Table S1: Minimum (min) and maximum (max) limits of quantification (LOQs, in mg kg^{-1} dry weight (dw)) calculated on the 115 samples analysed for different elements by inductively coupled plasma atomic emission spectrometry and/or mass spectrometry. Essential elements are first listed according to their type (macro-minerals vs. trace elements), then by alphabetical order within each type of elements.

Elements	**LOQs in mg kg^{-1} dw (min – max)**
P	9 – 12
As	0.09 – 0.12
Co	0.009 – 0.012
Cr	0.09 – 0.12
Cu	0.9 – 1.2
Fe	3.6 – 4.8
Mn	0.01 – 1.20
Ni	0.036 – 0.048
Se	0.36 – 0.48
Zn	3.6 – 4.8

Table S2: Elemental composition of the 78 forage species considered from the NE Atlantic. The species code indicated in Table 1 is used and to facilitate reading, species are given in the same order as in Table 1. Values are elemental concentrations (means ± standard deviations (SD) when available) in mg kg^{-1} dry weight. Means ± SD are also indicated for each taxon, in bold. The conversion to a wet weight basis is made possible through the moisture percentage indicated in Table 1. Essential elements are first listed according to their type (macro-minerals vs. trace elements), then by alphabetical order within each type of elements.

Species code	N	P	As	Co	Cr	Cu	Fe	Mn	Ni	Se	Zn
Jellyfish											
Aaur	41 796	4 366	8.74	0.145	0.174	3.19	242	2.85	0.56	1.95	193.4
Crustaceans	**97 966 ± 14 750**	**10 832 ± 1 411**	**33.3 ± 23.3**	**0.377 ± 0.297**	**0.681 ± 0.465**	**59.5 ± 26.2**	**323 ± 410**	**13.8 ± 13.9**	**6.78 ± 14.0**	**2.38 ± 0.86**	**75.7 ± 26.5**
Mnor	113 450	11 150	28.0	0.097	0.332	23.8	76.6	2.10	0.98	3.20	60.5
Apur	95 433#	10 250 ± 134	12.7 ± 1.12	0.196 ± 0.019	0.585 ± 0.133	91.8 ± 2.14	53.2 ± 1.1	2.47 ± 0.01	1.75 ± 0.39	1.72 ± 0.16	46.6 ± 1.1
Plon	102 916	12 077	7.27	0.486	1.60	51.4	948	38.2	41.4*	2.36	80.2
Psiv	121 322	11 249	41.1	0.053	0.057	71.1	15.5	1.39	0.31	1.63	57.0
Pmar	78 330	8 009	32.8	0.407	0.588	52.0	114	18.2	3.34	1.56	112
Phen	80 282	10 993	61.8	0.722	1.01	26.2	990	18.9	2.36	3.75	101
Npub	96 561	12 680	70.3	0.861	0.689	67.8	330	26.3	2.33	3.07	101
Cephalopods	**117 743 ± 9 199**	**9 832 ± 1 116**	**33.3 ± 37.4**	**0.270 ± 0.371**	**0.340 ± 0.334**	**71.1 ± 45.2**	**76.5 ± 75.8**	**2.43 ± 1.44**	**0.50 ± 0.55**	**3.41 ± 1.20**	**85.4 ± 28.9**
Aspp	119 687 ± 2 497	10 129 ± 157	15.1 ± 1.80	0.034 ± 0.011	0.161 ± 0.177	67.8 ± 40.4	122 ± 150	2.39 ± 1.12	0.15 ± 0.09	2.52 ± 0.51	66.1 ± 11.5
Lfor	119 905	11 038	20.6	0.032	0.050	28.1	15.8	1.16	0.19	2.31	57.4
Lvul	125 374 ± 4619	11 233 ± 843	23.8 ± 11.2	0.038 ± 0.016	0.284 ± 0.203	29.9 ± 4.37	32.5 ± 21.4	1.22 ± 0.18	0.10 ± 0.08	2.84 ± 0.17	65.0 ± 4.1
Icoi	121 628 ± 9 571	9 708 ± 277	20.5 ± 5.58	0.286 ± 0.054	0.136 ± 0.108	110 ± 13.0	125 ± 74.8	2.62 ± 1.52	0.35 ± 0.11	4.96 ± 0.26	93.0 ± 3.6
Tebl	122 369 ± 11571	9 054 ± 469	35.3 ± 10.9	0.082 ± 0.008	0.263 ± 0.293	41.1 ± 5.0	31.9 ± 0.1	1.54 ± 0.59	0.34 ± 0.45	3.20 ± 0.14	81.4 ± 4.5
Sepiol	111 202	9 851	19.3	0.524	0.621	102.1	93.8	3.59	1.04	3.50	116
Soff	102 895 ± 4 537	8 384 ± 84	34.0 ± 13.5	1.04 ± 0.424	0.684 ± 0.609	105 ± 1.4	76.5 ± 60.7	5.12 ± 0.75	1.58 ± 0.07	3.20 ± 0.40	101 ± 20.0
Ecir	106 080	8 210	164	0.464	0.933	158	109	2.36	1.05	6.53	165
Fish	**198 066 ± 15 078**	**14 399 ± 5 283**	**24.0 ± 35.0**	**0.096 ± 0.065**	**0.606 ± 0.623**	**3.26 ± 3.98**	**90.7 ± 102**	**4.13 ± 3.06**	**1.05 ± 0.80**	**3.12 ± 2.63**	**56.5 ± 23.2**
Cartilaginous fish	**132 558 ± 5 191**	**8 413 ± 3091**	**82.8 ± 16.5**	**0.063 ± 0.020**	**0.921 ± 0.527**	**2.99 ± 1.58**	**41.9 ± 21.0**	**1.55 ± 0.93**	**0.96 ± 0.47**	**2.18 ± 0.48**	**40.1 ± 10.4**
Sccan	127 357#	9 018 ± 5 002	69.6 ± 8.63	0.079 ± 0.012	1.33 ± 0.414	3.38 ± 2.52	43.3 ± 34.9	1.70 ± 1.57	0.85 ± 0.15	2.04 ± 0.25	46.9 ± 9.4
Rnae	132 580	6 764	101	0.048	0.515	3.10	47.4	1.56	1.60	1.80	28.1
Cmon	137 739	8 853	91.4	0.047	0.514	2.10	33.6	1.25	0.52	2.85	38.4
Bony fish	**107 181 ± 14 569**	**14 674 ± 5 209**	**21.3 ± 33.2**	**0.098 ± 0.066**	**0.592 ± 0.626**	**3.28 ± 4.06**	**92.9 ± 104**	**4.24 ± 3.07**	**1.06 ± 0.81**	**3.17 ± 2.69**	**57.3 ± 23.4**

Ccon	108 414	8 384 ± 172	64.2 ± 35.5	0.067 ± 0.016	2.73 ± 2.28	3.80 ± 2.58	43.2 ± 0.1	1.77 ± 0.06	1.75 ± 1.18	2.96 ± 0.28	45.5 ± 1.9
Sbea	113 403	16 380	7.52	0.131	1.53	3.76	921	9.96	1.36	1.40	119
Sspr	93 856 ± 13 981	12 804 ± 1 932	8.97 ± 2.07	0.074 ± 0.045	0.272 ± 0.260	2.13 ± 0.51	86.2 ± 25.8	7.45 ± 2.31	0.36 ± 0.12	1.35 ± 0.63	82.4 ± 12.9
Spil	84 023 ± 11 727	9 438 ± 1 300	7.49 ± 0.81	0.075 ± 0.025	0.295 ± 0.335	2.48 ± 0.08	91.6 ± 3.5	3.37 ± 0.63	0.40 ± 0.13	2.99 ± 0.78	66.1 ± 2.8
Char	78 524	8 492	4.33	0.027	0.054	2.16	56.4	1.23	0.29	2.58	37.0
Eenc	113 838 ± 10 568	15 085 ± 5 437	9.36 ± 1.36	0.137 ± 0.051	0.309 ± 0.398	4.23 ± 0.72	91.1 ± 10.9	6.22 ± 3.09	0.76 ± 0.33	2.88 ± 0.83	121 ± 46.6
Xcop	120 998	16 725	40.5	0.162	0.733	2.92	74.2	4.33	1.05	3.64	86.2
Asph	100 296 ± 6 275	10 249 ± 1 963	29.0 ± 1.91	0.088 ± 0.001	0.405 ± 0.153	1.77 ± 0.22	74.5 ± 1.9	3.35 ± 1.56	0.45 ± 0.04	1.93 ± 0.13	73.6 ± 4.6
Nope	119 020	19 739	31.7	0.154	0.411	2.07	20.5	3.37	1.86	2.49	65.6
Aolf	109 754	21 836	21.2	0.112	0.156	3.43	32.2	2.93	1.25	3.32	60.7
Mmue	92 839	17 296	7.96	0.124	1.64	8.03	104	3.47	1.96	2.14	68.8
Sboa	113 315	16 802	3.85	0.107	0.864	2.19	267	4.63	1.47	1.67	89.9
Aris	112 264	19 763	5.86	0.063	0.498	4.04	93.3	2.76	0.70	2.84	58.6
Lcro	124 292	15 404	2.55	0.080	0.473	1.08	39.0	1.13	1.24	3.49	34.6
Bgla	86 339[#]	12 828 ± 34	3.76 ± 0.07	0.091 ± 0.004	0.474 ± 0.084	2.45 ± 0.02	56.9 ± 2.7	2.44 ± 0.08	1.24 ± 0.04	2.45 ± 0.07	45.9 ± 1.1
Nkro	83 142	9 771	5.48	0.062	0.129	3.06	39.7	0.91	0.72	2.84	26.3
Lgem	89 753	8 088	2.99	0.043	0.051	2.11	22.4	0.53	0.50	3.27	21.3
Ccoe	113 416	17 706	27.2	0.129	0.393	1.86	136	4.51	1.53	3.42	51.6
Mmng	121 055 ± 11 825	17 096 ± 2 510	18.6 ± 6.07	0.096 ± 0.037	0.472 ± 0.417	2.07 ± 0.33	64.0 ± 22.5	4.78 ± 0.80	0.70 ± 0.39	3.10 ± 0.54	48.8 ± 4.0
Ppol	129 038[#]	15 484 ± 6 005	13.8 ± 5.27	0.065 ± 0.006	0.606 ± 0.056	2.38 ± 0.54	45.4 ± 2.3	2.97 ± 1.71	0.88 ± 0.47	2.33 ± 0.18	48.4 ± 13.4
Mpou	121 456 ± 4 629	16 476 ± 4 154	25.6 ± 11.4	0.096 ± 0.009	0.521 ± 0.307	2.96 ± 0.64	55.9 ± 4.8	1.84 ± 0.66	0.77 ± 0.49	3.30 ± 0.47	62.1 ± 16.6
Tlus	126 305 ± 16 933	14 728 ± 4 596	15.9 ± 8.56	0.076 ± 0.038	0.378 ± 0.223	2.16 ± 0.11	45.5 ± 13.7	4.66 ± 2.00	0.42 ± 0.32	3.01 ± 0.19	41.3 ± 9.3
Garg	103 689	13 680	35.1	0.106	0.642	2.73	151	3.10	1.36	2.70	49.0
Tmin	113 482 ± 4 315	13 843 ± 4 502	30.8 ± 6.31	0.071 ± 0.025	0.456 ± 0.064	2.68 ± 0.07	83.8 ± 34.1	3.85 ± 2.55	0.63 ± 0.17	3.15 ± 0.63	42.5 ± 5.4
Gspp	116 316	12 355	58.6	0.070	0.479	4.96	77.0	4.73	0.84	2.97	33.5
Pble	121 272	9 770	37.6	0.049	0.274	3.97	54.5	1.87	1.37	3.20	37.0
Mmcc	127 707 ± 2 524	17 938 ± 3 593	30.8 ± 20.5	0.057 ± 0.027	0.260 ± 0.166	1.76 ± 0.04	40.4 ± 14.5	4.14 ± 2.39	0.46 ± 0.22	2.81 ± 0.11	50.9 ± 4.8
Apre	97 199 ± 709	12 342 ± 4 713	6.06 ± 0.90	0.091 ± 0.032	0.424 ± 0.391	1.38 ± 0.02	76.0 ± 0.8	4.32 ± 1.76	0.75 ± 0.80	1.68 ± 0.02	85.2 ± 4.3
Bbel	121 548	10 436	2.76	0.046	0.054	1.85	69.6	0.49	0.89	1.86	63.6
Ssau	126 706	13 411	5.32	0.073	0.115	3.99	97.5	1.54	0.61	1.77	47.5
Hmed	103 474	23 172	31.5	0.150	0.873	4.12	123	3.57	1.89	3.59	56.2
Cape	94 306[#]	20 140 ± 1 011	18.5 ± 2.32	0.121 ± 0.008	0.865 ± 0.096	1.72 ± 0.43	174 ± 124	6.72 ± 1.95	1.64 ± 0.14	2.51 ± 0.29	63.5 ± 4.6
Eaeq	87 194	37 424	2.89	0.187	0.047	2.09	36.5	15.7	2.55	2.15	76.7
Hdac	83 568	8 944	9.06	0.070	0.369	7.05	38.3	0.56	2.06	3.19	51.6
Slop	118 618	24 642	7.41	0.129	1.34	8.24	60.9	8.17	3.40	4.81	53.8
Acuc	96 270 ± 9 223	13 825 ± 5 914	10.6 ± 4.05	0.081 ± 0.022	0.195 ± 0.106	2.75 ± 0.53	37.9 ± 2.1	6.67 ± 3.38	0.75 ± 0.31	2.39 ± 0.09	30.6 ± 4.2
Dlab	116 076	12 413	9.96	0.056	1.10	7.26	43.3	1.27	0.96	2.72	46.9
Ttru	105 078 ± 4 203	13 875 ± 1 534	7.91 ± 2.22	0.126 ± 0.010	0.296 ± 0.243	3.35 ± 0.41	127.9 ± 36.3	1.57 ± 0.76	0.59 ± 0.15	5.54 ± 1.07	60.7 ± 8.3
Spcan	95 830 ± 8 365	11 252 ± 2 213	13.5 ± 1.72	0.105 ± 0.053	0.763 ± 0.104	1.63 ± 0.36	123 ± 82.6	5.25 ± 3.04	0.92 ± 0.04	3.11 ± 0.17	41.2 ± 3.6
Bboo	94 368	8 837	3.91	0.063	0.047	1.48	89.9	3.19	0.32	1.90	39.3

Paca	88 976	9 521	7.68	0.071	0.414	3.07	53.1	1.52	0.44	3.10	33.6
Msur	103 366 ± 2 162	11 443 ± 1 147	15.2 ± 5.15	0.096 ± 0.028	0.409 ± 0.431	2.59 ± 0.56	99.7 ± 54.4	2.54 ± 0.12	0.66 ± 0.04	2.93 ± 0.36	29.3 ± 3.2
Crub	113 153	28 008	34.7	0.122	0.576	1.49	51.7	13.1	2.14	3.17	63.9
Lram	115 217	15 949	4.02	0.157	1.60	38.2	251	3.46	1.68	4.10	83.2
Lber	129 893	9 719	25.1	0.037	0.126	1.57	49.0	2.15	0.47	1.47	36.6
Hlan	114 418	22 412	14.8	0.096	0.052	2.93	102	5.96	1.13	25.6*	84.7
Atob	112 186 ± 191	12 968 ± 1 192	6.99 ± 1.21	0.038 ± 0.002	0.220 ± 0.054	3.02 ± 0.04	65.5 ± 4.6	2.75 ± 0.16	0.30 ± 0.06	7.29 ± 0.16	69.1 ± 4.6
Tdra	112 427	22 533	11.9	0.118	0.230	2.11	82.3	2.06	1.17	2.85	59.5
Ptri	111 739	16 421	6.84	0.113	1.20	5.71	97.7	4.08	4.29	1.74	100
Clyr	109 169	20 605	73.9	0.193	0.284	2.07	110	13.7	1.39	3.05	59.5
Lfri	93 795	20 125	4.76	0.161	1.49	2.00	207	7.83	1.90	2.20	48.2
Ssco	85 471 ± 6 701	9 476 ± 1 322	4.69 ± 0.34	0.062 ± 0.019	0.926 ± 1.28	2.23 ± 0.36	102 ± 26.0	1.20 ± 0.18	0.89 ± 0.74	3.88 ± 0.54	47.7 ± 4.9
Lwhi	109 284	12 776	13.5	0.046	1.93	3.13	32.0	2.64	0.65	2.03	41.4
Aimp	113 524	23 500	23.4	0.121	0.302	1.42	31.9	8.39	1.47	2.15	39.2
Gcyn	117 031	13 778	150	0.586	0.835	3.04	42.8	6.96	1.63	3.20	43.4
Mkit	119 538	11 192	258	0.041	0.733	2.32	26.2	2.42	0.56	3.85	38.1
Ppla	109 765	9 742	25.7	0.152	1.53	3.20	236	4.73	4.68	2.50	45.1
Svul	128 863[#]	13 925 ± 1 502	24.1 ± 12.0	0.062 ± 0.008	0.575 ± 0.236	1.79 ± 0.50	61.9 ± 1.7	5.40 ± 1.54	0.92 ± 0.02	1.95 ± 0.28	39.6 ± 2.4
Dcun	111 771	12 491	13.0	0.081	1.14	6.52	159	9.25	1.25	2.09	37.0

[#] For this species, although several samples were constituted, only one sample could be analysed for N concentration.

* Value replaced by the 99-quantile of the distribution for the element (in brackets) in data analyses and treatment, using concentrations converted in wet weight.

Table S3: Statistical results of the Kruskal-Wallis (KW) tests followed by post-hoc multiple comparison tests with Holm's adjustment method applied to test differences among among taxa or habitats (chi-squared (χ^2) value, degrees of freedom (df) et p-value of each KW test), with the level of significance set at α = 0.05 for all tests. Taxa or habitats that were significantly different following post-hoc tests are then indicated by different letters on the facets Figures 2 and 3. For p-values of KW tests, the number of stars indicated corresponds to p <0.05 (*); p <0.01 (**) or p <0.001 (***). Essential elements are first listed according to their type (macro-minerals vs. trace elements), then by alphabetical order within each type of elements.

Elements	Differences among taxa	Differences among habitats across the horizontal gradient	Differences among habitats across the vertical gradient
N	χ^2 =4.1; df =3; p =0.254	χ^2 =19.3; df =2; p <0.001***	χ^2 =6.4; df =2; p =0.042*
P	χ^2 =26.5; df =3; p <0.001***	χ^2 =2.4; df =2; p =0.300	χ^2 =0.117; df =2; p =0.943
As	χ^2 =14.1; df =3; p =0.003** (but post-hoc tests not significant)	χ^2 =6.4; df =2; p =0.041* (but post-hoc tests not significant)	χ^2 =27.9; df =2; p <0.001***
Co	χ^2 =8.6; df =3; p =0.036*	χ^2 =4.2; df =2; p =0.122	χ^2 =4.7; df =2; p =0.094 (but some post-hoc tests significant)
Cr	χ^2 =3.6; df =3; p =0.306	χ^2 =1.9; df =2; p =0.394	χ^2 =15.1; df =2; p =0.001**
Cu	χ^2 =34.9; df =3; p <0.001***	χ^2 =5.7; df =2; p =0.057	χ^2 =2.6; df =2; p =0.273
Fe	χ^2 =6.3; df =3; p =0.010*	χ^2 =8.2; df =2; p =0.017* (but post-hoc tests not significant)	χ^2 =1.0; df =2; p =0.610
Mn	χ^2 =10.1; df =3; p =0.018*	χ^2 =10.9; df =2; p =0.004** (but post-hoc tests not significant)	χ^2 =10.5; df =2; p =0.005**
Ni	χ^2 =10.8; df =3; p =0.013*	χ^2 =0.8; df =2; p =0.659	χ^2 =9.5; df =2; p =0.008**
Se	χ^2 =5.1; df =3; p =0.164	χ^2 =1.5; df =2; p =0.482	χ^2 =0.8; df =2; p =0.683
Zn	χ^2 =15.5; df =3; p =0.001**	χ^2 =8.2; df =2; p =0.016*	χ^2 =1.7; df =2; p =0.424

Table S4: Numerical results of the hierarchical clustering analysis (HCA) performed using Ward's minimum variance method: proportion of variance explained by each element in the definition of HCA groups, and elemental composition of groups (mean concentrations ± standard deviations (SD), in mg kg^{-1} wet weight). For each element, the highest value is in bold, and the lowest value in italics and underlined. Essential elements are first listed according to their type (macro-minerals vs. trace elements), then by alphabetical order within each type of elements.

	Elemental composition of HCA groups (means ± SD)										
HCA group / element	**N**	**P**	**As**	**Co**	**Cr**	**Cu**	**Fe**	**Mn**	**Ni**	**Se**	**Zn**
Group 1	27 459 ± 2 891	3 075 ± 692	5.07 ± 3.85	<u>*0.016 ± 0.006*</u>	<u>*0.073 ± 0.045*</u>	2.37 ± 4.05	15.5 ± 8.8	<u>*0.59 ± 0.33*</u>	0.17 ± 0.09	0.66 ± 0.16	11.4 ± 2.9
Group 2	25 448 ± 699	2 209 ± 209	12.0 ± 15.4	0.119 ± 0.080	0.142 ± 0.071	**26.9 ± 6.25**	21.3 ± 5.3	0.77 ± 0.28	0.28 ± 0.15	0.93 ± 0.42	24.5 ± 9.9
Group 3	26 861 ± 8 165	3 268 ± 1 075	14.4 ± 10.3	**0.192 ± 0.098**	0.263 ± 0.022	15.6 ± 8.79	**152 ± 95.0**	**7.25 ± 1.90**	**1.39 ± 0.92**	0.80 ± 0.34	**31.1 ± 13.3**
Group 4	**30 768 ± 2 965**	2 616 ± 659	**27.6 ± 22.0**	0.035 ± 0.050	**0.339 ± 0.209**	0.80 ± 0.14	<u>*9.9 ± 2.0*</u>	0.71 ± 0.47	0.29 ± 0.12	0.67 ± 0.21	<u>*10.3 ± 1.9*</u>
Group 5	29 177 ± 1 606	3 594 ± 694	3.03 ± 1.67	0.025 ± 0.007	0.134 ± 0.087	0.97 ± 0.59	24.3 ± 8.0	0.99 ± 0.62	0.23 ± 0.16	**1.13 ± 0.69**	19.3 ± 6.0
Group 6	28 068 ± 4 395	**5 316 ± 1 638**	4.64 ± 4.38	0.035 ± 0.009	0.238 ± 0.162	1.73 ± 3.01	32.0 ± 22.2	1.94 ± 1.03	0.56 ± 0.30	0.73 ± 0.26	15.5 ± 5.4
Group 7	<u>*13 371 ± 5 941*</u>	<u>*1 974 ± 993*</u>	<u>*2.37 ± 2.26*</u>	0.017 ± 0.004	0.096 ± 0.064	<u>*0.34 ± 0.07*</u>	36.1 ± 42.3	0.63 ± 0.35	<u>*0.17 ± 0.09*</u>	<u>*0.28 ± 0.13*</u>	12.7 ± 2.5