Supplementary Material

1 Tables

Supplementary Table 1. Aggregation of vessels into 10 vessel groups according to similar physical characteristics and behavioral similarity (métiers and fishing patterns). See specification of gear codes in Table S2 below.

Group number	Number of vessels	Mean length (m)	Min length (m)	Max length (m)	Mean engine power (kW)	Gears
Group 1	4	88.05	86.30	90.45	5431.74	OTB, OTM
Group 2	3	76.51	75.40	78.90	4606.58	OTB, OTM, PS
Group 3	4	69.87	68.80	69.99	3091.84	OTB, OTM, PS
Group 4	4	60.85	55.95	63.00	2746.17	OTB, OTM
Group 5	4	51.05	49.50	53.00	1214.97	OTB, OTM, PTM
Group 6	3	46.22	42.30	48.80	881.81	OTB, OTM
Group 7	4	45.06	41.81	48.55	1381.45	OTB, OTM, PTM
Group 8	4	40.96	40.30	41.45	852.29	OTB, OTM
Group 9	4	38.56	34.96	39.85	755.52	OTB, OTM
Group 10	3	29.54	27.65	33.00	514.73	OTB, OTM

Supplementary Table 2. Classification of fishing activities into 9 main métiers according to gear and target species.

Métier	Gear/s	Mesh size range (mm)	Main purpose	Combinations of métiers included
OTB Demersal fish species	Otter bottom trawl	16-120	Consumption	OTB_DEF_>=105_1_120_COD; OTB_DEF_>=120_0_0_MIX; OTB_DEF_16-31_0_0_MIX; OTB_DEF_32-69_0_0_MIX
OTB Sandeel	Otter bottom trawl	10-16	Industrial	OTB_DEF_<16_0_0_SAN
OTB Norway pout	Otter bottom trawl	16-31	Industrial	OTB_DEF_16-31_0_0_NOP
OTM/PTM Sprat	Mid-water trawls, pair pelagic trawls	16-69	Industrial	OTM_SPF_16-31_0_0_SPR; PTM_SPF_16-31_0_0_SPR; OTM_SPF_32-69_0_0_SPR
OTM Pilchard	Mid-water trawls	16-31	Consumption	OTM_SPF_16-31_0_0_PIL
OTM/PS Herring	Mid-water trawls and purse seine	16-69	Consumption	OTM_SPF_32-69_0_0_HER; PS_SPF_32-69_0_0_HER; OTM_SPF_16-31_0_0_HER
OTM/PS Atlantic mackerel	Mid-water trawls and purse seine	32-69	Consumption	OTM_SPF_32-69_0_0_MAC; PS_SPF_32-69_0_0_MAC
OTM Horse mackerel	Mid-water trawls	32-69	Consumption	OTM_SPF_32-69_0_0_HOM;

OTM whiting	**Blue**	Mid-water trawls	32-69	Industrial	OTM_SPF_32-69_0_0_WHB

Supplementary Table 3. Selected relevant questions from the questionnaire prepared for the interviews with the Danish Pelagic Producers Organization.

- What is your company's main fleet and how many vessels do they operate? Do you have shares in a processing industry?
- Which are the fishing quotas (quota shares, individual quotas) assigned to the current vessel/company?
- Which is the maximum physical range that can be covered within a trip?
- Where and how far will your vessels be willing to go to find the meso-pelagic resources to fish?
- Which could be the limiting factors for the trip duration? Will the distance to the fishing grounds, the potential to conduct several fisheries at the same time, and/or the location of landing harbours influence the trip dynamics? Will the biological characteristics of the resources (species, size composition and density) influence their conservation? Or will the market demands/prices determine the duration of the trip? How do you think the fishing effort could be allocated along the year?
- What will the expected price per kg of mesopelagic resources be given current conservation method? Which current species in pelagic fishery will the price be similar to?
- We observed price fluctuations within 5 years for all of the targeted species. Which are the reasons? Do you expect such fluctuation for mesopelagic species as well?
- For what species in current pelagic fishery will the costs be most similar to for new mesopelagic fishery (excluded the extra costs)?
- Which is the current pelagic and perceived mesopelagic maximum number of tows per day and per trip? Will there be a maximum volume achievable per haul?
- Which is the current pelagic and perceived mesopelagic minimum needed catch amount and revenue in a haul to make it interesting?
- Which will be the expected fuel consumption changes during the different types of activities linked to the mesopelagic fishery?
- Which technology will be needed to fish the meso-pelagic resources at such depths? Which new gears will be introduced? Will the vessels need a new fish search equipment/detecting device?
- What current storage, processing, and conservation (icing and freezing) capacity do you have on board at the moment?
- Which would be the storage, processing and conservation (icing and freezing) adaptations needed to preserve the harvested resources, and which would be the costs for this?
- Considering the current trends and predictions for meso-pelagic fishery, would you as a fishing company invest (either in switching or beginning) in this activity? How appealing and feasible is this option in your opinion?

Supplementary Table 4. Estimated fishing trip break-even points (BEP in terms of revenue and catch) and fishing trip net profits at the resolution of vessel size class and specific for each métier provided with 5-years averages of BEPs, prices and total net profit.

	Vessel size range (m)	OTB Norway pout	OTB Sandeel	OTM/PTM Sprat	OTM Blue whiting	OTM/PS Herring (industrial)	OTM/PS Herring (consumption)	OTM Horse mackerel	OTM/PS Atlantic mackerel
Trip BEP Revenue (€)	24-35	34 722	24 242	26 395	-	-	-	-	-
	35-40	53 472	38 390	36 548	-	-	-	-	-
	40-45	77 083	52 520	87 309	-	74 782	77 957	-	-
	45-50	89 583	74 750	105 583	-	93 913	76 473	-	-
	50-60	123 263	88 889	129 949	-	208 695	-	-	-
	60-70	174 305	133 340	204 060	187 096	93 920	162 708	169 710	NA
	70-80	-	139 400	233 502	191 935	132 173	172 377	-	182 203
	80-90	-	158 586	-	193 548	74 785	191 671	-	161 017
Trip BEP Catch (kg)	24-35	145 204	136 778	115 458	-	-	-	-	-
	35-40	217 791	161 094	142 336	-	-	-	-	-

	40-45	294 063	227 963	346 429	-	226 761	145 210	-	-
	45-50	325 663	337 386	400 171	-	324 062	99 389	-	-
	50-60	435 423	392 097	464 677	-	839 271	-	-	-
	60-70	600 992	507 598	706 461	885 496	157 997	211 171	189 404	NA
	70-80	-	501 519	899 688	770 992	352 597	252 757	-	125 631
	80-90	-	489 361	-	572 519	190 660	348 430	-	285 430
Mean Trip BEP Revenue (€)		73 344	59 643	88 643	200 585	94 358	135 051	169 710	170 919
Mean Trip BEP Catches (kg)		277 275	233 747	338 841	724 074	269 444	196 705	189 404	146 164
Mean price (5 years) (€)		0.242	0.204	0.241	0.234	0.288	0.570	0.779	1.066
Net profit (€)	24-35	24 465	1 517 119	4 047 651	-	-	-	-	-
	35-40	1 068 329	2 382 649	2 397 816	-	-	-	-	-
	40-45	-222 546	9 722 100	8 134 318	-	222 314	11 170 753	-	-
	45-50	886 798	5 296 908	11 385 966	-	20 430	5 480 986	-	-

	50-60	-528 706	3 930 438	4 881 255	-	87 702	121 537 488	-	-
	60-70	332 843	14 311 536	14 311 722	4 972 844	225 183	-	18 812 306	61 139 198
	70-80	-	11 962 473	3 766 162	21 616 701	782 090	165 608 789	-	170 010 372
	80-90	-	3 151 789	-	16 852 654	420 200	109 749 242	-	83 222 734
Total 5-years net profit (€)		1 561 184	51 741 881	48 924 889	43 442 199	1 757 920	206 773 629	18 812 306	314 551 416

Supplementary Table 5. Break-even revenues, break-even catches, mean prices and profits for each vessel group and métier over the period of time considered (2015-19).

	Vessel group	OTB Norway pout	OTB Sandeel	OTM/PTM Sprat	OTM Blue whiting	OTM/PS Herring (industrial)	OTM/PS Herring (consumption)	OTM Horse mackerel	OTM/PS Atlantic mackerel
BEP Revenue (€)	Group 1	-	63 157	-	191 093	123 010	183 745	-	176 053
	Group 2	-	55 263	235 981	197 149	129 032	163 874	-	179 796
	Group 3	161 527	57 017	207 943	190 577	92 903	167 676	169 710	NA
	Group 4	101 480	45 175	176 401	-	209 032	140 252	-	178 453
	Group 5	108 983	31 578	121 495	-	-	81 096	-	-
	Group 6	86 509	30 263	100 467	-	-	49 482	-	-

	Group 7	89 141	24 561	100 467	-	79 139	84 949	-	-
	Group 8	76 080	20 175	85 280	-	63 655	73 155	-	-
	Group 9	53 638	14 912	37 383	-	-	17 834	-	-
	Group 10	30 555	10526	28 037	-	-	-	-	-
BEP Catch (kg)	Group 1	-	243 827	-	567 050	309 782	342 612	-	313 521
	Group 2	-	243 827	877 870	781 609	342 423	248 394	-	143 627
	Group 3	425 424	253 086	639 044	888 888	161 099	179 871	189 404	NA
	Group 4	369 491	223 765	650 256	-	846 597	248 394	-	201 876
	Group 5	379 611	157 407	428 027	-	-	197 002	-	-
	Group 6	322 033	152 777	368 473	-	-	137 044	-	-
	Group 7	308 474	123 456	379 342	-	230 127	154 175	-	-
	Group 8	300 000	104 938	325 159	-	190 270	162 740	-	-
	Group 9	218 644	80 246	135 463	-	-	59 957	-	-
	Group 10	127 118	67 901	130 130	-	-	-	-	-
Mean price (€)		0,242	0,204	0,241	0,234	0,288	0,570	0,779	1,066
Group profit (€)	Group 1	-	6 303 579	-	16 852 654	328 072	54 874 621	-	41 611 366
	Group 2	-	23 924 946	3 766 162	21 616 701	782 090	82 804 394	-	85 005 186
	Group 3	65 837	21 213 247	5 531 312	4 972 844	225 183	59 037 841	18 812 306	28 847 830

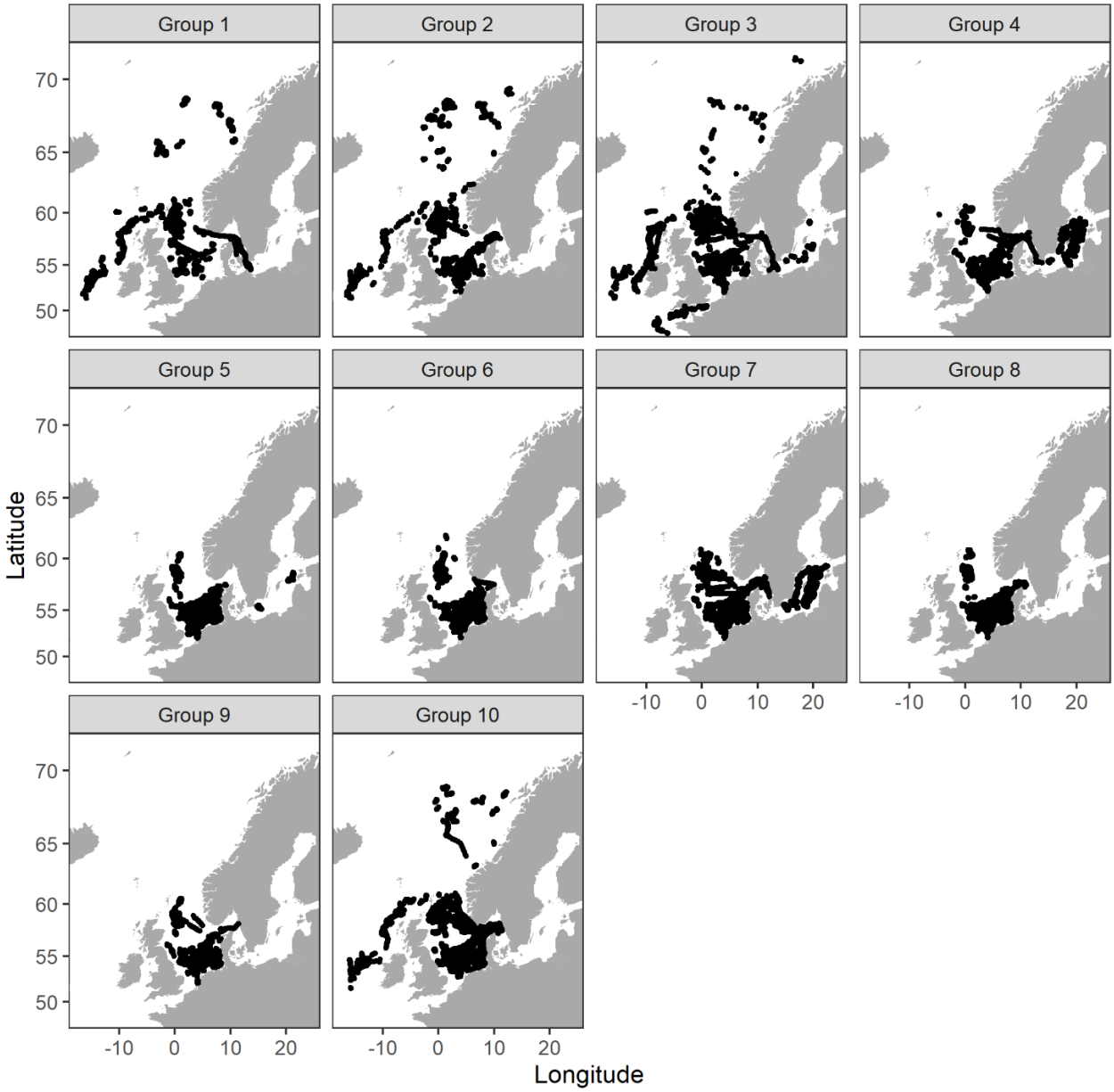
	Group 4	311 215	13 954 207	11 395	297	-	87 702	1 730 902	-	1 721 768
	Group 5	-423 404	3 658 896	4 144	125	-	-	95 964	-	-
	Group 6	352 974	6 846 776	2 508	487	-	-	867 628	-	-
	Group 7	407 419	13 608 543	13 940	026	-	141 091	6 704 127	-	89 556
	Group 8	-245 653	7 240 294	2 963	244	-	133 199	100 710	-	-
	Group 9	1 045 386	5 692 850	4 929	023	-	-	557 436	-	-
	Group 10	47 408	2 106 687	2 537	421	-	-	-	-	-

Supplementary Table 6. Break-even revenues, break-even catches, mean prices and profits by métier for each year of the period of time considered (2015-19).

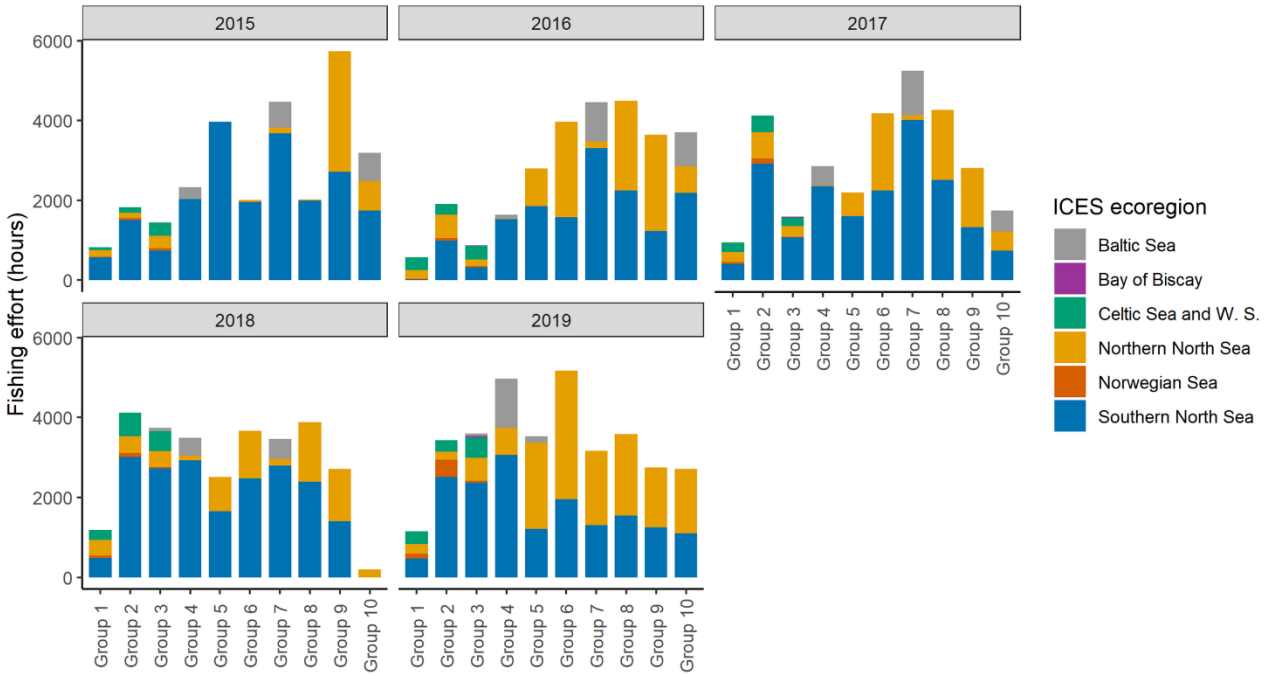
	Year	OTB Norway pout	OTB Sandeel	OTM/PTM Sprat	OTM Blue whiting	OTM/PS Herring (industrial)	OTM/PS Herring (consumption)	OTM Horse mackerel	OTM/PS Atlantic mackerel
BEP Revenue (€)	2015	35632	51938	71344	225045	103730	119268	166089	182692
	2016	73865	44977	84036	154265	99750	144873	183391	NA
	2017	79366	50648	115125	177858	93755	144717	159169	182692
	2018	87828	78006	110179	194192	NA	136179	173010	NA
	2019	85819	87626	66240	219600	211471	157625	162629	182692
BEP Catch (kg)	2015	152629	237975	289752	974358	288288	179996	163295	111650
	2016	268140	154598	292595	490842	266666	197109	216763	NA

	2017	421948	278090	603171	1040293	331531	270071	219653	160194
	2018	310605	315296	440003	652015	NA	265797	196531	NA
	2019	293679	284491	201448	732600	742342	229270	171965	87378
Mean price (€)	2015	0,203	0,175	0,103	0,236	0,314	0,549	0,823	0,887
	2016	0,216	0,233	0,208	0,278	0,338	0,706	0,656	1,056
	2017	0,120	0,107	0,107	0,153	0,280	0,512	0,745	0,985
	2018	0,179	0,168	0,174	0,208	0,246	0,471	0,788	1,240
	2019	0,208	0,188	0,208	0,217	0,229	0,595	0,615	1,335
Year profit (€)	2015	1145296	28031975	14275666	5741954	155102	34544546	3171221	29254144
	2016	285655	4157805	12451821	7948481	127595	56847194	3928017	32137783
	2017	-880531	32463743	-555155	6622045	941488	35278185	3939398	30279424
	2018	-390752	29817693	7267444	12753061	233666	40264877	1858237	33106728
	2019	1401515	10078808	15125112	10376659	300067	39838828	5915433	32497629

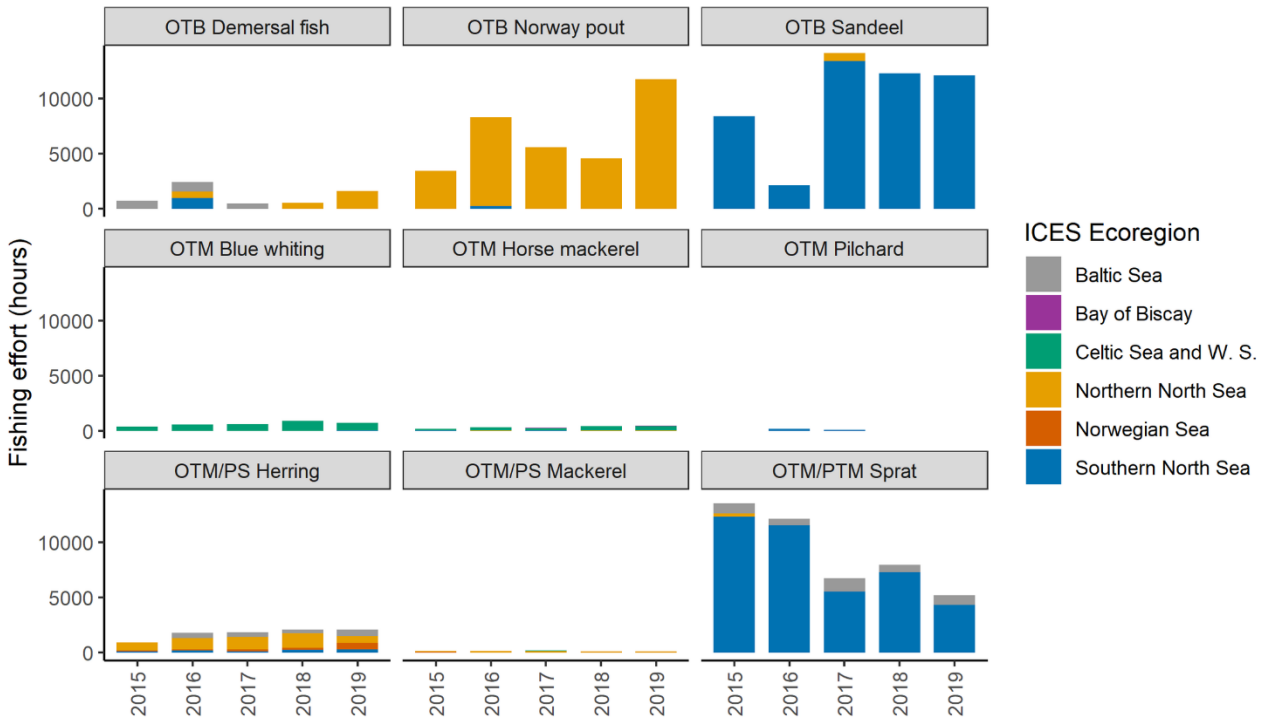
2 Figures



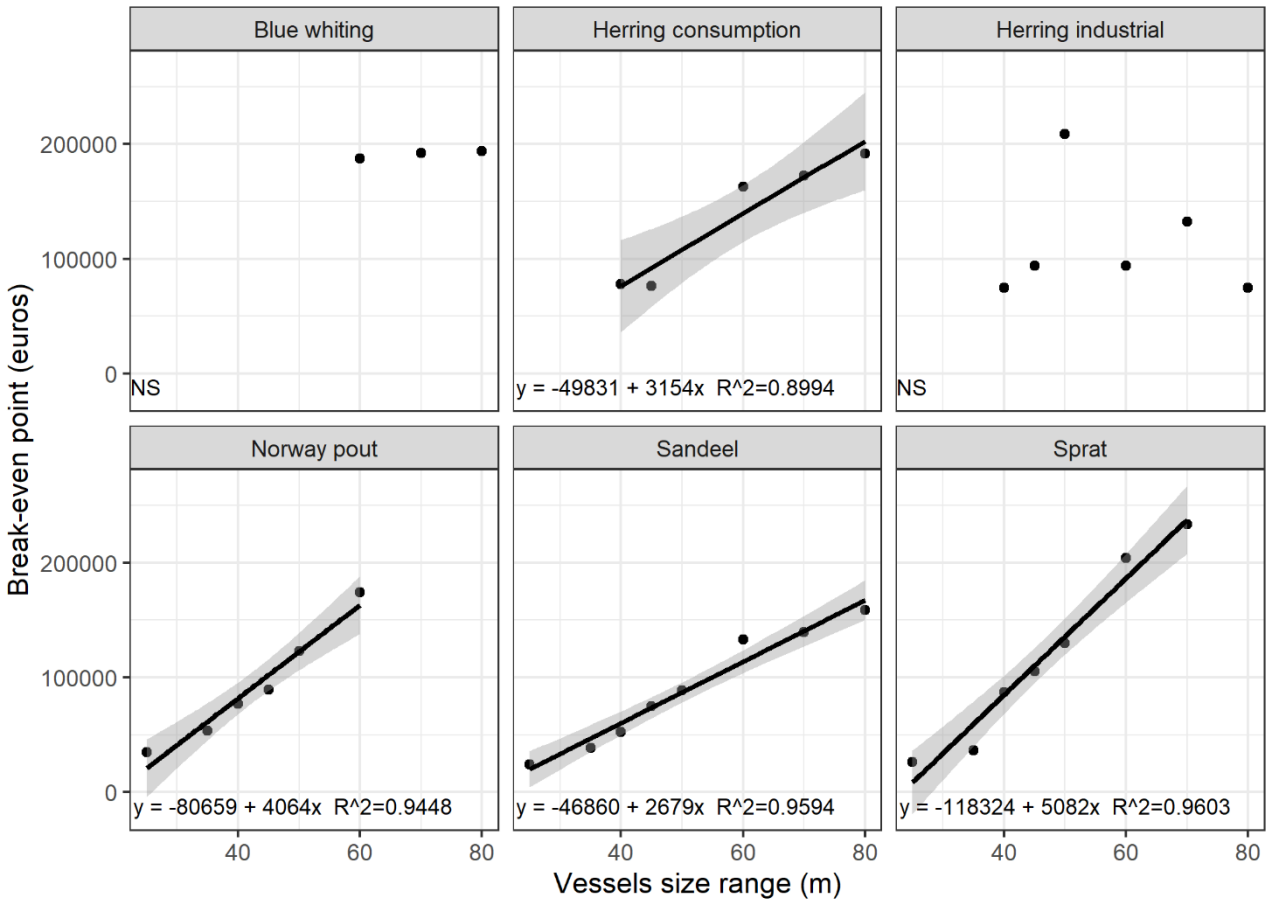
Supplementary Figure 1. Full geographical extent covered by each vessel group of the Danish large vessel pelagic catch sector expressed by fishing operations (individual hauls).



Supplementary Figure 2. Spatio-temporal distribution of the fishing effort expressed as fishing hours and displayed for each vessel group by year and ICES ecoregion covered.



Supplementary Figure 3. Spatio-temporal distribution of the fishing effort expressed as fishing hours and displayed for each métier by year and ICES ecoregion covered.



Supplementary Figure 4. Proportional positive relationship observed between the break-even point and the size of the vessels expressed as size range in meters. Significant relationship are displayed with the linear regression function and correlation coefficient (NS = not significant). A distinction was made for the herring harvested for both consumption and industrial purposes.