The following supplement accompanies the article

Evidence for limited adaptive responsiveness to large-scale spatial variation of habitat quality

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Supporting Information

Table S1. Number of samples collected in each year and subarea

Stratum & Year	1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2
2006	10	10	39	28	96	34	91	26	15	10	37	27	-	42
2007	9	30	6	-	35	-	64	27	29	33	31	54	-	42
2008	3	-	19	9	16	4	26	3	10	39	5	37	-	24
2009	-	-	14	9	37	33	20	21	28	10	29	71	-	32
2010	-	-	-	-	45	19	52	10	12	-	29	65	-	34
2011	-	-	-	-	-	3	95	32	74	25	77	56	-	122
2015	12	38	47	17	70	16	144	17	71	14	92	82	35	162
2016	-	-	-	-	19	-	68	7	38	21	67	47	-	157

Table S2. Classification of all identified species into the 14 taxonomically or functionally distinct diet groups. When a diet item was too far digested or too fragmentary to be identified to species level, the diet item was classified to a higher taxonomic level.

Diet group/Species	No of occurrence
Benthic fish	
Anarhichas lupus	11
Anarhichas minor	1
Anarhichas sp.	19
Artediellus atlanticus	8
Benthic fish	2
Cottidae sp.	9
Enchelyopus cimbrius	3
Eumicrotremus sp.	1
Gymnelus sp.	2
Hippoglossoides platessoides	14
Icelus spatula	1
Leptoclinus maculatus	1
Lycodes vahlii	2
Macrourus berglax	1
Pleuronectiformes	5
Raja radiata	1
Reinhardtius hippoglossoides	7
Rhinonemus cimbrius	2
Scorpaeniformes	3
Stichaeidae sp.	1
Triglops sp.	14
Triglops pingeli	2
Triglops murrayi	27
Benthic remains	
Actiniaria	5
Annelida	10
Anthozoa	3
Aphrodita spp.	1
Asteroidea	6
Benthic remains	364
Bivalvia	59
Brachyura	8
Chaetognatha	1
Echinodermata	9
Gastropoda	19
Holothuria	145
Hyas spp.	4
Isopoda	59
Lithodes maja	63

Lithodes spp.	1
Majidae	16
Octopoda	12
Ophiuridae	163
Opisthobranchia	10
Paguroidea	2
Polychaeta	262
Sclerocrangon sp.	3
Capelin	
Mallotus villosus	286
Crustacea unidentified	
Acanthephyra pelagica	21
Amphipoda	15
Calanoida	12
Caprellidae	75
Caridea	213
Copepoda	17
Crangonidae	4
Crustacea	370
Cumacea	4
Decapoda	237
Dendrobranchiata	3
Ephyrina hoskynii	2
Eucopia grimaldii	1
Gnathophausia sp.	68
Gnathophausia zoea	19
Lebbeus polaris	15
Lophogastrida	2
Mysida	18
Neognathophausia gigas	3
Ostracoda	1
Paraeuchaeta norvegica	5
Pasiphaeidae	8
Pasiphaea multidentata	22
Pasiphaea tarda	3
Phyllocarida	1
Sclerocrangon sp.	3
Sergia robusta	3
Sergestidae	18
Tanaidacea	7
Euphausiids	
Euphausiacea	994
Meganyctiphanes norvegica	1175
Thysanoessa spp.	21
Thysanoessa inermis	1
Thysanoessa rachii	1

Fish unidentified	
Anguilliformes	2
Argentina silus	2
Clupea harengus	1
Hoplostethus atlanticus	1
Osmeriformes	2
Perciformes	1
Teleostei	818
Gadoids	
Arctogadus glacilis	1
Boreogadus saida	2
Brosme brosme	1
Gadiformes	24
Gadus morhua	131
Gadus ogac	3
Gaidropsarus argentatus	4
Lotidae	3
Melanogrammus aeglefinus	14
Microgadus tomcod	3
Micromesistius poutassou	43
Pollachius virens	3
Gammarids	
Gammaridae	689
Gammarus spp.	104
Hyperiids	
Hyperiidae	334
Hyperia medusarum	2
Hyperia galba	10
Themisto spp.	65
Themisto abyssorum	60
Themisto compressa	252
Themisto libellula	714
Mesopelagic fish	
Alepocephalus spp.	4
Alepocephalus agassizii	3
Argyropelecus hemigymnus	1
Bathylagus spp.	1
Bathylagus euryops	16
Benthosema glaciale	147
Borostomias antarcticus	7
Chauliodus sloani	12
Chauliodus sp.	2
Chiasmodon spp.	2
Cyclothone spp.	75

Gonostoma bathyphilum	1
Gonostomatidae	12
Holtbyrnia macrops	1
Lampadena speculigera	1
Lampanyctus spp.	23
Lampanyctus ater	5
Lampanyctus festivus	2
Lampanyctus intricarius	4
Lampanyctus macdonaldi	31
Lobianchia spp.	1
Malacosteus niger	6
Maurolicus mülleri	3
Myctophidae	154
Myctophum punctatum	77
Myctophum selenops	2
Myctophum spp.	1
Nemichthyidae	8
Notoscopelus spp.	28
Notoscopelus caudispinosus	1
Notoscopelus kroyeri	88
Notolepis rissoi	5
Paralepis atlantica	3
Paralepididae	25
Platytroctidae	7
Poromitra megalops	1
Protomyctophum arcticum	1
Scopelogadus beanii	3
Scopelosaurus lepidus	1
Serrivomer beanii	81
Sternoptychidae	1
Stomias boa boa	7
Stomiidae	1
Trigonolampa miriceps	1
Xenodermichthys copei	3
Other remains	
Cephalopoda	29
Coleoidea	29
Hydrozoa	1
Medusozoa	6
Salpidae	5
Teuthida	83
Pandalus sp.	
Pandalidae	98
Pandalus borealis	113
Pandalus montagui	3
Redfish	

Sebastes sp.	144
Sebastes fasciatus	3
Sebastes norvegicus	23
Sebastes mentella	43
Sebastes viviparus	3
Sandeel	
Ammodytes sp.	63
Ammodytes marinus	12
Ammodytes dubius	3

Table S3. Summary table of the best generalized linear model relating energy reserves (liver index) of cod to fish length and subarea. Df, degrees of freedom.

Predictor	Df	Deviance	Residual Df	F-value	p-value
Subarea	13	219.4	424.45	151.4	< 0.001***
Fish length	1	9.6	414.81	86.4	< 0.001***

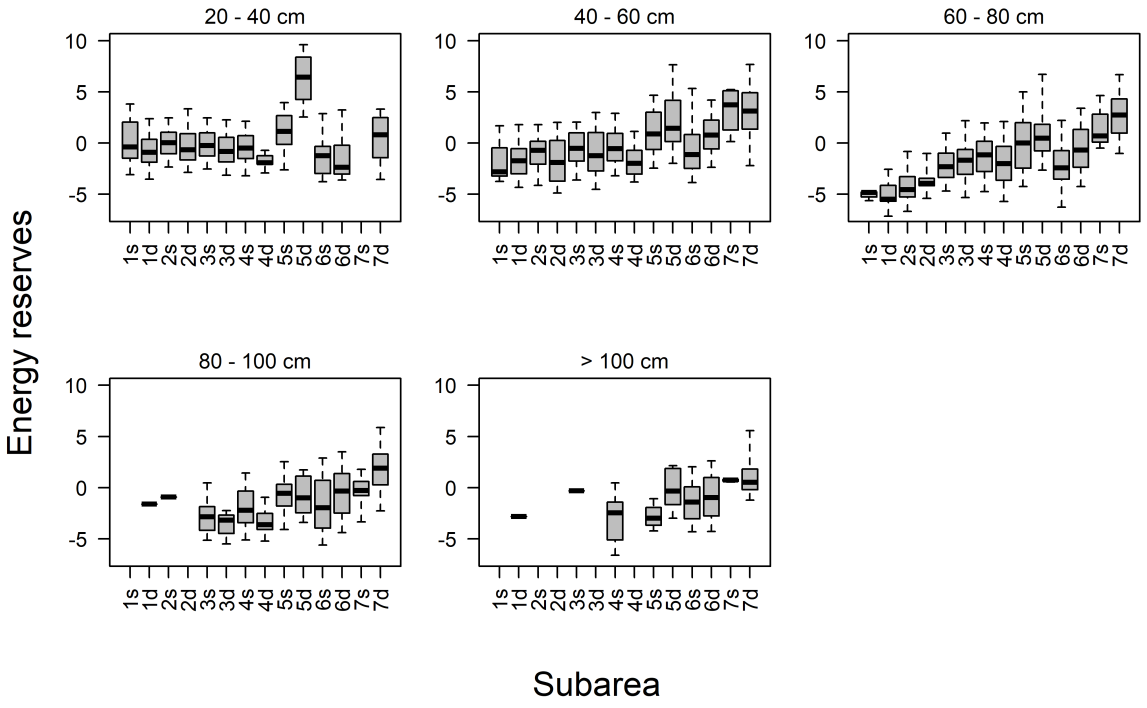

Fig. S1. Variation of the energy reserves (liver index) of cod in relation to the 14 different subareas. Subarea numbers (1-7) correspond to a west-east gradient off Greenland. Data are presented for five different fish length classes. In order to reduce the effect of fish size on energy reserves, model residuals (GAM with energy reserves as response and year and length as predictors) instead of raw values were used. Box limits are the 25% and 75% quantiles, with the median denoted by the bold line. Whiskers show the 90% quantiles (5% and 95%).

Table S4. Generalized linear models testing the effects of year, fish length, density, subarea and bottom temperature on energy reserves (liver index) of Greenland cod. Ranked from lowest to highest BIC. Term inclusion in a given model is indicated by a plus symbol (+).

Rank	Year	Fish Length	Density	Sub-area	Stomach Fullness	Growth	Year: Fish Length	Year: Subarea	Length: Subarea	Fish Length: Density	Sub-area: Density	Bott. Temp.	BIC
1	+	+		+								+	13124
2	+	+		+	+							+	13125
3	+	+	+	+						+		+	13130
4	+	+	+	+								+	13130
5	+	+	+	+	+							+	13132
6	+	+	+	+	+					+		+	13132
7	+	+		+		+						+	13132
8	+	+		+	+	+						+	13133
9	+	+		+									13135
10	+	+		+	+								13136

Table S5. Results of permutation tests (PERMANOVA) for canonical correspondence analysis relating Atlantic cod diet composition to different constrained variables (adjusted r^2: 0.20).

Predictors	Df	Chi²	pseudo-F	p-Value
Fish length	1	0.12	51.2	0.001***
Energy reserves	1	0.07	32.8	0.001***
Subarea	13	0.76	25.7	0.001***
Year	7	0.24	15.2	0.001***
Subarea:Year	64	0.84	5.9	0.001***
Fish length : Energy reserves	1	0.00	1.4	0.096
Fish length : Subarea	13	0.10	3.4	0.001***
Energy reserves : Subarea	13	0.06	2.0	0.001***