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Supplementary material

Distribution of arsenic species in an open seagrass ecosystem: relationship to trophic groups, habitats and feeding zones

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Table S1. Arsenic concentrations measured in certified reference materials

Certified reference material	*n*	Measured ($\mu g\ g^{-1}$)	Certified ($\mu g\ g^{-1}$)
DORM-2 Dogfish muscle	8	17.9 ± 0.6	18 ± 1.1
DOLT-1 Dogfish liver	8	9.9 ± 0.5	10.1 ± 1.4
NIST-1566a Oyster tissue	7	13.8 ± 0.5	14 ± 1.2
TORT-2 Lobster hepatopancreas	8	26 ± 2	24.6 ± 2.2
NIES-9 Sargasso	4	109 ± 5	115 ± 9
CRM-279 Sea lettuce (*Ulva lactuca*)	5	3.6 ± 0.3	3.09 ± 0.2
CRM 402 White Clover	3	0.085 ± 0.008	0.093 ± 0.01

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Table S2. Principal components analysis of arsenic species' proportions in seagrass sediment, plant and animal tissues

Factor loadings in bold have more influence on the sample location in three-dimensional space

Axis	Eigenvalues	Percentage variation	Cumulative percentage variation
PC1	2.1×10^3	79.9	79.9
PC2	376	14.1	94
PC3	87.1	3.3	97.3
Variable	PC1	PC2	PC3
Arsenoriboside 1	0.172	0.279	0.234
Arsenoriboside 2	0.108	**0.407**	–0.112
Arsenoriboside 3	0.059	0.193	**–0.792**
Arsenoriboside 4	0.011	–0.028	–0.018
DMA	0.073	0.104	**0.466**
MA	0.060	0.094	0.288
Inorganic arsenic	**0.419**	**–0.798**	–0.072
AB	**–0.878**	–0.248	0.003
TMAO	–0.014	–0.003	0.001
AC	–0.005	0.000	0.003
TETRA	–0.004	0.001	–0.001

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Table S3. Method performance data for speciation analyses: (a) extraction and column recoveries for a pooled sample (mean ± standard deviation, *n* = 4) and (b) peak times and precision

Limits of detection are based on 20-μL injection, *n* = 10, <0.01 μgg^{-1}, for all arsenic species except for inorganic arsenic, which is <0.001 μg g^{-1}.

Samples were spiked with standards to confirm peak identity and matrix effects. Recoveries of spikes are in the range 99–101 %, 100 ± 1 % (*n* = 10)

(a)							
Sample			Methanol–water extraction		Column recoveries		
Zostera capricornii			117 ± 6		111 ± 5		
Cystophora moniformis			80 ± 4		99 ± 2		
Saccrostrea glomerata			78 ± 2		89 ± 4		
Acanthropagrus australis			95 ± 2		100 ± 1		
(b)							
Cations							
Arsenic species	AB	AS1	TMAO	AC	TETRA		
Peak time (*n* = 5)	3.6 ± 0.1	4.10 ± 0.08	5.2 ± 0.1	6.50 ± 0.07	8.1 ± 0.1		
Precision (*n* = 5)							
Concentration (μg L^{-1})	10	1	0.2	0.05	0.2		
CV (%)	<1	<15	<8	<4	<4		
Anions							
Arsenic species	As^{3+}	DMA	MA	AS2	As^{5+}	AS3	AS4
Peak time (*n* = 5)	2.5 ± 0.1	3.10 ± 0.08	5.1 ± 0.1	7 0.0 ± 0.1	10.0 ± 0.5	13.5 ± 0.8	31 ± 1
Precision (*n* = 5)							
Concentration (μg L^{-1})	10	0.2	0.2	1	0.5	1	1
CV (%)	<1	<10	<5	<15	<6	<15	<15