Supplementary material

Diversity and biogeography of planktonic diatoms in Svalbard fjords: the role of dispersal and Arctic endemism in late-summer community structuring.

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This document includes:

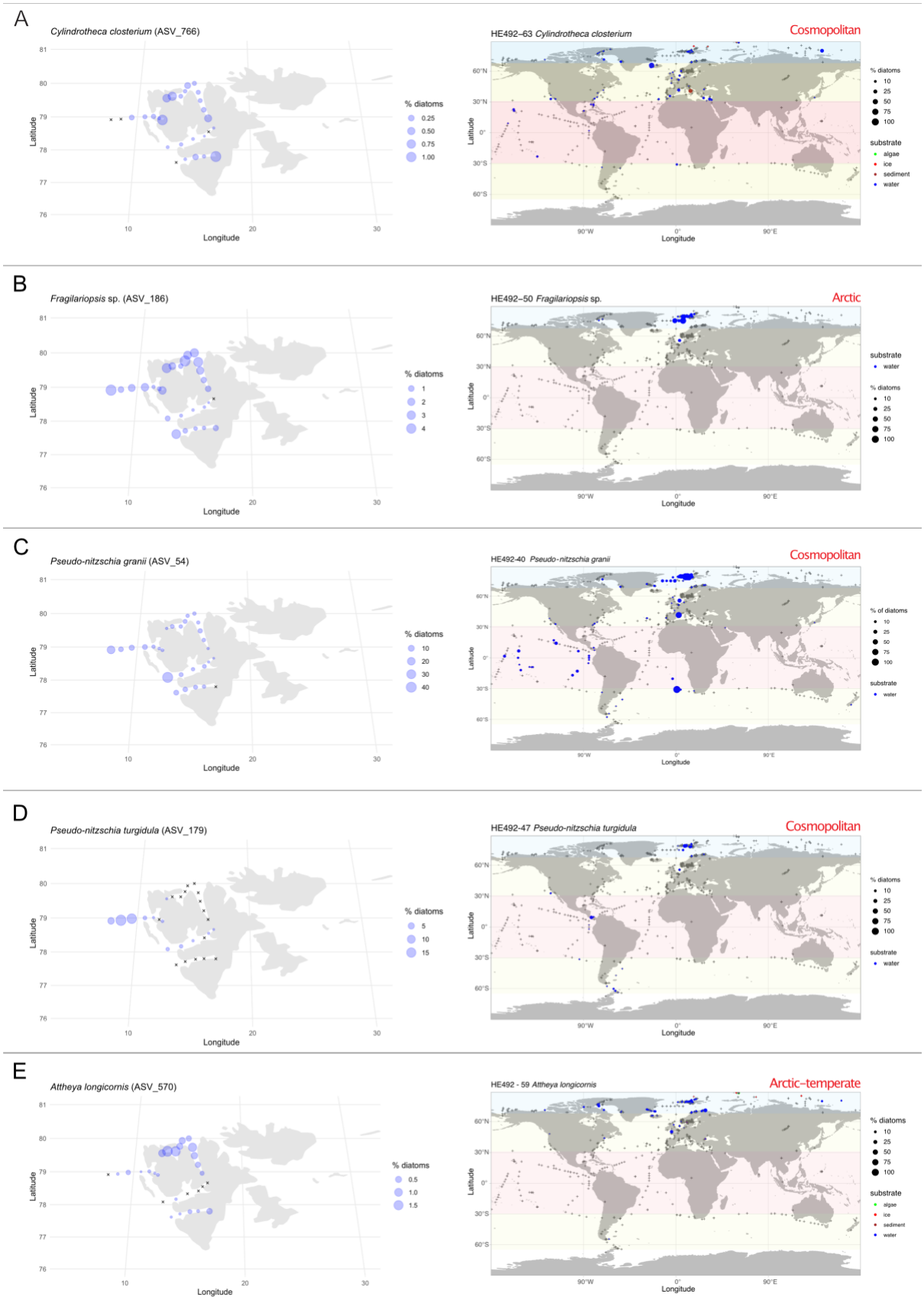

Figure S2. Local and Global biogeographic distribution maps. Genotypes cultured in this study.

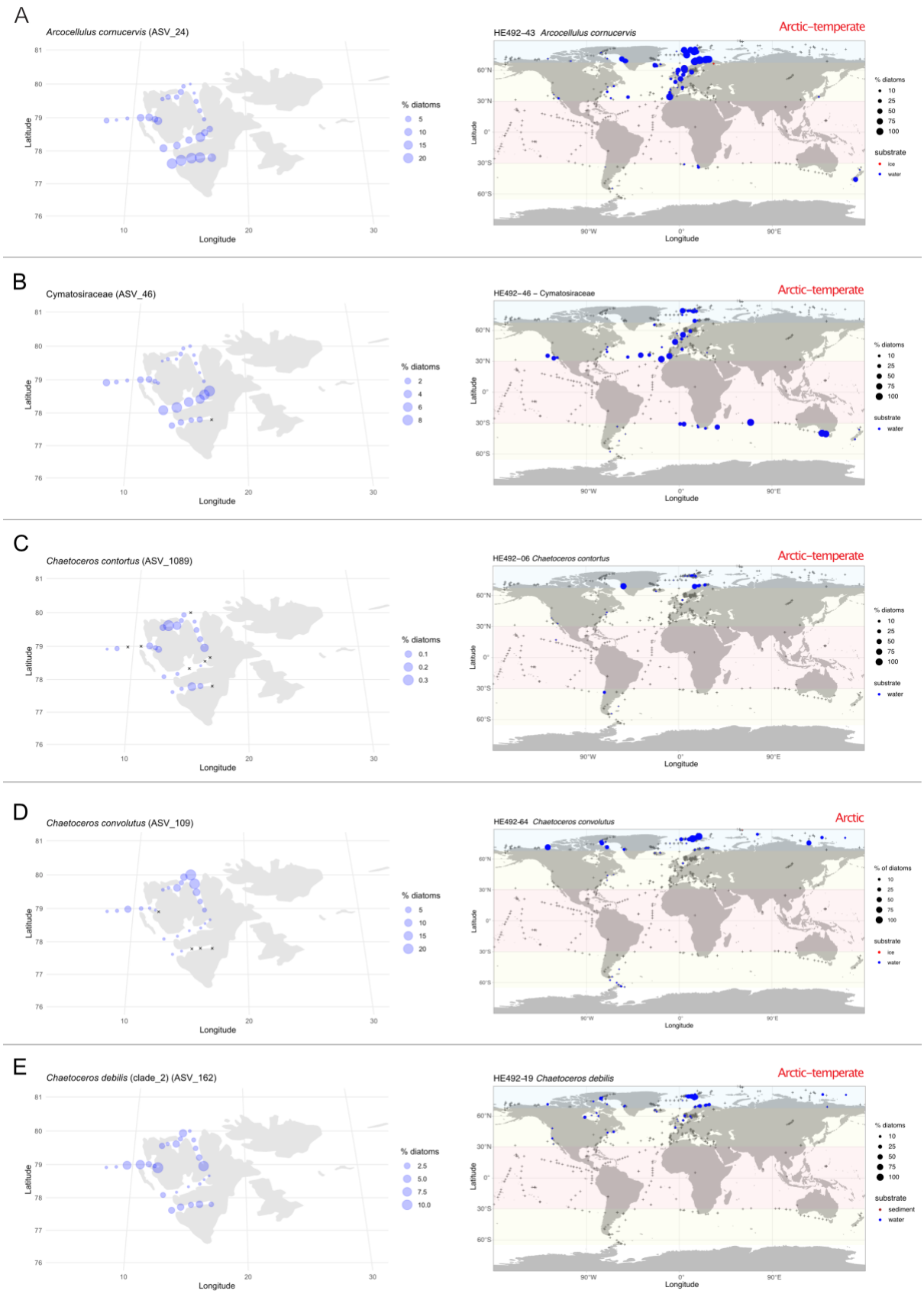

Figure S3. Local and Global biogeographic distribution maps. Genotypes cultured in this study.

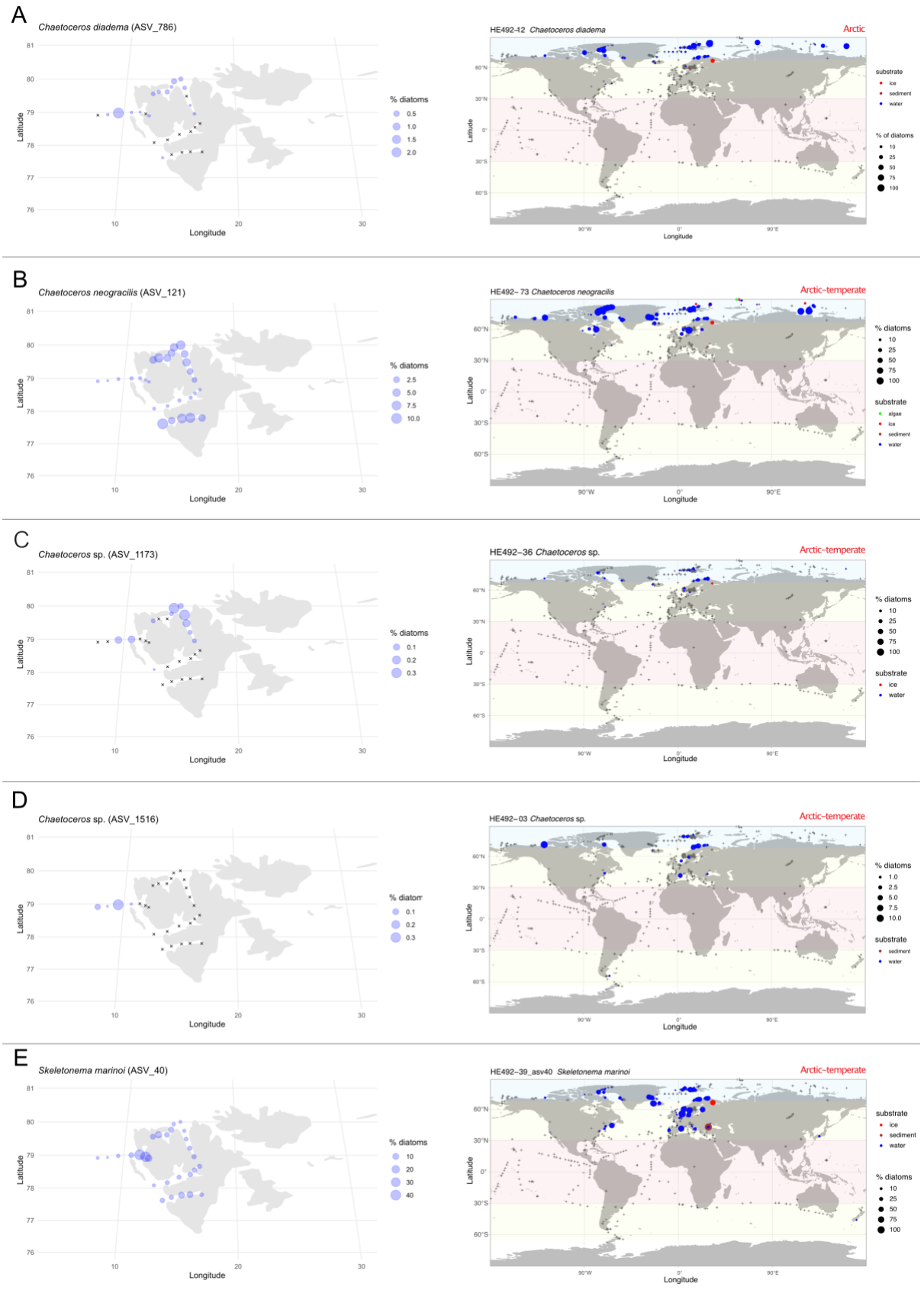

Figure S4. Local and Global biogeographic distribution maps. Genotypes cultured in this study.

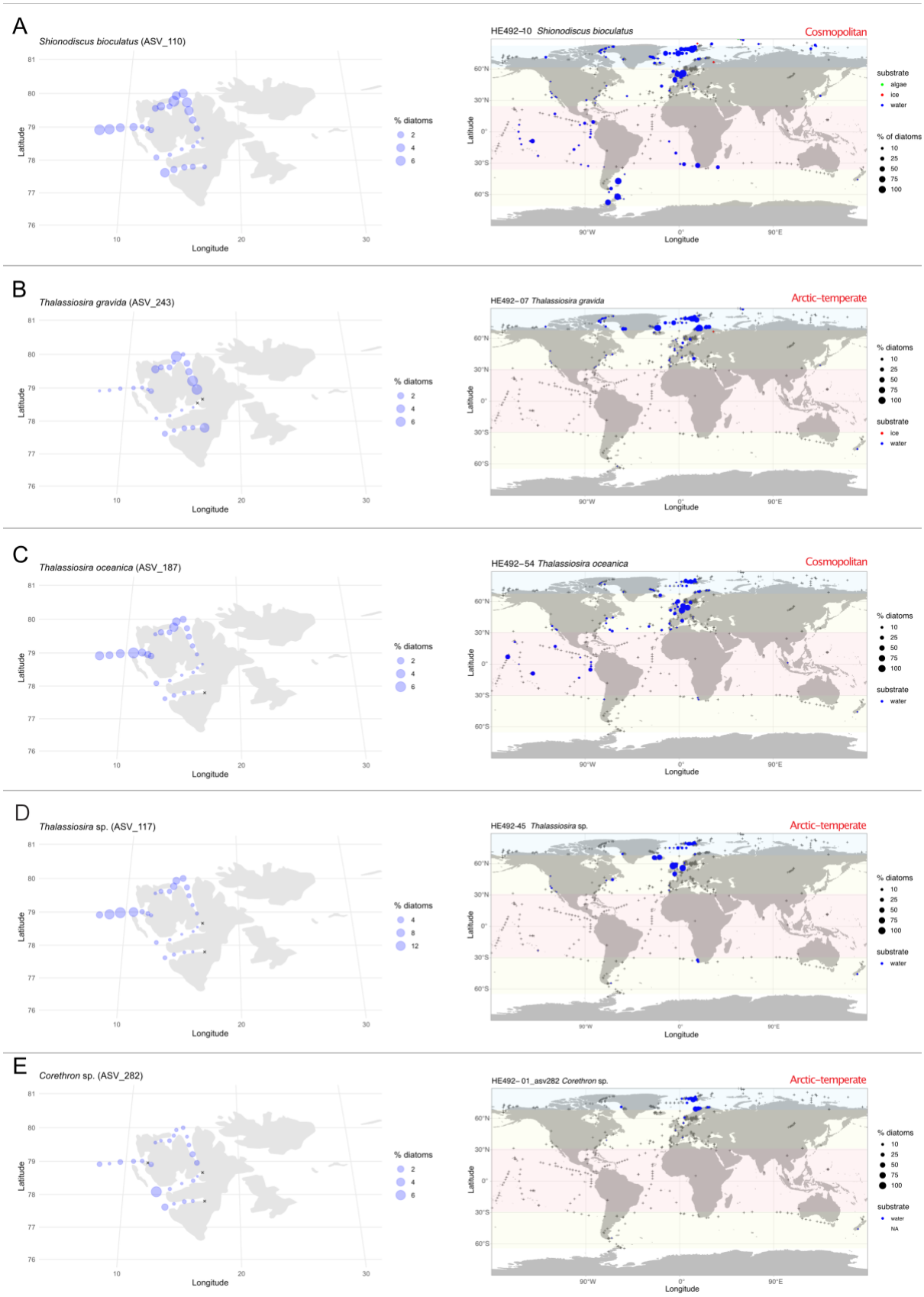

Figure S5. Local and Global biogeographic distribution maps. Genotypes cultured in this study.

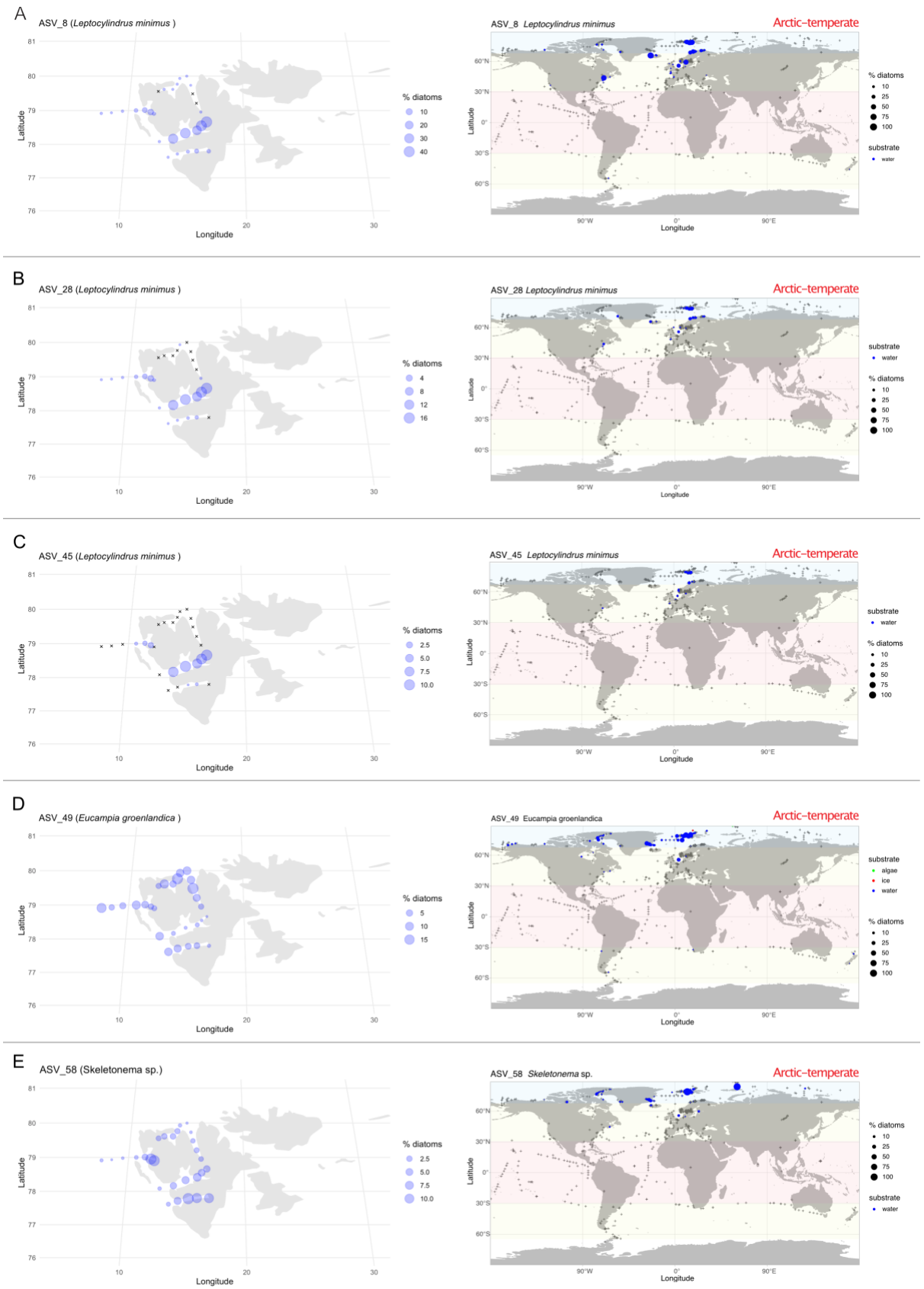

Figure S6. Local and Global biogeographic distribution maps. The most abundant non-cultured genotypes from the local metabarcoding dataset.

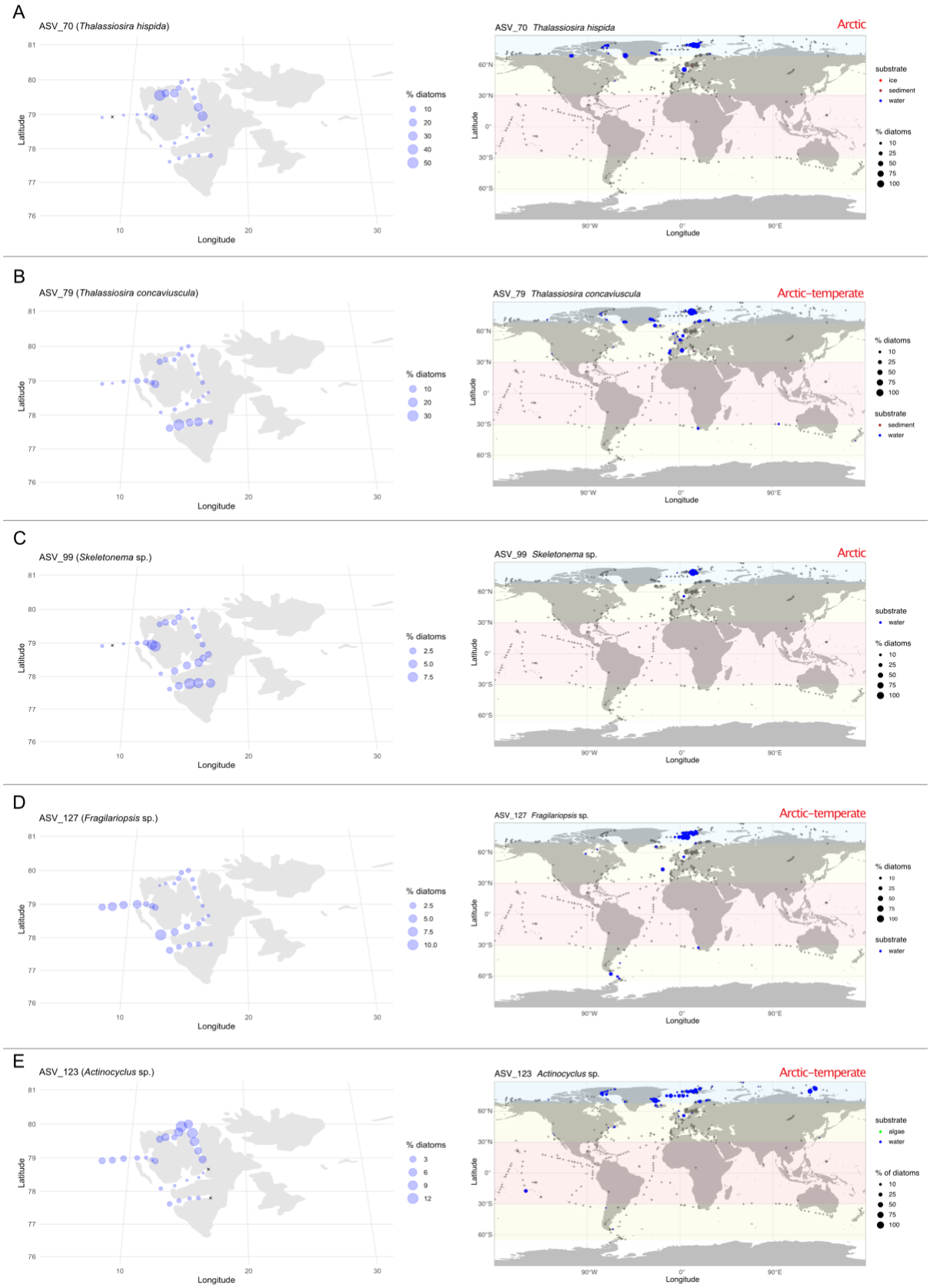

Figure S7. Local and Global biogeographic distribution maps. The most abundant non-cultured genotypes from the local metabarcoding dataset.

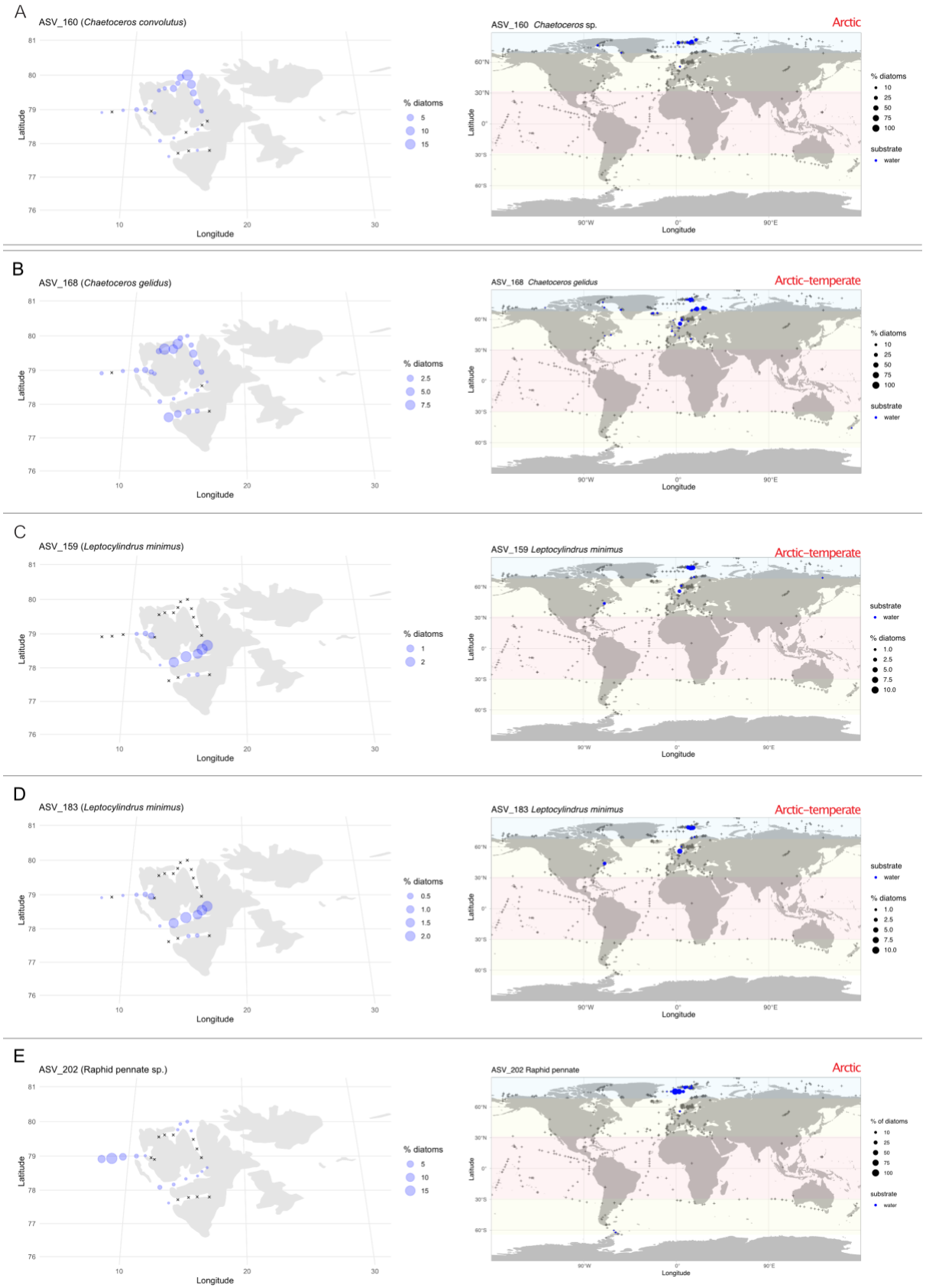

Figure S8. Local and Global biogeographic distribution maps. The most abundant non-cultured genotypes from the local metabarcoding dataset.

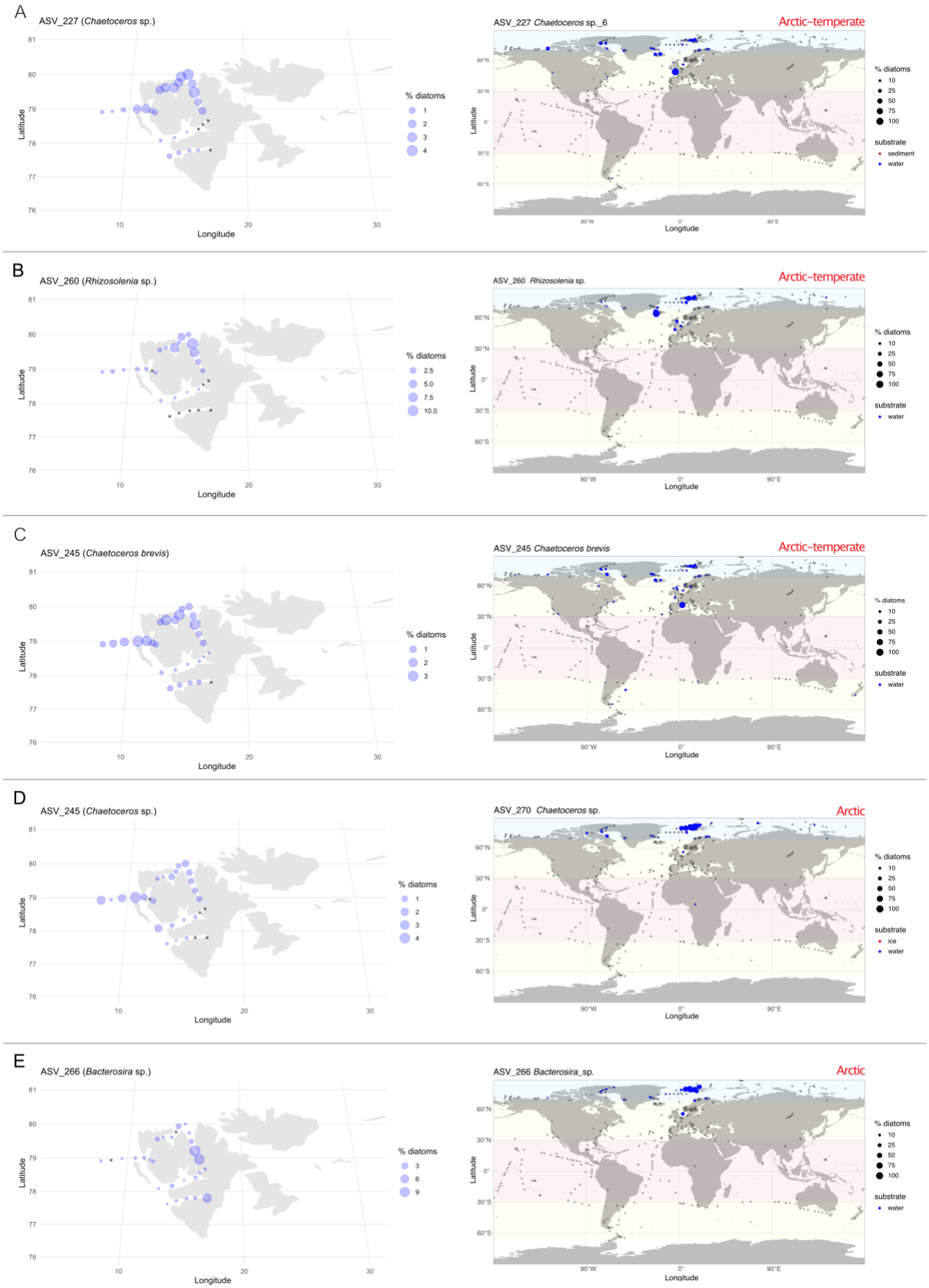

Figure S9. Local and Global biogeographic distribution maps. The most abundant non-cultured genotypes from the local metabarcoding dataset.

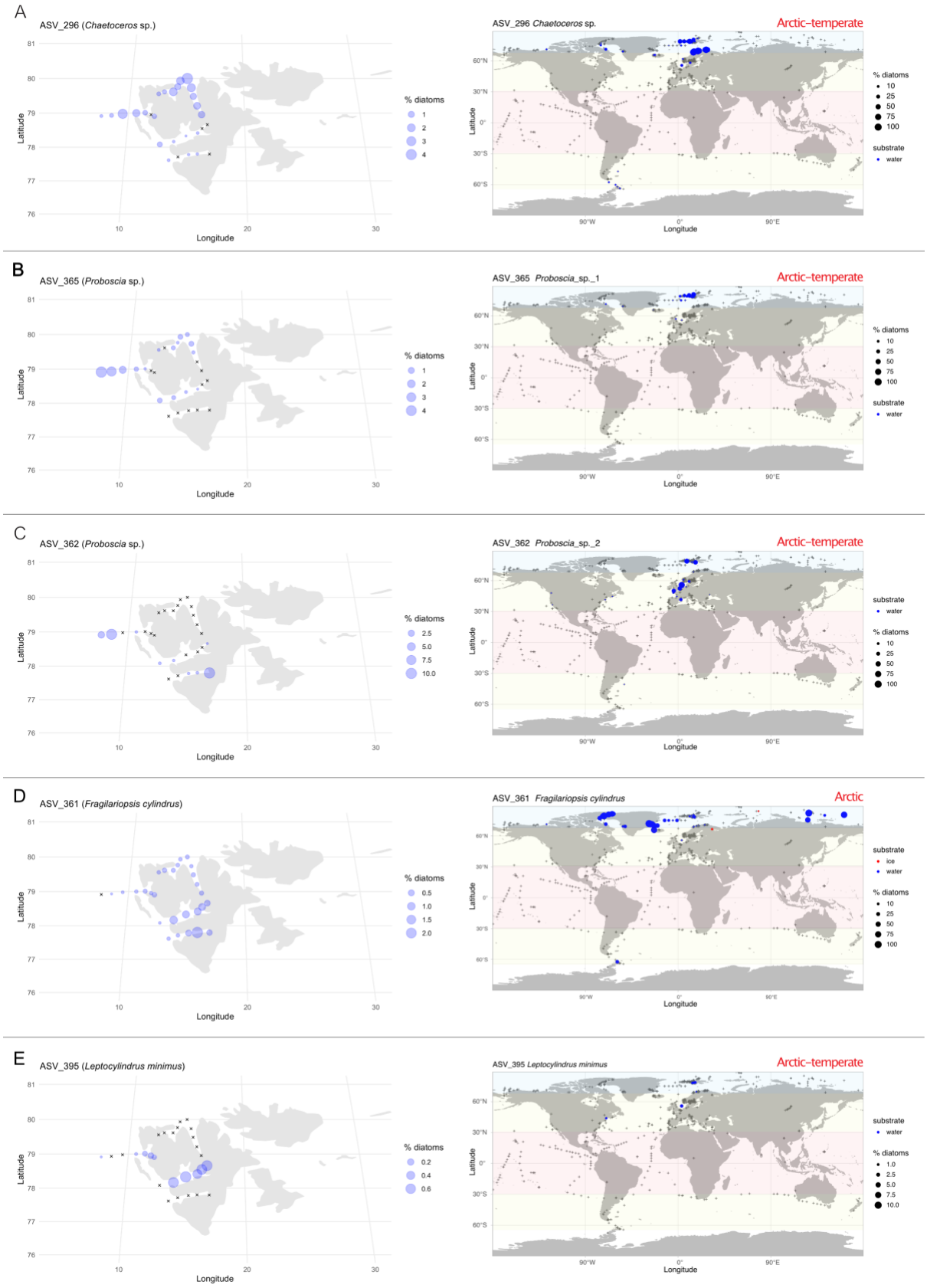

Figure S10. Local and Global biogeographic distribution maps. The most abundant non-cultured genotypes from the local metabarcoding dataset.

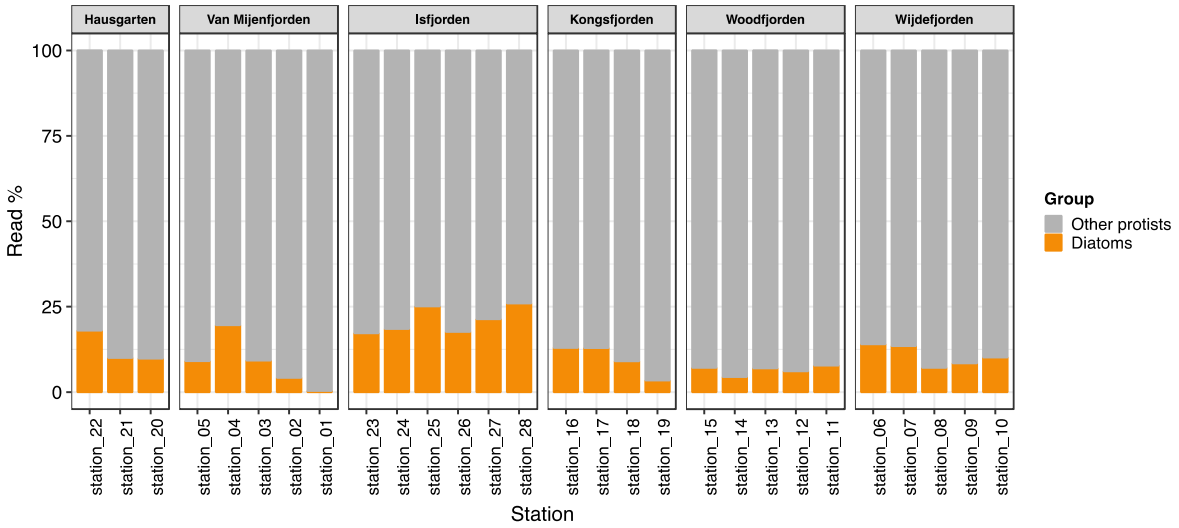

Figure S11. Relative contribution of diatom reads to the total protist reads. Data from the local metabarcoding dataset.

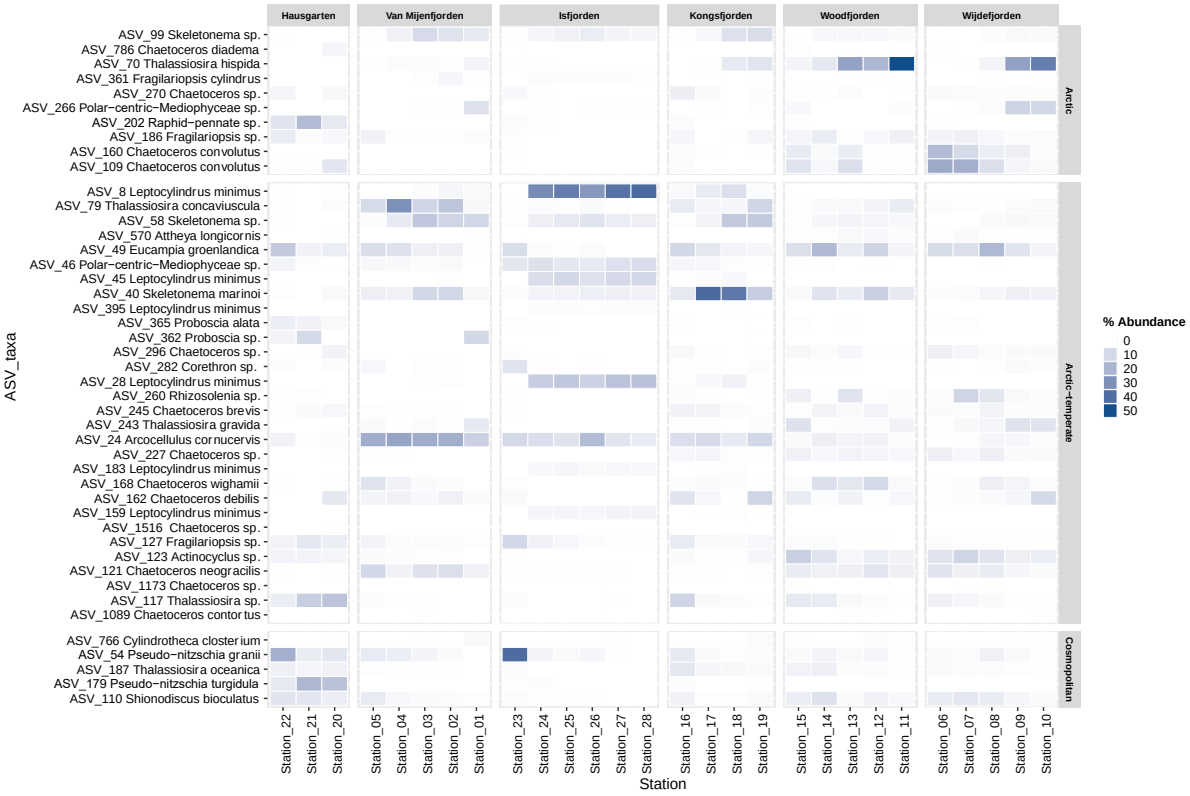

Figure S12. Distribution of diatom ASVs in the studied area. ASVs are grouped based on their biogeographic distribution type. Only ASVs that were biogeographically analysed are included in the plot.

Supplementary Table S1. Primers used in PCR amplification and sequencing of the cultured diatom strains.

Primer	Primer Direction	Use	Primer sequence (5´- 3´)
18S rRNA			
1F[a]	Forward	PCR, sequencing	AAC CTG GTT GAT CCT GCC AGT
528F[c]	Forward	Sequencing	CGG TAA TTC CAG CTC C
850F[b]	Forward	Sequencing	GGG ACA GTT GGG GGT ATT CGT A
300R[c]	Reverse	Sequencing	TCA GGC TCC CTC TCC GG
1147R[b]	Reverse	Sequencing	AGT TTC AGC CTT GCG ACC ATA C
1055R[c]	Reverse	Sequencing	CGG CCA TGC ACC ACC
1528R[a]	Reverse	PCR, sequencing	TGA TCC TTC TGC AGG TTC ACC TAC
28S rRNA			
DIR-F[d]	Forward	PCR, sequencing	ACC CGC TGA ATT TAA GCA TA
D1C-R[d]	Reverse	PCR, sequencing	CCT TGG TCC GTG TTT CAA GA

[a] Medlin et al. (1988)
[b] Theriot et al. (2015)
[c] Elwood et al. (1985)
[d] Scholin et al. (1994)

Supplementary Table S2. Primers used in metabarcoding of field samples.

Primer	Primer Direction	Primer sequence (5′- 3′)
V4 18S rRNA		
Reuk454FWD1[a]	Forward	CCA GCA SCY GCG GTA ATT CC
V4R[a]	Reverse	ACT TTC GTT CTT GAT

[a] Bradley et al. (2016)

Supplementary Table S3. Biogeographic distribution types of genotypes analysed in this study, sorted by the total read abundance of corresponding ASVs in the local metabarcoding dataset (100% pairwise identity). "Ice-samples" column indicates genotypes that were detected in ice-samples within the global metabarcoding dataset.

ASV	N reads	Phylogeny-based taxonomy	Cultured	Biogeography-type	Ice-samples	Fig.
ASV_8	172620	*Leptocylindrus minimus*	NO	Arctic-temperate	NO	S6A
ASV_28	68766	*Leptocylindrus minimus*	NO	Arctic-temperate	NO	S6B
ASV_24	68649	*Arcocellulus cornucervis*	YES	Arctic-temperate	YES	S3A
ASV_40	53451	*Skeletonema marinoi*	YES	Arctic-temperate	YES	S4E
ASV_45	43673	*Leptocylindrus minimus*	NO	Arctic-temperate	NO	S6C
ASV_46	40805	Polar-centric-Mediophyceae sp.	YES	Arctic-temperate	NO	S4B
ASV_49	38041	*Eucampia groenlandica*	NO	Arctic-temperate	YES	S6D
ASV_54	37275	*Pseudo-nitzschia granii*	YES	Cosmopolitan	NO	S2C
ASV_58	33653	*Skeletonema* sp.	NO	Arctic-temperate	NO	S6E
ASV_70	30330	*Thalassiosira hispida*	NO	Arctic	YES	S7A
ASV_79	27824	*Thalassiosira concaviuscula*	NO	Arctic-temperate	NO	S7B
ASV_99	20613	*Skeletonema* sp.	NO	Arctic	NO	S7C
ASV_109	18432	*Chaetoceros convolutus*	YES	Arctic	YES	S3D
ASV_110	16149	*Shionodiscus bioculatus*	YES	Cosmopolitan	YES	S5A
ASV_117	15474	*Thalassiosira* sp.	YES	Arctic-temperate	NO	S5D
ASV_127	15387	*Fragilariopsis* sp.	NO	Arctic-temperate	NO	S7D
ASV_123	14922	*Actinocyclus* sp.	NO	Arctic-temperate	NO	S7E
ASV_121	14562	*Chaetoceros neogracilis*	YES	Arctic-temperate	YES	S4B
ASV_160	11987	*Chaetoceros convolutus*	NO	Arctic	NO	S8A
ASV_162	11732	*Chaetoceros debilis*	YES	Arctic-temperate	YES	S4E
ASV_159	11854	*Leptocylindrus minimus*	NO	Arctic-temperate	NO	S8B
ASV_179	9992	*Pseudo-nitzschia turgidula*	YES	Cosmopolitan	NO	S2D
ASV_168	9903	*Chaetoceros gelidus*	NO	Arctic-temperate	NO	S8C
ASV_183	9558	*Leptocylindrus minimus*	NO	Arctic-temperate	NO	S8D
ASV_186	9019	*Fragilariopsis* sp.	YES	Arctic	NO	S2B
ASV_187	8614	*Thalassiosira oceanica*	YES	Cosmopolitan	NO	S5C
ASV_202	8561	*Raphid-pennate* sp.	NO	Arctic	NO	S8E
ASV_227	6625	*Chaetoceros* sp.	NO	Arctic-temperate	NO	S9A
ASV_260	5597	*Rhizosolenia* sp.	NO	Arctic-temperate	NO	S9B
ASV_245	5989	*Chaetoceros brevis*	NO	Arctic-temperate	NO	S9C
ASV_243	5816	*Thalassiosira gravida*	YES	Arctic-temperate	NO	S5B
ASV_270	5277	*Chaetoceros* sp.	NO	Arctic	YES	S9D
ASV_266	5110	*Bacterosira* sp.	NO	Arctic	NO	S9E
ASV_282	4918	*Corethron* sp.	YES	Arctic-temperate	NO	S5E
ASV_296	4669	*Chaetoceros* sp.	NO	Arctic-temperate	NO	S10A
ASV_365	3406	*Proboscia alata*	NO	Arctic-temperate	NO	S10B
ASV_362	3352	*Proboscia* sp.	NO	Arctic-temperate	NO	S10C
ASV_361	3212	*Fragilariopsis cylindrus*	NO	Arctic	YES	S10D
ASV_395	3010	*Leptocylindrus minimus*	NO	Arctic-temperate	NO	S10E
ASV_570	1295	*Attheya longicornis*	YES	Arctic-temperate	YES	S2E
ASV_766	682	*Cylindrotheca closterium*	YES	Cosmopolitan	YES	S2A
ASV_786	666	*Chaetoceros diadema*	YES	Arctic	YES	S4E
ASV_1089	218	*Chaetoceros contortus*	YES	Arctic-temperate	NO	S4B
ASV_1173	219	*Chaetoceros* sp.	YES	Arctic-temperate	YES	S4C
ASV_1516	105	*Chaetoceros* sp.	YES	Arctic-temperate	YES	S4D