loss of sand and statically charging of foam and foils.

Shape	Composition of the total sample (%)	Rate of return (%)
Threads	59	85
Sheets	12	77
Foam	5	79
Rigid	24	90

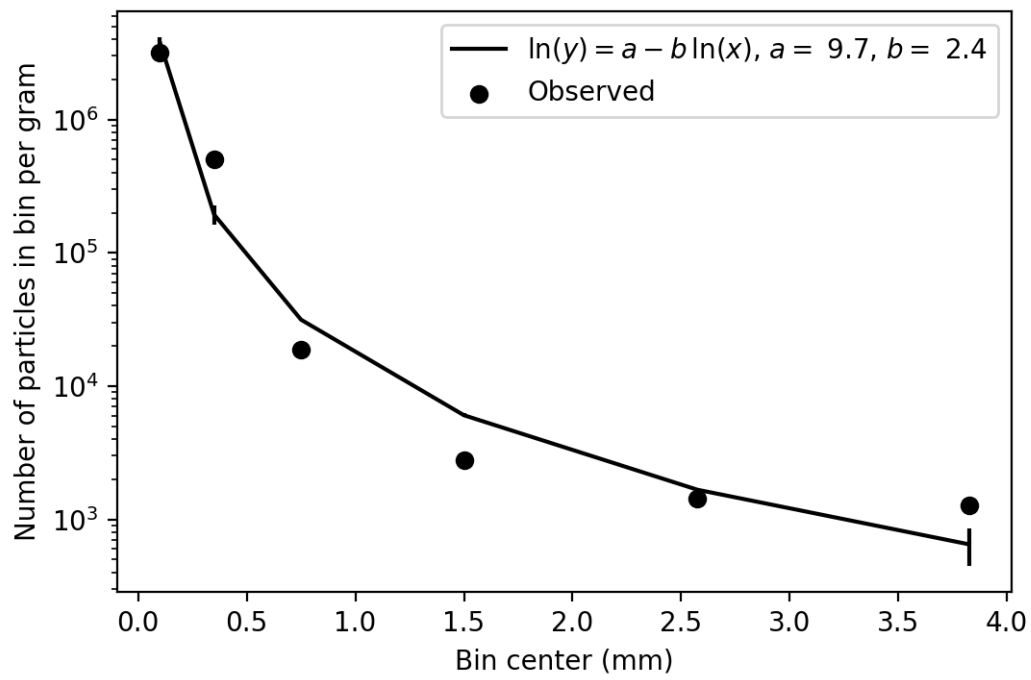
Online Supplement 3. Particle count

To estimate the number of particles per gram particles were counted by size category.

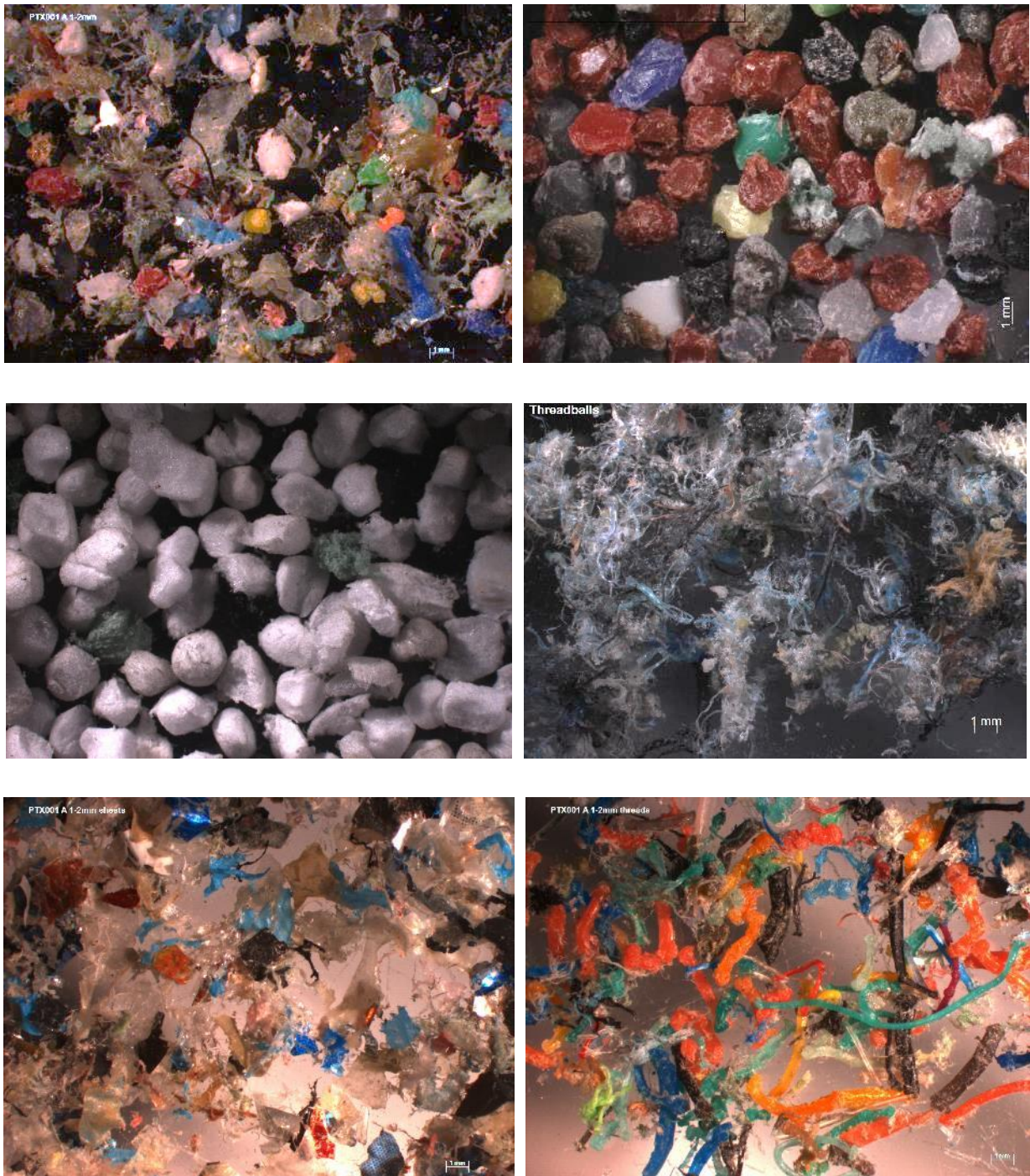
Online Supplement Table 3.1. Particles of different sizes were obtained, sieved into different size categories and then counted (n) and weighed (in gram) by category. For the bigger sizes, >4.5 – 1.0 mm, particles were categorized into sheets, threads, foam, fragments and thread balls. For the smaller sieve sizes (1.0 - <0.2 mm) this was not possible. Samples smaller than 0.5 mm were poured with ethanol in a Bogorov counting chamber and counted manually on pictures taken under the microscope (AxioCam MRC with AxioVision 40 V 4.8.2.0 software (Zeiss, Germany)) marking counted particles to avoid double counts (OS Figure 3.3.). To verify results, two different sample batches were counted (E-A and E-B). In some cases two or three subsamples were counted to make sure the numbers of particles are comparable. The last column is the sum of the individual counts per category.

A																
Sample Number	Sample Batch	Size (mm)	Sub-sample	Mass sub-sample	weight total	Sheet n	sheet mass	Thread n	thread mass	foam n	foam mass	fragment n	fragment mass	threadball/dust n	threadball/dust mass	Total sum pieces
PTX001	E-A	>4.5	no	x	0.1390	0	0	0	0	0	0	0	0	1	0.1390	1
PTX001	E-A	3.15-4.5	no	x	0.0400	3	0.0008	0	0	39	0.0214	0	0	3	0.0178	45
PTX001	E-A	2-3.15	no	x	1.3383	291	0.0984	25	0.034	1390	0.3369	191	0.7635	25	0.1055	1922
PTX001	E-A	1-2	yes	0.5	0.4993	569	0.0607	172	0.1	253	0.0262	337	0.2472	1	0.0652	1332
PTX001	E-A	0.5-1.0	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	202
PTX001	E-A	0.5-1.0	yes	0.01	0.011	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	171
PTX001	E-A	0.2-0.5	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4840
PTX001	E-A	<0.2	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	29679
B																
PTX001	E-B	>4.5	no	x	0.0000	0	0	0	0	0	0	0	0	0	0	0
PTX001	E-B	3.15-4.5	no	x	0.0782	12	0.0044	0	0	94	0.0506	1	0.0017	3	0.0215	110
PTX001	E-B	2-3.15	no	x	1.9930	327	0.0876	73	0.0664	2191	0.4788	224	0.8892	1	0.471	2816
PTX001	E-B	1-2	yes	0.1	0.0969	99	0.0099	41	0.0145	46	0.0026	101	0.0667	1	0.0032	288
PTX001	E-B	1-2	yes	0.1	0.0992	134	0.013	32	0.011	67	0.0039	70	0.0618	1	0.0095	304
PTX001	E-B	1-2	yes	0.1	0.0986	99	0.0092	41	0.0235	67	0.0052	65	0.0513	1	0.0094	273
PTX001	E-B	0.5-1.0	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	190
PTX001	E-B	0.5-1.0	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	189
PTX001	E-B	0.2-0.5	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5295
PTX001	E-B	<0.2	yes	0.01	0.0100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	33783

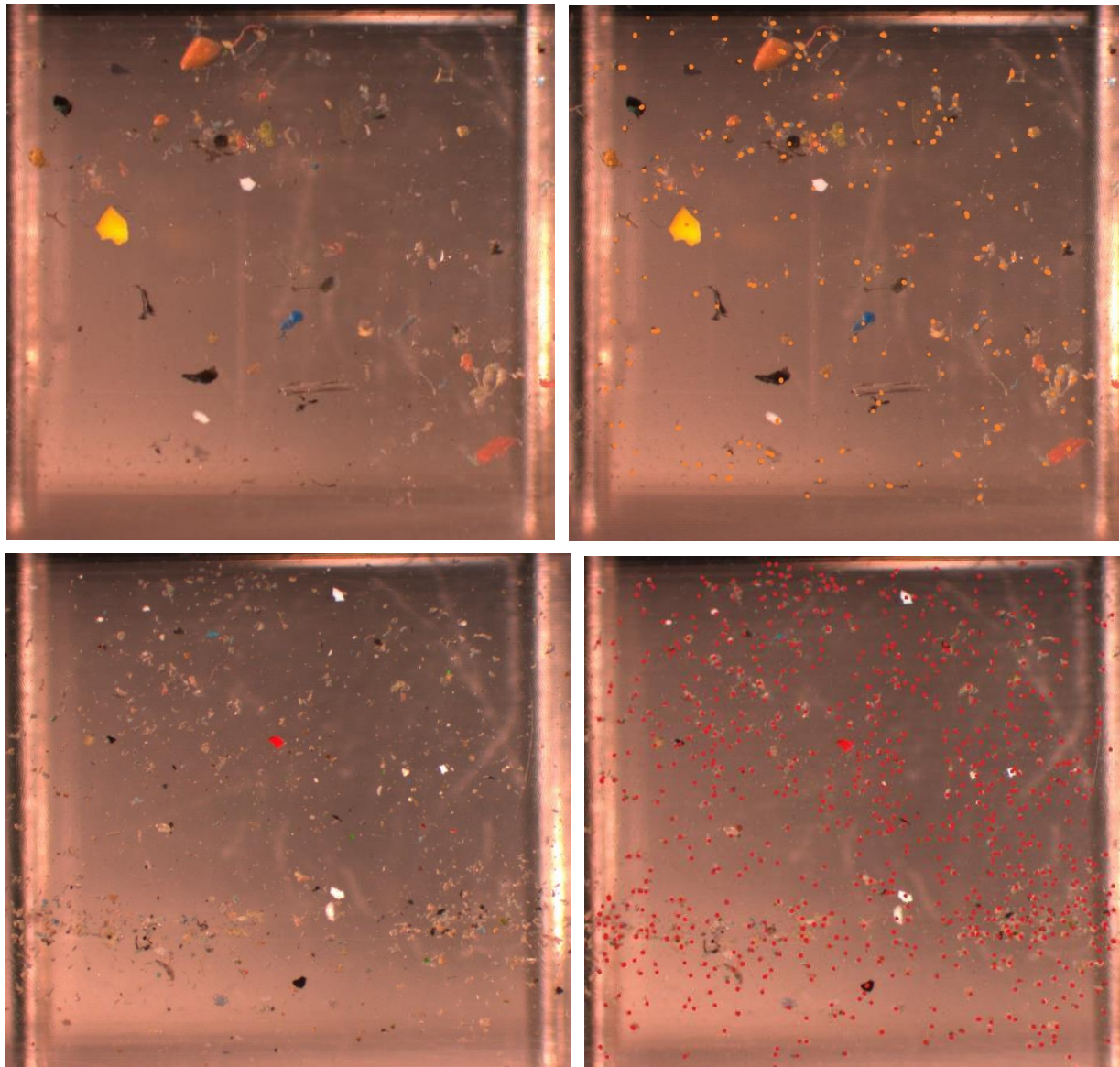
Online Supplement Figure 3.1. Particle size fraction and particle number data fitted to the logarithm of the exponential function $y = a * x^{-b}$. Error bars indicate one standard deviation.



Online Supplement Figure 3.2. Photographs of the particle count of size categories 1-3 mm (sorted with sieve tower). Top left: unsorted mix 1-2 mm. Top Right: Fragments 2-3.15 mm. Centre left: Foam 2-3.15 mm. Centre right: Thread ball 2-3.15 mm. Bottom left: Sheets 1-2 mm. Bottom right: threads 1-2 mm.



Online Supplement Figure 3.3. Photographs of particles in a Bogorov counting chamber, 0.5-0.2 mm (Top) and <0.2 mm (Bottom), before (left) and after (right) counting. The chamber on the top contains 195 particles, the one on the bottom 821 particles.



Online Supplement 4. Characteristics of collected individual items of marine debris

Online Supplement Table 4.1. Characteristics of collected individual items (n=351) of marine debris, including type of debris (category and sub-category), colour and polymer type used to prepare the MLD microplastic. mixture.

	Category	Sub-category		Individual item code	Colour	FTIR polymer
1	Foam	foam	1.1	PTX-MP-267	green	PS
		foam		PTX-MP-268	yellow	PVC
		foam		PTX-MP-269	yellow	PU
		foam		PTX-MP-270	white	PE
		foam		PTX-MP-271	orange black	EVA
		foam		PTX-MP-272	white	PE
		foam		PTX-MP-273	white	PS
		foam		PTX-MP-274	white	PS
		foam		PTX-MP-275	yellow green	unclear
		foam		PTX-MP-276	yellow	PU
		foam		PTX-MP-277	yellow	PU
		foam		PTX-MP-278	yellow	PU
		foam		PTX-MP-279	white	PS
		foam		PTX-MP-280	white	PS
		foam		PTX-MP-281	yellow	PU
		foam		PTX-MP-282	yellow	PU
		foam		PTX-MP-283	white	PS
		foam		PTX-MP-284	white	PS
		foam		PTX-MP-285	yellow	PU
		foam		PTX-MP-286	white	PS
		foam		PTX-MP-287	white	PS
		foam		PTX-MP-288	yellow green	PU
		foam		PTX-MP-289	white	PE
		foam		PTX-MP-290	yellow	PU
		foam		PTX-MP-291	white	PS
		foam		PTX-MP-292	yellow	PU
		foam		PTX-MP-293	white	PE
		foam		PTX-MP-294	white	unclear
		foam		PTX-MP-295	black	PU
2	Plastic bottles	drink bottles	2.1	PTX-MP-006	blue transparent	PET
		drink bottles		PTX-MP-007	blue transparent	PET
		drink bottles		PTX-MP-008	transparent	PET
		drink bottles		PTX-MP-009	transparent	PET
		drink bottles		PTX-MP-010	transparent	PET
		other bottles	2.2	PTX-MP-011	blue	PE
		other bottles		PTX-MP-012	transparent	PET
		other bottles		PTX-MP-013	white	PE
		other bottles		PTX-MP-014	white	PE

Category	Sub-category		Individual item code	Colour	FTIR polymer
	other bottles		PTX-MP-015	transparent	PET
	other bottles		PTX-MP-016	pink	PE
	other bottles		PTX-MP-017	white	PE
	other bottles		PTX-MP-018	transparent	PET
	other bottles		PTX-MP-019	white	PE
	other bottles		PTX-MP-020	transparent	PE
	other bottles		PTX-MP-021	transparent	PET
	other bottles		PTX-MP-022	white	PE
3	Fish boxes, jerrycans				
	fish boxes	3.1	PTX-MP-348	green	LLDPE
	fish boxes		PTX-MP-349	green	LLDPE
	fish boxes		PTX-MP-350	red	LLDPE
	fish boxes		PTX-MP-351	yellow	LLDPE
	Jerrycans	3.2	PTX-MP-145	white	LLDPE
	Jerrycans		PTX-MP-146	green	PE
	Jerrycans		PTX-MP-147	black	PP
	Jerrycans		PTX-MP-148	yellow	LLDPE
	Jerrycans		PTX-MP-149	green	PP
	Jerrycans		PTX-MP-150	orange	PE
	Jerrycans		PTX-MP-151	blue	PE
	Jerrycans		PTX-MP-152	red	PP
	Jerrycans		PTX-MP-153	blue	PP
	Jerrycans		PTX-MP-154	white	PP
	Jerrycans		PTX-MP-155	white	PP
	Jerrycans		PTX-MP-156	yellow	LLDPE
	Jerrycans		PTX-MP-157	yellow	LLDPE
4	Other packaging				
	sheets	4.1	PTX-MP-045	transparent	LLDPE
	sheets		PTX-MP-046	black	PE
	sheets		PTX-MP-047	white	LLDPE
	sheets		PTX-MP-048	silver bling	LLDPE
	sheets		PTX-MP-049	transparent blue	PE
	sheets		PTX-MP-050	transparent	PE
	sheets		PTX-MP-051	black	PE
	sheets		PTX-MP-052	transparent	PE
	sheets		PTX-MP-053	transparent	PE
	sheets		PTX-MP-054	white	PE
	sheets		PTX-MP-055	transparent	LLDPE
	sheets		PTX-MP-056	transparent	LLDPE
	sheets		PTX-MP-057	green	LDPE
	sheets		PTX-MP-058	blue	PE
	sheets		PTX-MP-059	red	unclear
	sheets		PTX-MP-060	white	PE
	sheets		PTX-MP-061	black	PE

Category	Sub-category	Individual item code	Colour	FTIR polymer
	sheets	PTX-MP-062	blue	PE
	sheets	PTX-MP-063	transparent	PP
	sheets	PTX-MP-064	transparent	PP
	sheets	PTX-MP-065	brown	PP
	sheets	PTX-MP-066	transparent	PE
	sheets	PTX-MP-067	black	unclear
	sheets	PTX-MP-068	transparent	PP
	sheets	PTX-MP-069	transparent	LLDPE
	sheets	PTX-MP-070	transparent silver	unclear
	sheets	PTX-MP-071	transparent white	LLDPE
	sheets	PTX-MP-072	blue black	PE
	sheets	PTX-MP-073	green	unclear
	sheets	PTX-MP-074	transparent	LLDPE
	sheets	PTX-MP-075	transparent	PP
	sheets	PTX-MP-076	transparent	PP
	sheets	PTX-MP-077	transparent	PP
	sheets	PTX-MP-078	transparent	PP
	sheets	PTX-MP-079	white	PE
	sheets	PTX-MP-080	white	LLDPE
	sheets	PTX-MP-081	white	PE
	sheets	PTX-MP-082	transparent	PE
	sheets	PTX-MP-083	transparent	PE
	sheets	PTX-MP-084	transparent	PE
	sheets	PTX-MP-085	transparent	PE
	sheets	PTX-MP-086	transparent	PE
	sheets	PTX-MP-087	transparent	PP
	sheets	PTX-MP-088	transparent	PE
	sheets	PTX-MP-089	pink	PE
	sheets	PTX-MP-090	black	PE
	sheets	PTX-MP-091	black	PE
	sheets	PTX-MP-092	black	PE
	sheets	PTX-MP-093	transparent	LLDPE
	sheets	PTX-MP-094	white	PE
	sheets	PTX-MP-095	black	PE
	sheets	PTX-MP-096	white	PE
	sheets	PTX-MP-097	transparent	PP
	sheets	PTX-MP-098	transparent	LLDPE
	sheets	PTX-MP-099	transparent	LLDPE
	sheets	PTX-MP-100	transparent red	LLDPE
	sheets	PTX-MP-101	transparent	LLDPE
	sheets	PTX-MP-102	white	PE
	sheets	PTX-MP-103	transparent blue	LLDPE
	sheets	PTX-MP-104	transparent	unclear
	sheets	PTX-MP-105	transparent red	LLDPE

Category	Sub-category		Individual item code	Colour	FTIR polymer	
	sheets		PTX-MP-106	transparent	LLDPE	
	sheets		PTX-MP-107	transparent	PE	
	sheets		PTX-MP-108	transparent	LDPE	
	sheets		PTX-MP-109	transparent	LLDPE	
	sheets		PTX-MP-110	transparent	PE	
	sheets		PTX-MP-111	transparent	PP	
	strapbands	4.2	PTX-MP-023	yellow	PP	
	strapbands		PTX-MP-024	transparent	LLDPE	
	strapbands		PTX-MP-025	white	PP	
	strapbands		PTX-MP-026	white	PP	
	strapbands		PTX-MP-027	yellow	PP	
	strapbands		PTX-MP-028	black	PP	
	strapbands		PTX-MP-029	green	PP	
	strapbands		PTX-MP-030	white	PP	
	strapbands		PTX-MP-031	yellow	PP	
	strapbands		PTX-MP-032	blue	PP	
	strapbands		PTX-MP-033	blue	PP	
	strapbands		PTX-MP-034	white	PP	
5	Gloves	fishery gloves	5.1	PTX-MP-003	orange	unclear
		fishery gloves		PTX-MP-004	orange	Polyacetylene
		fishery gloves		PTX-MP-005	green	Polyacetylene
6	Other plastic material	balloon (rubber)	6.1	PTX-MP-042	red	unclear
		balloon (ribbon)		PTX-MP-043	red	PP
		ballon (valve)		PTX-MP-044	white	LLDPE
		fishery other	6.2	PTX-MP-035	black	PE
		fishery other		PTX-MP-036	blue	PP
		fishery other		PTX-MP-037	blue	PE
		fishery other		PTX-MP-038	blue	PE
		fishery other		PTX-MP-039	blue	PP
		fishery other		PTX-MP-040	yellow	PE
		fishery other		PTX-MP-041	white	PP
		silicone tube	6.3	PTX-MP-001	white green	PE
		silicone tube		PTX-MP-002	yellow	PP
		food packaging	6.4	PTX-MP-112	white	PP
		food packaging		PTX-MP-113	transparent	PP
		food packaging		PTX-MP-114	white	PE
		food packaging		PTX-MP-115	transparent green	PP
		food packaging		PTX-MP-116	transparent blue	PP
		food packaging		PTX-MP-117	white	PVC
		food packaging		PTX-MP-118	white	PP
		food packaging		PTX-MP-119	white	PP
		food packaging		PTX-MP-120	red	PP

Category	Sub-category	Individual item code	Colour	FTIR polymer
	food packaging	PTX-MP-121	white blue	PP
	food packaging	PTX-MP-122	white	PET
	food packaging	PTX-MP-123	transparent	PP
	food packaging	PTX-MP-124	yellow	PP
	food packaging	PTX-MP-125	black white	PP
	food packaging	PTX-MP-126	black	unclear
	food packaging	PTX-MP-127	white	PP
	food packaging	PTX-MP-128	white	PP
	food packaging	PTX-MP-129	orange	PP
	food packaging	PTX-MP-130	blue white	PP
	food packaging	PTX-MP-131	brown	PP
	food packaging	PTX-MP-132	silver	PP
	food packaging	PTX-MP-133	blue	PVC
	food packaging	PTX-MP-134	blue	unclear
	food packaging	PTX-MP-135	white	PP
	food packaging	PTX-MP-136	white	PP
	food packaging	PTX-MP-137	yellow	LLDPE
	food packaging	PTX-MP-138	yellow	PP
	food packaging	PTX-MP-139	white	PP
	food packaging	PTX-MP-140	transparent	unclear
	food packaging	PTX-MP-141	white	PP
	food packaging	PTX-MP-142	blue	PP
	food packaging	PTX-MP-143	transparent yellow	PP
	food packaging	PTX-MP-144	green	PP
	miscellaneous	6.5 PTX-MP-296	red	PE
	miscellaneous	PTX-MP-297	white	PP
	miscellaneous	PTX-MP-298	green	PP
	miscellaneous	PTX-MP-299	white	PP
	miscellaneous	PTX-MP-300	white	PP
	miscellaneous	PTX-MP-301	white	PP
	miscellaneous	PTX-MP-302	blue	LLDPE
	miscellaneous	PTX-MP-303	grey	LLDPE
	miscellaneous	PTX-MP-304	blue	PE
	miscellaneous	PTX-MP-305	white	PP
	miscellaneous	PTX-MP-306	yellow	PP
	miscellaneous	PTX-MP-307	black	PE
	miscellaneous	PTX-MP-308	white	PE
	miscellaneous	PTX-MP-309	white	PE
	miscellaneous	PTX-MP-310	blue	unclear
	miscellaneous	PTX-MP-311	blue	PP
	miscellaneous	PTX-MP-312	white	PE
	miscellaneous	PTX-MP-313	blue	PE
	miscellaneous	PTX-MP-314	white	PE
	miscellaneous	PTX-MP-315	blue	PE

Category	Sub-category		Individual item code	Colour	FTIR polymer	
	miscellaneous		PTX-MP-316	white	LLDPE	
	miscellaneous		PTX-MP-317	green	PE	
	miscellaneous		PTX-MP-318	yellow	PP	
	miscellaneous		PTX-MP-319	yellow	PP	
	miscellaneous		PTX-MP-320	white	PE	
	miscellaneous		PTX-MP-321	red	PE	
	miscellaneous		PTX-MP-322	orange	PE	
	miscellaneous		PTX-MP-323	blue	PE	
	miscellaneous		PTX-MP-324	red	PE	
	miscellaneous		PTX-MP-325	blue	PE	
	miscellaneous		PTX-MP-326	purple	unclear	
	miscellaneous		PTX-MP-327	blue	PE	
	miscellaneous		PTX-MP-328	red	PE	
	miscellaneous		PTX-MP-329	white	PP	
	miscellaneous		PTX-MP-330	orange	PP	
	miscellaneous		PTX-MP-331	black	PE	
	miscellaneous		PTX-MP-332	white	unclear	
	miscellaneous		PTX-MP-333	grey	PP	
	miscellaneous		PTX-MP-334	white	PVC	
	miscellaneous		PTX-MP-335	black	LLDPE	
	miscellaneous		PTX-MP-336	yellow	PVC	
	miscellaneous		PTX-MP-337	white	PP	
	miscellaneous		PTX-MP-338	green	LLDPE	
	miscellaneous		PTX-MP-339	yellow	PP	
	miscellaneous		PTX-MP-340	blue	LLDPE	
	miscellaneous		PTX-MP-341	black	PP	
	miscellaneous		PTX-MP-342	orange	LLDPE	
	miscellaneous		PTX-MP-343	white	LLDPE	
	miscellaneous		PTX-MP-344	yellow	PP	
	miscellaneous		PTX-MP-345	orange	LLDPE	
	miscellaneous		PTX-MP-346	blue	LLDPE	
	miscellaneous		PTX-MP-347	black	LLDPE	
7	Threadlike	ropes, nets	7.1	PTX-MP-158	orange	LLDPE
		ropes, nets		PTX-MP-159	blue	LLDPE
		ropes, nets		PTX-MP-160	green	PP
		ropes, nets		PTX-MP-161	green	LLDPE
		ropes, nets		PTX-MP-162	white	PP
		ropes, nets		PTX-MP-163	yellow	PP
		ropes, nets		PTX-MP-164	blue	PE
		ropes, nets		PTX-MP-165	black	PE
		ropes, nets		PTX-MP-166	yellowlow green	PE
		ropes, nets		PTX-MP-167	black	PE
		ropes, nets		PTX-MP-168	green	PE
		ropes, nets		PTX-MP-169	black	PE

Category	Sub-category	Individual item code	Colour	FTIR polymer
	ropes, nets	PTX-MP-170	orange	PE
	ropes, nets	PTX-MP-171	pink orange	PE
	ropes, nets	PTX-MP-172	green	PE
	ropes, nets	PTX-MP-173	orange	PE
	ropes, nets	PTX-MP-174	black	PP
	ropes, nets	PTX-MP-175	yellow	PP
	ropes, nets	PTX-MP-176	black	PE
	ropes, nets	PTX-MP-177	blue	PE
	ropes, nets	PTX-MP-178	blue	PE
	ropes, nets	PTX-MP-179	green	PP
	ropes, nets	PTX-MP-180	orange	PE
	ropes, nets	PTX-MP-181	black	PE
	ropes, nets	PTX-MP-182	white	PP
	ropes, nets	PTX-MP-183	orange	PE
	ropes, nets	PTX-MP-184	yellow	PP
	ropes, nets	PTX-MP-185	blue	PE
	ropes, nets	PTX-MP-186	green	PP
	ropes, nets	PTX-MP-187	green	PE
	ropes, nets	PTX-MP-188	white	PP
	ropes, nets	PTX-MP-189	blue	PE
	ropes, nets	PTX-MP-190	blue	PE
	ropes, nets	PTX-MP-191	green	PP
	ropes, nets	PTX-MP-192	blue	PE
	ropes, nets	PTX-MP-193	orange	PE
	ropes, nets	PTX-MP-194	blue	PE
	ropes, nets	PTX-MP-195	black	PE
	ropes, nets	PTX-MP-196	orange	PP
	ropes, nets	PTX-MP-197	blue	PE
	ropes, nets	PTX-MP-198	blue	PE
	ropes, nets	PTX-MP-199	yellow orange	LLDPE
	ropes, nets	PTX-MP-200	blue	LLDPE
	ropes, nets	PTX-MP-201	green	PP
	ropes, nets	PTX-MP-202	green	PP
	ropes, nets	PTX-MP-203	orange	PE
	ropes, nets	PTX-MP-204	black	PE
	ropes, nets	PTX-MP-205	blue	PE
	ropes, nets	PTX-MP-206	transparent	PA
	ropes, nets	PTX-MP-207	orange	LLDPE
	ropes, nets	PTX-MP-208	orange	PP
	ropes, nets	PTX-MP-209	blue	PE
	ropes, nets	PTX-MP-210	pink	PE
	ropes, nets	PTX-MP-211	yellow	PP
	ropes, nets	PTX-MP-212	green	PE
	ropes, nets	PTX-MP-213	orange	PE

Category	Sub-category	Individual item code	Colour	FTIR polymer
	ropes, nets	PTX-MP-214	orange	LLDPE
	ropes, nets	PTX-MP-215	green	PE
	ropes, nets	PTX-MP-216	blue	PE
	ropes, nets	PTX-MP-217	green	PP
	ropes, nets	PTX-MP-218	green	PP
	ropes, nets	PTX-MP-219	orange	LLDPE
	ropes, nets	PTX-MP-220	green	PP
	ropes, nets	PTX-MP-221	orange	PE
	ropes, nets	PTX-MP-222	orange	PE
	ropes, nets	PTX-MP-223	white	PP
	ropes, nets	PTX-MP-224	green	PE
	ropes, nets	PTX-MP-225	white	PP
	ropes, nets	PTX-MP-226	blue	PP
	ropes, nets	PTX-MP-227	green	PE
	ropes, nets	PTX-MP-228	green	PE
	ropes, nets	PTX-MP-229	green	PE
	ropes, nets	PTX-MP-230	blue	PE
	ropes, nets	PTX-MP-231	white	unclear
	ropes, nets	PTX-MP-232	white	PP
	ropes, nets	PTX-MP-233	black	PP
	ropes, nets	PTX-MP-234	blue	PE
	ropes, nets	PTX-MP-235	green	PP
	ropes, nets	PTX-MP-236	blue	PP
	ropes, nets	PTX-MP-237	green	LLDPE
	ropes, nets	PTX-MP-238	orange	PE
	ropes, nets	PTX-MP-239	orange	PP
	ropes, nets	PTX-MP-240	black	PE
	ropes, nets	PTX-MP-241	black	PP
	ropes, nets	PTX-MP-242	orange	PE
	ropes, nets	PTX-MP-243	orange	LLDPE
	ropes, nets	PTX-MP-244	blue	LLDPE
	ropes, nets	PTX-MP-245	orange	PE
	ropes, nets	PTX-MP-246	orange	PE
	ropes, nets	PTX-MP-247	white	LLDPE
	ropes, nets	PTX-MP-248	white	PP
	ropes, nets	PTX-MP-249	black	PP
	ropes, nets	PTX-MP-250	green	LLDPE
	ropes, nets	PTX-MP-251	orange	LLDPE
	ropes, nets	PTX-MP-252	green	PP
	ropes, nets	PTX-MP-253	all	PP
	ropes, nets	PTX-MP-254	blue	LLDPE
	ropes, nets	PTX-MP-255	white	PP
	ropes, nets	PTX-MP-256	green	PE
	ropes, nets	PTX-MP-257	green	PE

Category	Sub-category	Individual item code	Colour	FTIR polymer
	ropes, nets	PTX-MP-258	black	PP
	ropes, nets	PTX-MP-259	green	PP
	ropes, nets	PTX-MP-260	green	PE
	ropes, nets	PTX-MP-261	white	PP
	ropes, nets	PTX-MP-262	orange	LLDPE
	ropes, nets	PTX-MP-263	yellow green	LLDPE
	ropes, nets	PTX-MP-264	green	LLDPE
	ropes, nets	PTX-MP-265	white	PP
	ropes, nets	PTX-MP-266	blue	PE

Online Supplement 1: Polymer type distribution

Online Supplement Table 5.1. Polymer type distribution of the beached plastic sample in terms of number and mass.

Material	Number	Mass (gram)	% Mass
Polyethylene (PE)	183	609.6	60.9
Polypropylene (PP)	112	277.6	27.7
Polyamide (PA)	1	31.4	3.1
Unidentified	16	30.7	3.1
Polyurethane (PU)	11	18.7	1.9
Polystyrene (PS)	10	17.0	1.7
Polyvinyl chloride (PVC)	5	9.4	0.9
Polyethylene terephthalate (PET)	10	4.64	0.5
Ethylene-vinyl acetate (EVA)	1	1.7	0.2
Polyacetylene	2	0.6	0.1
Total	351	1001.34	100