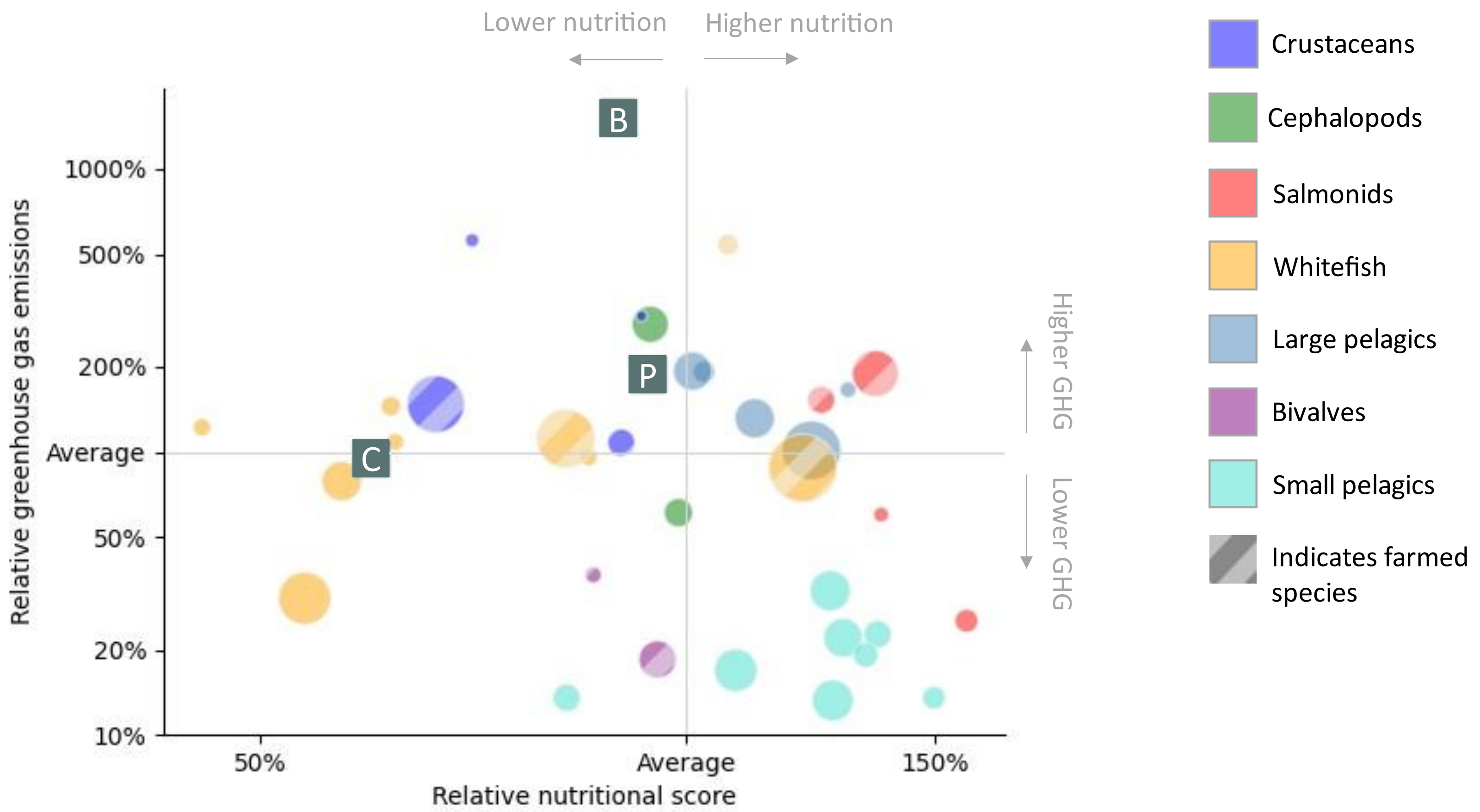
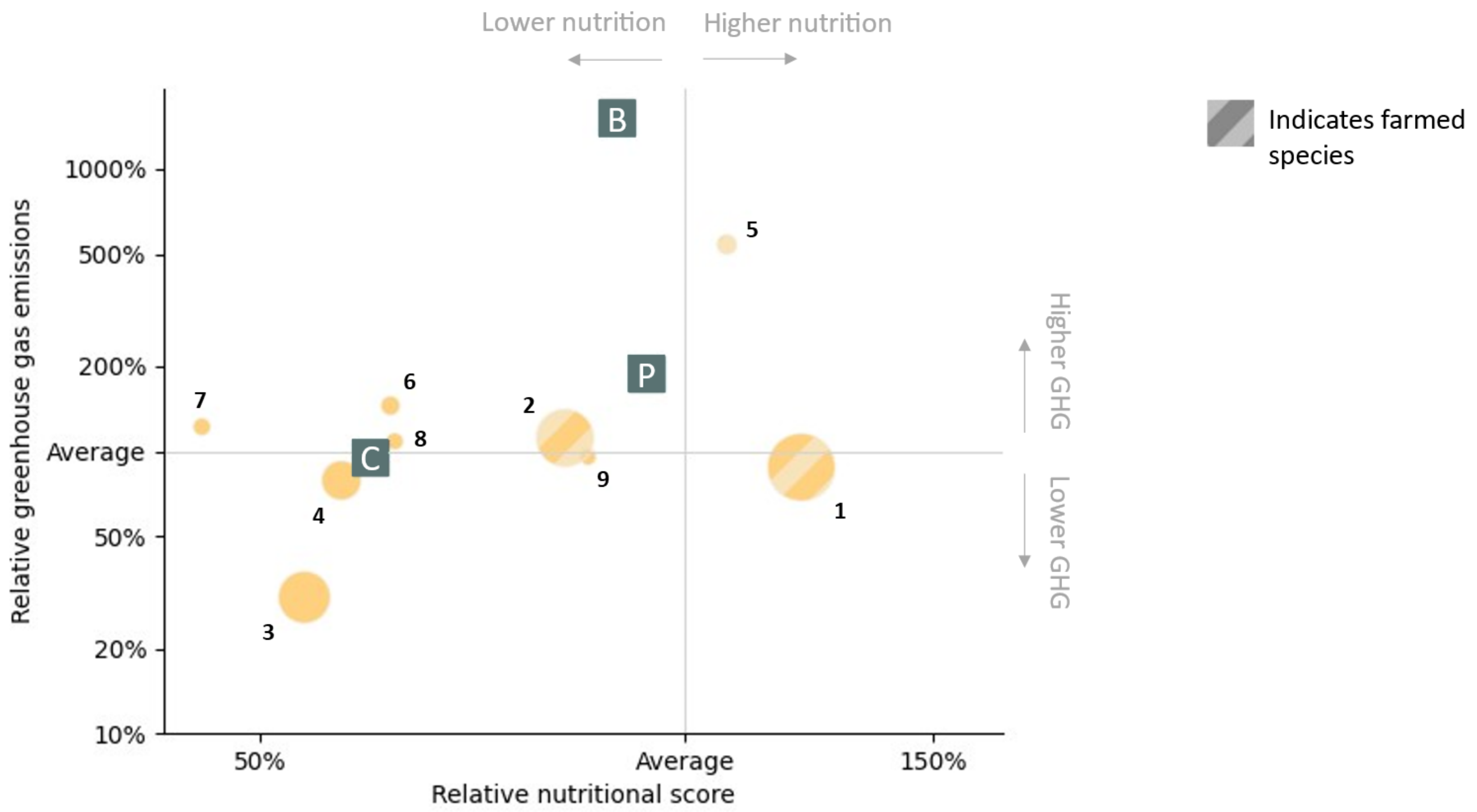
Supplementary Information for:

Assessing seafood nutritional diversity together with climate impacts informs more comprehensive dietary advice

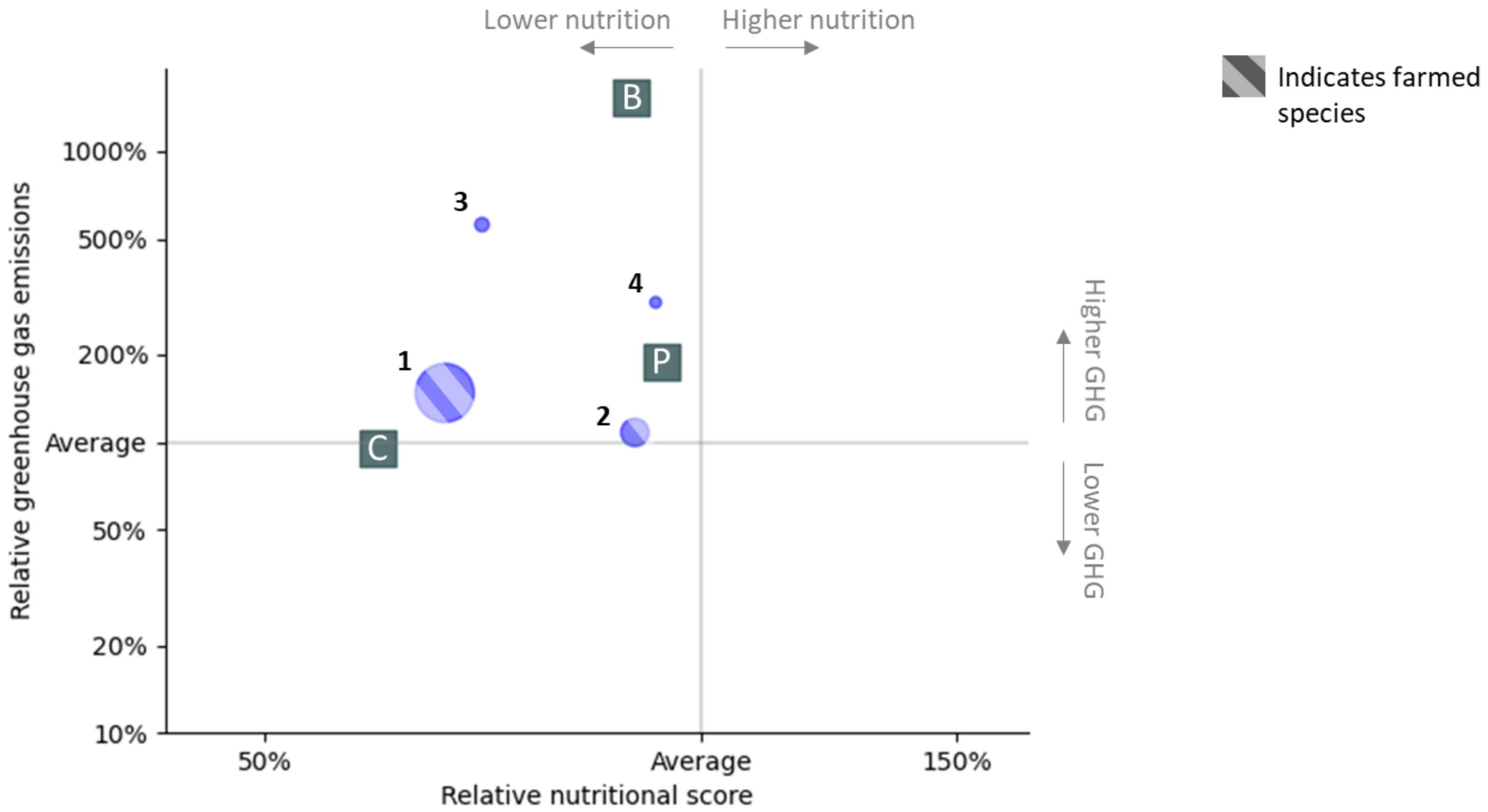
Bianchi et al. 2022



Supplementary Figure 1. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant seafood species groups from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. Both GHG values and nutrition scores are log-weighted and positioned relative to the weighted average of all included seafood species (3.7 kg CO_2-eq per kg edible weight and NDS 4.0).

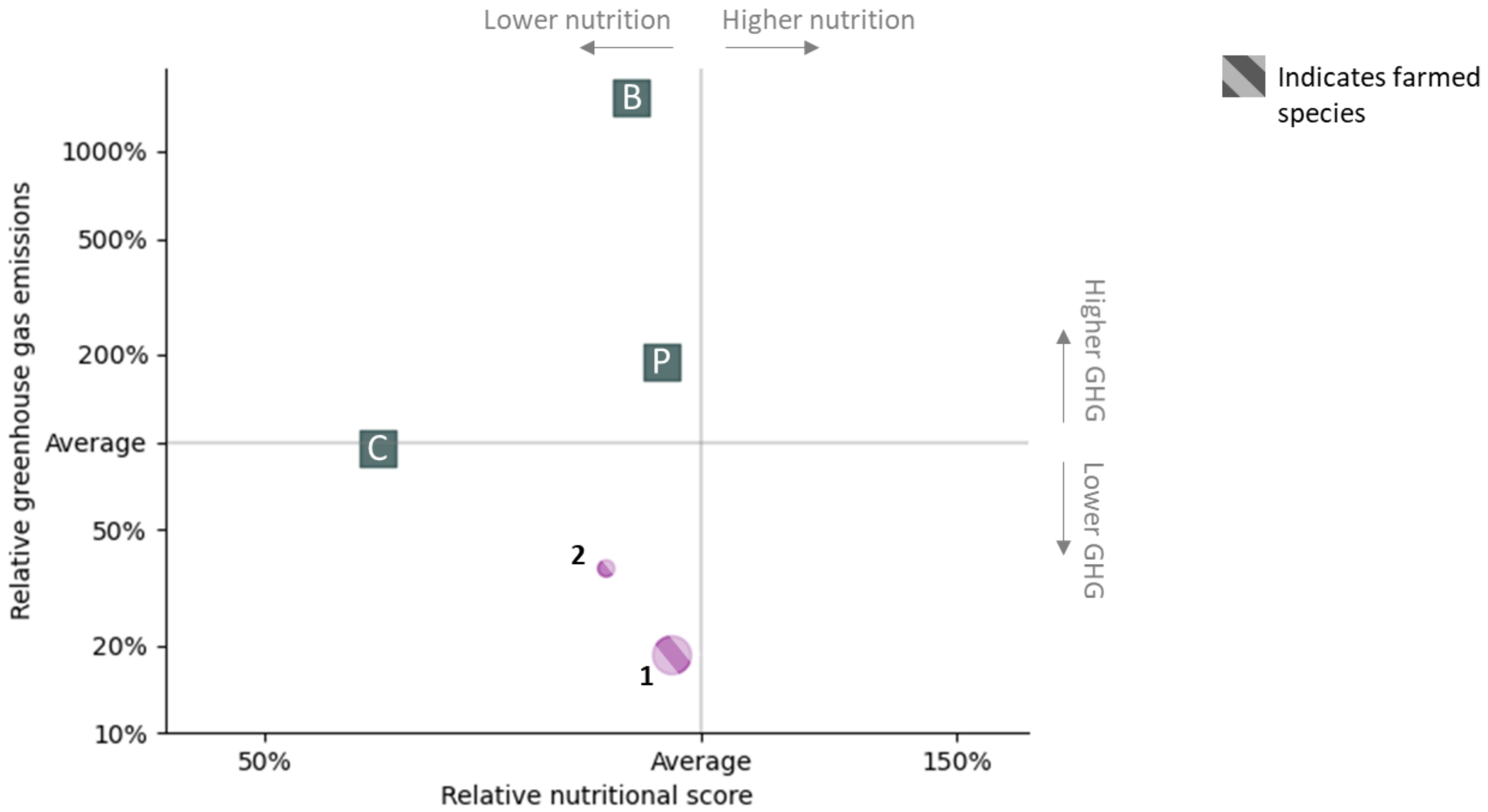


Supplementary Figure 2. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **whitefish** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Common carp, **2** Nile tilapia, **3** Alaska pollock, **4** Atlantic cod, **5** Amur catfish, **6** Pacific cod, **7** Cape hake, **8** Haddock, **9** Saithe.

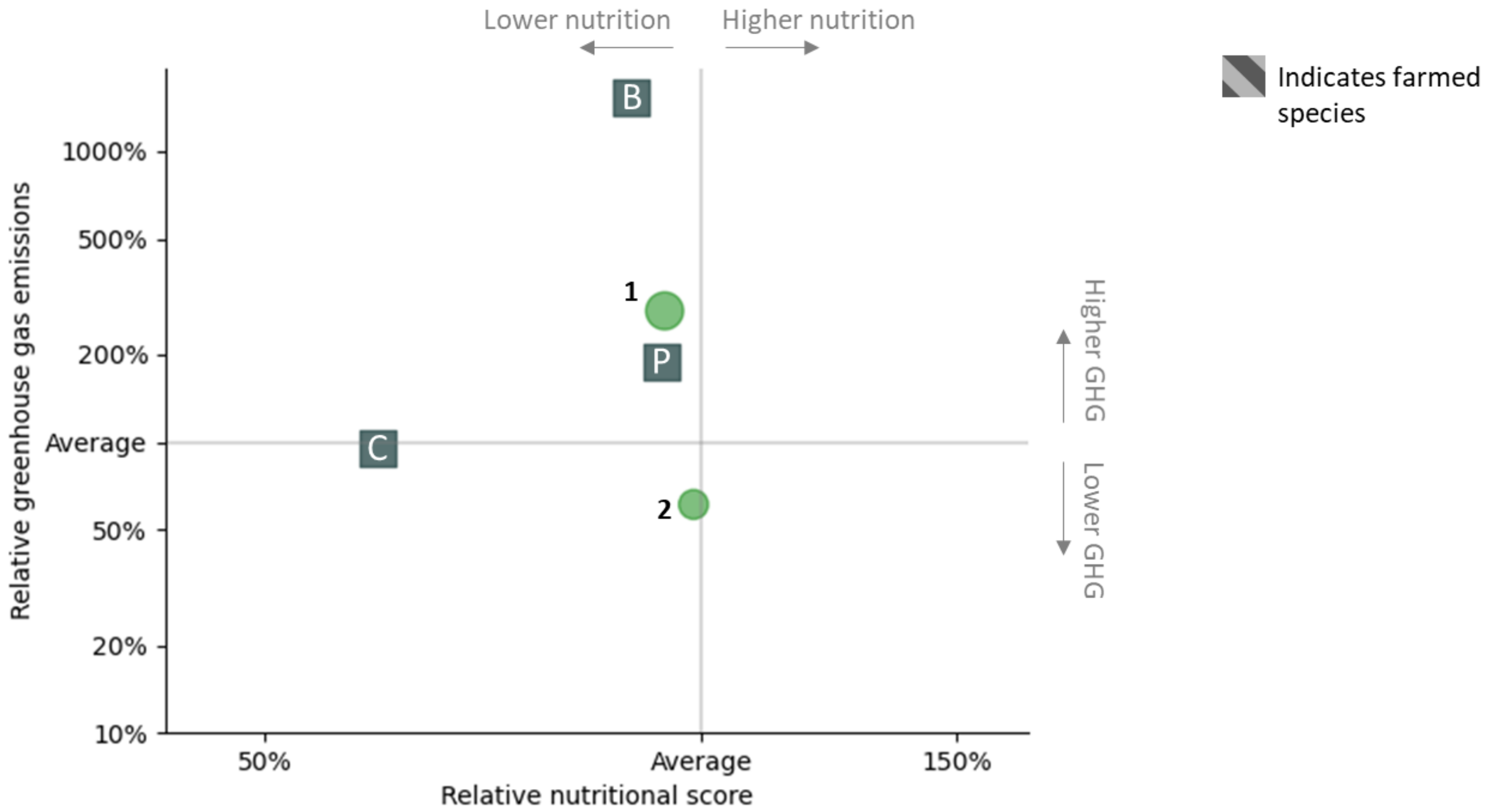


Supplementary Figure 3. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **crustacean** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Whiteleg shrimp, **2** Giant tiger prawn, **3** Northern prawn, **4** American lobster.

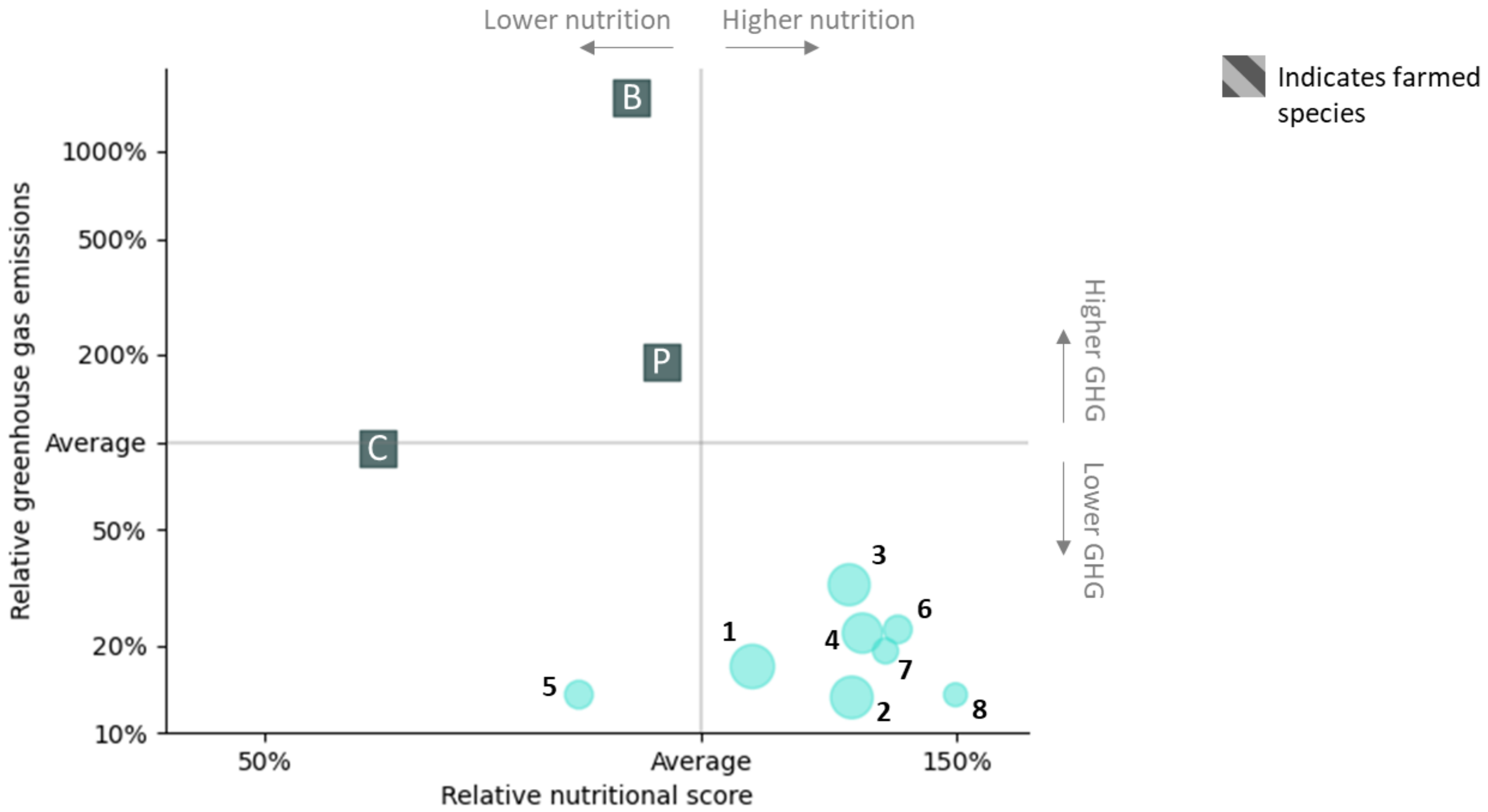
Supplementary Figure 4. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **salmonid** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Atlantic salmon, **2** Rainbow trout, **3** Pink salmon, **4** Sockeye salmon.



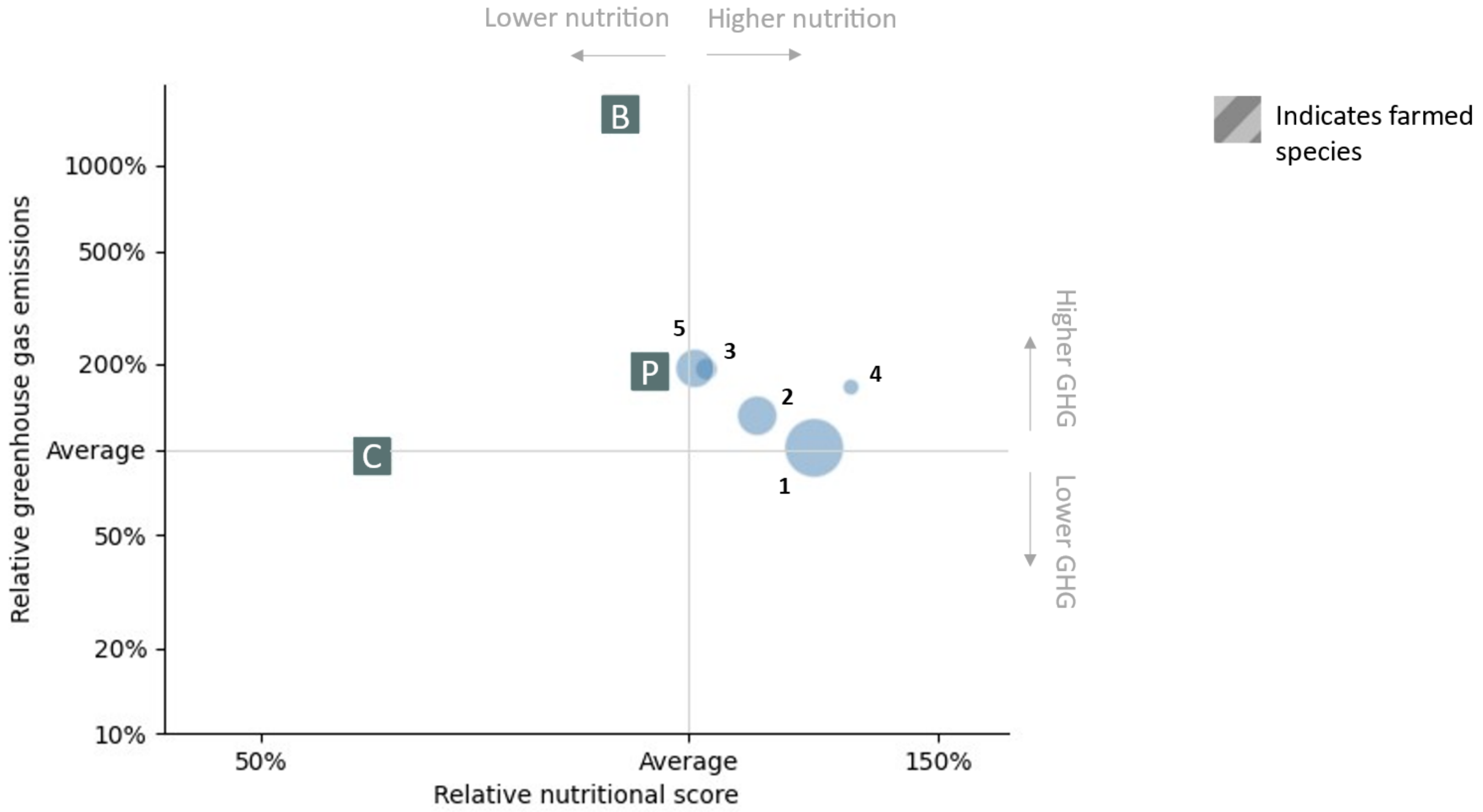
Supplementary Figure 5. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **bivalve** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Pacific cupped oyster, **2** Mussels.



Supplementary Figure 6. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **cephalopod** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Jumbo flying squid, **2** Other cephalopods.



Supplementary Figure 7. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **small pelagic** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Atlantic herring, **2** Pacific chub mackerel, **3** Japanese anchovy, **4** Atlantic mackerel, **5** Capelin, **6** European sprat, **7** Pacific herring, **8** Japanese pilchard.



Supplementary Figure 8. Relative nutrient density score and production-related greenhouse gas emissions per edible weight of globally significant **large pelagic** species from fisheries (solid colours) and aquaculture (striped) at the point of landing/harvest along with beef (B), chicken (C) and pork (P). Relative size of seafood group bubbles are proportionate to 2015 global edible weight production volumes. **1** Skipjack tuna, **2** Yellowfin tuna, **3** Bigeye tuna, **4** Albacore, **5** Largehead hairtail.

Supplementary Table 1. Nutrient density (NDS_{21}) for the analyzed seafoods and the percentage contribution of individual nutrients to the score.

Nutrient % contribution	NDS_{21}	Protein	Ca	Cu	Fe	K	Mg	Na	P	Zn	Reti-nol eqs	Vit D	Vit E	Thia-min	Ribo-flavin	Niacin eqs	Panto-thenic acid	Vit B6	Fol-ate	Vit B12	Satur-ated fatty acids	n-3 fatty acids
Pacific cupped oyster	3.8	4.5	4.3	23.6	1.7	0.9	7.9	4.8	5.0	0.0	0.6	2.4	0.4	1.2	3.8	6.8	2.3	1.8	0.6	23.6	0.4	3.5
Nile tilapia	3.3	10.7	0.4	1.7	1.1	2.6	2.5	0.5	6.7	1.0	0.0	29.5	2.6	0.9	1.2	13.4	4.0	4.6	1.0	13.2	1.3	1.1
Common carp	4.8	7.0	0.2	1.1	0.4	1.9	1.4	0.5	5.1	1.7	0.1	19.7	4.4	7.6	3.0	8.3	5.8	2.0	0.5	19.7	2.0	7.6
Japanese carpet shell	2.0	4.1	2.3	2.3	5.9	1.4	11.0	14.9	4.2	2.4	0.2	0.0	1.5	0.6	4.6	5.4	2.7	1.1	0.9	34.2	0.0	0.4
Whiteleg shrimp	2.6	12.6	1.2	11.9	1.5	1.2	3.6	3.7	7.7	3.3	0.9	0.0	7.4	0.6	1.4	17.4	1.1	2.9	1.0	18.2	0.4	2.0
Alaskan pollock	2.1	9.8	0.6	1.4	0.4	1.8	2.1	6.7	16.3	0.9	0.2	7.2	2.2	1.0	2.7	9.2	1.9	2.1	0.3	27.3	0.2	5.6
Skipjack tuna	4.9	8.9	0.6	1.9	1.1	2.3	2.2	0.4	6.4	1.2	0.4	18.2	0.2	0.6	1.7	20.2	1.7	13.2	0.5	16.0	0.3	2.0
Atlantic salmon	5.4	6.9	0.2	0.7	0.2	1.9	1.4	0.4	5.4	0.5	0.2	12.5	4.9	3.2	1.3	13.0	3.6	7.2	0.2	17.4	2.4	16.4
Atlantic herring	4.3	7.8	1.2	2.2	1.1	2.0	2.2	1.0	7.3	1.5	0.8	9.1	2.6	1.7	4.2	9.5	2.8	5.0	0.5	21.7	2.2	13.5
Pacific chub mackerel	5.1	7.5	0.4	1.9	1.0	2.2	1.7	0.8	3.3	0.9	0.4	17.0	2.1	1.7	6.5	15.0	1.2	4.7	0.1	18.6	2.1	10.8
Yellowfin tuna	4.5	10.8	0.1	0.9	0.8	2.8	2.5	0.5	8.8	0.6	0.5	6.2	0.6	2.2	2.1	22.2	1.2	15.9	0.1	19.2	0.2	1.9
Japanese anchovy	5.0	6.6	1.1	3.4	0.7	1.6	1.9	0.8	6.2	1.3	0.3	7.3	0.8	0.5	2.4	15.8	3.9	8.1	0.9	18.2	3.4	14.8
Atlantic cod	2.3	15.4	0.4	0.9	0.3	4.5	3.4	1.6	11.9	1.1	0.1	8.9	2.9	1.8	1.6	14.9	1.3	4.7	1.2	19.8	0.2	3.2
Largehead hairtail	5.1	6.7	0.2	1.5	1.3	1.6	4.4	0.8	5.6	0.8	1.1	3.6	3.0	2.6	4.7	15.1	3.1	5.5	0.0	18.0	2.9	17.3
Atlantic mackerel	4.0	7.3	0.3	0.5	0.2	1.8	2.1	1.0	5.7	0.8	1.4	22.0	2.9	0.2	1.3	10.1	2.5	3.4	0.1	8.2	6.4	22.0
Jumbo flying squid	3.8	8.1	0.9	20.7	3.7	2.4	4.6	3.2	9.2	4.9	0.0	0.0	6.2	1.2	0.8	9.4	3.2	1.1	0.8	13.3	0.5	5.6
Jackknife clam	3.0	4.5	1.8	12.4	5.2	1.0	4.4	8.4	4.8	3.0	1.2	2.8	2.5	7.0	3.3	4.6	2.1	0.9	0.8	28.0	0.1	1.3
Red swamp crawfish	3.0	9.6	0.8	8.5	0.8	2.4	3.1	1.0	10.1	2.3	0.8	0.0	7.3	1.2	0.9	12.6	3.7	1.9	2.4	28.3	0.2	1.9
European sprat	5.4	6.1	2.7	1.5	1.3	1.2	1.7	0.6	9.5	3.4	6.0	17.4	1.5	0.0	2.2	8.8	2.5	3.6	0.8	17.4	2.1	9.7

Nutrient % contribution	NDS$_{21}$	Protein	Ca	Cu	Fe	K	Mg	Na	P	Zn	Retinol eqs	Vit D	Vit E	Thiamin	Riboflavin	Niacin eqs	Pantothenic acid	Vit B6	Folate	Vit B12	Saturated fatty acids	n-3 fatty acids
Giant tiger prawn	3.6	9.0	0.7	18.5	3.7	2.2	3.7	2.2	9.5	3.3	0.6	0.0	3.1	0.2	1.5	11.7	1.4	2.2	0.9	23.6	0.4	1.4
Capelin	3.3	10.4	1.8	4.6	1.2	2.4	2.9	0.9	9.7	3.5	0.6	2.4	1.6	0.2	3.0	9.3	3.8	3.4	0.3	29.6	0.7	7.8
Gazami crab	4.2	6.3	2.4	21.9	0.3	1.9	4.2	3.9	6.3	5.8	0.0	0.0	4.4	0.4	2.7	9.5	3.4	3.0	1.2	21.9	0.0	0.3
Rainbow trout	5.0	7.4	0.3	0.9	0.3	2.2	1.6	0.6	5.8	0.6	0.4	15.9	4.0	2.5	1.7	13.2	5.8	5.5	0.4	19.3	1.5	9.8
Japanese pilchard	6.0	6.1	1.2	3.5	1.5	1.0	1.5	0.6	5.2	1.8	0.2	15.9	4.4	0.4	5.2	11.3	3.6	6.0	0.4	15.9	2.0	12.1
Pacific herring	5.3	6.1	0.5	1.7	0.8	1.7	1.9	1.0	6.0	1.4	0.4	17.4	6.0	0.1	3.3	8.3	3.7	5.6	0.6	17.4	2.6	13.5
Pacific cod	2.5	14.3	0.5	1.2	0.3	4.6	3.7	1.7	11.8	1.1	0.1	2.0	2.3	1.1	1.5	12.6	1.7	3.5	0.7	32.3	0.2	3.0
Amur catfish	4.3	8.2	0.4	0.7	0.4	2.0	1.7	0.5	5.4	1.0	2.0	8.9	15.6	6.1	1.9	7.2	3.6	2.7	0.6	21.4	2.0	7.8
Pink salmon	6.3	6.3	0.4	1.1	0.5	1.6	1.6	0.5	15.3	0.7	0.7	15.3	0.7	1.0	1.4	15.3	3.1	8.5	0.1	15.3	1.3	9.0
Scallops	3.0	9.1	1.4	5.5	1.8	2.2	3.9	3.9	9.7	3.7	0.4	0.0	4.6	1.1	2.5	10.2	1.3	4.2	1.7	30.6	0.2	1.8
Cephalopods	3.9	6.3	0.8	14.1	2.4	1.6	4.1	4.7	4.9	4.6	0.7	1.1	3.1	1.0	1.5	9.6	13.4	0.9	0.7	22.9	0.1	1.3
Haddock	2.5	12.1	0.4	0.9	0.3	3.0	2.5	3.9	12.0	0.8	0.8	0.7	1.8	0.6	1.8	17.0	1.6	8.0	0.8	28.2	0.2	2.4
Cape hake	1.8	16.8	0.7	1.1	0.3	5.0	5.6	3.7	12.8	1.0	0.2	2.2	1.2	2.1	1.3	15.3	3.3	3.1	1.6	20.1	0.3	2.4
Saithe	3.4	11.1	1.7	1.6	0.6	2.9	6.2	1.2	9.0	1.0	0.5	2.9	0.7	1.1	4.4	13.2	2.0	6.3	0.2	28.6	0.2	4.6
Northern prawn	2.8	10.2	0.6	11.6	0.3	0.7	3.5	9.1	6.1	2.3	0.0	0.0	12.7	1.0	0.0	8.1	1.2	0.9	1.0	29.0	0.1	1.6
American lobster	3.7	8.1	1.2	24.8	0.3	1.9	2.0	4.0	8.1	5.1	0.5	0.0	2.4	1.2	1.5	10.3	11.9	2.0	0.6	12.9	0.1	1.2
Bigeye tuna	4.1	10.9	0.1	1.3	1.5	2.9	2.7	0.6	11.3	0.7	0.1	4.8	0.8	0.6	1.6	24.0	1.0	8.5	0.2	24.0	0.3	2.2
Albacore	5.2	9.9	0.2	1.1	0.8	2.4	2.5	0.4	8.5	0.7	0.1	13.4	1.5	2.1	1.6	19.1	1.2	13.8	0.2	19.1	0.1	1.5
Chilean mussel	3.4	5.8	1.3	7.6	4.9	1.3	3.7	5.3	7.1	3.8	2.7	0.0	4.6	1.6	5.2	7.5	2.3	1.9	2.6	25.7	0.7	4.4
Blue mussel	3.5	6.0	1.0	4.2	5.1	1.3	3.1	5.1	7.1	4.0	2.2	0.0	10.2	1.6	5.2	7.6	2.3	1.5	2.6	25.4	0.7	4.2
Sockeye salmon	5.5	7.5	0.2	1.2	0.3	1.7	1.7	1.0	6.7	0.5	1.3	17.5	1.9	2.6	1.7	14.8	4.0	8.3	0.4	17.5	1.0	8.2
Green mussel	3.7	4.7	0.6	5.2	11.9	1.5	5.8	2.7	6.5	3.0	2.3	0.0	2.7	0.2	5.5	7.0	2.3	3.9	6.4	25.5	0.2	2.1

Supplementary Table 2. Nutritional composition of the analyzed seafoods (mg if not indicated otherwise).

Nutrients per 100 g edible portion	Protein (g)	Ca	Cu	Fe	K	Mg	Na	P	Zn	I (µg)	Se (µg)	Retinol eqs (µg)	Vit D	Vit E	Thia-min	Ribo-flavin	Niacin eqs	Panto-thenic acid	Vit B6	Fol-ate (µg)	Vit B12 (µg)	Satur-ated fatty acids (g)	n-3 fatty acids (g)
Pacific cupped oyster	9.6	182.4	2.1	1.6	137	104	404	149	0.0	72.7	32.6	21.1	1.0	0.1	0.1	0.2	4.3	0.5	0.1	10.0	27.0	0.4	0.4
Nile tilapia	18.1	14.6	0.1	0.8	308	26.6	33.2	160	0.5	5.0	24.0	1.0	20.0	0.8	0.0	0.1	6.8	0.7	0.2	13.2	1.1	0.9	0.1
Common carp	17.7	9.0	0.1	0.5	340	22.0	49.0	180	1.2	n.a.	n.a.	4.0	14.0	2.0	0.5	0.2	6.3	1.5	0.1	10.0	10.0	2.0	1.1
Japanese carpet shell	6.0	66.0	0.1	3.8	140	100	870	85	1.0	55.0	38.0	5.5	0.0	0.4	0.0	0.2	2.4	0.4	0.0	11.0	52.4	0.0	0.0
Whiteleg shrimp	18.2	34.4	0.3	1.0	126	32.1	215	155	1.3	5.0	34.0	20.3	0.0	1.9	0.0	0.1	7.5	0.2	0.1	11.0	1.3	0.3	0.2
Alaskan pollock	12.2	15.0	0.0	0.2	160	16.0	333	284	0.3	n.a.	15.9	3.0	1.8	0.5	0.0	0.1	3.4	0.2	0.1	3.0	1.6	0.1	0.4
Skipjack tuna	22.0	29.0	0.1	1.3	407	34.0	37.0	222	0.8	25.0	36.5	16.0	9.0	0.1	0.0	0.1	19.5	0.4	0.9	9.0	1.9	0.3	0.3
Atlantic salmon	19.9	11.8	0.0	0.3	376	24.7	48.0	219	0.4	9.2	21.4	8.9	7.2	2.5	0.2	0.1	11.2	1.0	0.5	4.5	4.1	2.8	2.6
Atlantic herring	18.0	57.0	0.1	1.1	327	32.0	90.0	236	1.0	n.a.	36.5	28.0	4.2	1.1	0.1	0.2	6.6	0.6	0.3	10.0	13.7	2.0	1.7
Pacific chub mackerel	20.1	23.0	0.1	1.2	406	28.0	86.0	125	0.7	n.a.	36.5	19.0	9.1	1.0	0.1	0.4	12.1	0.3	0.3	2.0	4.4	2.2	1.6
Yellowfin tuna	24.4	4.0	0.0	0.8	441	35.0	45.0	278	0.4	n.a.	90.6	18.0	2.8	0.2	0.1	0.1	22.8	0.3	0.9	2.0	2.1	0.2	0.2
Japanese anchovy	18.2	60.0	0.2	0.9	300	32.0	85.0	240	1.0	38.0	40.0	11.0	4.0	0.4	0.0	0.2	13.0	1.1	0.6	19.0	13.9	3.8	2.2
Atlantic cod	18.2	8.7	0.0	0.1	373	24.7	73.6	196	0.4	300	31.0	2.3	2.1	0.6	0.1	0.0	5.3	0.2	0.1	11.0	1.1	0.1	0.2

Nutrients per 100 g edible portion	**Protein (g)**	**Ca**	**Cu**	**Fe**	**K**	**Mg**	**Na**	**P**	**Zn**	**I (µg)**	**Se (µg)**	**Retinol eqs (µg)**	**Vit D**	**Vit E**	**Thiamin**	**Riboflavin**	**Niacin eqs**	**Pantothenic acid**	**Vit B6**	**Folate (µg)**	**Vit B12 (µg)**	**Saturated fatty acids (g)**	**n-3 fatty acids (g)**
Largehead hairtail	16.5	12.0	0.0	0.2	290	29.0	88.0	180	0.5	n.a.	n.a.	52.0	14.0	1.2	0.0	0.1	6.9	0.6	0.2	2.0	0.9	5.8	3.2
Atlantic mackerel	18.6	12.0	0.1	1.6	314	76.0	90.0	217	0.6	n.a.	44.1	50.0	2.0	1.5	0.2	0.3	12.5	0.9	0.4	1.0	8.7	3.3	2.7
Jumbo flying squid	16.4	37.5	0.8	3.3	339	57.7	264	263	2.8	25.6	50.9	0.0	0.0	2.3	0.1	0.0	5.8	0.6	0.1	13.0	1.3	0.4	0.6
Jackknife clam	8.1	66.0	0.4	4.1	120	49.0	600	120	1.5	n.a.	55.1	34.2	1.0	0.8	0.3	0.1	2.5	0.4	0.0	11.0	59.4	0.1	0.1
Red swamp crawfish	14.9	25.0	0.2	0.6	261	30.0	62.0	218	1.0	92.3	28.4	20.5	0.0	2.0	0.0	0.0	5.9	0.6	0.1	30.0	2.1	0.2	0.2
European sprat	17.6	157	0.1	1.7	246	31.0	68.0	381	2.7	59.0	22.6	276	20.3	0.8	0.0	0.2	7.6	0.7	0.3	17.6	10.4	2.4	1.5
Giant tiger prawn	17.1	25.9	0.6	3.1	289	43.1	167	252	1.7	49.1	31.1	18.2	0.0	1.1	0.0	0.1	6.6	0.3	0.1	13.5	2.1	0.3	0.2
Capelin	17.6	60.0	0.1	0.9	290	30.0	60.0	230	1.7	n.a.	36.5	15.0	0.8	0.5	0.0	0.1	4.7	0.6	0.2	4.0	3.4	0.5	0.7
Gazami crab	14.4	110	1.1	0.3	300	60.0	360	200	3.7	n.a.	82.7	0.0	0.0	1.8	0.0	0.2	6.5	0.8	0.2	22.0	4.7	0.0	0.0
Rainbow trout	19.1	16.4	0.0	0.4	390	26.2	58.5	211	0.4	12.3	16.9	18.3	8.2	1.9	0.2	0.1	10.3	1.5	0.4	8.8	3.8	1.5	1.4
Japanese pilchard	19.2	74.0	0.2	2.1	230	30.0	81.0	230	1.6	24.0	48.0	8.0	32.0	2.5	0.0	0.4	10.7	1.1	0.5	10.0	15.7	2.6	2.1
Pacific herring	17.4	27.0	0.1	1.0	350	33.0	110	240	1.1	n.a.	36.5	18.0	22.0	3.1	0.0	0.2	7.2	1.1	0.4	13.0	17.4	3.0	2.1
Pacific cod	18.3	11.8	0.0	0.2	412	29.0	84.5	211	0.4	200	22.9	2.0	0.5	0.5	0.0	0.0	4.9	0.2	0.1	7.0	2.0	0.1	0.2
Amur catfish	18.4	18.0	0.0	0.4	320	23.0	46.0	170	0.6	n.a.	27.5	70.0	4.0	6.3	0.3	0.1	4.8	0.8	0.2	10.0	2.3	1.8	1.0
Pink salmon	20.5	29.0	0.1	0.8	372	32.0	68.0	754	0.7	n.a.	31.4	35.0	10.9	0.4	0.1	0.1	19.1	1.0	0.7	3.0	3.2	1.7	1.6

Nutrients per 100 g edible portion	**Protein (g)**	**Ca**	**Cu**	**Fe**	**K**	**Mg**	**Na**	**P**	**Zn**	**I (µg)**	**Se (µg)**	**Reti-nol eqs (µg)**	**Vit D**	**Vit E**	**Thia-min**	**Ribo-flavin**	**Niacin eqs**	**Panto-thenic acid**	**Vit B6**	**Fol-ate (µg)**	**Vit B12 (µg)**	**Satur-ated fatty acids (g)**	**n-3 fatty acids (g)**
Scallops	14.9	45.7	0.2	1.3	246	39.6	257	221	1.7	130	23.0	11.4	0.0	1.4	0.0	0.1	5.0	0.2	0.2	22.0	3.6	0.1	0.2
Cephalopods	13.8	33.0	0.6	2.3	251	56.0	413	151	2.8	34.0	47.0	26.0	0.5	1.2	0.1	0.1	6.3	2.9	0.1	13.0	5.0	0.1	0.2
Haddock	16.3	11.0	0.0	0.2	286	21.0	213	227	0.3	n.a.	25.9	17.0	0.2	0.5	0.0	0.1	6.9	0.2	0.3	9.0	1.8	0.1	0.2
Cape hake	16.6	13.0	0.0	0.1	342	34.0	144	176	0.3	8.0	22.1	3.1	0.4	0.2	0.1	0.0	4.5	0.3	0.1	12.5	1.0	0.1	0.1
Saithe	19.4	60.0	0.1	0.5	356	67.0	86.0	221	0.5	n.a.	36.5	14.0	1.0	0.2	0.0	0.2	6.9	0.4	0.3	3.0	3.2	0.1	0.4
Northern prawn	17.6	21.0	0.4	0.2	88	37.0	630	147	1.1	20.0	23.0	0.0	0.0	3.9	0.0	0.0	4.2	0.2	0.0	14.0	3.5	0.1	0.2
American lobster	16.4	47.3	1.0	0.2	263	25.2	323	229	2.9	n.a.	85.0	14.9	0.0	0.9	0.1	0.1	6.2	2.4	0.1	10.0	1.3	0.1	0.1
Bigeye tuna	22.8	4.0	0.1	1.4	420	35.0	49.0	330	0.4	8.0	67.0	3.0	2.0	0.3	0.0	0.1	18.0	0.2	0.5	4.0	4.5	0.3	0.3
Albacore	26.0	9.0	0.1	0.9	440	41.0	38.0	310	0.5	12.0	71.0	4.0	7.0	0.7	0.1	0.1	25.7	0.3	0.9	4.0	2.8	0.2	0.2
Chilean mussel	11.4	49.9	0.3	4.2	178	44.1	412	195	2.1	140	49.4	84.1	0.0	1.6	0.1	0.2	4.4	0.4	0.1	40.3	14.2	0.6	0.5
Blue mussel	11.8	39.3	0.1	4.4	178	37.7	402	195	2.2	140	49.9	68.3	0.0	3.6	0.1	0.2	4.5	0.4	0.1	40.3	14.2	0.5	0.5
Sockeye salmon	21.3	10.0	0.1	0.4	343	30.0	112	266	0.4	n.a.	30.6	58.0	17.7	1.0	0.2	0.1	12.6	1.2	0.6	8.0	6.0	1.2	1.3
Green mussel	9.3	25.0	0.2	10.3	210	70.0	211	178	1.6	110	51.0	70.9	0.0	1.0	0.0	0.3	4.1	0.4	0.2	100	7.3	0.2	0.2

Supplementary Discussion 1

Effect of nutrients capping on the nutrient density of seafoods

The choice of method for the calculation of nutrient density builds on previous research[1]. As the seafoods analyzed in this study are a heterogenous group including species with nutrient profiles characterized by very high content of a few nutrients, the need to apply capping was carefully pondered. Capping is a method that rounds off to 100% the content of nutrients exceeding the recommended reference values, allowing in this way to avoid crediting the overconsumption of nutrients beyond their recommended intakes.

As can be seen in Supplementary Table 9, several nutrients required the application of capping (vitamin B12, niacin equivalents, vitamin D, phosphorus and copper). However, the decision to present capped NDS values as the main results is largely based on the abundance of vitamin B12 in most species. If not capped, its content would range between 37,5 to 2475% of the DRI and explaining up to 92% of the uncapped NDS_{21}. Molluscs species such as jackknife clam or Japanese carpet shell, ranked at the top for uncapped NDS_{21} (Supplementary Table 10). However, when capped, these species fell to the lowest tertile for nutrient density. Supplementary Table 10 highlights which seafood products rank high (green items) or lower (red items) when capping is applied. Whilst a large part of molluscs dropped to a lower level of nutrient density, tunas and some salmonids improved significantly their position when capping was applied. Interestingly, even a relatively low NDS_{21} seafood as Nile tilapia was affected by this methodological choice, dropping even lower as a result of capping its vitamin D content.

As capped NDS_{21} values seemed to more fairly describe the nutritional benefits from the analyzed seafoods, without the bias of lifting species who only contain extremely high levels of vitamin B12, it was decided to present capped NDS_{21} values as the main results of this study.

Supplementary Table 3. Comparison of nutrient density ranking in 36 seafoods calculated as NDS_{21} and NDS_{23} (i.e. including also the nutrients Iodine and Selenium).

Tertile	Seafood	NDS_{21}	Seafood[1]	NDS_{23}
1	Pink salmon	6.3	Pink salmon	6.9
	Japanese pilchard	6.0	Japanese pilchard	6.7
	Sockeye salmon	5.5	Atlantic mackerel	6.3
	European sprat	5.4	Albacore	6.3
	Atlantic salmon	5.4	European sprat	6.2
	Pacific herring	5.3	Sockeye salmon	6.1
	Albacore	5.2	Pacific chub mackerel	6.1
	Atlantic mackerel	5.1	Pacific herring	6.0
	Pacific chub mackerel	5.1	Atlantic salmon	5.8
	Japanese anchovy	5.0	Japanese anchovy	5.7
	Rainbow trout	5.0	American lobster	5.7
	Skipjack tuna	4.9	Skipjack tuna	5.7
	Common carp	4.8		
	Yellowfin tuna	4.5		
2	Atlantic herring	4.3	Rainbow trout	5.3
	Amur catfish	4.3	Green mussel	5.3
	Gazami crab	4.2	Blue mussel	5.2
	Bigeye tuna	4.1	Atlantic herring	5.2
	Largehead hairtail	4.0	Chilean mussel	5.2
	Cephalopods	3.9	Bigeye tuna	5.1
	Pacific cupped oyster	3.8	Cephalopods	4.9
	Jumbo flying squid	3.8	Saithe	4.9
	American lobster	3.7	Pacific cupped oyster	4.8
	Green mussel	3.7	Jumbo flying squid	4.8
	Giant tiger prawn	3.6	Giant tiger prawn	4.4
	Blue mussel	3.5		
	Chilean mussel	3.4		

3	Saithe	3.4	Scallops	4.2
	Capelin	3.3	Red swamp crawfish	4.1
	Nile tilapia	3.3	Haddock	3.9
	Red swamp crawfish	3.0	Pacific cod	3.8
	Scallops	3.0	Atlantic cod	3.8
	Jackknife clam	3.0	Nile tilapia	3.7
	Northern prawn	2.8	Northern prawn	3.3
	Whiteleg shrimp	2.6	Whiteleg shrimp	3.2
	Haddock	2.5	Japanese carpet shell	3.0
	Pacific cod	2.5	Alaskan pollock	2.5
	Atlantic cod	2.3	Cape hake	2.2
	Alaskan pollock	2.1		
	Japanese carpet shell	2.0		
	Cape hake	1.8		

[1] For common carp, yellowfin tuna, amur catfish, gazami crab, largehead hairtail, capelin, jackknife clam, NDS_{23} values could not be calculated due to lack of composition data on Selenium and Iodine.

Supplementary Table 4. Species list and data sources regarding climate impact (FEUD= Fisheries Energy Use Database, SAUP= Sea Around Us Project)

Seafood	**Production method (Fisheries/ Aquaculture)**	**Data source**	**Fishing/farming technology (or source of information)**	**IUCN Red List status if fished species (Last year assessed)**	**GHG* (kg CO_2e per tonne edible)**
Alaskan pollock	F	FEUD	SAUP gear database	NT (2013)	1120
Albacore	F	FEUD	SAUP gear database	NT (2015)	6112
American lobster	F	FEUD	Traps	LC (2009)	11137
Amur catfish	A	Kluts et al. 2012[2]	Vietnam, intensive pond systems	Cultivated	19893
Atlantic cod	F	FEUD	SAUP gear database	VU (1996)	2905
Atlantic herring	F	FEUD	SAUP gear database	LC (2009)	623
Atlantic mackerel	F	FEUD	SAUP gear database	LC (2010)	811
Atlantic salmon	A	Winther et al. 2020[3]	Marine netpen	Cultivated	6978**
Bigeye tuna	F	FEUD	SAUP gear database	VU 2011)	7074
Cape hake	F	FEUD	Industry information	LC (2012)	4500
Capelin	F	FEUD	Assumption	LC (2014)	498
Cephalopods	F	FEUD	SAUP gear database	Species group	2248
Common carp	A	Mungkung et al. 2013[4]	Indonesia polyculture (large, high-density)	Cultivated	3235
Constricted tagelus/ Jackknife clam	A	Data gap	Bottom culture, mudflats	Cultivated	Data gap
European sprat	F	FEUD	SAUP gear database	LC (2018)	836
Gazami crab	F	Data gap	Bottom trawl and small scale fisheries	NA	Data gap
Giant tiger prawn	A	Aubin et al. 2015[5]	Philippines, extensive brackish polyculture pond	Cultivated	3977
Haddock	F	FEUD	SAUP gear database	VU (1996)	3998
Japanese anchovy	F	FEUD	SAUP gear database	LC (2018)	1190
Japanese carpet shell	A	Data gap	Intertidal bottom culture, mudflats	Cultivated	Data gap
Japanese pilchard	F	FEUD	SAUP gear database	NA	498
Jumbo flying/ Humboldt squid	F	FEUD	SAUP gear database	DD (2010)	10410
Largehead hairtail	F	FEUD	SAUP gear database	LC (2013)	7112

Mussels (*Mytilus/Perna* sp)	A	Aubin et al. 2018[6]	Bouchot culture	Cultivated	1354
Nile tilapia	A	Pelletier et al. 2010[7]	Indonesia, lake-based netpens	Cultivated	4108
Northern shrimp /prawn	F	FEUD	SAUP gear database	NA	20619
Pacific chub mackerel	F	FEUD	SAUP gear database	LC (2009)	488
Pacific cod	F	FEUD	SAUP gear database	NA	5344
Pacific cupped oyster	A	Pucylowski 2017[8]	Bottom culture	Cultivated	682
Pacific herring	F	FEUD	SAUP gear database	DD (2019)	705
Pink salmon	F	FEUD	SAUP gear database	NA	932
Rainbow trout	A	Dekamin et al. 2015[9]	Average of Flow-through and RAS	Cultivated	3769
Red swamp crawfish	A	Data gap	No info	Cultivated	Data gap
Saithe	F	FEUD	SAUP gear database	LC (2013)	3519
Scallops	A	Data gap	Marine aquaculture, floating raft	Cultivated	Data gap
Skipjack tuna	F	FEUD	SAUP gear database	LC (2010)	3732
Sockeye salmon	F	FEUD	SAUP gear database	LC (2010)	2213
Whiteleg shrimp	A	Cao et al. 2011[10]	Weighted average of intensive and semi-intensive	Cultivated	5439
Yellowfin tuna	F	FEUD	SAUP gear database	NT (2011)	4843

*No use of by-products (all impact allocated to edible part)

**Excluding Land Use Change

Supplementary Table 5. Distribution on different fishing gear (%) and resulting weighted fuel use intensity per species

Seafood	Bottom trawl	Gillnet	Longline	Pelagic trawl	Purse seine	Other*	Weighted FUI (L/tonne)
Alaska pollock	4	1		91		4	111
Albacore	3		78		1	18	859
American lobster						100**	1026
Atlantic cod	21	7	13		6	53	430
Atlantic herring	3			44	31	22	93
Atlantic mackerel	1		1	50	24	24	120
Bigeye tuna		1	51		43	4	995
Cape hake	53		47			0	578
Capelin				13	65	22	73
Cephalopods	40	21	8			31	380
European sprat	2			76	3	19	114
Gazami crab	74					26	Data gap
Haddock	32	2	16		11	39	465
Japanese anchovy	8	14		31	16	31	179
Japanese pilchard					100	0	64
Jumbo flying squid			55			45	1691
Largehead hairtail	61		11	2		26	1017
Northern shrimp /prawn	91					9	1799
Pacific chub mackerel				18	50	32	67
Pacific cod	16	2	15	1		66	531
Pacific herring	3	2		81	2	11	109
Pink salmon					14	86	111
Saithe	47	9	5		15	25	401
Skipjack tuna		5	14		73	7	561
Sockeye salmon		9	2		31	58	333
Yellowfin tuna		4	28		52	16	809

*Other is composed of the categories ‘Other’, ‘Unknown’ and ‘Small scale’ in the database, since these could not be matched with fuel use data in any meaningful way. **100% traps.

Supplementary Table 6. Seafood products analyzed. Volumes based on edible weights calculated from species-specific factors for edible yield[11], except Red swamp crawfish, Jackknife clam, Gazami crab and Amur catfish, whose edible yield factors were retrieved from the corresponding nutrition composition databases; Atlantic salmon[12]; American lobster[13]; and oyster[14].For fishing methods for wild-caught, see Supplementary Table 5. For farming technologies, see Supplementary Table 4. Top producers with joint proportion of global production in brackets[15]

Common name	**Scientific name**	**Seafood category**	**Proportion of global production volume (% in liveweight)**	**Edible yield (from liveweight)**	**Production source**	**Top-producing countries**	**Reason for including**
Pacific cupped oyster	*Crassostrea gigas* (Thunberg 1793)	Bivalves	2.59	0.14	Marine aquaculture	South Korea, France, Japan (85%)	Top scoring in the production volumes
Nile tilapia	*Oreochromis niloticus*	Farmed whitefish	2.31	0.37	Fresh and brackish water aquaculture. capture	Indonesia, China, Egypt (82%)	Top scoring in the production volumes
Common carp	*Cyprinus carpio*	Farmed whitefish	2.17	0.54	Freshwater aquaculture	China, Indonesia (84%)	Top scoring in the production volumes
Japanese carpet shell	*Ruditapes philippinarum*	Bivalves	2.01	0.18	Marine aquaculture	China (98%)	Top scoring in the production volumes
Whiteleg shrimp	*Litopenaeus vannamei*	Farmed crustaceans	1.94	0.57	Marine. fresh. brackish water. aquaculture	China, India, Indonesia (61%)	Top scoring in the production volumes
Alaska pollock	*Theragra chalcogramma*	Fished whitefish	1.69	0.41	Capture	Russia, US (94%)	Top scoring in the production volumes
Skipjack tuna	*Katsuwonus pelamis*	Tunas	1.41	0.62	Capture	Indonesia, South Korea, Ecuador, Japan, Papua New Guinea, Spain, US; Taiwan (61%)	Top scoring in the production volumes
Atlantic salmon	*Salmo salar*	Farmed salmonids	1.19	0.45	Marine aquaculture	Norway, UK (79%)	Top scoring in the production volumes
Scallops	*Includes Pecten maximus. and other species belonging to the Pectinidae family*	Bivalves	0.89	0.15	Marine aquaculture	China, Japan (85%)	Previously analyzed in Hallström et al.
Atlantic herring	*Clupea harengus*	Small pelagics	0.75	0.61	Capture	Norway, Denmark, Finland, Iceland, Russia, Faeroe islands, Sweden (69%)	Top scoring in the production volumes

Pacific chub mackerel	*Scomber japonicus*	Small pelagics	0.75	0.57	Capture	Japan, China, Peru (70%)	Top scoring in the production volumes
Yellowfin tuna	*Thunnus albacares*	Tunas	0.68	0.58	Capture	Indonesia, Mexico, Papua New Guinea, Philippines, Taiwan, Spain, South Korea, Japan, Ecuador (55%)	Top scoring in the production volumes
Japanese anchovy	*Engraulis japonicus*	Small pelagics	0.66	0.62	Capture	China, South Korea, Japan (100%)	Top scoring in the production volumes
Atlantic cod	*Gadus morhua*	Fished whitefish	0.65	0.61	Capture	Norway, Russia, Iceland (82%)	Top scoring in the production volumes
Largehead hairtail	*Trichiurus lepturus*	Fished whitefish	0.63	0.59	Capture	China, South Korea, Iran (91%)	Top scoring in the production volumes
Atlantic mackerel	*Scomber scombrus*	Small pelagics	0.62	0.61	Capture	UK, Norway, Russia, Iceland, Faeroe islands (74%)	Top scoring in the production volumes
Jumbo flying squid (Humboldt squid)	*Dosidicus gigas (*Orbigny. 1835*)*	Cephalopods	0.50	0.67	Capture	China, Peru, Chile (98%)	Top scoring in the production volumes
Giant tiger prawn	*Penaeus monodon (*Fabricius 1798*)*	Farmed crustaceans	0.49	0.57	Brackish water aquaculture. capture	India, Vietnam, Indonesia (71%)	Top scoring in the production volumes
Jackknife clam	*Sinonovacula constricta*	Molluscs except cephalopods	0.40	0.65	Marine aquaculture	China (100%)	Top scoring in the production volumes
Red swamp crawfish	*Procambarus clarkii (*Girard. 1852*)*	Farmed crustaceans	0.39	0.12	Freshwater aquaculture	China (94%)	Top scoring in the production volumes
Rainbow trout	*Oncorhynchus mykiss (*Walbaum 1792*)*	Farmed salmonids	0.38	0.67	Marine and freshwater aquaculture	Iran, Turkey, Chile, Norway (52%)	Top scoring in the production volumes
European sprat	*Sprattus sprattus*	Small pelagics	0.34	0.56	Capture	Denmark, Poland, Sweden, Russia (65%)	Top scoring in the production volumes
Capelin	*Mallotus villosus (*Müller. 1776*)*	Small pelagics	0.32	0.6	Capture	Iceland, Norway (76%)	Top scoring in the production volumes
Cephalopods	*Cephalopoda spp.*	Cephalopods	0.30	0.70	Capture	Japan, Malaysia, China, Falkland islands, New Zealand, US	Previously analyzed in Hallström et al.
Gazami crab	*Portunus trituberculatus (*Miers. 1876*)*	Fished crustaceans	0.28	0.35	Capture	China (97%)	Top scoring in the production volumes
Japanese pilchard	*Sardinops melanosticta*	Small pelagics	0.25	0.53	Capture	Japan (78%)	Top scoring in the production volumes

Pacific herring	*Clupea pallasii (*Valenciennes. 1847*)*	Small pelagics	0.24	0.64	Capture	Russia (80%)	Top scoring in the production volumes
Pacific cod	*Gadus macrocephalus (*Tilesius 1810)	Fished whitefish	0.23	0.41	Capture	US, Russia (89%)	Top scoring in the production volumes
Amur catfish	*Silurus asotus*	Farmed whitefish	0.23	0.45	Freshwater aquaculture	China (99%)	Top scoring in the production volumes
Pink salmon	*Oncorhynchus gorbuscha*	Wild salmonids	0.22	0.62	Capture	US, Russia (99%)	Top scoring in the production volumes
Bigeye tuna	*Thunnus obesus*	Tunas	0.21	0.58	Capture	Indonesia, Ecuador, Taiwan, Japan, Spain, China, South Korea (69%)	Species of nutritional interest
Haddock	*Melanogrammus aeglefinus*	Fished whitefish	0.15	0.48	Capture	Norway, Russia, Iceland, UK (97%)	Previously analyzed in Hallström et al.
Cape hake	*Merluccius capensis*	Fished whitefish	0.15	0.53	Capture	Namibia, South Africa (95%)	Previously analyzed in Hallström et al.
Saithe	*Pollachius virens*	Fished whitefish	0.15	0.47	Capture	Norway, Iceland, Faeroe islands (79%)	Previously analyzed in Hallström et al.
Northern prawn	*Pandalus borealis*	Fished crustaceans	0.13	0.36	Capture	Greenland, Canada (76%)	Previously analyzed in Hallström et al.
Albacore	*Thunnus alalunga*	Tunas	0.11	0.58	Capture	Taiwan, China, Japan, Spain (68%)	Species of nutritional interest
Chilean mussel	*Mytilus chilensis*	Bivalves	0.10	0.24	Marine aquaculture	Chile (100%)	Species of nutritional interest
Blue mussel	*Mytilus edulis*	Bivalves	0.10	0.24	Marine aquaculture	Netherlands, France, Denmark, Canada, Ireland, Germany (92%)	Species of nutritional interest
Sockeye salmon	*Oncorhynchus nerka (*Walbaum. 1792*)*	Wild salmonids	0.09	0.62	Capture	US, Russia (98%)	Species of nutritional interest
American lobster	*Homarus americanus (*H. Milne Edwards. 1837*)*	Fished crustaceans	0.08	0.38	Capture	Canada, US (100%)	Previously analyzed in Hallström et al.
Green mussel	*Perna viridis*	Bivalves	0.07	0.24	Marine aquaculture	Thailand, Indonesia, Philippines (91%)	Species of nutritional interest

Supplementary Table 7. Reference food composition databases, nutrient gaps and nutrient data complementation for the analyzed seafoods

Seafood product	Food composition database	Nutrients missing in all food composition databases used	Notes
Pacific cupped oyster	uFishJ[16]		
Nile tilapia	uFishJ[16]		Nutrient composition refers to farmed tilapia.
Common carp	STFC[17]	Iodine, Selenium	
Japanese carpet shell	STFC[17]		
Whiteleg shrimp	uFishJ[16]		
Alaskan pollock	CNF[18]		Iodine from SFA
Skipjack tuna	CNF[18]		Vit. D and α-tocopherol from STFC (fish caught in autumn).
Atlantic salmon	uFishJ[16]		
Atlantic herring	CNF[18]		Iodine from SFA
Pacific chub mackerel	CNF[18]		Iodine for *Scomber scombrus* from SFA
Yellowfin tuna	CNF[18]	Iodine	
Japanese anchovy	STFC[17]		
Atlantic cod	uFishJ[16]		
Largehead hairtail	STFC[17]	Iodine, Selenium	
Atlantic mackerel	CNF[18]		Iodine from SFA
Jumbo flying squid	uFishJ[16]		Nutrient profile refers to *Ommastrephidae* family.
Jackknife clam	STFC[17]	Iodine	Selenium from China food composition book[19]
Red swamp crawfish	uFishJ[16]		Nutrient profile refers to European/Euro-American/Oceanian crayfish
European sprat	SFA[21]		Pantothenic acid from CoFID (Public Health England[20]
Giant tiger prawn	uFishJ[16]		
Capelin	CNF[18]	Iodine	

Gazami crab	STFC[17]	Iodine	Selenium from China food composition book (Institute of Nutrition and Food Safety, 2002).
Rainbow trout	uFishJ[16]		
Japanese pilchard	STFC[17]		
Pacific herring	STFC[17]		Iodine from SFA and selenium from CNF.
Pacific cod	uFishJ[16]		
Amur catfish	STFC[17]	Iodine	Tryptophan content from CNF; Selenium from China food composition book[10]
Pink salmon	CNF[18]		Iodine from SFA
Scallops	uFishJ[16]		
Cephalopods	uFishJ[16]		Vit B6 and B12 from SFA
Haddock	CNF[18]		Iodine from SFA
Cape hake	SFA[21]	Iodine	Panthotenic acid for Hakes (*Merluccius spp*.) from STFC.
Saithe	CNF[18]		Iodine from SFA
Northern prawn	SFA[21]		Panthotenic acid for *Pandalus eous* from STFC.
American lobster	uFishJ[16]	Iodine	Panthotenic acid from CNF and Iodine for Nephropidae spp. from SFA
Bigeye tuna	STFC[17]		
Albacore	STFC[17]		
Chilean mussel	uFishJ[16]		Nutrient profile refers to *Mytilus spp*.
Blue mussel	uFishJ[16]		
Sockeye salmon	CNF[18]		Iodine for *Oncorhynchus gorbuscha* from SFA
Green mussel	uFishJ[16]		
Other animal products			
Beef, composite cuts, steak/roast, lean and fat	CNF[18]		
Pork, composite cuts, leg, loin and shoulder, lean and fat	CNF[18]	Total n-3 fatty acids	n-3 calculated as the sum of ALA, EPA, DPA and DHA.

Chicken, broiler, meat and skin, raw	CNF[18]	Vitamin C	Vitamin C from SFA

Supplementary Table 8. Nutrients included in the analysis and their reference values.

Nutrients	DRI*	Source
DESIRABLE NUTRIENTS		
Protein (g/d) **	50	Codex Alimentarius[22]
n-3 fatty acids (g/d)***	2.75	FAO 2010[23]
Vitamins		
Vitamin A (µg RE)	800	Codex Alimentarius[22]
Vitamin D (µg)****	10	Codex Alimentarius[22]
Vitamin E (mg)	9	Codex Alimentarius[22]
Thiamin (mg)	1.2	Codex Alimentarius[22]
Riboflavin (mg)	1.2	Codex Alimentarius[22]
Niacin (mg NE)	15	Codex Alimentarius[22]
Pantothenic acid (mg)	5	Codex Alimentarius[22]
Vitamin B6 (mg)	1.3	Codex Alimentarius[22]
Folate (µg)	400	Codex Alimentarius[22]
Vitamin B12 (µg)	2.4	Codex Alimentarius[22]
Minerals		
Calcium (mg)	1 000	Codex Alimentarius[22]
Copper (µg)	900	Codex Alimentarius[22]
Iron (mg)*****	22	Codex Alimentarius[22]
Potassium (mg)	3500	Codex Alimentarius[22]
Magnesium (mg)	310	Codex Alimentarius[22]
Phosphorus (mg)	700	Codex Alimentarius[22]
Zinc (mg)******	14	
Iodine (µg)	150	Codex Alimentarius[22]
Selenium (µg)	60	Codex Alimentarius[22]
NON-DESIRABLE NUTRIENTS	**MRI***	
Saturated fatty acids (g/d)	20	Codex Alimentarius[22]
Sodium (mg/d)	2000	Codex Alimentarius[22]

*In Codex Alimentarius[22] the DRI is defined as nutrient reference values-requirement (NRVs-R) and MRI as nutrient reference values- non-communicable diseases (NRVs-NCD). **Based on 10% of total energy intake (E%), where the reference energy intake is 8 370 kilojoules/2 000 kilocalories. ***Based on 1,25 E%, recommended intake is 0,5-2 E% and refers to the adult population (age ≥ 18 years of age). Refers to content of EPA, DHA and ALA.****Average value, reference intake is 5-15 µg based on sunlight exposure. *****Based on 10% dietary absorption, estimated for diets rich in cereals, roots or tubers, with some meat, fish, poultry and/or containing some fruit and vegetables. ******Based on 22% dietary absorption, estimated for cereal-based diets, with >50% energy intake from cereal grains or legumes and negligible intake of animal protein.

Supplementary Table 9. Average nutrient contribution to NDS_{21} and to DRI for all seafood species for capped and uncapped values.

Capped nutrient contribution to NDS_{21}			Uncapped nutrient contribution to NDS_{21}			Capped nutrient % to DRI			Uncapped nutrient % to DRI		
Nutrient	**Average % contribution**	**Range**	**Nutrient**	**Average % DRI**	**Range**	**Nutrient**	**Average % contribution**	**Range**	**Nutrient**	**Average % DRI**	**Range**
Vitamin B12	21.6	8.2-34.2	Vitamin B12	345.8	37.5-2475	Vitamin B12	36.5	7.4-91.9	Vitamin B12	87.61	37.5-100*
Niacin equivalents	12.0	4.6-24.0	Niacin equivalents	56.3	15.7-171.3	Niacin equivalents	10.6	0.6-30.2	Niacin equivalents	51.42	15.7-100*
Protein	8.5	4.1-16.8	Vitamin D	53.6	0-320	Vitamin D	7.6	0.0-45.5	Vitamin D	36.30	0.0-100*
Phosphorus	7.9	3.3-16.3	Protein. total	33.9	12.0-52	Protein	7.0	0.5-16.9	Protein. total	33.87	12.0-52.0
Vitamin D	7.4	0.0-29.5	Phosphorus	32.2	12.1-107	Phosphorus	6.4	0.5-16.3	Phosphorus	32.04	12.1-100*
n-3 fatty acids	5.9	0.3-22.0	n-3 fatty acids	29.1	2.2-230	Copper	4.6	1.6-26.8	n-3 fatty acids	29.10	1.1-114^
Copper	5.7	0.5-24.8	Copper	26.9	1.1-114	n-3 fatty acids	4.5	0.0-22.5	Copper	22.90	2.2-100*
Vitamin B6	4.7	2.4-	Vitamin B6	21.6	3.1-72.3	Vitamin B6	3.8	0.1-14.2	Vitamin B6	21.57	3.1-72.3
alpha-Tocopherol	3.6	0.2-15.6	alpha-Tocopherol	14.9	1.1-70.0	alpha-Tocopherol	2.8	0.1-15.6	alpha-Tocopherol	14.85	1.1-70.0
Magnesium	3.3	1.4-11.0	Pantothenic acid	13.7	3.2-58.5	Pantothenic acid	2.4	0.3-11.6	Pantothenic acid	13.72	3.2-58.5
Pantothenic acid	3.1	1.0-13.4	Magnesium	12.8	5.2-33.4	Magnesium	2.3	0.6-5.6	Magnesium	12.80	5.2-33.4
Sodium	2.7	0.3-14.9	Riboflavin	11.2	0-35.1	Riboflavin	1.7	0.0-5.7	Riboflavin	11.21	0-35.1
Riboflavin	2.6	0.0-6.5	Sodium	9.6	1.7-43.5	Sodium	1.7	0.3-6.7	Sodium	9.59	1.7-43.5
Potassium	2.1	0.7-5.0	Potassium	8.3	2.5-12.6	Potassium	1.7	0.1-5.0	Potassium	8.34	2.5-12.6
Zinc	2.0	0.0-5.8	Zinc	8.1	0.1-26.4	Zinc	1.5	0.0-5	Zinc	8.14	0.1-26.4
Iron	1.7	0.2-11.9	Thiamin	6.8	0-38.3	Thiamin	1.1	0.1-6.1	Thiamin	6.84	0-38.3
Thiamin	1.6	0.0-7.6	Iron	6.7	0.8-46.8	Iron	1.0	0.2-7.8	Iron	6.69	0.8-46.8
Saturated fatty acids	1.0	0.0-3..4	Saturated fatty acids	5.2	0.1-29.2	Saturated fatty acids	0.8	0.0-5.7	Saturated fatty acids	5.16	0.1-29.2
Calcium	0.9	0.1-4.3	Calcium	3.8	0.3-25.0	Folate	0.6	0.0-4.2	Calcium	3.82	0.4-18.2
Folate	0.9	0.1-6.4	Retinol equivalents	3.5	0.4-18.2	Calcium	0.6	0.1-1.9	Retinol equivalents	3.51	0-34.5
Retinol equivalents	0.8	0-6.0	Folate	3.4	0-34.5	Retinol equivalents	0.5	0.0-3.4	Folate	3.42	0.3-25.0

*Rounded values as a result of applying capping. ^Capping is not applied to n-3 fatty acids.

Supplementary Table 10. Ranking of seafood species according to NDS_{21} with and without capping. Red cells indicate species that drop to a lower tertile of nutrient density when capping is applied; Green cells indicate species that move to a higher tertile of nutrient density when capping is applied.

Tertile	Uncapped NDS_{21}	Capped NDS_{21}
1	Jackknife clam	Pink salmon
	Japanese carpet shell	Japanese pilchard
	Pacific cupped oyster	Sockeye salmon
	Japanese pilchard	European sprat
	Pacific herring	Atlantic salmon
	Japanese anchovy	Pacific herring
	European sprat	Albacore
	Atlantic herring	Largehead hairtail
	Blue mussel	Pacific chub mackerel
	Common carp	Japanese anchovy
	Chilean mussel	Rainbow trout
	Largehead hairtail	Skipjack tuna
	Sockeye salmon	Common carp
	Pink salmon	Yellowfin tuna
2	Atlantic salmon	Atlantic herring
	Albacore	Amur catfish
	Pacific chub mackerel	Gazami crab
	Green mussel	Bigeye tuna
	Rainbow trout	Atlantic mackerel
	Gazami crab	Cephalopods
	Skipjack tuna	Pacific cupped oyster
	Bigeye tuna	Jumbo flying squid
	Cephalopods	American lobster
	Yellowfin tuna	Green mussel
	Atlantic mackerel	Giant tiger prawn
	Nile tilapia	Blue mussel
	Amur catfish	Chilean mussel

3	American lobster	Saithe
	Jumbo flying squid	Capelin
	Saithe	Nile tilapia
	Capelin	Red swamp crawfish
	Giant tiger prawn	Scallops
	Scallops	Jackknife clam
	Northern prawn	Northern prawn
	Red swamp crawfish	Whiteleg shrimp
	Whiteleg shrimp	Haddock
	Haddock	Pacific cod
	Pacific cod	Atlantic cod
	Atlantic cod	Alaskan pollock
	Alaskan pollock	Japanese carpet shell
	Cape hake	Cape hake

Supplementary Methods 1

Seafoods included in nutrient density assessment

Seafood species analyzed are shown in Supplementary Table 6. Species scoring among the top fifty species in global production volumes in 2015 for which nutrition composition data was available were included in this study[15]. Additional seafoods of interest were species previously analyzed in a Swedish study[1] and species from species groups of special interest (i.e. bivalves). A total of 41 seafood products, accounting for 27% of global fisheries and aquaculture production (including seaweeds) in 2015, were included in the nutritional analysis. Species of turtles and algae, and seafoods lacking a full taxonomic description, were excluded, with the exception of the groups "scallops" and "cephalopods". Carp is the most widely produced fish, with the different carp species (grass, silver and common carp and five other carp species) jointly representing 12% of global production. However, a sufficiently complete nutrition profile was only available for common carp, which was consequently the only carp species included in the analysis. Pacific cupped oyster ranks first in production volume (Supplementary Table 6) as it was deemed appropriate to combine production volumes for Pacific cupped oyster (*Crassostrea gigas,* 0.29% total production volume) and cupped oyster (*Crassostrea spp.*, 2.30% total production volume). Among the 41 selected species, a few species are not currently fully used for human consumption (i.e. capelin) but were nonetheless included in this analysis due to their potentially interesting nutrition profile.

Nutrient composition of seafood and other animal protein sources

Nutrient composition was obtained from the uFishJ food composition database[16] for 16 seafood products, from the Japan Standard Tables of Food Composition (STFC)[17] for 11 species, from the Canada Nutrient File (CNF)[18] for 11 species and from the Swedish Food Composition Database[21]for three species. The uFishJ database[16] offers the most comprehensive and global perspective over seafood composition, basing its data on a collection from 18 Regional and Sub-Regional FAO/INFOODS data centers, as well as national food composition tables. However, information was missing from uFishJ for more than half the species, which were then retrieved from the other databases. The Japan STFC[17] was particularly useful to derive the nutrient composition of seafood products produced in Asia, whilst the Swedish SFA database[21] was used for Iodine values. Additionally, for a few products, data on other nutrients were lacking and hence complemented by equivalent data from other food composition databases, including reference databases from uFishJ (e.g. the China food composition book[19]). Reference food composition databases, nutrient gaps and complementation for several lacking nutrients are shown in Supplementary Table 7.

Nutrients included in the nutrient density assessment and reference values

Nutrient density was calculated according to two indexes, NDS_{21} and NDS_{23}, based on 21 and 23 nutrients, respectively, of which 19-21 are nutrients considered positive for their contribution to human health, and whose intake should be promoted, and two are nutrients to be limited based on their detrimental health effects.

The dietary reference intake (DRI) were based on the "nutrient reference values-requirements" (NRVs-R), the maximum recommended intake (MRI) on the "nutrient reference values–non-communicable disease" (NRVs-NCD) developed by Codex Alimentarius for the purpose of nutrition labelling in food products[22]. NRVs-R are established for vitamins, minerals and protein (Supplementary Table 8) and are based on the individual nutrient level 98 (i.e. the daily intake reference value estimated to meet the nutrient requirement of 98 percent of the apparently healthy individuals in a specific life stage and sex group) for the general population older than 36 months of age. NRVs-NCD refer to the levels of nutrients associated with the reduction in the risk of diet-related non-communicable diseases not including nutrient deficiency diseases or disorders.

The set of reference values by Codex Alimentarius[22] can be internationally applied, and was therefore considered appropriate for this study, where the nutritional quality of seafood is analyzed from a global perspective. However, Codex Alimentarius[22] does not provide an indication for the recommended daily intake of n-3 fatty acids, whose inclusion in the present analysis is relevant. The reference value for the n-3 fatty acids was therefore derived from the FAO expert consultation on fatty acids in human consumption[23].

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