

**Supplementary material**

**A large scale survey of trace metal levels in coastal waters of the Western Mediterranean basin using caged mussels (*Mytilus galloprovincialis*)**

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Abbreviations used in tables:

Long DEC= Longitude in decimal coordinates

Lat DEC= Latitude in decimal coordinates

CI= Condition Index

Table S1. Geographic position and bottom depth (m) of sampling sites along the Western Mediterranean region, condition index (CI) and raw and adjusted trace metals levels (mg kg<sup>-1</sup> d.w.) in caged mussel samples. Western Mediterranean sub-basins I= Alborán, II= North-Western, III= South-Western, IV= Tyrrhenian.

Facade	Sub-basin	Code	Sites	Depth	Long DEC	Lat DEC	CI	Raw concentrations				Adjusted concentrations		
								Pb	Cd	Hg	Ni	Cd	Hg	Ni
France (2004)	II	0	Thau lagoon	7.0	3.5639	43.3729	0.12	1.3	1.00	0.09	0.7	-	-	-
France (2005)	II	0	Thau lagoon	7.0	3.5639	43.3729	0.06	1.7	1.17	0.15	1.0	-	-	-
France (2006)	II	0	Thau lagoon	7.0	3.5639	43.3729	0.15	0.7	0.60	0.07	0.4	-	-	-
Spain	I	1	Algeciras	17.0	-5.4325	36.1565	0.18	0.9	0.58	0.05	0.6	1.18	0.09	0.8
Spain	I	2	Marbella	30.5	-4.9700	36.4494	0.19	0.5	0.88	0.04	0.9	1.51	0.08	1.1
Spain	I	3	Fuengirola	20.0	-4.6006	36.5500	0.14	0.9	1.05	0.06	1.0	1.47	0.09	1.2
Spain	I	4	Málaga	31.0	-4.3461	36.7066	0.18	0.7	0.95	0.05	0.6	1.53	0.09	0.8
Spain	I	5	Torrox	30.0	-3.9622	36.7165	0.14	0.7	1.21	0.07	0.7	1.58	0.09	0.8
Spain	I	6	Adra	30.5	-3.0037	36.7305	0.19	1.0	1.38	0.05	0.8	1.99	0.09	1.0
Spain	I	7	Almería	29.7	-2.4251	36.8008	0.15	1.3	1.23	0.05	0.7	1.66	0.08	0.9
Spain	I	8	Cabo de Gata	31.0	-2.1975	36.7076	0.17	1.1	1.24	0.04	0.6	1.80	0.08	0.8
Spain	I	9	Águilas	31.5	-1.5971	37.3845	0.13	1.7	1.81	0.07	0.7	2.11	0.09	0.8
Spain	I	10	El Portús	31.0	-1.0382	37.5741	0.13	6.2	1.22	0.13	0.5	1.57	0.15	0.6
Spain	I	11	Cabo del Agua	48.5	-0.9132	37.5548	0.11	6.4	1.39	0.09	0.8	1.59	0.10	0.9
Spain	III	12	Portmán	44.5	-0.8543	37.5647	0.11	5.3	1.26	0.08	0.6	1.40	0.09	0.7
Spain	III	13	Cabo de Palos	29.2	-0.7815	37.5527	0.10	2.3	1.26	0.08	0.9	1.30	0.08	0.9
Spain	III	14	Guardamar	26.0	-0.5972	38.1075	0.08	1.3	1.24	0.10	1.0	0.99	0.08	0.9
Spain	II	15	Javea	28.7	0.2158	38.7876	0.15	1.2	0.85	0.06	1.1	1.32	0.09	1.3
Balearic I.	II	16	San Antonio Abad	12.0	1.2864	38.9784	0.06	1.5	2.14	0.13	1.0	1.32	0.08	0.7
Balearic I.	III	17	Formentera island	21.5	1.4714	38.7956	0.06	1.2	2.11	0.15	1.2	1.36	0.10	0.9
Balearic I.	III	18	Port Eivissa	20.5	1.4538	38.9006	0.06	1.5	2.04	0.11	1.0	1.25	0.06	0.7
Balearic I.	III	19	Santa Eulalia	31.3	1.5525	38.9711	0.07	2.1	2.09	0.11	1.1	1.62	0.08	0.9
Balearic I.	III	20	Santa Ponsa	25.5	2.4555	39.5156	0.06	1.4	1.97	0.13	1.0	1.28	0.09	0.7
Balearic I.	III	21	Palma de Mallorca	25.2	2.6322	39.5441	0.10	2.3	1.02	0.11	0.6	1.10	0.11	0.6
Balearic I.	III	22	Cabrera	41.0	2.9435	39.1552	0.05	1.6	2.58	0.13	1.6	1.56	0.06	1.2

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Balearic I.	III	23	Cala d'Or	45.5	3.2417	39.3572	0.06	1.2	2.15	0.12	1.0	1.34	0.07	0.7
Balearic I.	III	24	Portocolom	35.6	3.2844	39.4194	0.07	1.0	1.95	0.12	0.9	1.47	0.09	0.7
Balearic I.	II	25	Alcudia	26.0	3.1856	39.7994	0.06	1.2	1.87	0.13	1.2	1.10	0.08	0.9
Balearic I.	II	26	Soller	21.5	2.6879	39.7976	0.07	1.5	1.87	0.11	1.0	1.27	0.07	0.8
Balearic I.	II	27	Ciutadella	17.5	3.8240	39.9943	0.05	1.4	2.25	0.14	1.4	1.23	0.07	1.0
Balearic I.	II	28	Cala Trebeluja	21.3	3.9862	39.9209	0.07	2.0	2.16	0.13	1.0	1.67	0.10	0.8
Balearic I.	II	29	Mahon	33.0	4.3125	39.8589	0.07	1.6	2.39	0.11	0.9	1.97	0.08	0.7
Balearic I.	II	30	Fornells	30.0	4.1125	40.0646	0.07	1.5	2.42	0.12	1.2	1.83	0.08	1.0
Spain	II	31	Gandia	26.5	-0.0925	39.0492	0.11	1.2	1.13	0.07	1.0	1.24	0.08	1.0
Spain	II	32	Valencia	30.0	-0.2258	39.2706	0.10	1.2	0.95	0.08	1.0	0.97	0.08	1.0
Spain	II	33	Columbretes islands	39.8	0.6839	39.9003	0.10	1.3	1.39	0.08	1.2	1.45	0.08	1.2
Spain	II	34	Ebro river	20.4	0.9338	40.7176	0.16	1.4	0.84	0.06	0.8	1.35	0.09	1.0
Spain	II	35	Llobregat river	20.5	2.2057	41.3523	0.17	2.7	0.56	0.05	0.7	1.13	0.09	0.9
Spain	II	36	Barcelona	50.2	2.2437	41.4101	0.22	1.3	0.62	0.04	0.5	1.33	0.09	0.8
Spain	II	37	Besós river	30.2	2.7686	41.6417	0.18	1.4	0.46	0.05	0.5	1.05	0.09	0.7
Spain	II	38	Medas islands	30.2	3.2195	42.0189	0.19	0.8	0.73	0.04	0.7	1.36	0.08	0.9
Spain	II	39	Golfo de Rosas	25.5	3.1483	42.1848	0.18	0.7	0.87	0.04	0.7	1.46	0.08	0.9
Spain	II	40	Cabo de Creus	29.7	3.2844	42.2781	0.18	0.9	0.73	0.04	0.7	1.31	0.08	0.9
France	II	41	Tet river	14.8	3.0508	42.7154	0.18	0.9	0.63	0.04	0.6	1.24	0.08	0.8
France	II	42	Aude river	11.0	3.2503	43.2038	0.17	1.1	0.69	0.04	0.7	1.26	0.08	0.9
France	II	43	Agde-Hérault river	10.7	3.4309	43.2659	0.19	1.1	0.69	0.04	0.6	1.32	0.08	0.9
France	II	44	Frontignan	9.7	3.7610	43.4099	0.20	0.8	0.69	0.04	0.7	1.35	0.08	1.0
France	II	45	Montpellier	29.8	3.9654	43.4340	0.18	0.8	0.71	0.04	0.6	1.30	0.08	0.8
France	II	46	Rhone river	26.0	4.8441	43.3109	0.13	1.4	0.71	0.06	1.4	1.07	0.08	1.5
France	II	47	Huveaune river	21.0	5.3539	43.2540	0.18	2.1	0.60	0.08	0.5	1.20	0.12	0.7
France	II	48	Cortiou	21.0	5.4017	43.2116	0.13	1.5	0.90	0.07	0.7	1.20	0.09	0.8
France	II	49	Sainte Marguerite	41.0	5.9947	43.0921	0.11	1.5	1.00	0.08	1.0	1.20	0.09	1.1
France	II	50	Hyeres river	11.1	6.2072	43.0999	0.13	1.5	1.09	0.10	0.7	1.44	0.12	0.8
France	II	51	Argens river	21.0	6.7432	43.4052	0.09	1.3	1.05	0.08	1.0	0.93	0.07	1.0
France	II	52	Cannes	50.7	7.0739	43.5465	0.10	1.3	1.39	0.09	0.9	1.37	0.09	0.9
France	II	53	Nice	64.7	7.2674	43.6925	0.13	1.6	1.35	0.08	1.1	1.68	0.10	1.2
Corsica I.	IV	54	Bastia sud	31.0	9.5550	42.5438	0.09	1.2	1.23	0.09	1.0	1.09	0.08	0.9

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Corsica I.	IV	55	Golo river	n.m.	9.5716	42.1258	0.10	1.0	0.89	0.08	1.0	0.91	0.08	1.0
Corsica I.	IV	56	Tavignano	21.5	9.3348	41.6053	0.09	0.9	1.00	0.09	0.8	0.96	0.09	0.8
Corsica I.	IV	57	Porto-vecchio	11.0	9.2666	41.3356	0.10	1.1	1.11	0.08	0.6	1.18	0.08	0.6
Corsica I.	IV	58	Lavezzi island	31.0	8.8495	41.6903	0.08	1.4	1.18	0.09	0.8	0.99	0.08	0.7
Corsica I.	II	59	Propriano	n.m.	8.7788	41.8676	0.09	1.1	1.12	0.10	0.8	0.96	0.09	0.7
Corsica I.	II	60	Ajaccio sud	21.0	8.6466	42.4420	0.11	1.1	1.05	0.08	0.6	1.22	0.09	0.7
Corsica I.	II	61	Galeria	31.0	8.6657	42.2903	0.10	1.1	1.20	0.08	0.8	1.24	0.08	0.8
Corsica I.	II	62	Porto	n.m.	9.3206	42.8900	0.10	1.2	1.10	0.08	1.0	1.08	0.08	1.0
Corsica I.	II	63	Pino	n.m.	8.0364	43.8659	0.11	1.3	1.21	0.06	1.3	1.39	0.07	1.4
Italy	II	64	Imperia	30.2	9.4583	42.6726	0.13	1.0	0.87	0.07	0.6	1.16	0.09	0.7
Italy	II	65	Zinola	31.3	8.4597	44.2581	0.13	1.9	0.89	0.08	1.1	1.23	0.10	1.2
Italy	II	66	Haven	74.4	8.6988	44.3765	0.13	1.7	0.96	0.07	1.2	1.27	0.09	1.3
Italy	II	67	Cornigliano	72.4	8.8641	44.3859	0.13	1.6	1.12	0.06	1.5	1.48	0.08	1.6
Italy	II	68	Santa Margherita Ligure	31.0	9.2231	44.3241	0.13	0.8	0.99	0.07	0.9	1.35	0.09	1.0
Italy	II	69	Punta San Pietro	30.2	9.8077	44.0302	0.16	0.7	0.67	0.06	0.6	1.16	0.09	0.8
Italy	II	70	Forte dei Marmi	15.2	10.1229	43.9339	0.18	0.6	0.68	0.04	0.5	1.29	0.08	0.7
Italy	II	71	Livorno porto	20.2	10.2858	43.5222	0.11	0.9	1.00	0.09	1.8	1.12	0.10	1.8
Italy	IV	72	Piombino chiusa	23.3	10.5466	42.9096	0.14	1.8	1.23	0.11	1.1	1.62	0.14	1.3
Italy	IV	73	Portoferraio	31.0	10.3149	42.8293	0.08	3.1	1.46	0.14	1.2	1.18	0.12	1.1
Italy	IV	74	Ombrone river	15.2	11.0636	42.6166	0.14	0.6	0.85	0.06	0.8	1.22	0.08	0.9
Italy	IV	75	San Stefano	32.5	11.1240	42.4516	0.13	0.9	0.95	0.09	1.2	1.27	0.11	1.3
Italy	IV	76	Giannutri island	53.0	11.0952	42.2490	0.08	1.0	1.54	0.11	1.1	1.21	0.09	1.0
Italy	IV	77	Montalto di Castro	16.0	11.5514	42.3239	0.14	0.8	0.73	0.11	0.7	1.12	0.14	0.9
Italy	IV	78	Civitavecchia	31.0	11.7743	42.0959	0.12	1.3	0.86	0.10	0.7	1.12	0.12	0.8
Italy	IV	79	Tevere river	16.0	12.2271	41.7151	0.11	1.2	0.89	0.11	0.9	1.02	0.12	1.0
Italy	IV	80	Torpaterno	15.5	12.4071	41.6285	0.12	1.1	0.86	0.09	0.6	1.09	0.11	0.7
Italy	IV	81	Palmarola island	21.0	12.8733	40.9364	0.06	1.4	2.41	0.17	1.9	1.44	0.11	1.5
Italy	IV	82	Gaeta	20.0	13.5875	41.2125	0.11	1.0	1.13	0.07	0.1	1.24	0.08	0.1
Italy	IV	83	Bagnoli	20.5	14.1584	40.7990	0.09	1.8	1.30	0.10	0.8	1.23	0.10	0.8
Italy	IV	84	Napoli	21.0	14.2929	40.8273	0.11	1.4	1.12	0.08	0.9	1.25	0.09	1.0
Italy	IV	85	Sarno river	20.0	13.1634	38.7181	0.06	1.1	2.89	0.15	1.4	2.04	0.10	1.1
Italy	IV	86	Palinuro	20.5	14.4583	40.7230	0.09	1.2	1.20	0.08	0.8	1.12	0.07	0.8

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Italy	IV	87	Vibo	21.0	15.3228	40.0082	0.06	0.9	2.37	0.16	1.3	1.47	0.10	0.9
Italy	IV	88	Gioia	21.0	16.1390	38.7288	0.07	1.0	1.95	0.12	1.3	1.42	0.09	1.1
Sicily I.	IV	89	Milazzo	30.0	15.8816	38.4369	0.07	0.9	1.37	0.15	1.1	0.86	0.12	0.9
Sicily I.	IV	90	Patti	40.0	15.3096	38.2146	0.08	1.2	1.64	0.10	1.3	1.33	0.08	1.2
Sicily I.	IV	91	Filicudi island	49.0	14.9828	38.1616	0.07	0.9	1.76	0.11	1.3	1.37	0.08	1.1
Sicily I.	IV	92	Termini	30.5	14.5721	38.5560	0.06	0.9	2.48	0.14	1.3	1.86	0.10	1.1
Sicily I.	IV	93	Palerme	20.5	13.7840	38.0033	0.07	0.8	1.47	0.14	1.1	1.04	0.11	0.9
Sicily I.	IV	94	Ustica island	41.0	13.3235	38.2223	0.08	0.9	1.33	0.23	1.1	1.11	0.22	1.0
Sicily I.	IV	95	Trappeto	29.5	13.0039	38.0704	0.07	0.9	1.82	0.13	1.3	1.41	0.10	1.1
Sicily I.	IV	96	Trapani2	20.7	12.4774	38.0092	0.07	0.8	1.53	0.12	1.1	1.06	0.09	0.9
Sicily I.	IV	97	Trapani	21.0	12.4096	37.9885	0.07	0.9	1.81	0.12	1.1	1.26	0.08	0.9
Sicily I.	IV	98	Banco di Pantelleria	22.5	12.0973	37.1651	0.07	1.1	1.91	0.14	1.1	1.50	0.11	0.9
Sardinia I.	III	99	Portoscuso	20.0	8.3609	39.2017	0.08	8.3	2.01	0.33	0.9	1.68	0.31	0.8
Sardinia I.	III	100	Oristano	20.7	8.4641	39.8251	0.10	2.9	1.46	0.11	0.6	1.53	0.11	0.6
Sardinia I.	IV	101	Porto Torres				0.08	1.9	1.98	0.14	1.7	1.65	0.12	1.6
Sardinia I.	IV	102	Maddalena island	22.0	9.4376	41.1964	0.09	1.3	1.35	0.17	1.1	1.27	0.16	1.1
Sardinia I.	IV	103	Tavolara island	30.5	9.6570	40.9279	0.10	0.8	1.26	0.07	0.8	1.35	0.08	0.8
Sardinia I.	IV	104	Cagliari	20.5	9.1775	39.1680	0.11	1.5	1.07	0.11	0.7	1.18	0.12	0.7
Tunisia	IV	105	Sidi Daoud	21.5	10.8664	37.0007	0.07	1.1	1.81	0.13	2.2	1.32	0.10	2.0
Tunisia	IV	106	Korbous	21.5	10.5360	36.8073	0.08	1.0	1.33	0.12	2.2	0.98	0.10	2.1
Tunisia	IV	107	Rades	15.0	10.4028	36.7824	0.09	1.3	1.28	0.10	1.7	1.20	0.09	1.7
Tunisia	IV	108	Sidi Ali	20.5	10.3315	37.1754	0.08	1.0	1.62	0.12	2.0	1.31	0.10	1.9
Tunisia	IV	109	Bizerte	21.5	9.9191	37.2694	0.09	1.2	1.33	0.11	1.4	1.22	0.10	1.4
Tunisia	IV	110	La Galite island	20.0	8.9521	37.5119	0.05	1.3	2.48	0.14	2.6	1.42	0.07	2.2
Tunisia	IV	111	Tabarka	22.0	8.7720	36.9686	0.07	1.2	2.04	0.14	3.4	1.53	0.11	3.2
Algeria	III	112	Annaba	22.0	7.8206	36.8994	0.11	0.9	1.31	0.08	1.5	1.46	0.09	1.6
Algeria	III	113	Skikda	22.0	6.9205	36.8953	0.09	0.9	1.24	0.20	2.4	1.16	0.19	2.4
Algeria	III	114	Zhour river	21.0	6.2437	36.9477	0.07	1.2	1.97	0.14	3.1	1.48	0.11	2.9
Algeria	III	115	Jijel	23.5	5.8033	36.8280	0.11	0.8	1.05	0.11	0.8	1.15	0.12	0.8
Algeria	III	116	Bejaia	21.5	5.1328	36.7425	0.10	0.8	1.19	0.11	1.0	1.22	0.11	1.0
Algeria	III	117	Alger 2	23.5	3.1818	36.7650	0.14	1.4	1.05	0.12	0.9	1.43	0.14	1.0
Algeria	III	118	Alger 1	22.0	3.1546	36.7607	0.15	1.0	0.87	0.10	0.6	1.34	0.13	0.8

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Algeria	I	119	Orán	24.5	-0.6110	35.7271	0.09	1.5	1.40	0.09	2.5	1.34	0.09	2.5
Morocco	I	120	Nador	21.0	-2.8393	35.2191	0.10	2.0	1.21	0.06	2.7	1.27	0.06	2.7
Morocco	I	121	Mellila	21.5	-2.9249	35.3091	0.10	1.6	1.05	0.08	0.7	1.09	0.08	0.7
Morocco	I	122	Cap 3 fourches	17.0	-2.9469	35.4346	0.12	0.9	1.42	0.04	0.7	1.68	0.06	0.8
Morocco	I	123	Ceuta	23.0	-5.3333	35.9038	0.14	0.6	1.12	0.06	0.6	1.54	0.09	0.8

Note: the data obtained from Banco di Pantelleria [site No. 98] was included in the Tyrrhenian sub-basin for data treatments, despite this location may receive a direct influence of the Eastern Mediterranean basin.

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Figure S1. Condition Index (mean  $\pm$  95 % confidence interval) in caged mussels (*Mytilus galloprovincialis*) from the four sub-basins of the Western Mediterranean sea (N=123). Mussels were sampled in July after an immersion period of 12 weeks. Bars labelled with the same letter are not statistically different ( $p < 0.05$ ) tested by Kruskal Wallis test and Tanhane T2 pos-hoc test.

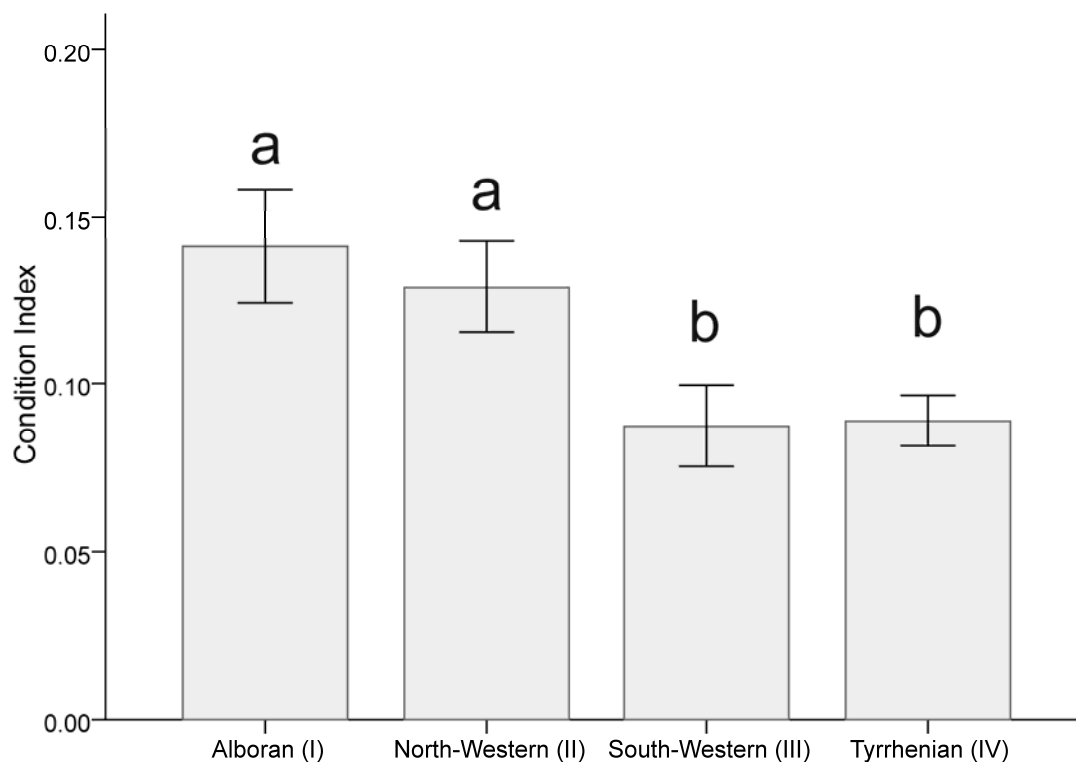
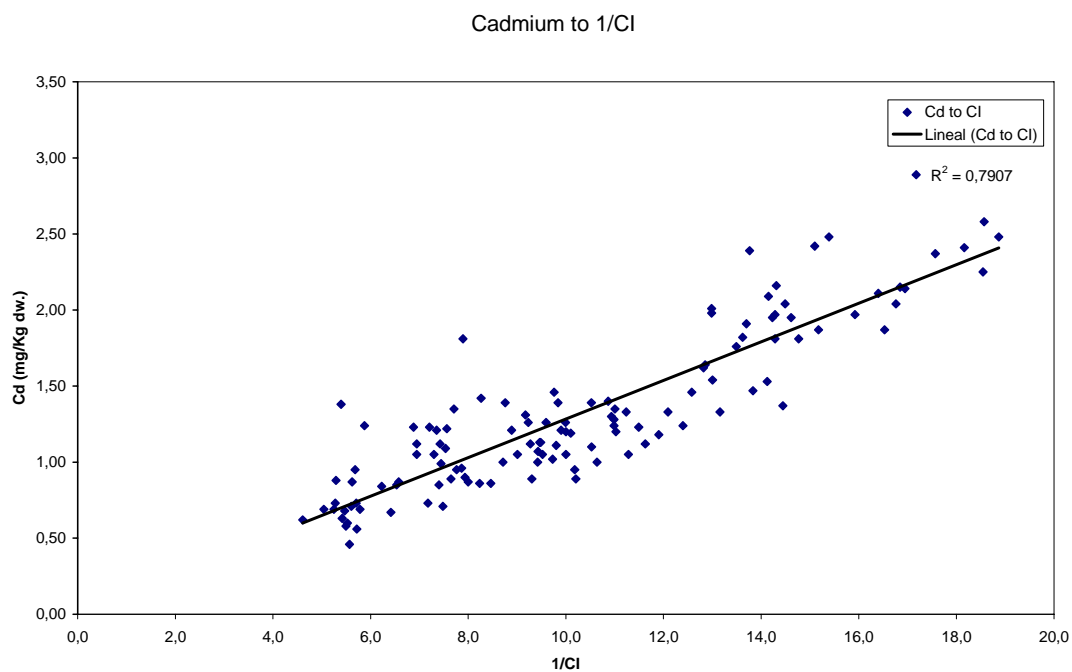
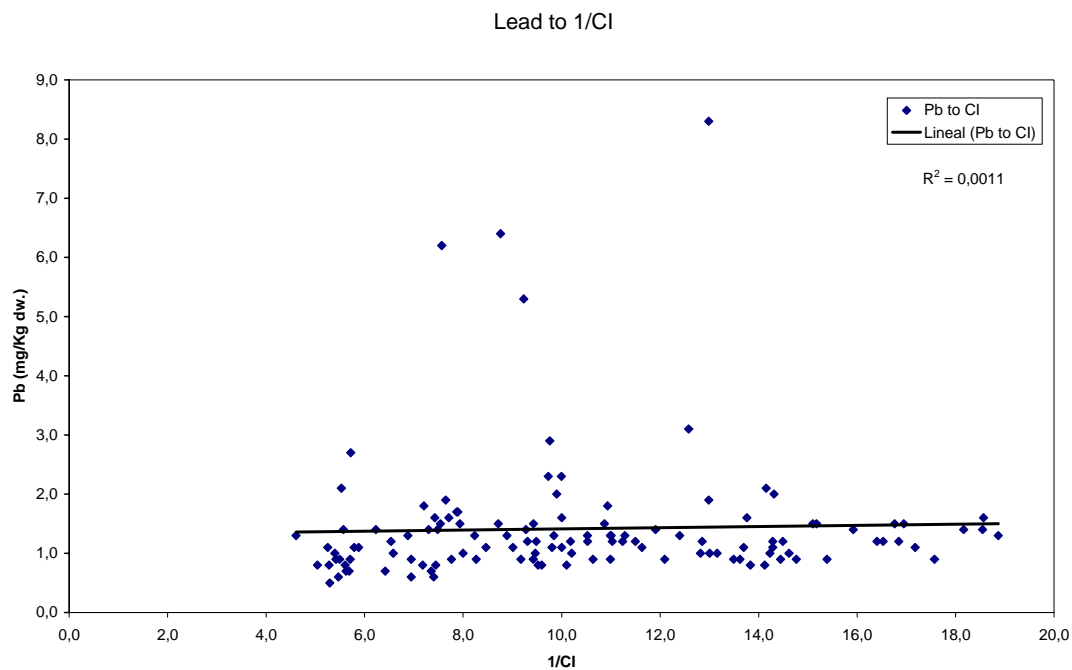
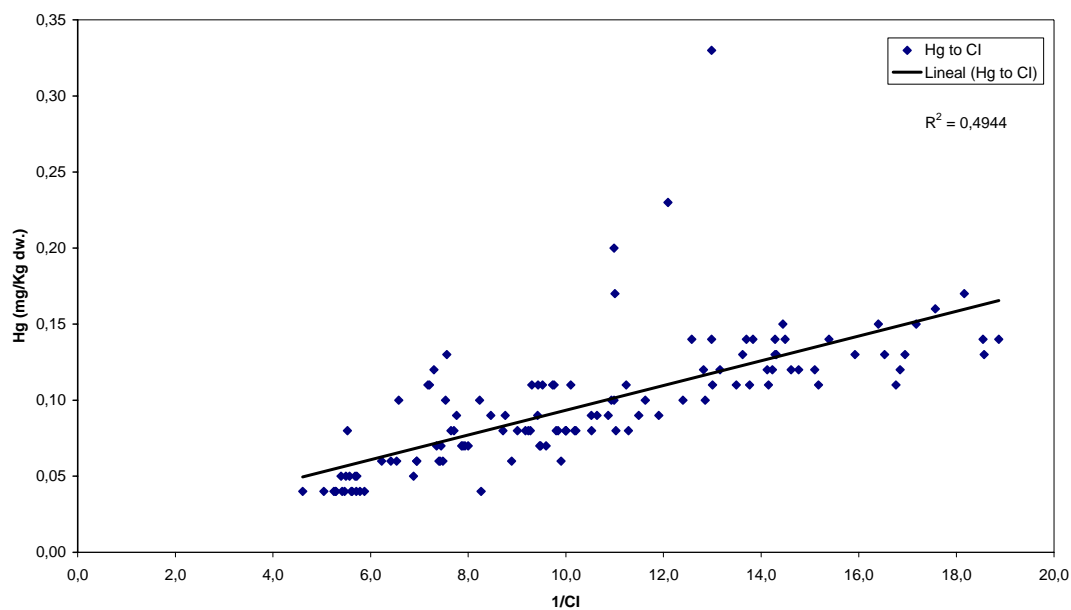


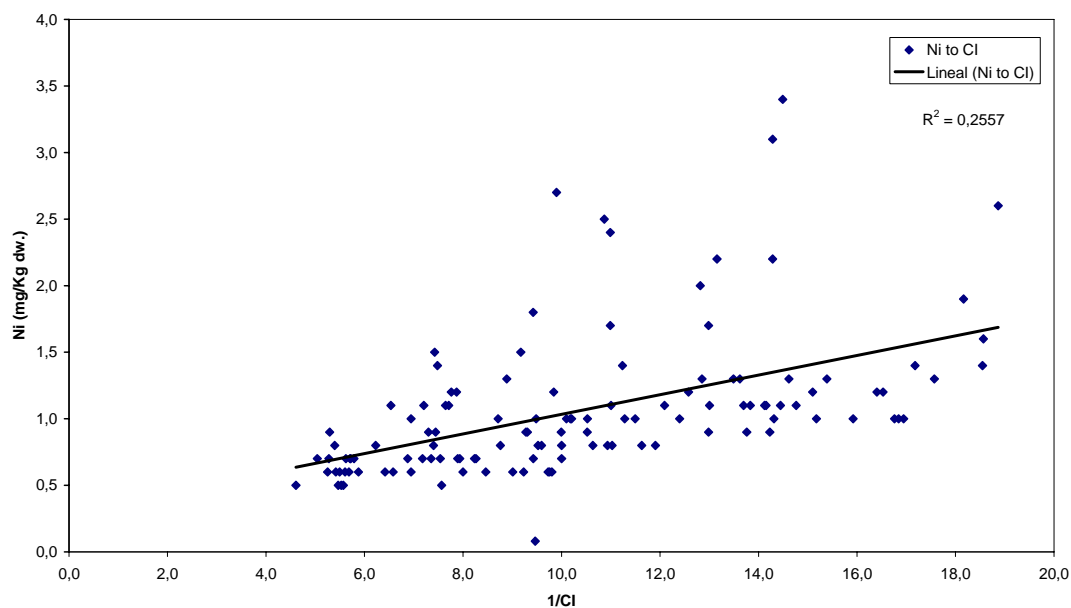
Figure S2. Plots showing the correlation between metal concentration and 1/CI for Pb, Cd, Hg and Ni datasets (including outlier values)



Mercury to 1/CI



Nickel to 1/CI



The linear regression models (LTS-Software), after removing the outliers, gave the following parameters (CI=condition index;  $R^2$ =regression coefficient;  $C_p$ =critical probability):

Lead:  $Pb = 0.021 * (1/CI) + 0.007$ ;  $R^2 = 6.57$ ;  $C_p = 0.01$

Cadmium:  $Cd = 0.124 * (1/CI) + 0.01$ ;  $R^2 = 84.65$ ;  $C_p < 0.0001$

Mercury:  $Hg = 0.008 * (1/CI) + 0.007$ ;  $R^2 = 81.71$ ;  $C_p = 0.0001$

Nickel:  $Ni = 0.049 * (1/CI) + 0.41$ ;  $R^2 = 50.25$ ;  $C_p < 0.0001$

Figure S3. Log-normal frequency distribution curves of adjusted metal concentrations (Cd, Hg and Ni) and Pb concentrations (mg/kg d.w.) in caged mussels (*Mytilus galloprovincialis*) immersed for a period of 12 weeks. Each datasets comprise values measured in the 123 sampling sites in the Western Mediterranean sea (2004, 2005 and 2006).

