

supplementary material

Metals	MAG-1 (Sediment and SPM)			Dorm-4 (oyster)		
	Estimated	Certified	Recovery %	Estimated	Certified	Recovery %
Cu	30.04 ± 0.47	30 ± 3	100.13	14.42 ± 1.01	15.90 ± 0.90	90.69
Ni	52.90 ± 0.54	53 ± 8	99.81	1.20 ± 0.01	1.36 ± 0.22	88.24
Pb	22.99 ± 0.73	24 ± 3	95.79	0.32 ± 0.03	0.416 ± 0.05	76.92
Cd	0.70 ± 0.26	0.20 ± 0.03	80.00	0.33 ± 0.03	0.306 ± 0.02	107.84

Table S1 Quality control performance check with the metals concentration (mg/kg) in certified reference material MAG-1 and DORM-4 on dry weight basis.

MAG-1 = Marine sediment certified reference material for trace metal, DORM-4 = Fish protein certified reference material for trace metal. Abbreviation: SPM = suspended particulate matter. Values are presented as an average (n = 3).

Table S2a Pearson correlation coefficient (r value) between metals concentration in surface sediment, SPM, surface seawater (dissolved), oyster tissue and physico-chemical parameters at Chicalim Bay (CB) during April 2013 – May 2014.

Parameters	Water temp.	pH	Salinity	DO	Chla	NO ₃ +NO ₂	PO ₄	POC	TSS	Sand	Silt	Clay	TOC	TC
Cu sed.	-0.20	0.56	-0.09	0.03	0.42	0.01	-0.10	0.84^b	0.06	0.50	-0.51	-0.42	-0.44	-0.52
Ni sed.	-0.14	0.13	0.39	-0.29	-0.15	-0.33	-0.30	0.00	-0.25	-0.65^a	0.66^a	0.63^a	0.71^a	0.56
Pb sed.	-0.04	-0.31	-0.44	0.21	-0.08	0.43	0.24	-0.37	0.17	0.26	-0.27	-0.20	-0.34	-0.33
Cd sed.	-0.26	0.48	-0.09	0.10	0.31	0.03	-0.10	0.81^b	0.11	0.40	-0.41	-0.34	-0.33	-0.42
Cu SPM	-0.13	0.22	0.05	0.35	0.16	-0.04	-0.25	0.27	0.04	-0.04	0.03	0.17	0.05	-0.18
Ni SPM	-0.47	-0.26	-0.54	0.90^c	-0.12	0.60^a	0.20	-0.08	0.43	-0.13	0.11	0.21	0.11	0.04
Pb SPM	0.01	0.40	0.01	-0.02	0.47	0.00	0.10	0.59^a	0.21	0.33	-0.33	-0.33	-0.22	-0.36
Cd SPM	-0.57	0.23	-0.66^a	0.44	0.20	0.68^a	0.23	0.48	0.37	0.31	-0.32	-0.25	-0.39	-0.40
Cu dis.	-0.08	0.06	0.00	0.29	-0.06	-0.04	0.08	0.14	0.22	-0.01	-0.01	0.08	-0.17	-0.26
Ni dis.	-0.63^a	-0.74^b	-0.58^a	0.27	-0.64^a	0.62^a	0.36	-0.14	0.56	-0.15	0.16	0.07	0.22	0.38
Pb dis.	-0.58^a	-0.61^a	-0.83^b	0.53	-0.20	0.83^b	0.77^b	0.08	0.90^c	0.15	-0.14	-0.19	-0.14	0.02
Cd dis.	0.29	-0.07	0.19	-0.39	0.18	-0.19	0.30	0.00	0.24	0.11	-0.09	-0.16	-0.04	0.09
Cu Cm	-0.52	-0.40	-0.41	0.35	-0.24	0.37	-0.01	0.18	0.33	-0.18	0.19	0.23	0.18	0.24
Ni Cm	0.03	-0.18	0.08	0.20	-0.05	-0.15	-0.20	-0.33	-0.10	-0.40	0.37	0.57	0.21	0.17
Pb Cm	0.30	0.27	0.67^a	-0.41	0.05	-0.65^a	-0.67^a	0.09	-0.52	-0.38	0.38	0.39	0.43	0.33
Cd Cm	-0.37	-0.22	-0.36	0.38	-0.07	0.29	-0.05	0.46	0.36	0.27	-0.27	-0.20	-0.20	-0.13
Cu Cg	-0.26	0.02	-0.44	0.69^a	0.03	0.42	-0.04	0.28	0.21	0.32	-0.34	-0.24	-0.42	-0.47
Ni Cg	0.27	-0.22	0.26	0.15	-0.35	-0.33	-0.54	-0.51	-0.45	-0.28	0.26	0.40	0.03	-0.07
Pb Cg	0.55	-0.27	0.44	-0.39	-0.28	-0.40	-0.29	-0.56	-0.42	-0.03	0.04	-0.08	0.15	0.14
Cd Cg	-0.29	0.10	-0.20	0.27	0.11	0.14	-0.09	0.66^a	0.26	0.36	-0.36	-0.30	-0.28	-0.26

Significance level at $p < 0.05 = a$, $p < 0.01 = b$, $p < 0.001 = c$. Temp. = Temperature (°C), DO = dissolve oxygen (mg/l), Chla = chlorophyll *a* (µg/l), NO₃⁻ = nitrate (µmol/l), NO₂⁻ = nitrite (µmol/l), PO₄⁻ = phosphate (µmol/l), POC = particulate organic carbon (µg C/l), TSS = total suspended solids (mg/l), TOC = total organic carbon (%), TC = total carbon (%), sand, silt and clay (%), Cm = *Crassostrea madrasensis*, Cg = *Crassostrea gryphoides*, sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in sediment, SPM, oyster tissue expressed in mg/kg, and in seawater (dissolved) expressed in µg/l.

Table S2b Pearson correlation coefficient (r value) between metals concentration in surface sediment, SPM, surface seawater (dissolved) and metals concentration in oyster tissues at CB (Chicalim Bay) during April 2013 – May 2014.

Parameters	Cu sed.	Ni sed.	Pb sed.	Cd sed.	Cu SPM	Ni SPM	Pb SPM	Cd SPM	Cu dis.	Ni dis.	Pb dis.	Cd dis.	Cu Cm	Ni Cm	Pb Cm	Cd Cm	Cu Cg	Ni Cg	Pb Cg	Cd Cg
Cu sed.	1.00																			
Ni sed.	0.08	1.00																		
Pb sed.	-0.34	-0.44	1.00																	
Cd sed.	0.98^c	0.12	-0.41	1.00																
Cu SPM	0.58^a	0.38	0.00	0.62^a	1.00															
Ni SPM	-0.12	-0.18	0.33	-0.04	0.36	1.00														
Pb SPM	0.66^a	0.26	-0.10	0.67^a	0.63^a	-0.15	1.00													
Cd SPM	0.24	-0.33	0.25	0.22	0.02	0.53	0.02	1.00												
Cu dis.	0.26	-0.30	-0.15	0.34	0.29	0.20	0.03	-0.07	1.00											
Ni dis.	-0.18	-0.03	0.20	-0.08	-0.06	0.38	-0.22	0.19	0.11	1.00										
Pb dis.	-0.18	-0.32	0.29	-0.12	-0.18	0.43	-0.13	0.31	0.18	0.80^b	1.00									
Cd dis.	-0.05	0.00	-0.07	-0.08	-0.16	-0.49	0.20	-0.39	0.22	0.10	0.15	1.00								
Cu Cm	0.16	0.40	-0.15	0.21	0.24	0.30	-0.07	0.18	-0.20	0.54	0.41	-0.31	1.00							
Ni Cm	-0.22	0.29	0.10	-0.25	0.23	0.22	-0.40	-0.25	0.10	0.02	-0.03	-0.06	0.41	1.00						
Pb Cm	0.27	0.79^b	-0.59^a	0.28	0.35	-0.40	0.33	-0.35	-0.33	-0.35	-0.65^a	-0.03	0.26	0.12	1.00					
Cd Cm	0.64^a	0.06	-0.22	0.69^a	0.48	0.22	0.25	0.17	0.24	0.45	0.33	-0.15	0.72^b	0.10	0.14	1.00				
Cu Cg	0.28	-0.53	0.14	0.33	0.19	0.63^a	-0.04	0.64^a	0.27	0.06	0.20	-0.68^a	0.15	-0.20	-0.35	0.39	1.00			
Ni Cg	-0.24	-0.11	0.19	-0.23	0.11	0.17	-0.46	-0.28	0.21	-0.17	-0.25	-0.51	0.08	0.56	-0.01	0.02	0.30	1.00		
Pb Cg	-0.29	0.01	0.31	-0.29	-0.01	-0.32	0.18	-0.56	-0.28	-0.16	-0.32	0.05	-0.40	-0.28	0.14	-0.32	-0.25	0.21	1.00	
Cd Cg	0.85^c	0.04	-0.40	0.90^c	0.54	0.09	0.46	0.18	0.36	0.21	0.13	-0.09	0.47	-0.11	0.22	0.92^c	0.41	-0.11	-0.33	1.00

Significance level at $p < 0.05 = a$, $p < 0.01 = b$, $p < 0.001 = c$. Abbreviations: Cm = *Crassostrea madrasensis*, Cg = *Crassostrea gryphoides*, sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in sediment, SPM, oyster tissue expressed in mg/kg, and in seawater (dissolved) expressed in $\mu\text{g/l}$.

Table S3a Pearson correlation coefficient (r value) metals concentration in surface sediment, SPM, surface seawater (dissolved), oyster tissue and physico-chemical parameters at NC (Nerul Creek) during April 2013 – May 2014.

Parameters	water temp.	pH	Salinity	DO	Chla	NO ₃ +NO ₂	PO ₄	POC	TSS	Sand	Silt	Clay	TOC	TC
Cu sed.	-0.84^a	-0.37	-0.67	0.38	0.14	0.53	0.67	0.72	-0.25	-0.22	0.25	0.08	0.73	0.66
Ni sed.	-0.88^a	-0.26	-0.80	0.55	0.13	0.60	0.75	0.85^a	-0.28	-0.44	0.46	0.32	0.92^a	0.83^a
Pb sed.	-0.77	-0.57	-0.95^b	0.68	0.25	0.79	0.88^a	0.89^a	-0.16	-0.31	0.31	0.33	0.84^a	0.67
Cd sed.	-0.67	-0.50	-0.97^b	0.59	0.30	0.84^a	0.92^a	0.95^b	-0.08	-0.38	0.39	0.38	0.82^a	0.63
Cu SPM	-0.46	-0.16	-0.12	0.73	-0.61	-0.02	0.10	0.01	-0.73	-0.32	0.28	0.49	0.30	0.34
Ni SPM	-0.73	-0.62	-0.77	0.80	0.00	0.61	0.70	0.64	-0.36	-0.22	0.20	0.35	0.69	0.55
Pb SPM	-0.69	-0.23	-0.83^a	0.38	0.27	0.69	0.81	0.92^b	-0.09	-0.47	0.50	0.32	0.82^a	0.70
Cd SPM	-0.39	-0.64	-0.97^b	0.34	0.56	0.94^b	0.94^b	0.94^b	0.25	-0.17	0.17	0.18	0.58	0.34
Cu dis.	0.15	-0.08	0.14	0.37	-0.05	-0.22	-0.29	-0.37	-0.01	0.24	-0.27	0.03	-0.05	-0.08
Ni dis.	0.24	-0.42	0.09	-0.51	0.74	0.00	-0.13	-0.21	0.74	0.94^b	-0.92^a	-0.96^b	-0.32	-0.41
Pb dis.	-0.55	-0.52	-0.97^b	0.41	0.36	0.91^a	0.97^b	1.00^c	0.02	-0.38	0.39	0.34	0.70	0.50
Cd dis.	0.82^a	-0.18	0.20	-0.81^a	0.69	0.07	-0.15	-0.21	0.93^b	0.65	-0.64	-0.66	-0.70	-0.80
Cu Cm	0.35	0.01	0.23	-0.12	-0.45	-0.07	-0.08	-0.19	-0.24	-0.19	0.15	0.26	-0.47	-0.42
Ni Cm	0.40	0.17	0.46	0.10	-0.64	-0.38	-0.41	-0.52	-0.37	-0.14	0.09	0.34	-0.49	-0.39
Pb Cm	0.42	-0.36	-0.02	-0.72	0.89^a	0.20	0.03	0.00	0.94^b	0.78	-0.76	-0.87^a	-0.38	-0.51
Cd Cm	0.39	0.11	0.35	0.17	-0.59	-0.27	-0.30	-0.43	-0.36	-0.18	0.12	0.40	-0.43	-0.37
Cu Cg	-0.15	-0.09	-0.10	0.38	-0.59	0.11	0.19	0.10	-0.58	-0.46	0.42	0.56	0.03	0.06
Ni Cg	0.34	-0.02	0.33	-0.03	-0.50	-0.20	-0.22	-0.36	-0.29	-0.05	0.01	0.19	-0.50	-0.44
Pb Cg	-0.18	-0.86^a	-0.73	-0.15	0.88^a	0.82^a	0.75	0.67	0.64	0.46	-0.44	-0.50	0.18	-0.06
Cd Cg	0.02	-0.09	0.12	0.57	-0.33	-0.22	-0.24	-0.34	-0.31	0.05	-0.09	0.26	0.00	0.01

Significance level at $p < 0.05 = a$, $p < 0.01 = b$, $p < 0.001 = c$. Temp. = Temperature (°C), DO = dissolve oxygen (mg/l), Chla = chlorophyll *a* (µg/l), NO₃⁻ = nitrate (µmol/l), NO₂⁻ = nitrite (µmol/l), PO₄⁻ = phosphate (µmol/l), POC = particulate organic carbon (µg C/l), TSS = total suspended solids (mg/l), TOC = total organic carbon (%), TC = total carbon (%), sand, silt and clay (%), Cm = *Crassostrea madrasensis*, Cg = *Crassostrea gryphoides*, sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in sediment, SPM, oyster tissue expressed in mg/kg, and in seawater (dissolved) expressed in µg/l.

Table S3b Pearson correlation coefficient (r value) between metals concentration in surface sediment, SPM, surface seawater (dissolved) and metals concentration in oyster tissues at NC (Nerul Creek) during April 2013 – May 2014.

Parameters	Cu sed.	Ni sed.	Pb sed.	Cd sed.	Cu SPM	Ni SPM	Pb SPM	Cd SPM	Cu dis.	Ni dis.	Pb dis.	Cd dis.	Cu Cm	Ni Cm	Pb Cm	Cd Cm	Cu Cg	Ni Cg	Pb Cg	Cd Cg
Cu sed.	1.00																			
Ni sed.	0.91^a	1.00																		
Pb sed.	0.76	0.89^a	1.00																	
Cd sed.	0.69	0.87^a	0.97^b	1.00																
Cu SPM	0.26	0.16	0.31	0.16	1.00															
Ni SPM	0.64	0.67	0.88^a	0.77	0.70	1.00														
Pb SPM	0.78	0.94^b	0.83^a	0.89^a	-0.09	0.50	1.00													
Cd SPM	0.51	0.70	0.87^a	0.93^b	-0.07	0.62	0.80	1.00												
Cu dis.	-0.55	-0.38	-0.05	-0.10	0.21	0.14	-0.43	-0.07	1.00											
Ni dis.	-0.06	-0.21	-0.17	-0.23	-0.49	-0.22	-0.23	-0.04	0.18	1.00										
Pb dis.	0.69	0.84^a	0.91^a	0.96^b	0.06	0.67	0.91^a	0.94^b	-0.31	-0.25	1.00									
Cd dis.	-0.56	-0.56	-0.46	-0.35	-0.78	-0.62	-0.33	0.00	0.09	0.62	-0.24	1.00								
Cu Cm	-0.18	-0.38	-0.30	-0.33	0.48	-0.02	-0.40	-0.32	-0.28	-0.49	-0.18	-0.13	1.00							
Ni Cm	-0.53	-0.62	-0.44	-0.49	0.59	-0.04	-0.70	-0.51	0.28	-0.46	-0.48	-0.16	0.82^a	1.00						
Pb Cm	-0.11	-0.18	-0.18	-0.13	-0.80	-0.41	-0.04	0.15	-0.06	0.88^a	-0.06	0.84^a	-0.46	-0.58	1.00					
Cd Cm	-0.52	-0.58	-0.34	-0.38	0.60	0.04	-0.63	-0.39	0.34	-0.50	-0.37	-0.15	0.80	0.99^c	-0.59	1.00				
Cu Cg	0.18	0.04	0.14	0.08	0.81	0.45	-0.07	-0.06	-0.20	-0.70	0.14	-0.58	0.85^a	0.72	-0.76	0.73	1.00			
Ni Cg	-0.26	-0.49	-0.35	-0.42	0.61	0.04	-0.58	-0.43	-0.04	-0.39	-0.34	-0.17	0.96^b	0.92^a	-0.48	0.89^a	0.84^a	1.00		
Pb Cg	0.54	0.46	0.58	0.57	-0.25	0.39	0.51	0.72	-0.24	0.54	0.63	0.31	-0.30	-0.61	0.62	-0.56	-0.25	-0.36	1.00	
Cd Cg	-0.42	-0.32	0.02	-0.08	0.58	0.35	-0.46	-0.13	0.91^a	-0.10	-0.27	-0.21	0.06	0.56	-0.41	0.61	0.22	0.30	-0.36	1.00

Significance level at $p < 0.05 = a$, $p < 0.01 = b$, $p < 0.001 = c$. Abbreviations: Cm = *Crassostrea madrasensis*, Cg = *Crassostrea gryphoides*, sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in sediment, SPM, oyster tissue expressed in mg/kg, and in seawater (dissolved) expressed in $\mu\text{g/l}$.

Table S4a Pearson correlation coefficient (r value) metals concentration in surface sediment, SPM, seawater (dissolved), oyster tissue and physico-chemical parameters at ChB (Chapora Bay) during April 2013 – May 2014.

Parameters	water temp.	pH	Salinity	DO	Chla	NO ₃ +NO ₂	PO ₄	POC	TSS	Sand	Silt	Clay	TOC	TC
Cu sed.	-0.40	-0.60	-0.64	0.22	-0.92	0.65	0.67	0.01	0.59	-0.12	0.10	0.32	-0.30	-0.20
Ni sed.	-0.94	-0.83	-0.81	0.99	-0.45	0.80	0.78	1.00^a	0.84	0.98	-0.99	-0.93	-0.97	-0.99
Pb sed.	-1.00^a	-0.99	-0.98	0.97	-0.77	0.98	0.97	0.89	0.99	0.83	-0.84	-0.69	-0.98	-0.96
Cd sed.	-0.80	-0.92	-0.94	0.67	-0.99	0.94	0.95	0.50	0.91	0.39	-0.41	-0.19	-0.73	-0.66
Cu SPM	-0.99	-0.92	-0.91	1.00^a	-0.61	0.90	0.89	0.97	0.93	0.93	-0.94	-0.84	-1.00^a	-1.00^a
Ni SPM	-0.98	-1.00^a	-1.00^a	0.92	-0.85	1.00	0.99	0.82	1.00^a	0.74	-0.75	-0.58	-0.95	-0.91
Pb SPM	-1.00^a	-0.98	-0.97	0.98	-0.75	0.97	0.96	0.91	0.98	0.85	-0.86	-0.72	-0.99	-0.97
Cd SPM	0.54	0.33	0.28	-0.69	-0.18	-0.28	-0.24	-0.83	-0.34	-0.89	0.88	0.97	0.63	0.70
Cu dis.	-0.09	0.14	0.19	0.28	0.62	-0.20	-0.23	0.47	-0.13	0.58	-0.57	-0.74	-0.20	-0.30
Ni dis.	-0.49	-0.68	-0.71	0.31	-0.95	0.72	0.74	0.11	0.67	-0.02	0.00	0.23	-0.39	-0.29
Pb dis.	-0.95	-1.00^a	-1.00^a	0.88	-0.90	1.00^a	1.00^b	0.76	1.00	0.67	-0.68	-0.50	-0.91	-0.87
Cd dis.	0.27	0.49	0.53	-0.08	0.86	-0.53	-0.56	0.13	-0.48	0.25	-0.23	-0.45	0.16	0.06
Cu Cm	-0.28	-0.50	-0.54	0.10	-0.86	0.55	0.57	-0.12	0.49	-0.24	0.22	0.44	-0.18	-0.08
Ni Cm	0.65	0.46	0.42	-0.79	-0.04	-0.41	-0.38	-0.90	-0.47	-0.95	0.94	0.99	0.73	0.80
Pb Cm	0.07	0.30	0.34	0.12	0.73	-0.35	-0.38	0.33	-0.29	0.44	-0.43	-0.62	-0.04	-0.14
Cd Cm	-0.99	-0.93	-0.91	1.00^a	-0.62	0.91	0.89	0.97	0.93	0.93	-0.94	-0.83	-1.00^a	-1.00^a
Cu Cg	-1.00^a	-0.98	-0.97	0.97	-0.76	0.97	0.96	0.90	0.98	0.84	-0.85	-0.71	-0.99	-0.97
Ni Cg	-0.85	-0.70	-0.66	0.93	-0.25	0.66	0.63	0.99	0.71	1.00^a	-1.00^a	-0.98	-0.90	-0.94
Pb Cg	-0.76	-0.59	-0.55	0.87	-0.11	0.54	0.51	0.95	0.60	0.98	-0.98	-1.00^a	-0.83	-0.88
Cd Cg	-1.00	-0.99	-0.98	0.96	-0.79	0.98	0.97	0.88	0.99	0.82	-0.83	-0.68	-0.98	-0.96

Significance level at $p < 0.05 = a$, $p < 0.01 = b$, $p < 0.001 = c$. Temp. = Temperature (°C), DO = dissolve oxygen (mg/l), Chla = chlorophyll *a* (µg/l), NO₃⁻ = nitrate (µmol/l), NO₂⁻ = nitrite (µmol/l), PO₄⁻ = phosphate (µmol/l), POC = particulate organic carbon (µg C/l), TSS = total suspended solids (mg/l), TOC = total organic carbon (%), TC = total carbon (%), sand, silt and clay (%), Cm = *Crassostrea madrasensis*, Cg = *Crassostrea gryphoides*, sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in sediment, SPM, oyster tissue expressed in mg/kg, and in seawater (dissolved) expressed in µg/l.

Table S4b Pearson correlation coefficient (r value) between metals concentration in surface sediment, SPM, surface seawater (dissolved) and metals concentration in oyster tissues at ChB (Chapora Bay) during April 2013 – May 2014.

Parameters	Cu sed.	Ni sed.	Pb sed.	Cd sed.	Cu SPM	Ni SPM	Pb SPM	Cd SPM	Cu dis.	Ni dis.	Pb dis.	Cd dis.	Cu Cm	Ni Cm	Pb Cm	Cd Cm	Cu Cg	Ni Cg	Pb Cg	Cd Cg
Cu sed.	1.00																			
Ni sed.	0.06	1.00																		
Pb sed.	0.46	0.91	1.00																	
Cd sed.	0.87	0.55	0.84	1.00																
Cu SPM	0.25	0.98	0.97	0.70	1.00															
Ni SPM	0.58	0.85	0.99	0.91	0.93	1.00														
Pb SPM	0.43	0.93	1.00^a	0.82	0.98	0.98	1.00													
Cd SPM	0.56	-0.80	-0.48	0.07	-0.66	-0.35	-0.51	1.00												
Cu dis.	-0.88	0.43	0.02	-0.52	0.25	-0.12	0.06	-0.89	1.00											
Ni dis.	1.00	0.16	0.55	0.91	0.34	0.66	0.51	0.47	-0.83	1.00										
Pb dis.	0.66	0.79	0.97	0.95	0.89	0.99	0.96	-0.26	-0.22	0.73	1.00									
Cd dis.	-0.99	0.08	-0.34	-0.79	-0.12	-0.46	-0.30	-0.67	0.93	-0.97	-0.55	1.00								
Cu Cm	0.99	-0.07	0.35	0.80	0.13	0.47	0.31	0.66	-0.93	0.98	0.56	-1.00^b	1.00							
Ni Cm	0.43	-0.88	-0.60	-0.07	-0.76	-0.48	-0.63	0.99	-0.81	0.34	-0.39	-0.55	0.54	1.00						
Pb Cm	-0.94	0.28	-0.14	-0.65	0.09	-0.27	-0.10	-0.80	0.99	-0.91	-0.37	0.98	-0.98	-0.71	1.00					
Cd Cm	0.26	0.98	0.98	0.70	1.00^b	0.94	0.98	-0.66	0.24	0.35	0.90	-0.13	0.14	-0.76	0.08	1.00				
Cu Cg	0.44	0.92	1.00^a	0.83	0.98	0.99	1.00^a	-0.50	0.04	0.53	0.97	-0.32	0.33	-0.62	-0.12	0.98	1.00			
Ni Cg	-0.15	0.98	0.81	0.36	0.92	0.72	0.83	-0.91	0.61	-0.05	0.64	0.29	-0.27	-0.96	0.47	0.92	0.82	1.00		
Pb Cg	-0.29	0.94	0.71	0.22	0.85	0.61	0.74	-0.96	0.72	-0.20	0.52	0.42	-0.41	-0.99	0.60	0.85	0.73	0.99	1.00	
Cd Cg	0.48	0.90	1.00^a	0.85	0.97	0.99	1.00^a	-0.46	0.00	0.56	0.98	-0.35	0.37	-0.59	-0.16	0.97	1.00^a	0.80	0.70	1.00

Significance level at $p < 0.05 = a$, $p < 0.01 = b$, $p < 0.001 = c$. Abbreviations: Cm = *Crassostrea madrasensis*, Cg = *Crassostrea gryphoides*, sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in sediment, SPM, oyster tissue expressed in mg/kg, and in seawater (dissolved) expressed in $\mu\text{g/l}$.

Table S5 Results of PERMANOVA test for metals concentration in relation to seasons, sites, substrates and their interaction.

Factors	Df	SS	MS	Pseudo-F	<i>p</i> (MC)	Unique perm
season	3	3514.7	1171.6	3.745	<i>0.001</i>	999
site	2	4527.8	2263.9	7.2366	<i>0.001</i>	997
substrate	3	3.05E+05	1.02E+05	324.65	<i>0.001</i>	999
season × site	5	2210.7	442.15	1.4133	0.129	998
season × substrate	9	8056	895.11	2.8613	<i>0.001</i>	998
site × substrate	6	8387.3	1397.9	4.4684	<i>0.001</i>	998
season × site × substrate	15	5912.6	394.17	1.26	0.113	996
Residual	139	43484	312.84			
Total	182	4.45E+05				

Italic value indicates the significance level at $p < 0.05$. Abbreviations: Df= degrees of freedom, SS= sum of squares, MS = mean sum of squares, Pseudo-F = F value by permutation, *p* values are based on 999 permutations based on Monte Carlo (MC). Seasons: Pre-monsoon 1, monsoon, post-monsoon, pre-monsoon 2; Sites: Chicalim Bay, Nerul Creek, Chapora Bay; Substrates: surface sediment, suspended particulate matter, surface seawater (dissolved), oyster tissue.

Table S6 Results of PERMANOVA test for metals concentration in relation to seasons, sites, and their interaction.

Substrate	Factors	Df	SS	MS	Pseudo-F	<i>p</i> (MC)	Unique perm
Sediment	season	3	1441.5	480.5	1.9252	0.069	999
	site	2	9904.5	4952.3	19.842	<i>0.001</i>	999
	season × site	5	1977.1	395.41	1.5843	0.116	999
	Residual	28	6988.4	249.58			
	Total	38	2.08E+04				
SPM	season	3	1456.7	485.57	19.533	<i>0.001</i>	999
	site	2	1644.1	822.06	33.07	<i>0.001</i>	999
	season × site	5	635.3	127.06	5.1114	<i>0.002</i>	998
	Residual	28	696.04	24.858			
	Total	38	4.60E+03				
Seawater	season	3	3469.9	1156.6	3.474	<i>0.002</i>	997
	site	2	302.48	151.24	0.45425	0.779	998
	season × site	5	2275.6	455.12	1.367	0.204	998
	Residual	28	9322.4	332.94			
	Total	38	1.55E+04				
Oyster	species	1	2918.4	2918.4	7.8203	<i>0.002</i>	995
	season	3	8121.1	2707	7.2538	<i>0.001</i>	999
	site	2	1267.1	633.56	1.6977	0.134	998
	species × season	3	3256.8	1085.6	2.909	<i>0.007</i>	998
	species × site	2	1314.9	657.45	1.7617	0.119	999
	season × site	5	3653.5	730.69	1.958	<i>0.050</i>	998
	species × season × site	3	2800.3	933.43	2.5012	<i>0.027</i>	998
	Residual	46	1.72E+04	373.19			
	Total	65	37302				

Italic value indicates the significance level at $p < 0.05$. Abbreviation: Df = degrees of freedom, SS = sum of squares, MS = mean sum of squares, Pseudo-F = F value by permutation, p values are based on 999 permutations based on Monte Carlo (MC), SPM = suspended particulate matter. Seasons: Pre-monsoon 1, monsoon, post-monsoon, pre-monsoon 2; Sites: Chicalim Bay, Nerul Creek, Chapora Bay; oyster species: *Crassostrea madrasensis*, *Crassostrea gryphoides*.

Table S7 Result of redundancy analysis correlating the metals concentration in oyster tissue with physico-chemical parameters including metals concentration in sediment, SPM, surface seawater (dissolved) at study sites.

Marginal Effects		Conditional Effects		
Parameters	Lambda (I)	Parameters	Lambda (I)	<i>p</i> value
pH	0.41	pH	0.41	0.011
Salinity	0.32	DO	0.19	0.047
DO	0.26	Salinity	0.05	0.360
Water temp.	0.16	TSS	0.09	0.192
PO ₄	0.14	Chl <i>a</i>	0.06	0.295
TSS	0.06	Water temp.	0.05	0.334
POC	0.03	PO ₄	0.02	0.618
Chl <i>a</i>	0.03	POC	0.04	0.475
NO ₃ +NO ₂	0.01	NO ₃ +NO ₂	0.00	0.998
TOC	0.14	TOC	0.14	0.250
TC	0.14	Clay	0.08	0.383
Cd sed.	0.11	Cd sed	0.07	0.405
Pb sed.	0.09	Cu sed	0.09	0.414
Ni sed.	0.07	Pbsed	0.08	0.481
Cu sed.	0.05	Ni sed	0.12	0.328
Silt	0.04	Sand	0.03	0.745
Sand	0.04	TC	0.07	0.599
Clay	0.02	Silt	0.01	0.957
Ni SPM	0.50	Ni SPM	0.50	0.002
Cu SPM	0.44	Pb SPM	0.12	0.114
Pb SPM	0.18	Cd SPM	0.09	0.143

Cd dis	0.09		Cu SPM	0.05	0.302
Cd SPM	0.04		Cd dis	0.03	0.532
Pb dis.	0.02		Cu dis	0.05	0.333
Ni dis.	0.01		Pb dis	0.02	0.509
Cu dis.	0.00		Ni dis	0.02	0.678

Significance level at $p < 0.05$. Temp. = Temperature ($^{\circ}\text{C}$), DO = dissolve oxygen (mg/l), Chla = chlorophyll *a* ($\mu\text{g/l}$), NO_3^- = nitrate ($\mu\text{mol/l}$), NO_2^- = nitrite ($\mu\text{mol/l}$), PO_4^- = phosphate ($\mu\text{mol/l}$), POC = particulate organic carbon ($\mu\text{g C/l}$), TSS = total suspended solids (mg/l), TOC = total organic carbon (%), TC = total carbon (%), sand, silt and clay (%), sed. = sediment, dis. = dissolved, SPM = suspended particulate matter. Metals concentration in surface sediment and SPM expressed in mg/kg, whereas in seawater (dissolved) expressed in $\mu\text{g/l}$. Lambda (I) is the eigenvalue explained by the environmental variable.

Table S8 Results of redundancy analysis related to eigenvalues for axes, species-environment correlations, cumulative percentage variance of species data and species- environmental relation.

	Axis 1	Axis 2	Axis 3	Axis 4
Surface seawater variables				
Eigenvalues :	0.798	0.109	0.005	0.001
Species-environment correlations :	0.978	0.830	0.898	0.733
Cumulative percentage variance				
of species data :	79.800	90.600	91.100	91.200
of species-environment relation:	87.400	99.300	99.900	100.000
Sediment variables				
Eigenvalues :	0.351	0.126	0.005	0.001
Species-environment correlations :	0.649	0.892	0.932	0.574
Cumulative percentage variance				
of species data :	35.100	47.700	48.300	48.400
of species-environment relation:	72.700	98.700	99.900	100.000
Particulate and dissolve metal variables				
Eigenvalues :	0.756	0.121	0.006	0.002
Species-environment correlations :	0.954	0.866	0.995	0.973
Cumulative percentage variance				
of species data :	75.600	87.700	88.300	88.500
of species-environment relation:	85.500	99.200	99.800	100.000

Table S9 Results of redundancy analysis related to species scores and Inter set correlations of environmental variables with axes.

Species scores (adjusted for species variance)				Inter set correlations of environmental variables with axes		
		Axis 1	Axis 2		Axis 1	Axis 2
Water variables						
	Cu Cm	0.486	0.754	Water temp.	-0.395	0.395
	Ni Cm	-0.069	-0.113	pH	-0.686	0.343
	Pb Cm	-0.014	-0.079	Salinity	-0.603	0.274
	Cd Cm	0.639	-0.199	DO	0.562	-0.074
	Cu Cg	0.964	-0.079	Chl <i>a</i>	-0.176	0.160
	Ni Cg	0.717	0.139	NO ₃ +NO ₂	0.066	0.116
	Pb Cg	0.165	0.174	PO ₄	0.405	-0.046
	Cd Cg	0.843	-0.403	POC	0.175	0.224

					TSS	0.247	0.259
Sediment variables							
	Cu						
	Cm	-0.327	0.813		Sand	-0.199	-0.185
	Ni Cm	-0.220	-0.042		Silt	0.209	0.184
	Pb Cm	-0.003	0.093		Clay	0.131	0.189
	Cd						
	Cm	-0.527	0.007		TOC	0.409	-0.025
	Cu Cg	-0.638	-0.088		TC	0.408	0.057
	Ni Cg	-0.299	0.287		Cu sed.	-0.203	0.281
	Pb Cg	-0.237	-0.011		Ni sed.	-0.079	-0.650
	Cd Cg	-0.621	-0.403		Pb sed.	-0.323	0.007
					Cd sed.	-0.365	0.016
SPM and dissolve metal variables							
	Cu						
	Cm	0.211	0.816		Cu SPM	0.714	-0.284
	Ni Cm	-0.140	0.065		Ni SPM	0.771	-0.140
	Pb Cm	-0.055	-0.049		Pb SPM	0.418	0.445
	Cd						
	Cm	0.619	-0.056		Cd SPM	-0.088	0.462
	Cu Cg	0.959	-0.037		Cu dis	-0.022	0.100
	Ni Cg	0.548	0.158		Ni dis	-0.107	-0.063
	Pb Cg	0.160	0.215		Pb dis	0.138	-0.049
	Cd Cg	0.837	-0.269		Cd dis	-0.321	-0.207

Abbreviation: Temp. = Temperature (°C), DO = dissolve oxygen (mg/l), Chl a = chlorophyll a ($\mu\text{g/l}$), NO_3^- = nitrate ($\mu\text{mol/l}$), NO_2^- = nitrite ($\mu\text{mol/l}$), PO_4^- = phosphate ($\mu\text{mol/l}$), POC = particulate organic carbon ($\mu\text{g C/l}$), TSS = total suspended solids (mg/l), TOC = total organic carbon (%), TC = total carbon (%), sand, silt and clay (%), sed. = sediment, dis. = dissolved, SPM = suspended particulate matter, Cm = *Crassostrea madrasensis*, Cg = *Crassostrea*

gryphoides. Metals concentration in SPM, sediment and oyster tissue expressed in mg/kg, whereas in seawater (dissolved) expressed in $\mu\text{g/l}$.

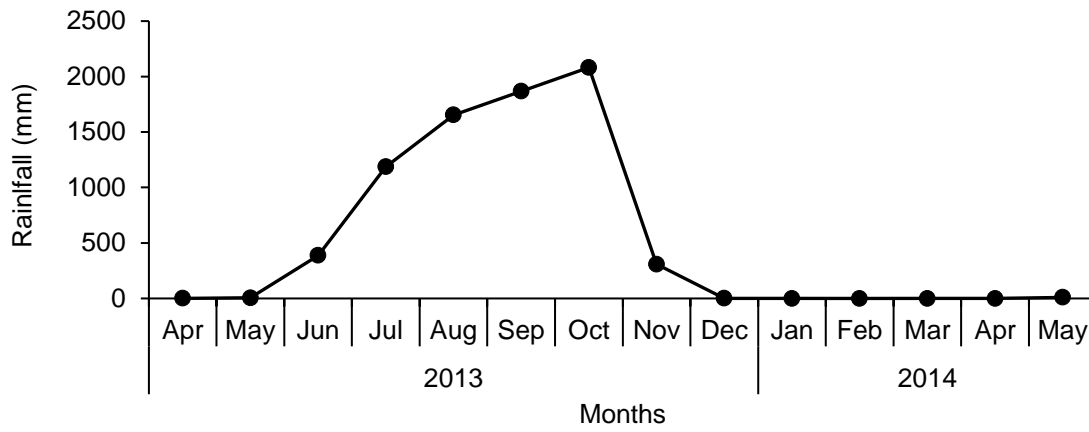


Fig. S1 Monthly variations in rainfall recorded in Goa coast during 2013–2014

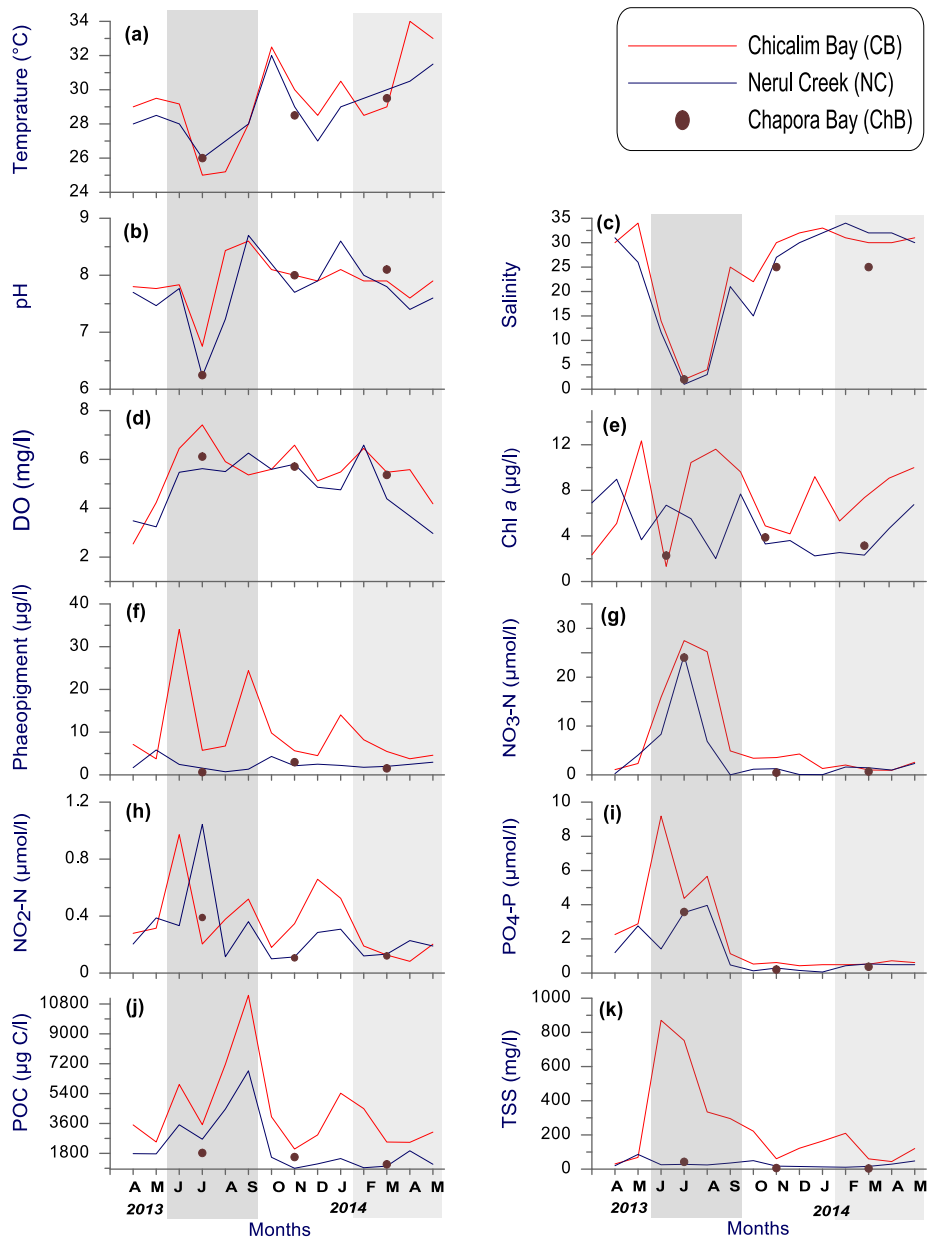


Fig. S2 Monthly variations in (a) water temperature, (b) pH, (c) salinity, (d) DO = dissolve oxygen, (e) Chl *a* = chlorophyll *a*, (f) NO₃-N = nitrate, (g) NO₂-N = nitrite (h) PO₄-P = phosphate, (i) POC = particulate organic carbon, and (j) TSS = total suspended solids recorded at sampling sites during April 2013 – May 2014. Values are presented as an average (n = 3)

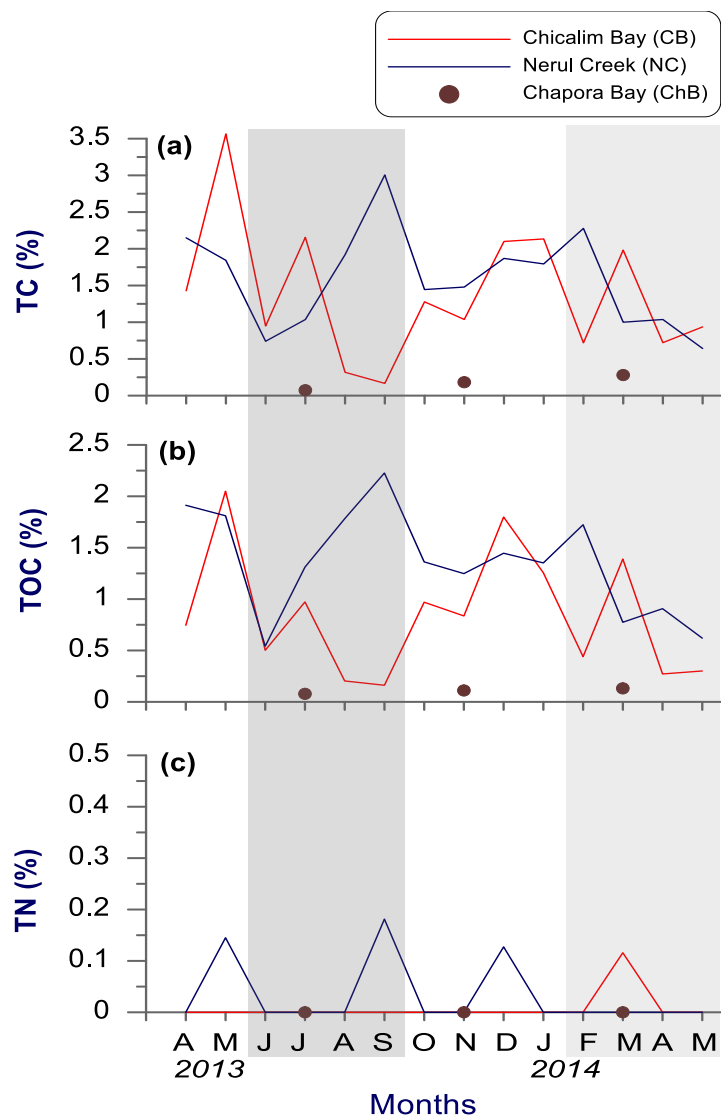


Fig. S3 a Monthly variations in (a) TC = total carbon), (b) TOC = total organic carbon), and (c) TN = total nitrogen measured at Chicalim Bay, Nerul Creek and Chapora Bay during April 2013 – May 2014. Values are presented as an average (n = 3)

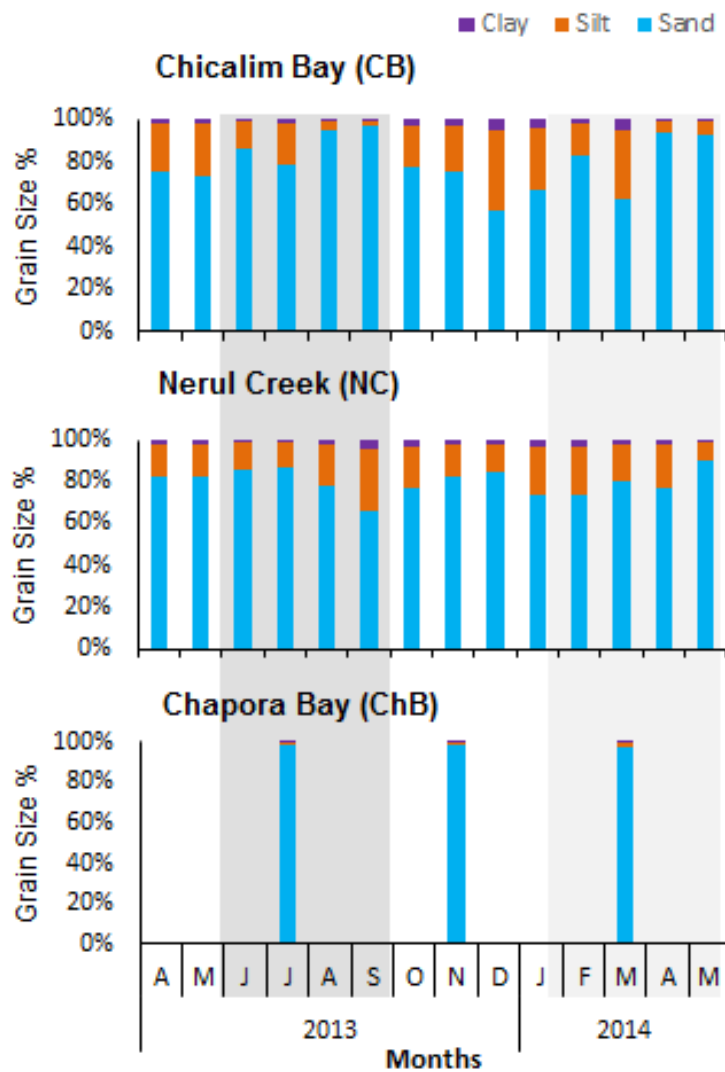


Fig. S3 b Monthly variations in sediment texture (sand, silt and clay) measured at (a) Chicalim Bay, (b) Nerul Creek, and (c) Chapora Bay during April 2013 – May 2014. Values are presented as an average (n = 3)