Supplementary material pertaining to the article

The complexity of micro- and nanoplastic research in the genus *Daphnia* – A systematic review of study variability and meta-analysis of immobilization rates

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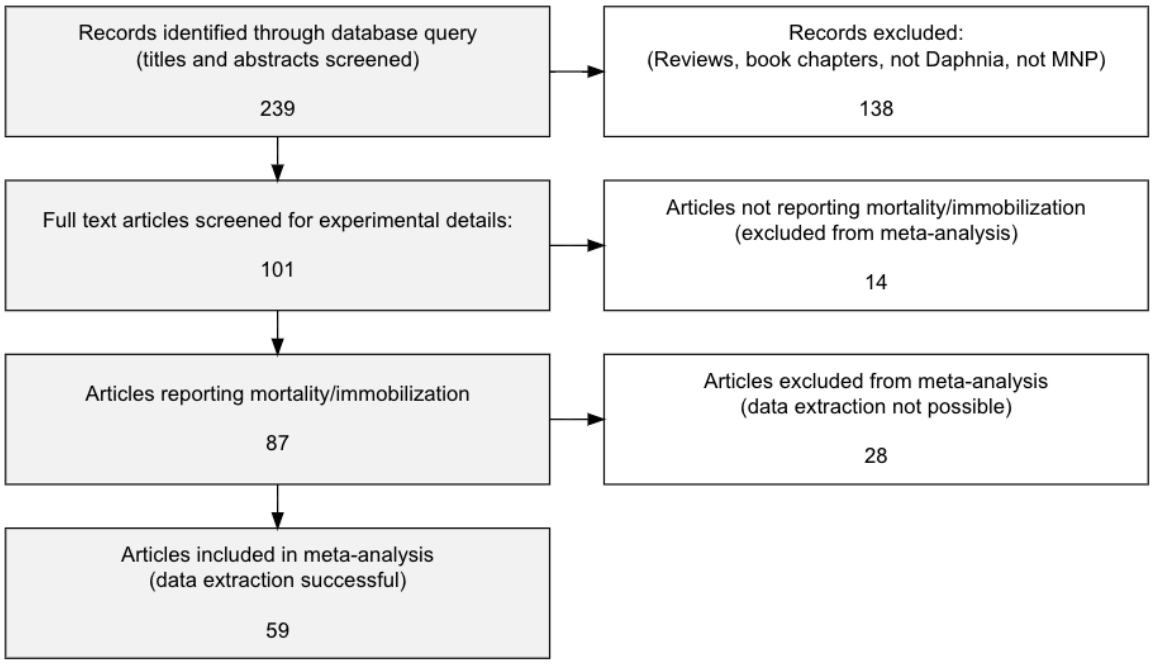

Figure S1. PRISMA flow diagram displaying the search results and the results from the publication screening process.

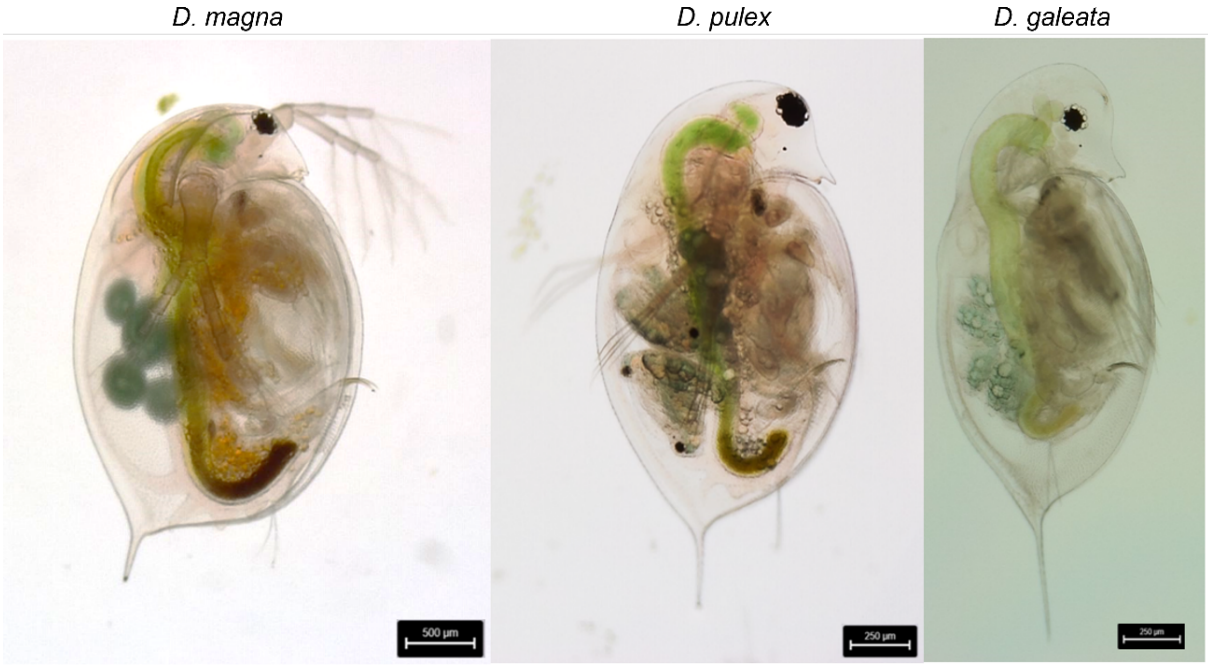

Figure S2. Bright-field microscopic images of adult representatives of the species *D. magna*, *D. pulex* and *D. galeata*, which are the species predominantly used in NMP research.

Figure S3. *D. magna* grazing on submerged macrophyte.

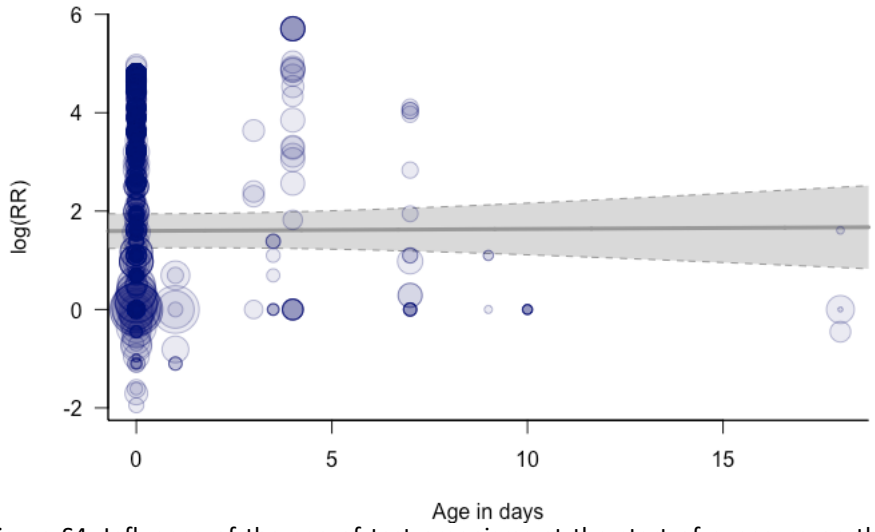

Figure S4. Influence of the age of test organisms at the start of exposure on the log(RR) for immobilization in *Daphnia* spp. exposed to NMP. Point sizes reflect inverse standard errors of the data points. The line represents the meta-regression line, and the shaded area represents the 95% confidence interval.

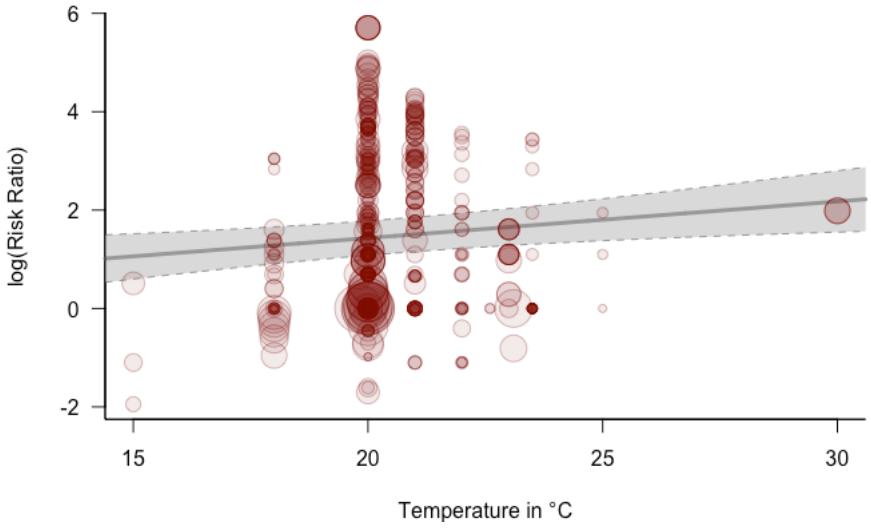

Fig. S5: Influence of experimental temperature on log(Risk Ratio) of immobilization in *Daphnia* spp. exposed to different NMPs. Point sizes reflect inverse standard errors of the data points. The line represents the meta-regression line, and the shaded area represents the 95% confidence interval.

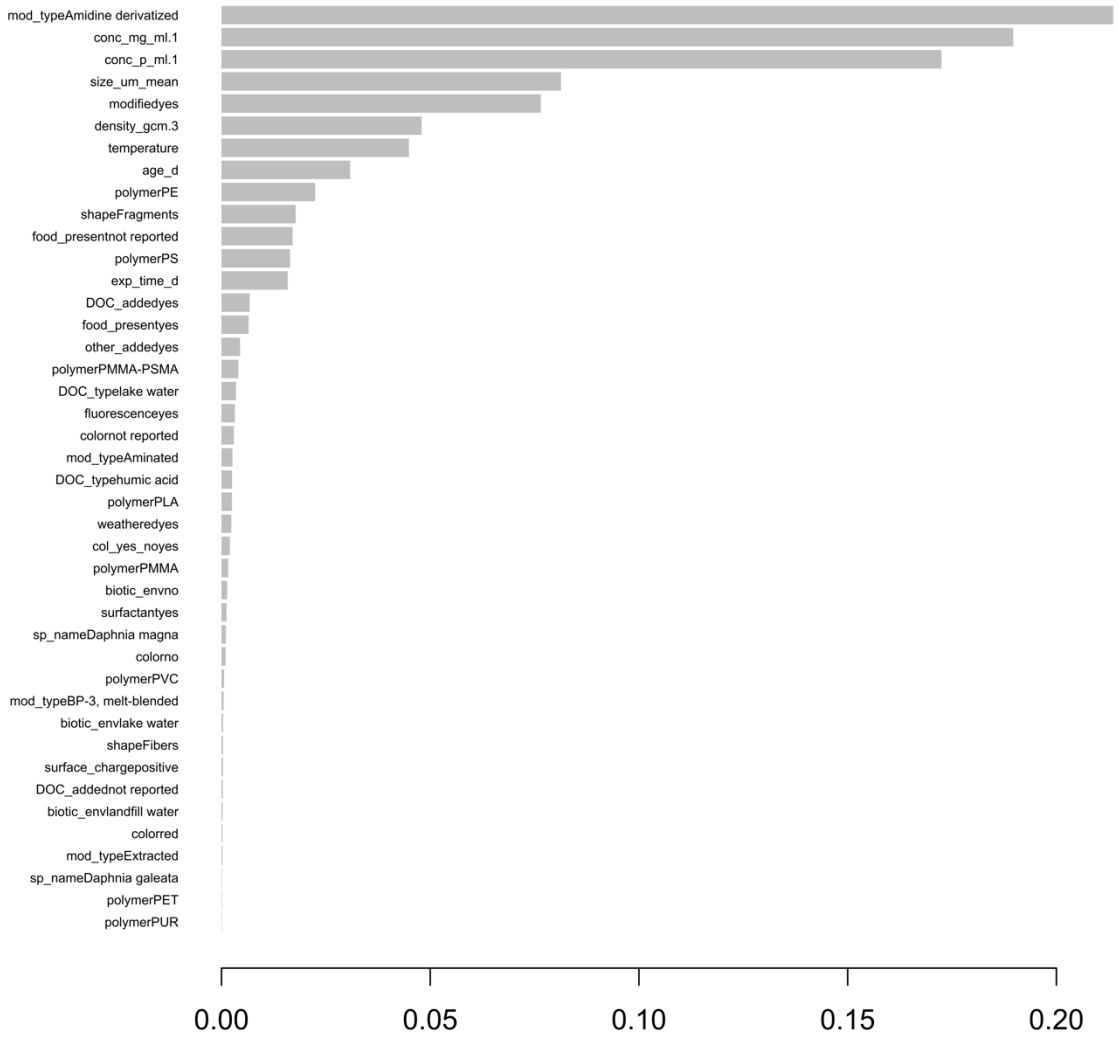

Figure S6: Single feature gains for predictor variables (one feature per factor level) from the final boosted regression tree model trained on the full dataset. For feature descriptions see meta data information in the supplementary online material.

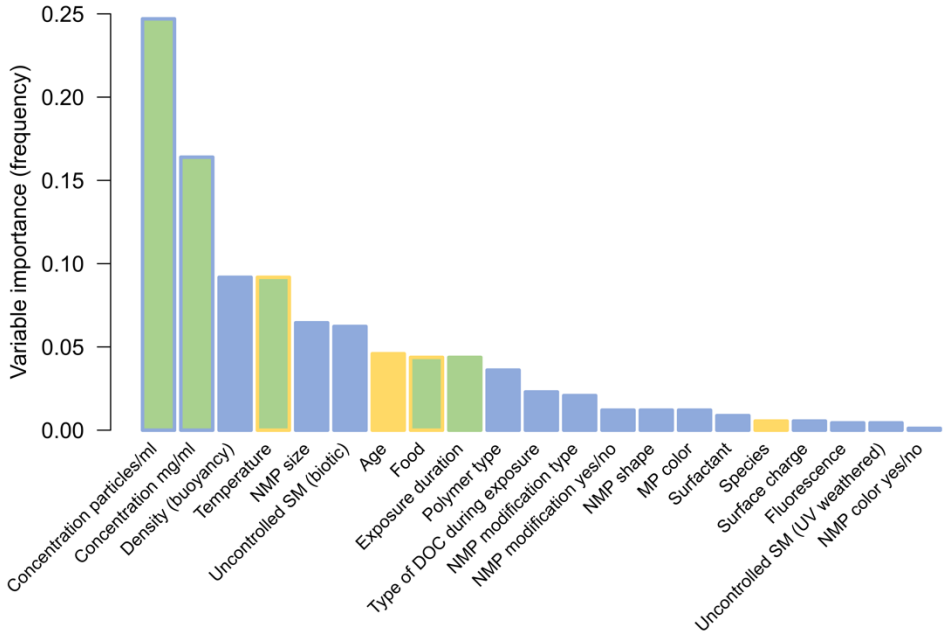

Figure S7: Predictor frequencies for predictor variables from the final boosted regression tree model trained on the full dataset.

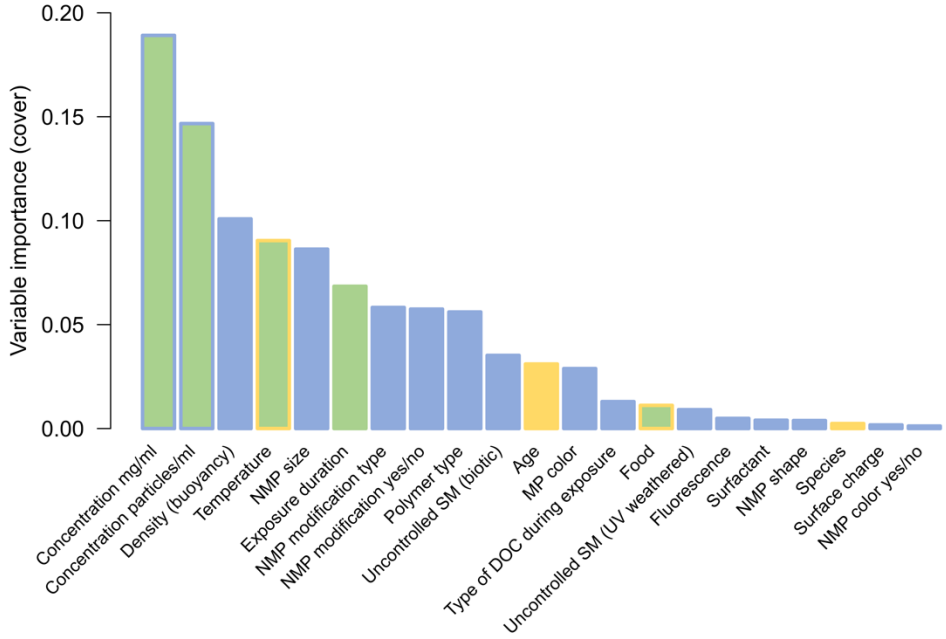

Figure S8: Coverage for predictor variables from the final boosted regression tree model trained on the full dataset.

TableS1: Number of studies and data points for different parameters levels included in the meta-analysis of immobilization risk ratios in *Daphnia* spp.

Parameter	Parameter level	Number of studies	Number of data points
Species	*D. magna*	54	682
	D. pulex	2	7
	D. galeata	1	1
Food	Food provided	29	209
	No food provided	19	398
Exposure duration	24 hours	1	13
	48 hours	22	462
	72 hours	1	1
	96 hours	11	65
	8 days	1	3
	14 days	1	4
	17 days	1	1
	19 days	1	1
	21 days	19	136
	26 days	1	3
	63 days	1	1
Polymer type	Low-density polyethylene (LDPE)	1	6
	Polyethylene (PE)	12	68
	Polyethylene terephthalate (PET)	4	11
	Mix of polyethylene, polystyrene and acrylonitrile butadiene styrene (PET/PS/ABS)	1	4
	Polyhydroxybutyrate (PHB)	1	8
	Polylactic acid (PLA)	1	6
	Mix of polystyrene and latex (PS/Latex)	1	34
	Poly(methyl methacrylate) (PMMA)	1	8

Polymer type (cont'd)	Poly(methyl methacrylate-*co*-stearylmethacrylate) copolymer (PMMA-PSMA)	1	8
	Polypropylene (PP)	2	5
	Polystyrene (PS)	30	488
	Polyurethane (PUR)	1	6
	Polyvinylchloride (PVC)	2	10
	Mix of polyvinylchloride and polyethylene (PVC/PE)	1	4
	One of ethylene acrylic acid, polyamide, a mix of polyethylene terephthalate and polyamide or undefined (one of EAA, PA, PET/PA or undefined)	8	24
Shape	Spheres	42	546
	Fragments	17	115
	Fibers	5	11
	Aggregates	1	6
MP/NP	Microplastic particles (MP)	38	274
	Nanoplastic particles (NP)	23	416
Additives, fluorescence tags and other polymer modifications	Benzophenone-3 (BP3) melt-blended	2	8
	13C-labelled	1	3
	Fluorescence tags	13	131
Uncontrolled surface modifications (Dissolved organic carbon (DOC))	Humic acid (during exposure)	3	42
	Fulvic acid (during exposure)	1	18
	Natural lake water (during exposure)	2	124
	Incubation in DOC containing media	2	6
Controlled surface modifications	Carboxylated	8	63
	Aminated	8	72
	Amidine derivatized	1	190
	Extracted	3	15

Table S2. Minimum information requirements for experiments with *Daphnia* and NMP, to be able to draw meaningful conclusions and to increase reproducibility of experiments.

Daphnia Biology / Organismic level	Species Clone / Sensitivity to reference chemicals Age (start of experiment + when measuring endpoints) Sex Brood number
NMP level	Polymer type (+ manufacturer/preparation method) Concentration (as particle count and mass count) Shape Size Information on used control particles Incubation method Information on additives Information on surface modifications (amination, carboxylation, Tween etc.)
Experimental level	Information on treatments Duration Temperature Food quality and quantity Replicates Animals/Replicate Information on used media (also quantities)