Supplementary materials *for* Nordic Blue Carbon ecosystems: Status and outlook

Table S1. The length of the Nordic coastline, based on Sayre et al. (2019). Estimates are based on a 30 m resolution (i.e., 1:60 000 scale)) and therefore excludes many small islands, which implies that countries with an island-rich archipelago (e.g. Norway) are greatly underestimated. However, Sayre et al. (2018) used the same approach across countries, making the various estimates comparable. (In contrast, e.g. the World Factbook (https://en.wikipedia.org/wiki/List_of_countries_by_length_of_coastline) does not provide the scale of measurement nor information on whether the figures are reported using the same scale).

Country	**Coastline (km)**
Greenland	94874
Iceland	10060
Faroe Islands	886
Norway	53751
Svalbard	7102
Denmark	6741
Sweden	22331
Finland	1250
Total Nordic	224087
% of World	9%

Table S2. Bibliometric search conducted in the Web of Science (WoS) *"Science Citation Index Expanded (SCI-EXPANDED) 1900-present*" on 17 July 2021. Queries are listed along with the number of hits. General query notes: While the bibliometric search provides an indication of the research effort, it should be noted that WoS does not include all publications; e.g. reports and some journals are not represented in WoS. Search field codes: TS: Topic; AD: Address.

Query description	Hits
Query 1 (Overall): (TS=((Greenland OR Greenlandic OR Norway OR Norwegian OR Iceland OR Icelandic OR "Faroe Islands" OR Faroese OR Denmark Or Danish OR Sweden OR Swedish OR Finland OR Finnish OR Nordic) AND ("Salt marsh" OR "saltmarsh" OR "tidal marsh" OR "reed belt" OR "Phragmites australis" OR Eelgrass OR Zostera OR Ruppia OR Zannichellia OR seaweed OR macroalga OR Fucus OR Ascophyllum OR Fucales OR kelp OR Laminariales))) AND (AD=(Greenland OR Norway OR Iceland OR "Faroe Islands" OR Denmark OR Sweden OR Finland))	893
Query 2 (by habitat): Query 1 AND, respectively:	
- "Salt marsh" OR "saltmarsh" OR "tidal marsh" OR "reed belt" OR "Phragmites australis"	*180*
- "Eelgrass OR Zostera OR Ruppia OR Zannichellia	*208*
- "seaweed OR macroalga OR Fucus OR Ascophyllum OR Fucales OR kelp OR Laminariales"	*521*
Query 3 (by country): Query 1 AND, respectively:	
- "Greenland OR Greenlandic"	53
- "Norway OR Norwegian"	259
- "Iceland OR Icelandic"	54
- "Faroe Islands" OR Faroese"	8
- "Denmark Or Danish"	374
- "Sweden OR Swedish"	249
- "Finland OR Finnish"	129
Query 4 (Blue Carbon): Query 1 AND (TS=("blue carbon" OR "carbon sequestration" or "carbon stock" or "carbon sink" or "carbon storage") Studies identified by the search: Jensen et al., 2006; Gong et al., 2014; Röhr et al., 2016; Dahl et al., 2016b; Dahl et al., 2018; Kindeberg et al., 2018; Bekkby et al., 2019; Brattland et al., 2019; Gustafsson and Norkko, 2019; Dahl et al., 2020a; Dahl et al., 2020b; Filbee-Dexter et al., 2020; Pedersen et al., 2020; van Son et al., 2020; Vondolia et al., 2020; Gundersen et al., 2021; Martínez-Garzía et al., 2021. Only 17 of the 893 publications were identified by this query, with the vast majority published since 2016. Eight of these addressed eelgrass (Röhr et al., 2016; Dahl et al., 2016b, 2018, 2020a, 2020b; Kindeberg et al., 2018; Gustafsson and Norrko, 2019; Martínez-Garzía et al., 2021), seven addressed macroalgae (Bekkby et al. 2019; Brattland et al. 2019; Filbee-Dexter et al. 2020; Pedersen et al., 2020; van Son et al., 2020; Vondolia et al., 2020; Gundersen et al., 2021) and two addressed salt marshes (Jensen et al. 2006; Gong et al. 2014).	17

These 17 Nordic BC studies represent a minimum estimate as at least some studies addressing Nordic eelgrass C-stocks were not captured by the search. The query failed to identify at least one study (Marbá et al., 2018) among the hits of query 1 although it quantifies BC-stocks; the reason being that it doesn't contain the BC-search terms of query 4 in title, abstract or key words. Also, two studies (Röhr et al., 2018; Ward, 2020) which address BC in the Nordic region were not identified in neither query 1 or 4; Röhr et al. (2018) because it does not include the search terms on the Nordic countries and Ward (2020) because it does not include any of the habitat-related search terms. Some studies from neighboring areas, e.g., the Wadden Sea salt marshes south of the Danish border (Mueller et al., 2019), which relate closely to Nordic BC research, were also not targeted by the bibliometric search. Also, two recent reports address ecosystem services of Nordic coastal vegetated ecosystems (Gundersen et al., 2017; Hancke et al., 2018a).	

Table S3. Environmental monitoring efforts, programs, and initiatives at regional and national level.

Country BC habitat	Parameter	Areas (ar) /sites (si)	Frequency (#/year)	Program/Reference
Greenland				
Salt marsh	-	-	-	-
Seagrass	-	-	-	-
Macroalgae	Growth, composition, cover, depth distribution	3 ar (Nuuk, Disko, Young Sound) /7 si (3, 3, 1)	1	Greenland Ecosystem Monitoring (www.g.e.m.dk)
Iceland				
Salt marsh	-	-	-	-
Seagrass	-	-	-	-
Macroalgae	-	-	-	-
Faroe Islands				
Salt marsh	-	-	-	-
Seagrass Macroalgae	-	-	-	-
Norway				
Salt marsh	-	-	-	-
Seagrass	Depth limit, cover, ecological status, epiphytes	Skagerrak: 6-8 si North Sea: 3-4 si Norw. Sea S: 2 si Norw. Sea N: 2 si Barents Sea: 1 si	1/1 1/1 1/1 1/1 1/1	ØKOKYST monitoring program. ØKOKYST Økosystemovervåking I Kystvann (Ecosystem Monitoring in Coastal Waters) (Norwegian Environment Agency). Available at: www. miljodirektoratet.no/ansvarsomrader/overvaking-arealplanlegging/miljoovervaking/overvakingsprogrammer/ basisovervaking/ okokyst/ (Accessed 2021-12-15).
Macroalgae	Reduced Species List (RSL) for intertidal macroalgae species	North Sea: 16-18 si Norw. Sea S: 5 si Norw. Sea N: 19-26 si Barents Sea: 8-27 si	1-2/5 1-2/5 1-2/5 1-2/5	ØKOKYST monitoring program
Macroalgae	Index for lower depth limit of 9 subtidal macroalgae (MSMDI)	Skagerrak: 10-16 si North Sea: 4 si	1/1 2-5/5	ØKOKYST monitoring program
Macroalgae	Density, canopy height, epiphytes, sea urchin grazing, (For subset of appx. 40 si y^{-1}: age structure, morphology, epiphytes)	2 ar / +150 si	1/1	Tangle kelp visual surveys. 2013-2021.Tareundersøkelser/Tilstandsvurdering av høstefelt for stortare, Institute of Marine Research" www.hi.no/hi/nettrapporter?query=tareunders%C3%B8kelser
Sweden				
Salt marsh	-	-		
Seagrass	Depth limit	Swedish west coast	1/1	SwAM, County Board of Västra Götaland (Hammar et al., 2018)
Macroalgae	Ecological status,		1/1	National monitoring program led by SwAM, following methods in Lindegarth et al., 2016

	spatiotemporal distribution			
Denmark				
Salt marsh	Area extent, composition	Habitat types	1/5, 2/5	Miljøstyrelsen et al., 2017 p.145
Seagrass	Depth limit, cover, composition	20 ar/98 si 92 ar/423 si 8 ar/56 si	1/1 1/1, 2/5 1/5 1/5	Control monitoring Operational monitoring Habitat monitoring https://mst.dk/media/141463/novana-2017-21-programbeskrivelse.pdf - page=11Miljøstyrelsen et al., 2017 p.11
Macroalgae	Cover, composition	14 ar/38 si 27 ar/82 si 8 ar/16 si	1/1 1/5, 2/5 1/5	Control monitoring Operational monitoring Habitat monitoring https://mst.dk/media/141463/novana-2017-21-programbeskrivelse.pdf - page=11 (Miljøstyrelsen et al., 2017 p.11)
Finland				
Salt marsh	Managed sites and threatened-species	35 000 ha	1/1, 1/3	Helmi Habitats Programme 2021–2030 (cultural habitats incl. coastal meadows) (Gummerus-Rautiainen et al., 2021)
Seagrass				
Macroalgae	Depth limit, cover	37 ar/98 si	1/3, 1/1	Manual for marine monitoring in Finland 2020–2026 (Rantajärviet al. 2020) Operational monitoring, depth limits, macrophyte transects

Table S4. Terminology of saltmarsh habitats.

To facilitate comparisons across the EU, the INSPIRE Directive (https://inspire.ec.europa.eu/inspire-legislation/26) requires all Member States to use EUNIS (https://eunis.eea.europa.eu/index.jsp), and the habitat codes in Annex I of the Habitats Directive (https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm). The relevant habitat types under the EU Habitat Directive Annex I are (codes in parenthesis): • *Salicornia* and other annuals colonizing mud and sand (1310), • Spartina swards (*Spartinion maritimae*) (1320), • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330) and • Boreal Baltic coastal meadows (1630).
An interpretation manual describes the correspondence between the above-listed habitat types and other classification systems (European Union 2013).
Regarding Norwegian salt marsh terms, Borgersen et al. (2020) suggested a set of five criteria to determine which NiN (Nature in Norway) types that fall under the term salt marshes in Norway (see section *Norway*). The criteria used were related to these five characteristics: 1) drying time, 2) water saturation, 3) salinity, 4) substrate type and 5) vegetation (see Borgersen et al. 2020 for more details). Borgersen et al. (2020) concluded that six classes under the Norwegian classification system (NiN) likely fit with the term salt marsh. These are M8, T11-3, T12-1, T12-2, T12-3 and T33-C-1 (Artsdatabanken.no).

Table S5. Overview of sites (country, location, position) with information on sediment C-stocks and associated references (see map in Fig. 3B).

BC habitat *Country*	Location	Lat	Long	Core depth *cm*	Ref
Salt marsh					
Denmark	Horsens fjord	55.87568	10.01888	43	Graversen et al., 2022
Denmark	Randers fjord	56.60705	10.30813	43	Graversen et al., 2022
Denmark	Mariager fjord	56.70865	10.16629	43	Graversen et al., 2022
Norway	Alta	69.9783	23.4315	>100	Ward, 2020
Norway	Stabbursnes	70.1942	24.9275	>100	Ward, 2020
Norway	Birtvarre	69.4959	20.8204	>100	Ward, 2020
Norway	Storfjord	69.2713	19.9266	>100	Ward, 2020
Norway	Storslett	69.7819	20.9953	>100	Ward, 2020
Seagrass					
Greenland	Ameralik	64.25	-51.58	10	Marbá et al., 2018
Greenland	Kapisillit	64.47	-50.22	10	Marbá et al., 2018
Greenland	Kobbefjord	64.15	-51.55	10	Marbá et al., 2018
Norway	Rovika	67.21	15.00	25	Röhr et al., 2018*
Denmark	Dalby Bugt	55.51861	10.61806	10	Kindeberg et al., 2018*
Denmark	Kertinge Nor	55.44778	10.55833	10	Kindeberg et al., 2018*
Denmark	Little Belt, muddy	55.48263	9.7326	10	Kindeberg et al., 2018*
Denmark	Little Belt, sandy	55.45263	9.7326	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Nissum31	56.603	8.25433	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Agerø2	56.671	8.58617	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Agerø8	56.57564	8.54317	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Agerø11	56.70833	8.533	10	Kindeberg et al., 2018*
Denmark	Limfjorden, TH9	56.94883	8.78597	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Skive13	56.63235	9.12508	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Skive29	56.60992	9.12043	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Lovns26	56.68053	9.22817	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Løgstør43	57.00772	9.05642	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Nibe33	57.03128	9.41315	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Nibe34	57.04938	9.74358	10	Kindeberg et al., 2018*
Denmark	Limfjorden, Nibe45	57.03928	9.63615	10	Kindeberg et al., 2018*
Denmark	Århus Bay, AAB03	56.12508	10.2268	10	Kindeberg et al., 2018*
Denmark	Århus Bay, AAB05	56.20017	10.289	10	Kindeberg et al., 2018*
Denmark	Århus Bay, AAB07	56.27692	10.39092	10	Kindeberg et al., 2018*
Denmark	Århus Bay, AAB09	56.27583	10.46325	10	Kindeberg et al., 2018*
Denmark	Århus Bay, AAB10	56.25475	10.47133	10	Kindeberg et al., 2018*
Denmark	Århus Bay, AAB17	56.2581	10.3522	10	Kindeberg et al., 2018*
Denmark	Odense Fjord, OF1	55.46998	10.44722	10	Kindeberg et al., 2018*
Denmark	Odense Fjord, OF2	55.52747	10.47747	10	Kindeberg et al., 2018*
Denmark	Odense Fjord, OF3	55.5175	10.53457	10	Kindeberg et al., 2018*
Denmark	Odense Fjord, OF4	55.5217	10.6109	10	Kindeberg et al., 2018*
Denmark	Horsens Fjord, HF1	55.82148	10.0544	10	Kindeberg et al., 2018*
Denmark	Horsens Fjord, HF2	55.87252	10.0328	10	Kindeberg et al., 2018*
Denmark	Horsens Fjord, HF3	55.83327	9.9704	10	Kindeberg et al., 2018*
Denmark	Vejle Fjord, VF1	55.70618	9.59957	10	Kindeberg et al., 2018*
Denmark	Vejle Fjord, VF2	55.7055	9.61047	10	Kindeberg et al., 2018*
Denmark	Vejle Fjord, VF3	55.69422	9.64728	10	Kindeberg et al., 2018*
Denmark	Vejle Fjord, VF4	55.69183	9.65387	10	Kindeberg et al., 2018*
Denmark	Vejle Fjord, VF5	55.6668	9.71693	10	Kindeberg et al., 2018*
Denmark	Little Belt, LB16	55.00667	9.96493	10	Kindeberg et al., 2018*
Denmark	Little Belt, LB5	55.1667	9.53178	10	Kindeberg et al., 2018*
Denmark	Little Belt, LB4	55.25433	9.77833	10	Kindeberg et al., 2018*

Denmark	Little Belt, WB	55.36683	9.78617	10	Kindeberg et al., 2018*
Denmark	Little Belt, AF13	55.02905	9.61402	10	Kindeberg et al., 2018*
Denmark	Little Belt, BS8	55.10833	9.58533	10	Kindeberg et al., 2018*
Denmark	Little Belt, HA3	55.27805	9.68568	10	Kindeberg et al., 2018*
Denmark	Funen, Nyborg	55.30	10.83	25	Röhr et al., 2016
Denmark	Funen, Kertinge	55.44	10.55	25	Röhr et al., 2016
Denmark	Funen, Lunkebugt	54.99	10.65	25	Röhr et al., 2016
Denmark	Funen, Thurøbund	55.04	10.69	25	Röhr et al., 2016
Denmark	Funen, Dalby	55.53	10.60	25	Röhr et al., 2016
Denmark	Limfjorden, Løgstør	57.01	9.05	25	Röhr et al., 2016
Denmark	Limfjorden, Lovns	56.62	9.28	25	Röhr et al., 2016
Denmark	Limfjorden, Agerø3	56.67	8.58	25	Röhr et al., 2016
Denmark	Limfjorden, Visby	56.77	8.48	25	Röhr et al., 2016
Denmark	Limfjorden, Agerø12	56.69	8.58	25	Röhr et al., 2016
Sweden	Snäckelbackebukten	58.36	11.56	25	Röhr et al., 2018*
Sweden	Torgestad	58.34	11.55	25	Röhr et al., 2018*
Sweden	Lindholmen	58.26	11.48	25	Röhr et al., 2018*
Sweden	Bökevik	58.25	11.45	25	Röhr et al., 2018*
Sweden	Hakefjord	58.04	11.80	25	Röhr et al., 2018*
Sweden	Wallhamn	58.01	11.71	25	Röhr et al., 2018*
Sweden	Storebrorn	57.89	11.66	25	Röhr et al., 2018*
Sweden	Finnsbo	58.30	11.78	25	Röhr et al., 2018*
Sweden	Kristineberg	58.25	11.45	25	Röhr et al., 2018*
Sweden	Stora Sand	58.81	17.69	25	Röhr et al., 2018*
Sweden	Långskär	58.80	17.68	25	Röhr et al., 2018*
Sweden	Torö	58.80	17.79	25	Röhr et al., 2018*
Sweden	Getevik	58.274	11.50519	25	Dahl et al., 2020a
Sweden	Sladholmen	58.34539	11.36883	25	Dahl et al., 2020a
Sweden	Styrsvik	58.36636	11.37731	25	Dahl et al., 2020a
Sweden	Rixö	58.36378	11.44475	25	Dahl et al., 2020a
Sweden	Trommekilen	58.34789	11.45714	25	Dahl et al., 2020a
Finland	Saksholm	60.12	21.86	25	Röhr et al., 2018*
Finland	Ängsö	60.11	21.71	25	Röhr et al., 2018*
Finland	Kolaviken	59.82	22.99	25	Röhr et al., 2018*
Finland	Ryssholmen	59.83	23.08	25	Röhr et al., 2018*
Finland	Tvärminne	59.84	23.24	25	Röhr et al., 2018*
Finland	Fårø	59.92	21.81	25	Röhr et al., 2018*
Finland	Lyddaren	60.13	21.44	25	Röhr et al., 2018*
Finland	Långören	59.88	21.74	25	Röhr et al., 2018*
Macroalgae					
Norway	Frohavet, Trøndelag	63.9489	9.4852	45	Frigstad et al., 2021
Norway	Frohavet, Trøndelag	63.9953	9.5895	45	Frigstad et al., 2021
Norway	Frohavet, Trøndelag	63.8523	9.2878	45	Frigstad et al., 2021
Norway	Frohavet, Trøndelag	63.7715	9.1367	45	Frigstad et al., 2021

*Results compiled in the referenced publication, which cite the original study.

Table S6. Examples of restoration sites for BC habitats (see map in Fig. 3D). All the Norwegian restoration efforts and efforts reported by Gagnon et al. 2021 are experimental/mini-scale (about $2m^2$).

BC habitat *country*	Location	Size (ha)	Year initiated	Ref /funding
Salt marsh				
Denmark	Gyldensteen Strand	?	2014	www.avjf.dk/avjnf/naturomraader/gyldensteen-strand/; Aage V. Jensen foundation
Seagrass				
Denmark	Horsens Fjord	1*	2017	Flindt et al., 2020; Lange et al. 2022/EPA
Denmark	Vejle Fjord	4-5*	2019	Flindt et al., 2020/Velux Foundation, national funds
Denmark	Odense Fjord	?	2019	Flindt et al., 2020/national funds
Denmark	Lunkebugten (South Funen Archipelago)	?	2019	Flindt et al., 2020/national funds
Denmark	Asaa rende (NW Kattegat)	1.5	Planned	/Velux Foundation
Denmark	Limfjorden	-	2017	Gagnon et al., 2021
Sweden	Bohuslän (12 sites)	-	2016	Moksnes et al., 2016, 2018
Sweden	Tummen (Gothenburg)	1.7	2016	Gothenburg harbor/ Marine-monitoring
Sweden	Askeröfjorden	1	2021	County board of Västra Götaland/ University of Gothenburg (Zorro project)
Sweden	Långevik and Tångudden (Sydkoster)	0.8	2020	County board of Västra Götaland/ University of Gothenburg (Zorro project)
Sweden	Gåsö (Lysekil)	0.16	2019	County board of Västra Götaland/ University of Gothenburg (Zorro project)
Sweden	Kalmarsund (5 sites)	-	2016	County board of Kalmar /Linnè university Life coast adapt
Sweden	Skåne (4 sites)	0.12	2020	www.lifecoastadaptenglish.se/
Norway	Varildsfjorden	-	2017	Gagnon et al., 2021
Norway	Ølbergholmen	-	2017	Gagnon et al., 2021
Finland	Sackholm	-	2017	Gagnon et al., 2021
Finland	Ängsö	-	2017	Gagnon et al., 2021
Finland	Fårö	-	2017	Gagnon et al., 2021
Macroalgae				
Norway	Vega	-	1988	Leinaas and Christie, 1996)
Norway	Tromsø	-	2018	Carlsson and Christie, 2019
Norway	Vega	-	2017	Garrabou et al., 2017
Norway	Arendal	-	2018	Fredriksen et al., 2020
Norway	Porsangerfjorden	-	2008	Strand et al., 2020
Norway	Fagervika	-	2018	Strand et al., 2020
Denmark	Kattegat	4.5	2008	www.bluereef.dk/EU Interreg, Danish EPA
Denmark	Livø reef, Limfjorden	Pilot	2017	Stæhr et al., 2020/Danish EPA
Denmark	Als (10 small reefs	small	2018	Alsstenrev.dk/Velux Foundation
Denmark	Gilleleje Flak (Kattegat)	1.3	planned	/Danish EPA
Denmark	Nørrerev and Veddelev (Roskilde Fjord)		planned	/Danish EPA
Sweden	Björnöfjärden Östermarsfladen (both Stockholm archipelago)		2013 2020	Kautsky et al., 2020/ Skärgårdsstifelsen.se

*Including subsequent expansion of the restored plots.

Table S7. Examples of ecosystem functions/services in addition to carbon sequestration for Nordic BC habitats, sorted in order of function, i.e. support of biodiversity, mitigation of eutrophication, climate change adaptation, and protection of cultural heritage.

Function/service by habitat	Nordic country	References
Support of biodiversity (Feeding/nursery ground etc.)		
Salt marshes	Denmark	Clausen and Clausen, 2014
Seagrasses	Nordic/Baltic region	Boström et al., 2014; Gundersen et al., 2017, Belgrano et al., 2018; Hancke et al., 2018a, 2018b
Seagrasses	Norway	Fredriksen et al., 2005, 2010
Seagrasses	Denmark	Thormar et al., 2016; Balsby et al., 2017; Clausen et al., 2013; Flindt et al. 2020
Seagrasses	Sweden	Boström and Bonsdorff, 1997; Baden and Boström, 2001, Pihl et al., 2006; Baden et al., 2010; Gullström et al., 2012; Staveley et al., 2017, 2020
Seagrasses	Finland	Boström and Bonsdorff, 1997; Boström et al. 2004, 2006
Intertidal macroalgae	Norway	Fredriksen et al. 2005
Subtidal macroalgae	Sweden; Finland, Baltic	Wikström and Kautsky, 2007; Schagerström et al., 2014; Jormalainen et al., 2017
Subtidal macroalgae	Norway	Christie et al., 2003, 2009 ((in)vertebrates); Lorentsen et al., 2010 (birds); Norderhaug et al., 2005 (fish); Christie et al., 2009 (fauna); Fagerli et al., 2014 (crab); Rinde et al., 2014, Gundersen et al., 2017; Belgrano et al., 2018; Hancke et al., 2018a
Mitigation of eutrophication		
Seagrasses	Nordic region	Gundersen et al., 2017; Belgrano et al., 2018; Hancke et al., 2018a
Seagrasses	Denmark	Flindt et al. 2020
Seagrasses	Sweden	Moksnes et al., 2008; Buapet et al., 2013; Cole and Moksnes, 2016; Dahl et al., 2020a; Moksnes et al., 2021
Seagrasses	Finland	Angove et al., 2018
Subtidal macroalgae	Nordic region	Gundersen et al., 2017; Belgrano et al., 2018; Hancke et al., 2018a; Christie et al., 2019;
Subtidal macroalgae (farmed)	Denmark	Bruhn et al., 2020
Climate change adaptation: acidification buffer		
Intertidal macroalgae	Greenland	Duarte and Krause-Jensen, 2018; Krause-Jensen et al., 2015
Intertidal macroalgae (Fucus)	Baltic Sea (N. Germany)	Wahl et al., 2018
Subtidal macroalgae/ kelps (*S. latissima*)	Greenland	Krause-Jensen et al., 2015, 2016
Subtidal macroalgae	Sweden	Kalokora et al., 2020
Climate change adaptation: Coastal protection/stabilization of sediment		
Salt marshes (reeds)	Finland	Kaitaranta et al., 2013
Seagrasses	Denmark	Flindt et al. 2020
Subtidal macroalgae	Norway	Mork, 1996; Løvås and Tørum, 2001
Climate change adaptation – Sediment accretion		
Salt marshes	Denmark	Graversen et al., 2022
Seagrasses	Greenland	Marbá et al., 2018
Protection of cultural heritage		
Seagrasses	Denmark	Krause-Jensen et al., 2019b
Subtidal macroalgae	Norway	Hancke et al., 2018b

Table S8. Survey during Nordic Blue Carbon Initiative meeting CPH Sept 2019 on why participants find a Nordic Blue Carbon collaboration relevant (https://www.thebluecarboninitiative.org/scientific-group-workshops/copenhagen2019).

Science
• Identifying research Qs • Placing BC in larger ecosystem valuation frameworks • Natural flux, stock info. to help get BC systems in GHG framework • White paper for inventory person/team, emission factor database, determine managed wetlands extent, conversion activities, perhaps with Tier One values • Proposals to support network and salt marsh mapping • Integrate BC data into other data systems already prepped for inventory like forests
Awareness Raising
• Nordic BC network – like seagrass network but with policy, joint research and shared management knowledge, translation into policy, possible advisory board of managers and politicians • Define common ground for Nordic countries – marshes as practice in NDCs, first step before tackling kelp, mappable though little data available, BUT possibly broaden out to other systems • Communications platform to encourage social mobilization, not just awareness • Target inventory teams, given that BC is sometimes a small fraction of land and gets neglected, need arguments from forestry people in order to feedback to science priorities • Public; policymakers – provide recommendations to Nordic council ministers, step two for policy awareness; civil society • Citizen science as tool for building a common public language for B.C. issues, engaging public, examples are UK salt marsh app, WWF Guillemot bird cam, other cams possibly in seagrass beds – very popular, ghost net fishing app, adopt a meadow like adopt a tree concept, a story about individuals • Connect with regional environmental NGOs, community organizations • Provide forum for connection of different policy groups – climate, oceans • UP - policy, IN - scientists, OUT – public, resource users, communities; strategy for tailoring communications strategy • Cultivate champions within specific ministries • Be real about BC not being the ultimate climate solution, but playing a role for many priorities, have scientific integrity in comms to build credibility
Policy
• Supporting science-based policy • GHG inventories, emissions-based, possible product of Nordic BC network, but still need to figure out where macroalgae/kelp fits so it can be integrated • Integrate BC data into other data systems already prepped for inventory like forests, engage forestry community • EU – look for a way to get BCEs funding • Engage International Partnership for Blue Carbon – government to government, add Nordic Countries
Conservation and Restoration
• Reintroduction of tidal flows

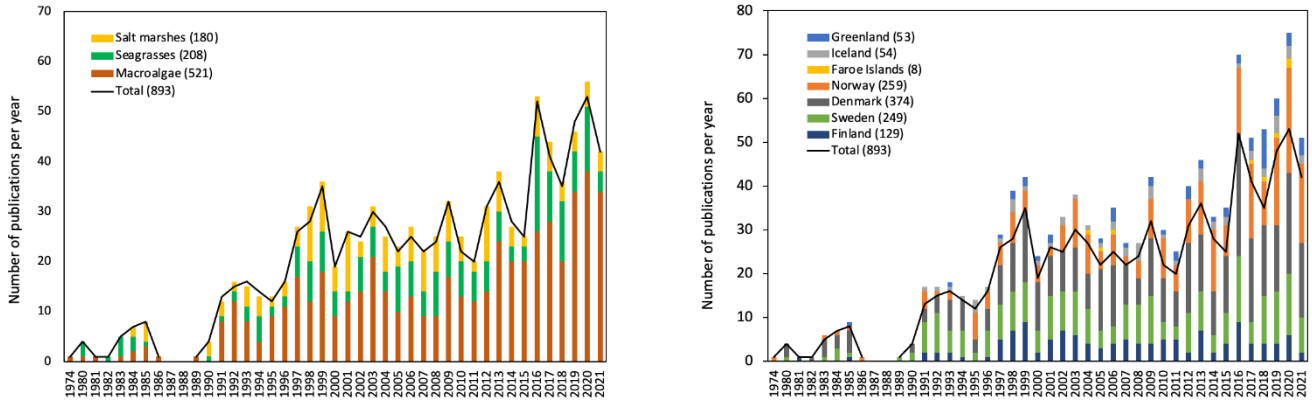
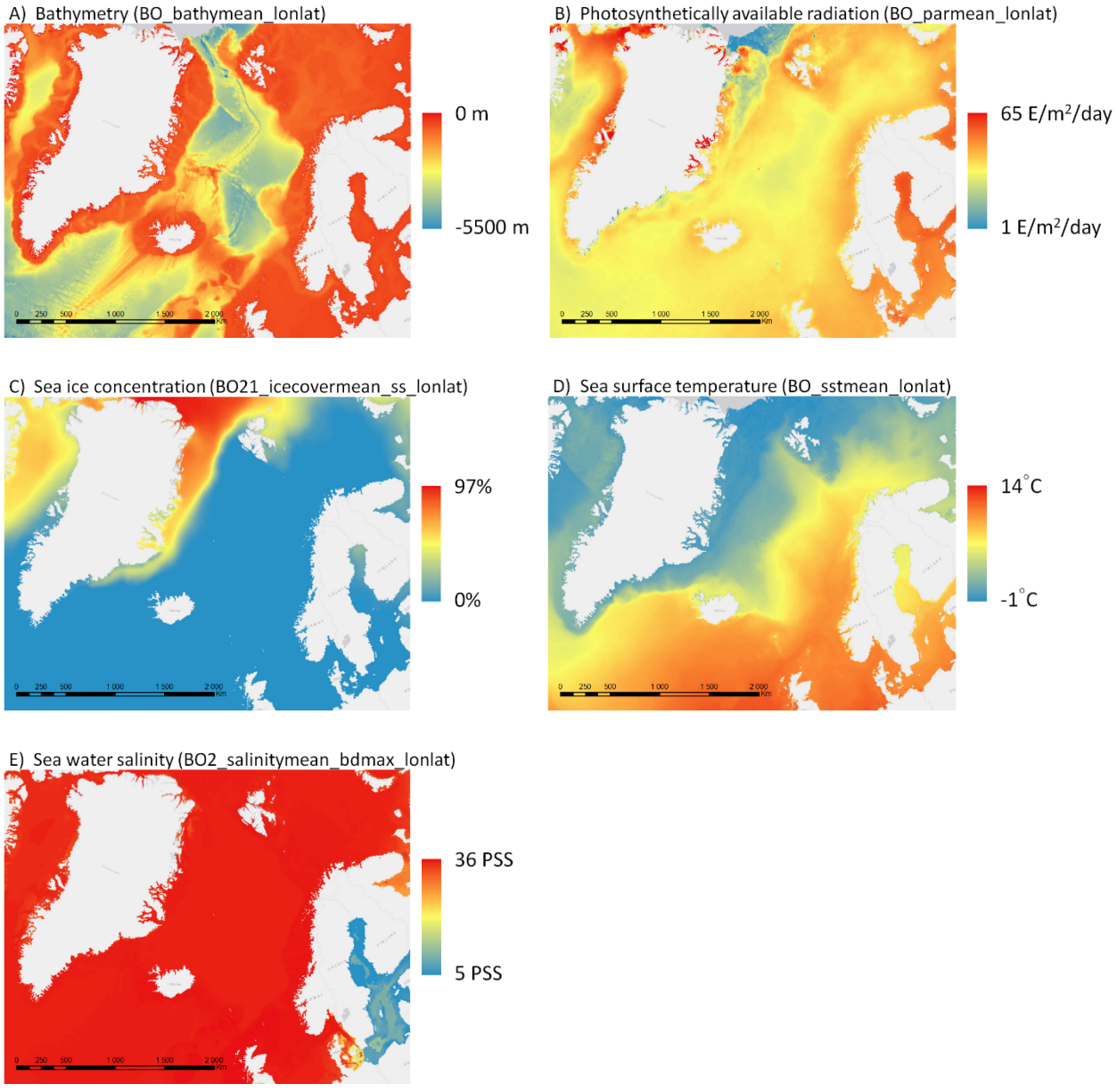


Fig. S1. Bibliometrics for Nordic BC habitats based on search in the Web of Science (Details on search strings and results in Table S3): Number of publications per year on the three main Nordic BC habitat types (salt marshes, seagrasses and macroalgae) as a total and distributed between habitat types (left panel) and by country (right panel). Total number of publications by habitat type, country and total are given in parenthesis in the legends. The sum of publications by habitat type or by country exceeds the total number of publications when studies include several habitat types or several Nordic countries. Overall, only 17 of the identified studies included BC search terms.

The search returned a total of 893 publications from the mid-1970s till today, with more than half of them (521) addressing macroalgae and fewer addressing eelgrass and other rooted vegetation (208) or salt marshes (108) (left panel). The number of publications also varies markedly between the Nordic countries with most representing Denmark (374), Norway (259), Sweden (249) and Finland (129), and much fewer representing Iceland (54), Greenland (53) and Faroe Islands (8) (right panel).

Fig. S2. The Nordic region with characteristic gradients in physicochemical conditions of relevance to BC habitats. From left to right: water depth (bathymetry), photosynthetically available radiation (PAR), sea ice concentration, sea surface temperature (SST) and sea water salinity (SSS). Source: Bio-ORACLE (Tyberghein et al., 2012, Assis et al., 2017). Bio-ORACLE layer codes are given in parentheses.



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