

Supplementary

S1: Table. Geomorphological characteristics of the substrate and its levels selected to PERMANOVA (*) and Principal Component Analysis (PCO) analyses.

Factor	Levels
Horizon*	Proximal
	Medium
	Distal
Platform width*	No platform
	Narrow (< 2m)
	Medium (< 4m)
	Wide (> 4m)
Wave exposure*	Exposed
	Semi-exposed
	Sheltered
Lithology	Rock
	Rock and decimetric stones
	Metric stones
	Decimetric stones
	Mixed: sand, rock stones
Slope	High (Cliff)
	Medium
	Low
Rift	Yes/No
Pools	Yes/No

S2: Table. List of qualitative phenotypical characters used for Bray-Curtis dissimilarity matrix for numerical taxonomy.

Morphological Characters
Caespitose
No caespitose
Disc
Haptera
Spines in primary branches
Spines in secondary branches
Scarfs
Spinose axis apex
Smooth axis apex
Receptacles in the base of appendages
Receptacles in the apex of appendages
Grouped conceptacles
Aerocyst
Iridescence
Tophules

S3: Table. List of primers used for phylogenetic analysis.

Name	Direction	Length	Sequence 5'→3'	Reference
mt23S	F	398 - 435	TAAGAMAGCGTAACAGCTCACT	Coyer <i>et al.</i> (2006)
	R		GTGGCGGTTTAAGGTACGG	
mt23S-B	F	398 - 435	AGCGTAACAGCTCACTGACCTA	Draisma <i>et. al</i> (2010)
	R		CTGTGGCGGTTTAAGGTACGGTT	
tRNA-Lys	F	625 - 803	CGTTTGGTGAGAACCTTACC	Coyer <i>et al.</i> (2006)
	R		TACCACTGAGTTATTGCTCCC	
tRNA-Lys-B	F	625 - 803	GGGGTGAAAAATATCACTTTGA	Draisma <i>et. al</i> (2010)
	R		AACCCAAGACCCTCGGATTA	
psbA	F	≈ 930	ATGACTGCTACTTTAGAAAGACG	Coyer <i>et al.</i> (2006)
	R		GCTAAATCTARWGGGAAGTTGTG	
psbA-FR2	F	≈ 930	ATGACTGCTACTTTAGAAAGACG	Draisma <i>et. al</i> (2010)
	R		AAAGTACCAGAAATACCTA	
psbA-F2R	F	≈ 930	GTAGCTTYYTCTGCTCCRGTAGC	Draisma <i>et. al</i> (2010)
	R		GCTAAATCTARWGGGAAGTTGTG	

S4: Table. GenBank accession numbers used in this study.

Name	mt23S	tRNA-Lys	psbA
<i>Polycladia heinii</i>	FM958335.1	FM992993.1	FM958266.1
<i>Bifurcaria bifurcata</i> FR	FM958373.1	FM992996.1	FM958269.1
<i>C. abies-marina</i> 06	FM958377.1	MF768022.1	MH513845.1
<i>C. abies-marina</i> 38	FM958376.1	MF768020.1	FM958293.1
<i>C. abies-marina</i> M26	MF767966.1	MF768022.1	MH513845.1
<i>C. abies-marina</i> M27	MF767967.1	MF768019.1	FM958293.1
<i>C. abies-marina</i> M29	MF767969.1	MF768020.1	MH513845.1
<i>C. abies-marina</i> M30	MF767970.1	MF768022.1	FM958293.1
<i>C. amentacea</i> 036	FM958359.1	FM993021.1	KY657602.1
<i>C. amentacea</i> GV3	MF767983.1	MF768004.1	KY657601.1
<i>C. amentacea</i> MU1	MF767982.1	FM993021.1	KY657600.1
<i>C. amentacea</i> var. <i>stricta</i> 1	MW074078	MW065782	Nº Pending
<i>C. amentacea</i> var. <i>stricta</i> 2	MW074083	MW065782	Nº Pending
<i>C. amentacea</i> var. <i>stricta</i> 3	MW074083	MW065782	Nº Pending
<i>C. amentacea</i> var. <i>stricta</i> 46	FM958356.1	FM993016.1	FM958285.1
<i>C. amentacea</i> var. <i>stricta</i> 84	FM958371.1	FM993017.1	FM958285.1
<i>C. baccata</i> MB1	MF767978.1	MF768024.1	EU681633.1
<i>C. baccata</i> MB2	MF767979.1	MF768025.1	EU681633.1
<i>C. baccata</i> S22	FM958368.1	FM993034.1	FM958291.1
<i>C. barbata</i> 16	FM958378.1	FM993043.1	-
<i>C. barbata</i> f. <i>repens</i> RB87	MF767972.1	MF768028.1	-

Name	mt23S	tRNA-Lys	psbA
<i>C. barbata</i> MB17	MF767971.1	MF768027.1	-
<i>C. brachycarpa</i> var. <i>balearica</i> 01	FM958362.1	FM993025.1	-
<i>C. brachycarpa</i> var. <i>brachycarpa</i> 04	FM958361.1	FM993026.1	FM958288.1
<i>C. compressa</i> 1	MW074075	MW065779	Nº Pending
<i>C. compressa</i> 2	MW074080	MW065779	Nº Pending
<i>C. compressa</i> 3	MW074080	MW065779	Nº Pending
<i>C. compressa</i> 43	FM958355.1	FM993015.1	FM958284.1
<i>C. compressa</i> M4	MF767959.1	MF767995.1	MH513847.1
<i>C. compressa</i> MB6	MF767960.1	MF767995.1	KY657604.1
<i>C. compressa</i> M25	MF767961.1	MF767996.1	KY657603.1
<i>C. compressa</i> R25	MF767962.1	MF767996.1	MH513847.1
<i>C. compressa</i> subsp. <i>pustulata</i> M31	MF767958.1	MF767998.1	-
<i>C. compressa</i> subsp. <i>pustulata</i> R3	MF767957.1	MF767998.1	-
<i>C. crinita</i> 75	FM958363.1	FM993029.1	KY657607.1
<i>C. crinita</i> 40	FM958360.1	FM993024.1	FM958287.1
<i>C. crinita</i> R90	MF767984.1	MF768018.1	KY657606.1
<i>C. elegans</i> 44	FM958375.1	FM993038.1	FM958292.1
<i>C. elegans</i> R8	MF767973.1	MF768029.1	FM958292.1
<i>C. foeniculacea</i> 350	FM958353.1	FM993013.1	FM958282.1
<i>C. foeniculacea</i> M22	MF767965.1	MF768002.1	MH513849.1
<i>C. funkii</i> 49	FM958357.1	FM993018.1	-
<i>Stephanocystis hakodatensis</i>	FM958350.1	FM993010.1	FM958279.1
<i>C. humilis</i> 1	MW074076	MW065780	Nº Pending
<i>C. humilis</i> 2	MW074076	MW065780	Nº Pending
<i>C. humilis</i> 27	FM958354.1	FM993014.1	FM958283.1
<i>C. humilis</i> 3	MW074076	MW065780	Nº Pending
<i>C. humilis</i> MB7	KF525359.1	KF525361.1	MH513846.1
<i>C. humilis</i> MP1	MF767964.1	MF768000.1	KY657608.1
<i>C. humilis</i> var. <i>myriophylloides</i> RB22	MF767963.1	MF767997.1	-
<i>C. mauritanica</i> 1	MF767976.1	MF768026.1	MH513850.1
<i>C. mediterranea</i> B14	KF525356.1	MF768006.1	-
<i>C. mediterranea</i> B5	KF525357.1	KF525365.1	-
<i>Polycladia myrica</i>	FM958349.1	FM993009.1	FM958278.1
<i>C. nodicaulis</i> M14	MF767974.1	MF768030.1	EU681634.1

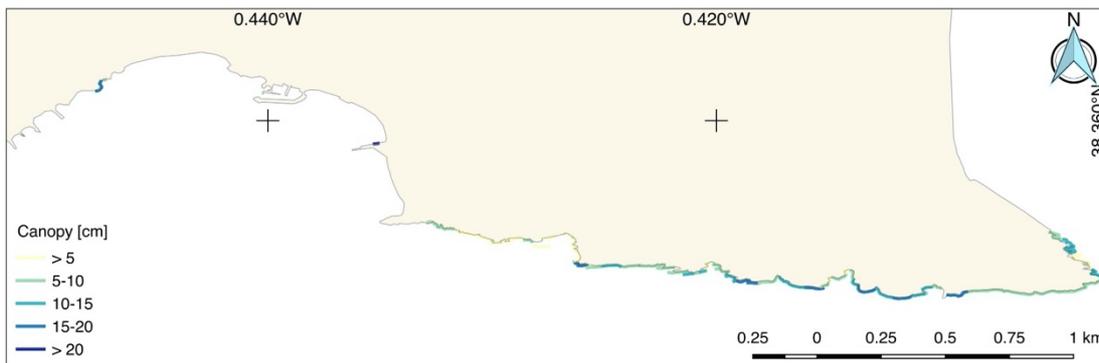
Name	mt23S	tRNA-Lys	psbA
<i>C. nodicaulis</i> M18	MF767975.1	MF768031.1	EU681634.1
<i>Stephanocystis setchellii</i>	FM958351.1	FM993011.1	FM958280.1
<i>C. spinosa</i> ALI4	MF767977.1	MF768032.1	-
<i>C. spinosa</i> h1	HQ438490.1	HQ438492.1	-
<i>C. spinosa</i> var. <i>tenuior</i> 12	FM958374.1	FM993037.1	-
<i>C. squarrosa</i> h1	HQ438491.1	HQ438494.1	-
<i>C. susanensis</i> SG	FM958379.1	FM993044.1	-
<i>C. tamariscifolia</i> C5	MF767990.1	MF768007.1	MH513851.1
<i>C. tamariscifolia</i> H7	MF767991.1	MF768011.1	MH513851.1
<i>C. tamariscifolia</i> M10	MF767992.1	MF768009.1	MH513851.1
<i>C. tamariscifolia</i> M11	MF767993.1	MF768008.1	FM958286.1
<i>C. tamariscifolia</i> M12	MF767985.1	MF768010.1	MH513851.1
<i>C. tamariscifolia</i> M20	MF767988.1	MF768014.1	FM958286.1
<i>C. tamariscifolia</i> M8	MF767986.1	MF768015.1	FM958286.1
<i>C. tamariscifolia</i> M9	MF767989.1	MF768016.1	EU681635.1
<i>C. tamariscifolia</i> S23	FM958370.1	FM993019.1	EU681635.1
<i>C. tamariscifolia</i> S25	FM958358.1	FM993020.1	FM958286.1
<i>C. tamariscifolia</i> T2	MF767987.1	MF768017.1	EU681635.1
<i>Sirophysalis trinodis</i> SGA	FM958348.1	FM993008.1	FM958277.1
<i>C. usneoides</i> 03	FM958367.1	FM993033.1	-
<i>C. usneoides</i> M15	KF525360.1	KF525362.1	-
<i>C. usneoides</i> M21	MF767980.1	MF768034.1	-
<i>C. usneoides</i> M3	MF767981.1	MF768035.1	-
<i>C. zosteroides</i> 06	FM958366.1	FM993032.1	FM958290.1
<i>Cystoseira</i> sp. 06	FM958369.1	FM993035.1	KY657609.1
<i>Cystoseira</i> sp. KRK	FM958364.1	FM993031.1	FM958289.1
<i>Fucus distichus</i> h1	AY659916.1	KU872207.1	-
<i>Fucus serratus</i> h2	AY659920.1	HQ316129.1	-
<i>Fucus spiralis</i> h1	AY659921.1	GQ385113.1	-
<i>Stephanocystis dioica</i>	FM958352.1	FM993012.1	FM958281.1
<i>Sargassum desfontainesii</i>	FM958407.1	FM993075.1	FM958301.1
<i>Sargassum elegans</i>	FM958406.1	FM993074.1	FM958300.1
<i>Sargassum muticum</i>	FM958392.1	FM958392.1	EU681659.1
<i>Sargassum</i> sp.	FM958397.1	FM993063.1	FM958299.1

Name	mt23S	tRNA-Lys	psbA
<i>T. algeriensis</i> 1	MW074074	MW065778	N ^o Pending
<i>T. algeriensis</i> 2	MW074079	MW065778	N ^o Pending
<i>T. algeriensis</i> 3	MW074079	MW065778	N ^o Pending
<i>T. sauvageauana</i> 1	MW074077	MW065781	N ^o Pending
<i>T. sauvageauana</i> 2	MW074082	MW065781	N ^o Pending
<i>T. sauvageauana</i> 3	MW074082	MW065781	N ^o Pending
<i>Turbinaria ornata</i> SG	FM958414.1	FM993083.1	-

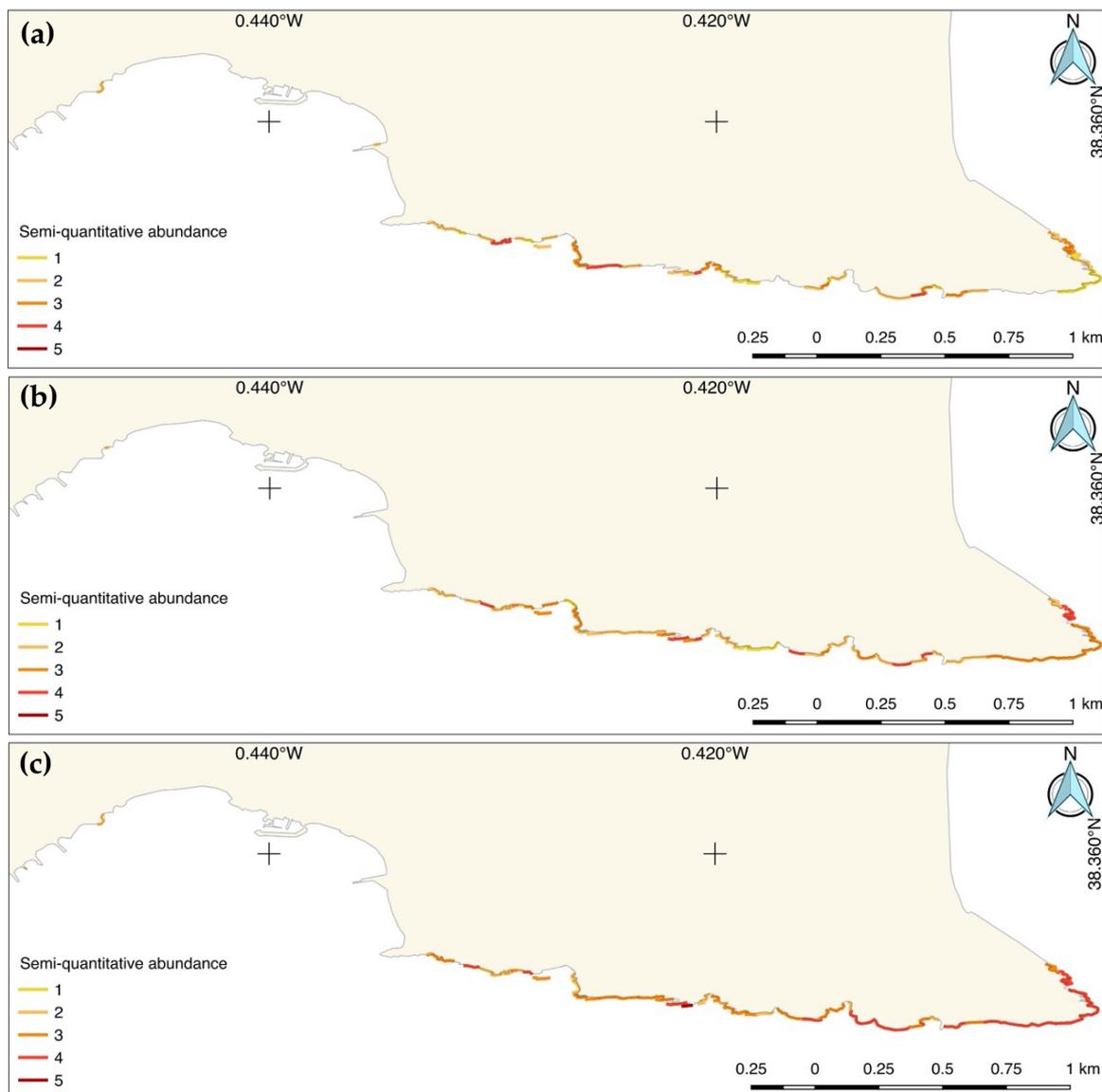
S5: Table. Abundance of *Cystoseira sl* dominant species attending on Wave exposure, Width of the platform and Horizons of the platform. Percentage of contribution of each species to the dissimilarity.

Wave Exposure: Low			Wave Exposure: Medium			Wave Exposure: High		
Species	Abundance average	%	Species	Abundance average	%	Species	Abundance average	%
<i>C. compressa</i>	1.15	64.1	<i>C. compressa</i>	0.89	47.2	<i>C. compressa</i>	1.54	46.1
<i>C. amentacea</i> var. <i>stricta</i>	0.72	14.8	<i>C. amentacea</i> var. <i>stricta</i>	1.24	51.4	<i>C. amentacea</i> var. <i>stricta</i>	1.29	42.9
<i>T. sauvageauana</i>	0.77	21.1	<i>T. algeriensis</i>	0.28	1.4	<i>T. algeriensis</i>	0.87	10.6
Width: Narrow			Width: Medium			Width: High		
Species	Abundance average	%	Species	Abundance average	%	Species	Abundance average	%
<i>C. compressa</i>	1.28	82.1	<i>C. compressa</i>	1.18	37.2	<i>C. compressa</i>	1.49	45.8
<i>C. amentacea</i> var. <i>stricta</i>	0.67	11.7	<i>C. amentacea</i> var. <i>stricta</i>	1.36	54.4	<i>C. amentacea</i> var. <i>stricta</i>	1.34	42.7
<i>C. humilis</i>	0.39	11.7	<i>T. algeriensis</i>	0.51	7.9	<i>T. algeriensis</i>	0.73	10.3
<i>T. sauvageauana</i>	0.28	1.0	<i>C. humilis</i>	0.18	0.4	<i>T. sauvageauana</i>	0.26	1.1
Horizon: Proximal			Horizon: Medium			Horizon: Distal		
Species	Abundance average	%	Species	Abundance average	%	Species	Abundance average	%
<i>C. compressa</i>	1.03	66.6	<i>C. compressa</i>	1.34	58.5	<i>C. compressa</i>	1.51	42.8
<i>C. amentacea</i> var. <i>stricta</i>	0.66	27.4	<i>C. amentacea</i> var. <i>stricta</i>	0.97	36.2	<i>C. amentacea</i> var. <i>stricta</i>	1.85	51.2
<i>T. algeriensis</i>	0.26	3.9	<i>T. algeriensis</i>	0.51	4.5	<i>T. algeriensis</i>	0.77	5.5
<i>T. sauvageauana</i>	0.26	1.6	<i>T. sauvageauana</i>	0.21	0.7	<i>T. sauvageauana</i>	0.11	0.1
<i>C. humilis</i>	0.16	0.5	<i>C. humilis</i>	0.15	0.2	<i>C. humilis</i>	0.2	0.3

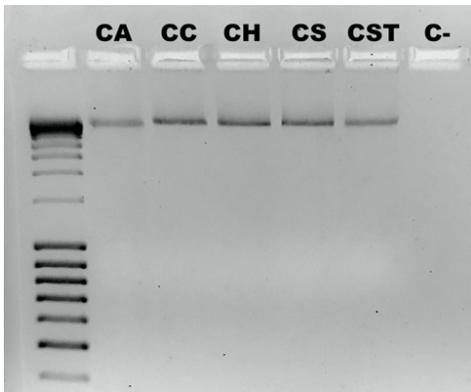
S6: Figure. Canopy height of *Cystoseira sl* recorded in the area of study.



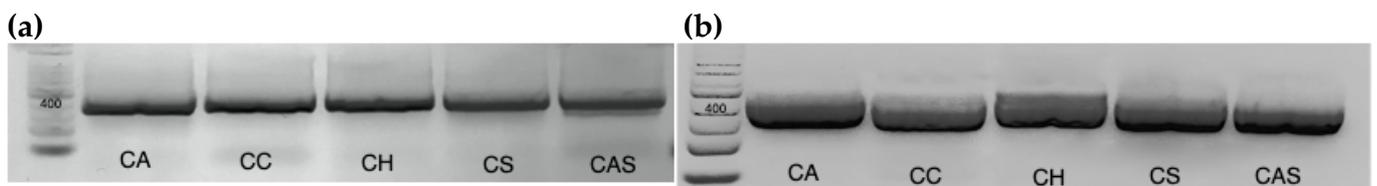
S7: Figure. Semiquantitative abundance of *Cystoseira sl* by horizons in the area of study. (a) Proximal horizon (b) Medium horizon (c) Distal horizon. Legend: 1: One isolated algae. 2: Several isolated individuals. 3: *Cystoseira sl* patches. 4: Discontinuous belts of at least one species. 5: Continuous belts of one or more species.



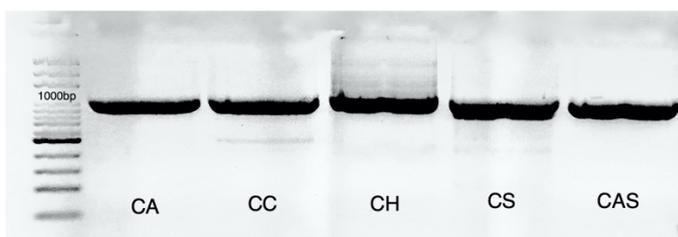
S8: Figure. Quality electrophoresis DNA gel on 2% agarose. Legend: CA: *T. algeriensis*. CC: *C. compressa*. CH: *C. humilis*. CS: *T. sauvageauana*. CST: *C. amentacea* var. *stricta*. C⁻: Negative control.



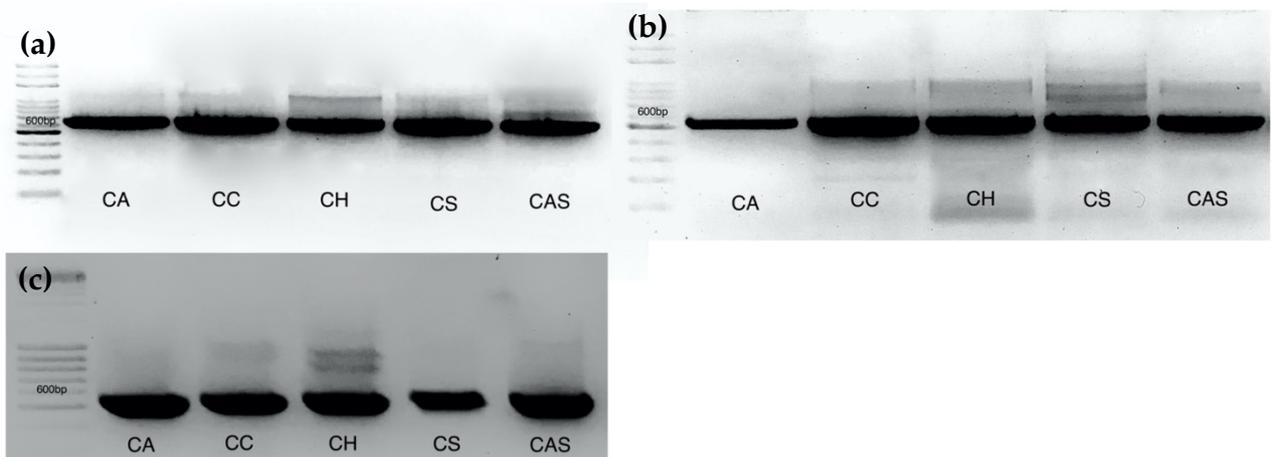
S9: Figure. (a) Quality electrophoresis DNA gel of mt23S primer. **(b)** Quality electrophoresis DNA gel of mt23SB primer. Legend: CA: *T. algeriensis*. CC: *C. compressa*. CH: *C. humilis*. CS: *T. sauvageauana*. CST: *C. amentacea* var. *stricta*.



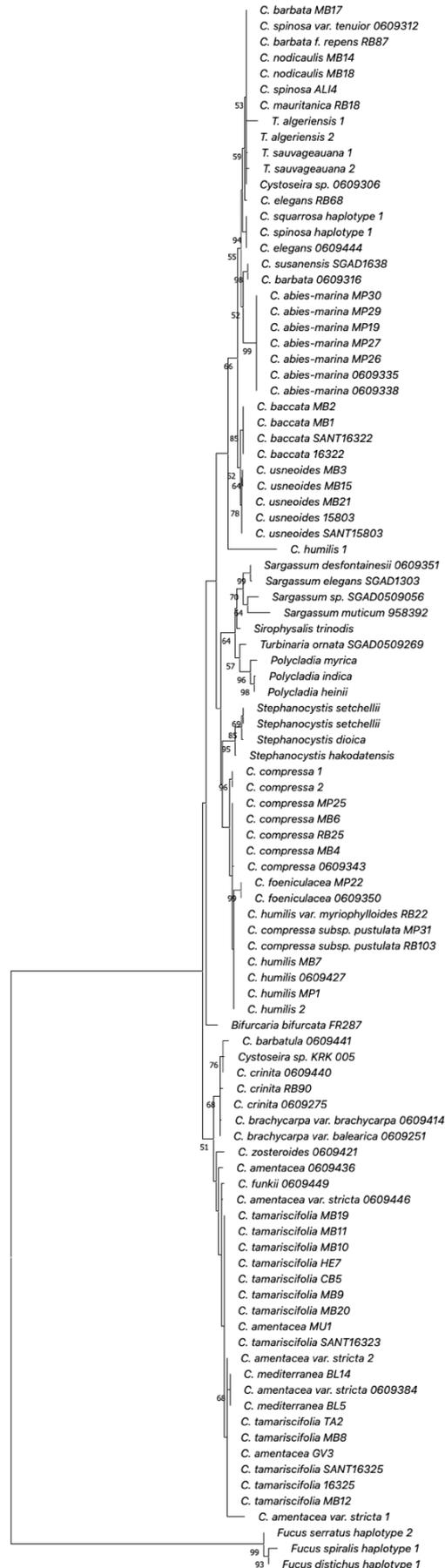
S10: Figure. Quality electrophoresis DNA gel of tRNA-LysB primer. Legend: CA: *T. algeriensis*. CC: *C. compressa*. CH: *C. humilis*. CS: *T. sauvageauana*. CST: *C. amentacea* var. *stricta*.



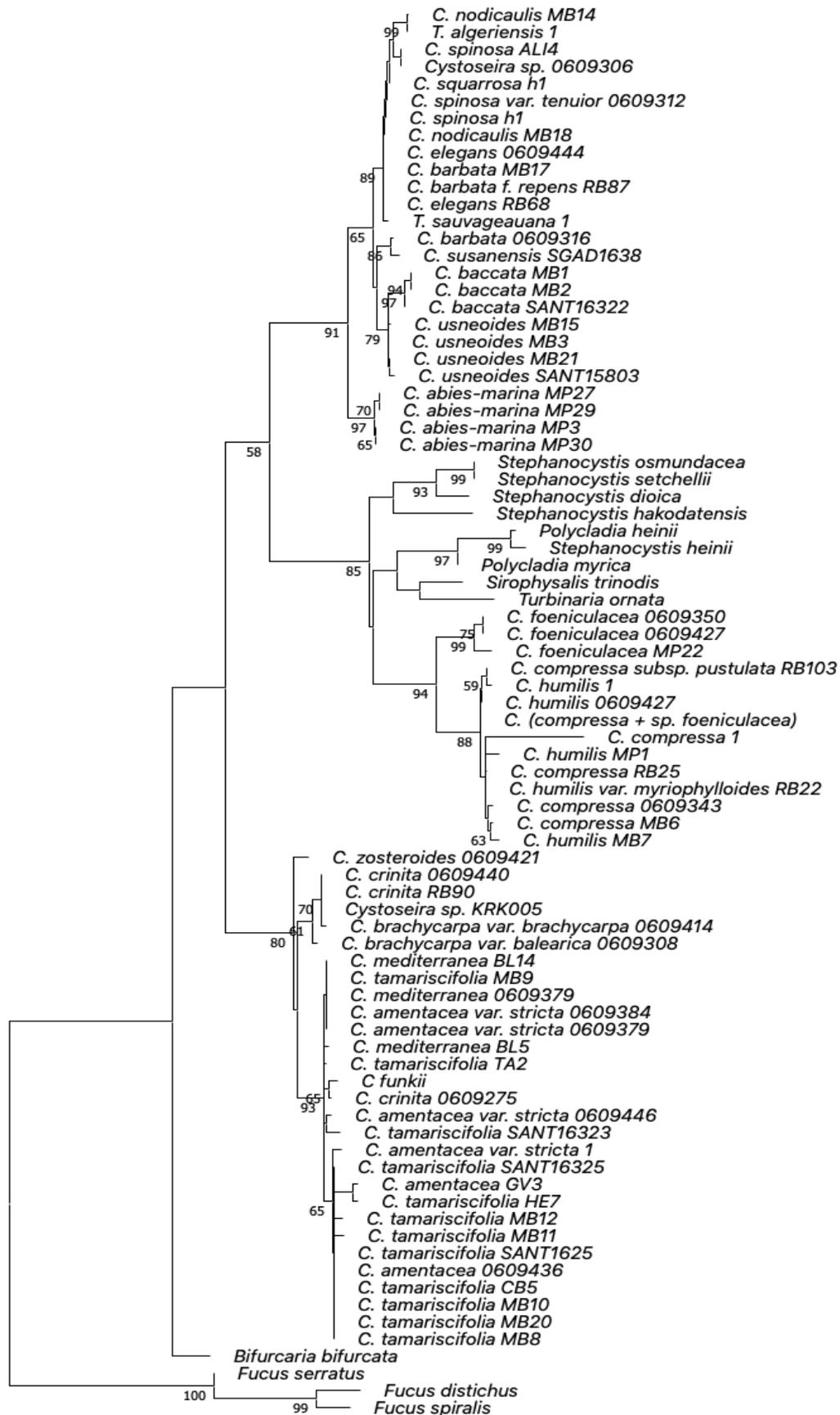
S11: Figure. (a) Quality electrophoresis DNA gel of psbA-FR primer. **(b)** Quality electrophoresis DNA gel of psbA-FR2 primer. **(c)** Quality electrophoresis DNA gel of psbA-F2R primer. Legend: CA: *T. algeriensis*. CC: *C. compressa*. CH: *C. humilis*. CS: *T. sauvageauana*. CST: *C. amentacea* var. *stricta*.



S12: Figure. Maximum likelihood phylogenetic tree obtained with NNI on mt23S sequences of samples from *Sargassaceae* family. Values of branches represent maximum likelihood bootstrap support values (>50%). *Cystoseira sl* samples sequenced in this study labelled with 1 or 2.



S13: Figure. Maximum likelihood phylogenetic tree obtained with NNI on tRNA-Lys spacer sequences of samples from *Sargassaceae* family. Values of branches represent maximum likelihood bootstrap support values (>50%). Samples sequenced in this study labelled with 1.



0.10

S14: Figure. Maximum likelihood phylogenetic tree obtained with NNI on psbA sequences of samples from *Sargassaceae* family. Values of branches represent maximum likelihood bootstrap support values (>50%). Samples sequenced in this study labelled with 1, 2 or 3.

