

Appendix 1. Diatom traits, their abbreviations and their calculated rarity indices (Chp = chloroplast; H = height; L = length; V = volume; W = width).

Trait	Abbreviation	psi	gri	hsi	rr
Chp nr 1	chl 1	0.0100	0.0650	0.0102	0.0102
Chp nr 2	chl 2	0.0113	0.0650	0.0102	0.0113
Chp nr 4	chl 4	1.0000	0.0924	0.0769	0.0924
Chp nr 24	chl 24	0.0111	0.0650	0.0104	0.0111
Chp elongated	chl elo	0.0190	0.0657	0.0143	0.0190
Chp plate-like	chl pl	0.0106	0.0650	0.0102	0.0106
Chp 2 lobes	chl 2lob	0.0161	0.0650	0.0120	0.0161
Chp appressed	chl app	1.0000	0.0859	0.0769	0.0859
Chp ribbon	chl ribb	0.0599	0.0650	0.0127	0.0599
Chp c shaped	chl c	0.0118	0.0650	0.0103	0.0118
Chp discoid	chl disc	0.0114	0.0650	0.0106	0.0114
Chp h shaped	chl sh	0.0147	0.0650	0.0102	0.0147
Chp lamellar	chl lam	1.0000	0.2875	0.5000	0.5000
Chp large plate	chl lpl	1.0000	0.8383	0.5000	0.8383
Chp much-lobes	chl mlob	0.0221	0.0657	0.0123	0.0221
Chp lobed-plate	chl lobpl	0.0702	0.0701	0.0122	0.0701
Chp small lobed plate-like	chl slobpl	0.0210	0.0650	0.0114	0.0210
Chp shapeless at rim	chl rim	1.0000	1.0000	1.0000	1.0000
Chp shape x	chl x	1.0000	1.0000	1.0000	1.0000
L: 0–5 µm	L 0_5	1.0000	0.9556	0.5000	0.9556
L: 5–10 µm	L 5_10	0.0117	0.0650	0.0103	0.0117
L: 10–15 µm	L 10_15	0.0125	0.0650	0.0102	0.0125
L: 15–20 µm	L 15_20	0.0163	0.0650	0.0102	0.0163
L: 20–25 µm	L 20_25	0.0158	0.0650	0.0102	0.0158
L: 25–30 µm	L 25_30	0.0216	0.0650	0.0102	0.0216
L: 30–35 µm	L 30_35	0.0274	0.0650	0.0105	0.0274
L: 35–40 µm	L 35_40	0.0300	0.0650	0.0106	0.0300
L: 40–45 µm	L 40_45	0.0155	0.0650	0.0102	0.0155
L: 45–50 µm	L 45_50	0.0137	0.0650	0.0102	0.0137
L: 50–55 µm	L 50_55	0.5213	0.0842	0.0270	0.0842
L: 55–60 µm	L 55_60	0.1752	0.0650	0.0196	0.0650
L: 60–65 µm	L 60_65	1.0000	0.1107	0.0625	0.1107
L: 65–70 µm	L 65_70	0.0867	0.0650	0.0137	0.0650
L: 70–75 µm	L 70_75	0.0607	0.0781	0.0208	0.0607
L: 75–80 µm	L 75_80	0.0748	0.0776	0.0200	0.0748
L: 80–85 µm	L 80_85	0.1189	0.0715	0.0345	0.0715

Appendix 1. (continued)

Trait	Abbreviation	psi	gri	hsi	rr
L: 85–90 μm	L 85_90	0.0305	0.0784	0.0270	0.0305
L: 90–95 μm	L 90_95	0.5771	0.1163	0.0769	0.1163
L: 95–100 μm	L 95_100	0.0785	0.0760	0.0278	0.0760
L: 100–105 μm	L 100_105	0.1454	0.1196	0.0435	0.1196
L: 105–110 μm	L 105_110	1.0000	0.1575	0.2000	0.2000
L: 110–115 μm	L 110_115	0.1750	0.1227	0.0909	0.1227
L: 115–120 μm	L 115_120	0.3100	0.0766	0.0185	0.0766
L: 125–130 μm	L 125_130	0.0914	0.1225	0.0417	0.0914
L: 130–135 μm	L 130_135	0.0603	0.0707	0.0143	0.0603
L: 145–150 μm	L 145_150	0.5213	0.0844	0.0294	0.0844
L: 155–160 μm	L 155_160	1.0000	0.1774	0.1667	0.1774
L: 160–165 μm	L 160_165	0.0967	0.1090	0.0556	0.0967
L: 190–195 μm	L 190_195	1.0000	0.1019	0.0526	0.1019
L: 205–210 μm	L 205_210	1.0000	1.0000	1.0000	1.0000
L: 210–215 μm	L 210_215	1.0000	1.0000	1.0000	1.0000
L: 235–240 μm	L 235_240	0.0190	0.1763	0.1000	0.1000
L: 300–305 μm	L 300_305	1.0000	1.0000	1.0000	1.0000
L: 310–315 μm	L 310_315	0.0660	0.0650	0.0145	0.0650
L: 320–325 μm	L 320_325	0.2971	0.0957	0.0400	0.0957
L: 450–455 μm	L 450_455	0.5814	0.5998	0.2500	0.5814
W: 0–5 μm	W 0_5	0.0109	0.0650	0.0102	0.0109
W: 5–10 μm	W 5_10	0.0107	0.0650	0.0102	0.0107
W: 10–15 μm	W 10_15	0.0156	0.0650	0.0103	0.0156
W: 15–20 μm	W 15_20	0.0220	0.0650	0.0110	0.0220
W: 20–25 μm	W 20_25	0.0205	0.0650	0.0105	0.0205
W: 25–30 μm	W 25_30	1.0000	0.1619	0.1000	0.1619
W: 30–35 μm	W 30_35	0.4611	0.0701	0.0244	0.0701
W: 45–50 μm	W 45_50	1.0000	1.0000	1.0000	1.0000
W: 55–60 μm	W 55_60	1.0000	0.1093	0.2500	0.2500
W: 85–90 μm	W 85_90	1.0000	1.0000	1.0000	1.0000
H: 0–1 μm	H 0_1	0.0296	0.0705	0.0217	0.0296
H: 1–2 μm	H 1_2	0.0109	0.0650	0.0102	0.0109
H: 2–3 μm	H 2_3	0.0105	0.0650	0.0102	0.0105
H: 3–4 μm	H 3_4	0.0212	0.0650	0.0106	0.0212
H: 4–5 μm	H 4_5	0.0297	0.0650	0.0115	0.0297
H: 5–6 μm	H 5_6	0.0161	0.0650	0.0139	0.0161

Appendix 1. (continued)

Trait	Abbreviation	psi	gri	hsi	rr
H: 6–7 μm	H 6_7	0.0707	0.0740	0.0303	0.0707
H: 7–8 μm	H 7_8	0.0709	0.0701	0.0127	0.0701
H: 8–9 μm	H 8_9	1.0000	0.2707	0.3333	0.3333
H: 9–10 μm	H 9_10	0.0519	0.0766	0.0286	0.0519
H: 10–11 μm	H 10_11	1.0000	0.1276	0.0909	0.1276
H: 12–13 μm	H 12_13	0.0575	0.1309	0.0526	0.0575
H: 14–15 μm	H 14_15	0.0476	0.0762	0.0435	0.0476
H: 15–16 μm	H 15_16	1.0000	1.0000	1.0000	1.0000
H: 23–24 μm	H 23_24	0.1432	0.0650	0.0145	0.0650
H: 27–28 μm	H 27_28	1.0000	0.0823	0.0357	0.0823
H: 33–34 μm	H 33_34	0.4611	0.0701	0.0294	0.0701
H: 39–40 μm	H 39_40	0.0210	0.0650	0.0114	0.0210
H: 52–53 μm	H 52_53	1.0000	0.1093	0.2500	0.2500
V: 0–99 μm^3	V 0_99	0.0108	0.0650	0.0102	0.0108
V: 99–299 μm^3	V 99_299	0.0141	0.0650	0.0102	0.0141
V: 299–599 μm^3	V 299_599	0.0156	0.0650	0.0102	0.0156
V: 599–1,499 μm^3	V 599_1499	0.0134	0.0650	0.0102	0.0134
V: 1,499–2,500 μm^3	V 1499_2500	0.0547	0.0650	0.0105	0.0547
V: 2,500–3,500 μm^3	V 2500_3500	0.0160	0.0650	0.0130	0.0160
V: 3,500–4,500 μm^3	V 3500_4500	0.0575	0.0857	0.0244	0.0575
V: 4,500–5,500 μm^3	V 4500_5500	0.0560	0.0650	0.0112	0.0560
V: 5,500–6,500 μm^3	V 5500_6500	0.3475	0.0823	0.0278	0.0823
V: 6,500–7,500 μm^3	V 6500_7500	1.0000	0.1375	0.1111	0.1375
V: 8,500–9,500 μm^3	V 8500_9500	0.2971	0.0957	0.0385	0.0957
V: 11,500–12,500 μm^3	V 11500_12500	0.2687	0.0926	0.0227	0.0926
V: 12,500–13,500 μm^3	V 12500_13500	0.5814	0.3255	0.2000	0.3255
V: 13,500–14,500 μm^3	V 13500_14500	1.0000	0.1355	0.1000	0.1355
V: 14,500–15,500 μm^3	V 14500_15500	0.0210	0.0650	0.0114	0.0210
V: 16,500–17,500 μm^3	V 16500_17500	1.0000	0.1575	0.2500	0.2500
V: 18,500–19,500 μm^3	V 18500_19500	1.0000	1.0000	1.0000	1.0000
V: 19,500–20,500 μm^3	V 19500_20500	0.1432	0.0650	0.0147	0.0650
V: 20,500–21,500 μm^3	V 20500_21500	1.0000	0.1774	0.1667	0.1774
V: 21,500–22,500 μm^3	V 21500_22500	1.0000	0.0895	0.0417	0.0895
V: 37,500–38,500 μm^3	V 37500_38500	1.0000	0.9270	0.5000	0.9270
V: 40,500–41,500 μm^3	V 40500_41500	1.0000	1.0000	1.0000	1.0000
V: 52,500–53,500 μm^3	V 52500_53500	0.4611	0.0701	0.0294	0.0701

Appendix 1. (continued)

Trait	Abbreviation	psi	gri	hsi	rr
V: 59,500–60,500 μm^3	V 59500_60500	1.0000	0.0823	0.0435	0.0823
V: 72,500–73,500 μm^3	V 72500_73500	1.0000	1.0000	1.0000	1.0000
V: 184,500–185,500 μm^3	V 184500_185500	1.0000	0.8383	0.5000	0.8383
V: 228,500–229,500 μm^3	V 228500_229500	1.0000	0.1093	0.2500	0.2500
L/W: 0–2 μm	L/W 0_2	0.0113	0.0650	0.0102	0.0113
L/W: 2–4 μm	L/W 2_4	0.0125	0.0650	0.0102	0.0125
L/W: 4–6 μm	L/W 4_6	0.0131	0.0650	0.0102	0.0131
L/W: 6–12 μm	L/W 6_12	0.0160	0.0650	0.0102	0.0160
L/W: 12–20 μm	L/W 12_20	0.0748	0.0650	0.0123	0.0650
L/W: 20–30 μm	L/W 20_30	0.0302	0.0668	0.0111	0.0302
L/W: 30–40 μm	L/W 30_40	0.1189	0.0993	0.1000	0.1000
L/W: 40–50 μm	L/W 40_50	1.0000	0.2925	0.2000	0.2925
L/W: 50–60 μm	L/W 50_60	0.0660	0.0650	0.0130	0.0650
L/W: 60–70 μm	L/W 60_70	0.5814	0.5998	0.2500	0.5814
L/W: 70–80 μm	L/W 70_80	0.0190	0.1763	0.1000	0.1000
Motile	mot	0.0100	0.0650	0.0102	0.0102
Non-motile	n_mot	0.0111	0.0650	0.0102	0.0111
Pioneer	pion	0.0128	0.0650	0.0102	0.0128
Non-pioneer	n_pion	0.0100	0.0650	0.0102	0.0102
Not-attached	n_attch	0.0103	0.0650	0.0102	0.0103
Attached	attch	0.0100	0.0650	0.0102	0.0102
Adnate	adnt	0.0117	0.0650	0.0103	0.0117
Pedunculate	pednc	0.0115	0.0650	0.0102	0.0115
Pad	pad	0.0160	0.0650	0.0105	0.0160
Stalk	stalk	0.0115	0.0650	0.0102	0.0115
Not colony	n_col	0.0100	0.0650	0.0102	0.0102
Colony	col	0.0148	0.0650	0.0102	0.0148
Mucous colony	muc_col	0.0664	0.0650	0.0145	0.0650
Chain colony	chn_col	0.0210	0.0650	0.0109	0.0210
Zigzag colony	zz_col	0.0161	0.0650	0.0145	0.0161
Rosette colony	rose_col	0.0660	0.0650	0.0139	0.0650
Ribbon colony	ribb_col	0.0187	0.0650	0.0112	0.0187
Stellate colony	stell_col	0.0275	0.0897	0.0313	0.0313
Arbuscular colony	arb_col	0.0576	0.0650	0.0130	0.0576