

## **Supplementary Information: Year-round utilization of sea ice-associated carbon in Arctic ecosystems**

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Supplementary Table 1 – Mean estimated sea ice particulate organic carbon (iPOC %) values and statistics [maximum values (Max), minimum values (Min), standard deviation (SD), standard error (SE) and sample size (n)] grouped by species and individual contributor (author initials). Additional sample data were contributed courtesy of Philipp Assmy (Norwegian Polar Institute), L. Winberg (University of Gothenburg), Dieter Piepenburg (Alfred Wegener Institute), Fanny Cusset (La Rochelle University), and Markus G. Dyck (Government of Nunavut). The source of original highly branched isoprenoid (HBI) values used to estimate iPOC are provided under the “source” column (see reference list at bottom of table). Data that have not been previously published are noted as “new”. Individual rows are listed by species (or lowest possible taxonomic group possible) and if available, a common name is provided.

Species	Common Name	Mean estimated iPOC%	Max	Min	SD	SE	n	Contributor	Source
<i>Actinauge cristata</i>		69.05	89.52	53.78	17.26	8.63	4	G.Y.G.	1
<i>Aglaophamus malmgreni</i>		89.34	89.34	89.34			1	G.Y.G.	1
<i>Ampelisca</i> sp.		8.47	37.06	-1.08	14.88	4.49	11	C.W.K.	2
<i>Anonyx nugax</i>		77.88	77.88	77.88			1	T.A.B.	3
<i>Anonyx nugax</i>		84.07	84.07	84.07			1	G.Y.G.	1
<i>Apherusa glacialis</i>		92.22	101.08	37.68	18.59	4.80	15	T.A.B. (Philipp Assmy)	4
<i>Arctogadus glacialis</i>	Ice or Arctic cod	12.35	19.38	7.67	3.49	0.87	16	S.H.F.	New
<i>Aspidophoroides olrikii</i>	Alligator Fish	36.22	53.79	17.11	15.80	6.45	6	N.E.H.	New
<i>Astarte borealis</i>		12.93	38.90	0.75	17.95	8.98	4	C.W.K.	2
<i>Astarte crenata</i>		37.61	38.99	36.22	1.96	1.39	2	G.Y.G.	1
<i>Astarte</i> sp.		92.33	93.29	91.36	1.36	0.96	2	T.A.B.	3
<i>Astarte</i> sp.		53.94	53.94	53.94			1	G.Y.G.	1
<i>Astarte</i> sp.		84.71	86.01	83.40	1.84	1.30	2	T.A.B. (Winberg)	New
<i>Bathyiaster vexillifer</i>		89.70	91.12	88.28	2.01	1.42	2	G.Y.G.	1
<i>Bathylagus euryops</i>	goiter blacksmelts	54.91	76.06	36.08	12.67	3.17	16	N.E.H.	New
<i>Bathypolypus bairdii</i>		57.39	57.39	57.39			1	G.Y.G.	1
<i>Beroe cucumis</i>		-1.08	-1.08	-1.08			1	D.K.	5
<i>Bolocera tuediae</i>		58.07	58.73	57.40	0.94	0.67	2	G.Y.G.	1
<i>Boreogadus saida</i>	Polar cod	7.48	15.07	3.03	3.50	0.94	14	D.J.Y. & R.A.	6
<i>Boreogadus saida</i>	Polar cod	73.85	73.85	73.85			1	T.A.B.	3
<i>Boreogadus saida</i>	Polar cod	44.51	101.08	4.46	33.94	5.66	36	S.H.F.	New
<i>Boreogadus saida</i>	Polar cod	19.35	64.89	-1.08	11.39	0.98	13 5	N.E.H.	New
<i>Boreomysis nobilis</i>		96.70	98.04	95.37	0.85	0.30	8	G.Y.G.	1
<i>Bougainvillia superciliaris</i>		-1.08	-1.08	-1.08			1	D.K.	5
Buccinidae		88.89	97.44	80.54	5.55	1.60	12	T.A.B. (Winberg)	New
<i>Calanus finmarchicus</i>		-1.08	-1.08	-1.08	0.00	0.00	6	D.K.	5, 7
<i>Calanus glacialis</i>		-1.08	-1.08	-1.08	0.00	0.00	5	D.K.	5, 7

<i>Calanus hyperboreus</i>		-1.08	-1.08	-1.08	0.00	0.00	5	D.K.	5, 7
<i>Catablema visicarium</i>		-1.08	-1.08	-1.08			1	D.K.	5
<i>Ceramaster granularis</i>		56.66	65.32	43.28	11.75	6.79	3	G.Y.G.	1
<i>Chaetognatha</i>		34.23	61.19	7.41	19.15	4.51	18	D.J.Y. & R.A.	6
<i>Chionoecetes opilio</i>		9.53	11.99	7.07	3.48	2.46	2	C.W.K.	2
<i>Chlamys islandica</i>		95.39	95.95	94.84	0.79	0.56	2	T.A.B. (Winberg)	New
<i>Clinocardium ciliatum</i>		57.53	76.53	46.32	11.49	5.14	5	T.A.B. (Winberg)	New
<i>Clione limacina</i>		101.08	101.0 8	101.0 8	0.00	0.00	2	D.K.	5
<i>Clione limacina</i>		4.86	8.69	2.14	2.16	0.77	8	D.J.Y. & R.A.	6
<i>Coregonus autumnalis</i>	Arctic Cisco	97.60	100.2 0	93.83	1.90	0.43	20	L.L.	New
<i>Coregonus nasus</i>	Broad Whitefish	101.05	101.0 7	100.9 1	0.04	0.01	19	L.L.	New
Cottoidea	Sculpin	89.44	98.30	76.44	5.93	1.33	20	S.H.F.	New
Cottoidea	Sculpin	71.55	93.00	45.55	13.09	3.50	14	N.E.H.	New
<i>Cryptonatica clausa</i>		93.77	97.57	87.27	3.45	1.15	9	T.A.B. (Winberg)	New
<i>Ctenodiscus crispatus</i>		61.56	62.02	61.09	0.66	0.47	2	G.Y.G.	1
Ctenophore		36.64	42.93	30.34	8.90	6.30	2	D.J.Y. & R.A.	6
<i>Cuspidaria glacialis</i>		66.53	68.24	64.83	2.41	1.71	2	G.Y.G.	1
<i>Delphinapterus leucas</i>	Beluga whale	76.56	100.6 2	14.66	17.87	1.32	18 4	S.H.F. & D.J.Y.	8
<i>Delphinapterus leucas</i>	Beluga whale	18.27	50.30	9.06	7.29	1.29	32	L.L.	New
<i>Diastylis rathkei</i>		67.75	82.40	43.06	21.50	12.41	3	G.Y.G.	1
<i>Drifa glomerata</i>		66.13	66.13	66.13			1	G.Y.G.	1
<i>Eleginus gracilis</i>	Saffron Cod	68.60	96.91	42.65	16.89	3.78	20	L.L.	New
<i>Ennucula tenuis</i>		28.40	76.66	0.16	25.91	6.11	18	C.W.K.	2
<i>Erignathus barbatus</i>	Bearded Seal	96.88	96.88	96.88			1	S.H.F.	New
<i>Eumicrotremus derjugini</i>	leatherfin lumpsucker	11.12	11.12	11.12			1	N.E.H.	New
<i>Eusirus holmi</i>		101.08	101.0 8	101.0 8	0.00	0.00	14	T.A.B. (Philipp Assmy)	4
<i>Fulmaris glacialis</i>	Northern fulmar	56.09	101.0 8	-1.08	32.83	4.27	59	F.C.	9
<i>Gadus morhua</i>	Atlantic cod	58.53	58.53	58.53			1	T.A.B.	3
<i>Gammarus wilkitzkii</i>		98.92	101.0 8	93.79	2.19	0.38	34	T.A.B. (Philipp Assmy)	4
<i>Geodia macandrewii</i>		56.32	58.30	54.34	2.80	1.98	2	G.Y.G.	1
<i>Golfingia margaritacea</i>		41.45	77.07	15.47	22.52	9.19	6	C.W.K.	2
<i>Gorgonocephalus lamarckii</i>		63.26	84.83	48.81	17.00	8.50	4	G.Y.G.	1
<i>Gorgonocephalus sp.</i>		20.09	20.09	20.09			1	C.W.K.	2
<i>Hanleya hanleyi</i>		54.74	56.44	53.05	2.40	1.70	2	G.Y.G.	1
<i>Henricia sp.</i>		67.97	85.91	53.49	13.62	6.09	5	G.Y.G.	1
<i>Henricia sp.</i>		50.21	50.21	50.21			1	C.W.K.	2

<i>Hiatella arctica</i>		80.88	83.76	77.99	4.08	2.89	2	T.A.B. (Winberg)	New
<i>Hippasteria phrygiana</i>		16.12	16.12	16.12			1	G.Y.G.	1
<i>Hippoglossoides platessoides</i>	American plaice	31.68	31.68	31.68			1	G.Y.G.	1
<i>Hippoglossoides platessoides</i>	American plaice	19.63	19.63	19.63			1	N.E.H.	New
<i>Hyas coarctatus</i>		78.58	78.58	78.58			1	T.A.B.	10
Hydrozoa		34.37	54.82	20.71	13.35	5.04	7	D.J.Y. & R.A.	6
<i>Hymenaster pellucidus</i>		82.67	82.67	82.67			1	G.Y.G.	1
<i>Hymenodora glacialis</i>		93.26	98.91	90.29	2.71	1.03	7	G.Y.G.	1
<i>Icasterias panopla</i>		57.01	57.44	56.58	0.61	0.43	2	G.Y.G.	1
<i>Icelus bicornis</i>	Twohorn sculpin	69.23	69.23	69.23			1	T.A.B.	3
<i>Jasmineira schaudinni</i>		89.85	95.40	79.81	5.70	2.33	6	G.Y.G.	1
<i>Lebbeus polaris</i>		60.35	93.93	24.30	26.28	9.29	8	G.Y.G.	1
<i>Leptagonus decagonus</i>	Atlantic poacher	48.50	48.50	48.50			1	T.A.B.	3
<i>Leptychaster arcticus</i>		75.70	75.70	75.70			1	G.Y.G.	1
<i>Limacina helicina</i>		96.20	101.08	91.32	6.90	4.88	2	D.K.	5
Liparidae	Snail Fish	7.26	71.57	-1.08	14.76	2.25	43	N.E.H.	New
<i>Liparis fabricii</i>	Gelatinous snailfish	37.00	37.00	37.00			1	T.A.B.	10
<i>Liparis gibbus</i>	Variegated snailfish	46.91	46.91	46.91			1	T.A.B.	3
<i>Liponema multicornis</i>		89.68	89.96	89.40	0.40	0.28	2	G.Y.G.	1
<i>Lithodes maja</i>		68.65	68.65	68.65			1	G.Y.G.	1
<i>Lumbrineris</i> sp.		22.08	22.08	22.08			1	C.W.K.	2
<i>Lumpenus lampretaeformis</i>	Snakeblenny	26.27	26.27	26.27			1	G.Y.G.	1
<i>Lycodes esmarkii</i>	Greater eelpout	76.22	76.22	76.22			1	T.A.B.	New
<i>Macoma</i> sp.		15.16	59.64	-1.08	18.06	3.10	34	C.W.K.	2
Maldanidae		27.89	78.35	-1.08	25.86	6.09	18	C.W.K.	2
<i>Mallotus villosus</i>	Capelin	15.47	15.47	15.47			1	T.A.B.	8
<i>Mallotus villosus</i>	Capelin	34.82	63.20	14.17	15.15	5.36	8	N.E.H.	8
<i>Meganyctiphanes norvegica</i>		6.49	29.18	-1.08	15.13	7.56	4	D.K.	7
<i>Melanogrammus aeglefinus</i>	Haddock	73.66	73.66	73.66			1	T.A.B.	New
<i>Mertensia ovum</i>		-1.08	-1.08	-1.08			1	D.K.	5
<i>Metridia longa</i>		-1.08	-1.08	-1.08	0.00	0.00	2	D.K.	5
<i>Molpadia</i> sp.		72.64	72.64	72.64			1	G.Y.G.	1
<i>Monodon monoceros</i>	Narwhal	79.65	83.71	74.15	4.10	1.84	5	S.H.F.	New
<i>Musculus</i> sp.		11.19	22.51	-0.14	16.02	11.33	2	C.W.K.	2
<i>Mya</i> sp.		3.18	3.18	3.18			1	C.W.K.	2
<i>Mya truncata</i>		4.28	4.29	4.28	0.01	0.00	2	C.W.K.	2
<i>Mya truncata</i>		92.41	92.41	92.41			1	T.A.B. (Winberg)	New

<i>Myriotrochus</i> sp.		22.26	22.26	22.26			1	C.W.K.	2
<i>Mysis oculata</i>		18.05	23.40	14.33	3.93	1.97	4	D.J.Y. & R.A.	6
<i>Nephtys</i> sp.		8.24	23.44	-1.08	7.41	2.62	8	C.W.K.	2
<i>Nuculana pernicula</i>		20.45	39.16	1.74	26.46	18.71	2	C.W.K.	2
<i>Nutricula</i> sp.		3.65	8.38	-1.08	6.69	4.73	2	C.W.K.	2
<i>Odobenus rosmarus divergens</i>	Pacific walrus	37.22	94.90	-0.90	22.45	1.89	14 1	C.W.K.	11
<i>Odobenus rosmarus rosmarus</i>	Atlantic walrus	68.07	100.3 0	1.77	27.50	3.61	58	D.J.Y.	12
<i>Oikopleura vanhoeffeni</i>		101.08	101.0 8	101.0 8			1	D.K.	5
<i>Onisimus glacialis</i>		101.08	101.0 8	101.0 8	0.00	0.00	10	T.A.B. (Philipp Assmy)	4
<i>Onisimus nanseni</i>		100.74	101.0 8	98.97	0.66	0.18	13	T.A.B. (Philipp Assmy)	4
<i>Ophiacantha bidentata</i>		86.71	86.76	86.66	0.07	0.05	2	G.Y.G.	1
<i>Ophiacantha spectabilis</i>		77.48	79.65	75.77	1.69	0.84	4	G.Y.G.	1
<i>Ophiocten sericeum</i>		38.54	54.51	8.34	26.17	15.11	3	C.W.K.	2
<i>Ophiopholis aculeata</i>		81.54	90.73	62.54	13.06	6.53	4	G.Y.G.	1
<i>Ophiopleura borealis</i>		94.70	99.33	83.56	7.46	3.73	4	G.Y.G.	1
<i>Ophioscolex glacialis</i>		84.96	84.96	84.96			1	G.Y.G.	1
<i>Ophiura sarsii</i>		89.02	91.08	85.05	3.44	1.99	3	G.Y.G.	1
<i>Osmerus mordax</i>	Rainbow smelt	53.40	83.83	37.82	14.63	4.88	9	L.L.	New
<i>Pagophilus groenlandicus</i>	Harp Seal	68.56	91.90	26.28	24.42	8.63	8	S.H.F.	New
<i>Pagurus pubescens</i>		24.51	24.51	24.51			1	G.Y.G.	1
<i>Pandalus borealis</i>		74.76	86.78	62.74	17.00	12.02	2	G.Y.G.	1
<i>Pandalus borealis</i>		68.88	73.92	58.85	8.69	5.01	3	T.A.B.	10
<i>Pandora</i> sp.		2.88	2.88	2.88			1	C.W.K.	2
<i>Paraeuchaeta glacialis</i>		-1.08	-1.08	-1.08	0.00	0.00	3	D.K.	7
<i>Paraeuchaeta norvegica</i>		-1.08	-1.08	-1.08			1	D.K.	5
<i>Pectinaria hyperborea</i>		30.99	66.67	5.08	25.42	7.34	12	C.W.K.	2
<i>Phoca vitulina</i>	Harbour seal	67.69	80.85	45.24	14.36	5.86	6	S.H.F.	New
<i>Phyllodoce groenlandica</i>		71.81	71.81	71.81			1	T.A.B.	New
<i>Platichthys stellatus</i>	Starry Flounder	99.81	100.9 5	95.60	1.26	0.27	22	L.L.	New
<i>Polymastia hemisphaerica</i>		65.19	65.19	65.19			1	G.Y.G.	1
<i>Polymastia</i> sp.		74.92	74.92	74.92			1	G.Y.G.	1
Polynoidae		78.09	78.09	78.09			1	T.A.B.	3
<i>Polyphysia crassa</i>		83.52	84.47	81.32	1.28	0.57	5	G.Y.G.	1
<i>Pontaster tenuispinus</i>		94.42	96.69	90.38	2.40	1.07	5	G.Y.G.	1
Porifera		95.71	95.71	95.71			1	G.Y.G.	1
Pteropod		7.74	9.03	6.08	0.94	0.28	11	D.J.Y. & R.A.	6
<i>Ptilella grandis</i>		14.05	14.05	14.05			1	S.H.F.	New
<i>Ptilella grandis</i>		61.96	87.49	45.83	22.37	12.91	3	G.Y.G.	1

<i>Pusa hispida</i>	Ringed Seal	92.54	101.0 8	10.07	13.07	0.56	54 6	S.H.F.	13, 14
<i>Reinhardtius hippoglossoides</i>	Greenland halibut	74.87	89.55	39.46	8.14	1.11	54	N.E.H.	8
<i>Rossia megaptera</i>		81.52	84.38	78.66	4.04	2.86	2	G.Y.G.	1
<i>Rossia</i> sp.		66.95	68.15	65.75	1.70	1.20	2	G.Y.G.	1
<i>Sabinea sarsii</i>		80.90	80.90	80.90			1	G.Y.G.	1
<i>Sagitta elegans</i>		-1.08	-1.08	-1.08	0.00	0.00	2	D.K.	5
<i>Sclerocrangon ferox</i>		69.33	69.33	69.33			1	G.Y.G.	1
<i>Sebastes mentella</i>	Red fish	14.47	14.47	14.47			1	T.A.B.	New
<i>Sebastes mentella</i>	Red fish	53.01	53.01	53.01			1	N.E.H.	New
<i>Serripes groenlandicus</i>		86.77	98.71	25.80	16.76	2.16	60	T.A.B. (Winberg)	New
<i>Serripes lamperosii</i>		0.19	2.74	-1.08	1.80	0.80	5	C.W.K.	2
<i>Spirontocaris liljeborgii</i>		53.38	80.16	26.61	37.87	26.78	2	G.Y.G.	1
<i>Stenosemus albus</i>		60.19	87.60	32.79	38.76	27.40	2	G.Y.G.	1
<i>Stephanasterias albula</i>		60.59	66.17	53.31	5.10	1.93	7	G.Y.G.	1
<i>Strongylocentrotus droebachiensis</i>		84.19	84.89	83.49	0.99	0.70	2	G.Y.G.	1
<i>Strongylocentrotus</i> sp.		95.87	95.87	95.87			1	T.A.B.	15
<i>Strongylocentrotus</i> sp.		85.96	91.81	80.96	3.19	0.92	12	T.A.B. (Findlay)	15
<i>Strongylocentrotus</i> sp.		82.88	100.8 3	5.88	25.73	4.55	32	T.A.B. (Dieter Piepenburg)	New
<i>Styela rustica</i>		13.75	13.75	13.75			1	C.W.K.	2
<i>Themisto abyssorum</i>		90.75	90.75	90.75			1	G.Y.G.	1
<i>Themisto abyssorum</i>		62.77	101.0 8	39.16	22.33	9.12	6	D.K.	5, 7
<i>Themisto libellula</i>		33.62	79.88	-1.08	28.20	9.97	8	D.K.	5, 7
<i>Themisto libellula</i>		9.08	18.56	-0.11	8.20	3.35	6	D.J.Y. & R.A.	6
<i>Thenaea muricata</i>		83.33	83.33	83.33			1	G.Y.G.	1
<i>Thysanoessa inermis</i>		18.02	31.12	-1.08	13.55	4.79	8	D.K.	5
<i>Thysanoessa inermis</i>		9.51	9.51	9.51			1	D.J.Y. & R.A.	6
<i>Thysanoessa raschii</i>	Arctic krill	30.46	50.97	13.17	17.28	8.64	4	D.J.Y. & R.A.	6
<i>Thysanoessa</i> sp.		-1.08	-1.08	-1.08	0.00	0.00	2	D.K.	5
<i>Tremaster mirabilis</i>		60.16	60.16	60.16			1	G.Y.G.	1
<i>Triglops nybelini</i>	Crocodile fish	37.83	64.39	-1.08	24.01	7.59	10	N.E.H.	New
<i>Triglops pingeli</i>	Ribbed sculpin	13.94	54.27	-1.08	17.96	5.68	10	N.E.H.	New
<i>Urasterias lincki</i>		38.58	38.58	38.58			1	G.Y.G.	1
<i>Uria lomvia</i>	Thick-billed murre	42.09	93.87	2.72	29.39	3.79	60	F.C.	9
<i>Ursus maritimus</i>	Polar bear	86.91	100.5 3	34.23	14.82	1.54	93	T.A.B. (Markus G. Dyck)	16
<i>Yoldia hyperborea</i>		28.85	68.67	1.74	27.57	8.31	11	C.W.K.	2
<i>Yoldiella lenticula</i>		95.19	95.19	95.19			1	G.Y.G.	1
Zoarcidae	Eel Pout	46.24	46.24	46.24			1	N.E.H.	New

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