The following supplement accompanies the article

Establishing a food web model for coastal Antarctic benthic communities: a case study from the Vestfold Hills

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Supplement. Isotopic and feeding guild data used to compile the food web from Vestfold Hills, East Antarctica

Table S1. $\delta^{13}C$ and $\delta^{15}N$ values (mean ± SD) of carbon sources and consumers from the Vestfold Hills food web. TP: trophic postition, PP = primary producer, SF = suspension feeder, DF = deposit feeder, G = grazer, O = omnivore, S/P = scavenger/predator, P = predator

Species		n	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	TP	Feeding guild[a]	Tissue analysed
Chlorophyla	*Chaetomorpha* sp.	6	–16.64 ± 0.36	5.88 ± 0.16		PP	Whole frond
	Monostroma sp.	6	–30.13	4.58		PP	Whole frond
Phaeophyceae	*Himantothallus grandifolius*	6	–17.47 ± 1.02	5.36 ± 0.49		PP	1 cm^2 sections
Rhodophyta	*Iridaea cordata*	18	–17.10 ± 1.51	6.80 ± 0.58		PP	1 cm^2 sections
	Palmaria decipiens	6	–16.33 ± 0.30	6.32 ± 0.06		PP	Whole frond
	Gymnogongrus	1	–30.13	4.58		PP	Whole frond
Pelagic POM	Pelagic POM	6	–19.86 ± 0.51	5.24 ± 0.46			Surface tow
Sea ice POM	Sea ice POM	47	–8.79 ± 4.30	2.95 ± 0.97			Ice core
Sediment POM	Sediment POM	19	–18.68 ± 1.18	5.75 ± 0.93			Sediment core
Annelida							
Polychaeta	*Flabelligera mundata*	6	–15.30 ± 1.42	6.54 ± 0.71	1.9	DF	Body section
	Nephtyidae	3	–13.52 ± 1.32	11.92 ± 0.24	3.7	P	Body section
	Perkinsiana sp.	8	–19.27 ± 0.78	6.35 ± 0.54	1.8	SF	Body section
	Polynoidae	2	–14.42 ± 1.76	11.40 ± 0.74	3.5	P	Body section
	Terrebellidae	2	–20.61 ± 0.04	7.79 ± 0.41	2.3	DF	Body section
Arthropoda							
Amphipoda	*Heterophoxus videns*	2	–14.54 ± 0.11	13.76 ± 1.72	4.3	P	Whole, combined individuals
	Orchomenella franklini	1	–14.7	9.42	2.9	DF	Whole, combined individuals
	Paramoera walkeri	4	–14.19 ± 0.48	7.26 ± 0.57	2.1	G	Whole, combined individuals

	Tryphosella sp.	3	–17.79 ± 0.15	10.87 ± 0.24	3.3	S/P	Whole individual
	Waldeckia obesa	3	–18.79 ± 0.37	10.23 ± 0.21	3.1	S/P	Whole, combined individuals
Decapoda	*Chorismus antarcticus*	2	–15.19 ± 1.41	10.80 ± 0.62	3.3	O	Muscle tissue
Isopoda	*Cymodocella tubicauda*	2	–11.94 ± 0.87	6.14 ± 0.54	1.8	G	Whole, combined individuals
	Glyptonotus antarcticus	9	–13.93 ± 1.76	12.44 ± 0.75	3.9	P	Muscle tissue
	Arcturidae	2	–16.50 ± 0.18	6.10 ± 0.04	1.8	SF	Whole individual
Pycnogonida	*Magnammothea gigantea*	2	–17.56 ± 0.12	11.93 ± 2.14	3.7	P	Body section–leg
	Nymphon australe	8	–16.97 ± 1.26	10.39 ± 0.72	3.2	P	Whole individual
Tanaidacea	Tanaids	1	–9.09	8.27	2.5	DF	Whole, combined individuals
Chordata							
Ascidiacea	Ascidian sp.1	1	–17.92	2.47	0.5	SF	Body section
	Ascidian sp.10	1	–17.54	3.36	0.8	SF	Body section
	Ascidian sp.11	2	–21.92 ± 2.68	6.88 ± 1.50	2.0	SF	Body section
	Ascidian sp.12	16	–19.41 ± 1.65	7.01 ± 0.72	2.1	SF	Body section
	Ascidian sp.13	1	–15.6	6.5	1.9	SF	Body section
	Ascidian sp.14	3	–22.83 ± 0.39	4.74 ± 0.41	1.3	SF	Body section
	Ascidian sp.2	3	–22.70 ± 0.03	6.10 ± 1.77	1.8	SF	Body section
	Ascidian sp.3	3	–17.50 ± 0.42	6.39 ± 0.22	1.9	SF	Body section
	Ascidian sp.4	1	–19.87	7.45	2.2	SF	Body section
	Ascidian sp.5	1	–20.70	6.70	2.0	SF	Body section
	Ascidian sp.6	1	–20.29	6.47	1.9	SF	Body section
	Ascidian sp.7	1	–19.93	7.11	2.1	SF	Body section
	Ascidian sp.8	1	–19.92	8.34	2.5	SF	Body section
	Ascidian sp.9	1	–15.40 ± 4.78	5.92 ± 1.12	1.7	SF	Body section
	Pyrosoma sp.	1	–19.6	6.77	2.0	SF	Body section
Perciformes	*Chinodraco hamatus*	13	–22.62 ± 0.51	12.30 ± 0.55	3.8	P	Muscle tissue
	Pagothina borchgrevinki	1	–21.59	10.89	3.4	P	Muscle tissue
	Trematomus bernacchii	131	–16.07 ± 0.92	13.98 ± 0.73	4.4	P	Muscle tissue
	Trematomus newnesi	1	–23.86	9.67	2.9	P	Muscle tissue
Cnidaria							
Anthozoa	*Artemidactis victrix*	3	–15.97 ± 0.47	12.02 ± 0.65	3.7	P	Epidermis
	Isotealia antarctica	1	–17.07	12.84	4.0	P	Epidermis
	Stomphia selaginella	5	–17.16 ± 0.97	11.56 ± 0.88	3.6	P	Epidermis
	Urticinopsis antarctica	11	–15.64 ± 1.38	11.53 ± 0.97	3.6	P	Epidermis
	Pennatulacea	2	–20.76 ± 0.42	8.79 ± 0.59	2.7	SF	Body section
Hydrozoa	Hydroid sp.1	3	–21.98 ± 0.05	6.16 ± 0.28	1.8	SF	Colony section
	Hydroid sp.2	4	–21.95 ± 0.61	6.27 ± 0.19	1.8	SF	Colony section
Echinodermata							
Asteroidea	*Aconodaster* cf. *hodgsoni*	3	–11.22 ± 0.91	11.72 ± 0.94	3.6	P	Epidermis

	Aconodaster cf. *conspicuus*	3	–15.02 ± 1.40	10.36 ± 0.72	3.2	P	Epidermis
	Diplasterias brucei	11	–13.32 ± 1.49	10.14 ± 0.66	3.1	S/P	Epidermis
	Odontaster validus	9	–11.32 ± 2.61	11.93 ± 0.54	3.7	O	Epidermis
	Perkinaster aurorae	3	–15.07 ± 1.50	11.68 ± 0.46	3.6	P	Epidermis
	Perkinaster cf. *fuscus antarcticus*	7	–14.47 ± 1.31	10.91 ± 0.81	3.4	S/P	Epidermis
	Perkinaster cf. *fuscus antarcticus* (juv)	4	–11.93 ± 1.07	10.41 ± 0.30	3.2	S/P	Epidermis
Echinoidea	*Sterechinus neumayeri*	12	–12.36 ± 1.42	10.40 ± 0.38	3.2	O	Peristomal membrane
Holothuroidea	*Cucumaria* sp.1	3	–19.88 ± 0.59	7.99 ± 0.96	2.4	SF	Body section
	Cucumaria sp.2	1	–21.71	8.08	2.4	SF	Body section
	Cucumaria sp.3	2	–20.36 ± 0.31	9.17 ± 0.51	2.8	SF	Body section
	Cucumaria sp.4	9	–20.92 ± 0.45	8.14 ± 0.53	2.4	SF	Body section
	Cucumaria sp.5	5	–17.39 ± 2.61	8.22 ± 0.92	2.5	SF	Body section
	Cucumaria sp.6	1	–20.16	8.41	2.5	SF	Body section
	Staurocucumis sp.	5	–19.81 ± 0.65	8.96 ± 1.10	2.7	SF	Body section
Ophuroidea	*Ophiosparte gigas*	3	–14.90 ± 1.31	9.89 ± 0.75	3.0	P	Epidermis
	Ophiura crassa	3	–15.81 ± 1.09	9.98 ± 0.60	3.0	DF	Epidermis
Mollusca							
Bivalvia	*Adamussium colbecki*	2	–19.69 ± 0.23	6.80 ± 0.26	2.0	SF	Muscle tissue
	Laternula elliptica	8	–19.71 ± 0.36	6.83 ± 0.25	2.0	SF	Muscle tissue
Gastropoda	*Amauropsis rossiana*	4	–19.10 ± 0.18	8.10 ± 0.14	2.4	P	Muscle tissue
	Marseniopsis mollis	8	–20.17 ± 0.56	9.68 ± 0.51	3.0	P	Muscle tissue
	Neobuccinium eatoni	18	–15.16 ± 1.24	12.07 ± 0.55	3.7	P	Muscle tissue
	Trophon longstaffi	5	–17.87 ± 0.59	9.68 ± 0.36	3.0	P	Muscle tissue
	Doris kerguelensis	9	–13.74 ± 1.28	10.87 ± 0.66	3.3	P	Muscle tissue
	Tritonia challengeriana	1	–20.14	11.32	3.5	P	Muscle tissue
	Opisthobranchia	4	–10.46 ± 0.26	9.36 ± 0.40	2.8	DF	Muscle tissue
Nemertea							
	Parborlasia corrugatus	5	–16.19 ± 0.56	11.16 ± 0.15	3.4	S/P	Body section
Porifera							
Demospongia	*Homaxinella* sp.	5	–20.30 ± 0.57	6.66 ± 0.47	1.9	SF	Body section
	Isodictya sp.	4	–19.12 ± 0.86	7.14 ± 0.44	2.1	SF	Body section
	Kirkpatrickia sp.	1	–19.09	6.88	2.0	SF	Body section
	Sphaerotylus sp.	2	–19.29 ± 0.81	5.92 ± 1.41	1.7	SF	Body section
	Porifera sp.1	1	–20.81	6.85	2.0	SF	Body section
	Porifera sp.2	3	–18.60 ± 0.41	7.95 ± 1.19	2.4	SF	Body section
	Porifera sp.3	1	–20.00	6.13	1.8	SF	Body section
	Porifera sp.4	1	–20.42	6.72	2.0	SF	Body section
	Porifera sp.5	1	–18.45	5.98	1.7	SF	Body section
	Porifera sp.6	1	–20.07	6.71	2.0	SF	Body section
	Porifera sp.7	2	–19.93 ± 0.60	7.90 ± 0.84	2.4	SF	Body section
	Porifera sp.8	3	–20.74 ± 0.49	7.63 ± 0.51	2.3	SF	Body section

[a]See Table S2 for studies of feeding guilds

Table S2. References used to identify feeding guilds listed in Table S1 and the main article

Taxonomic group	Studies of feeding guilds
Amphipoda	Dauby P, Scailteur Y, De Broyer C (2001) Trophic diversity within the eastern Weddell Sea amphipod community. Hydrobiologia 443:69–86 Nyssen F, Brey T, Lepoint G, Bouquegneau J-M, De Broyer C, Dauby P (2002) A stable isotope approach to the eastern Weddell Sea trophic web: focus on benthic amphipods. Polar Biol 25:280–287 Oliver JS, Slattery PN (1985) Effects of crustacean predators on species composition and population structure of soft-bodied infauna from McMurdo Sound, Antarctica. Ophelia 24:155–175 Rakusa-Suszczewski S (1972) The biology of *Paramoera walkerii* Stebbing (Amphipoda) and the Antarctic sub-fast ice community Pol Arch Hydrobiol 19:11–36
Anthozoa	–
Ascidiacea	–
Asteroidea	McClintock JB (1994) Trophic biology of Antarctic shallow-water echinoderms. Mar Ecol Prog Ser 111:191–202
Bivalvia	Ahn I (1997) Feeding ecology of the Antarctic lamellibranch *Laternula elliptica* (Laternulidae) in Marian Cove and vicinity King George Island, during one austra summer. In: Battaglia B, Valencia J, Walton DWH (eds) Antarctic communities: species structure and survival. Cambridge University Press, Cambridge, p 142–15 Norkko A, Thrush SF, Cummings V, Gibbs HL, Andrew N, Norkko J, Schwarz A-M (2007) Trophic structure of coastal Antarctic food webs associated with changes in sea ice and food supply. Ecology 88:2810–2820
Cnidaria	Amsler CD, McClintock JB, Baker BJ (1999) An Antarctic feeding triangle: defensive interactions between macroalgae, sea urchins, and sea anemones. Mar Ecol Prog Ser 183:105–114 Dayton PK, Robilliard GA, Paine RT (1970) Benthic faunal zonation as a result of Anchor Ice at McMurdo Sound, Antarctica. In: Holdgate M (ed) Antarctic ecology, Book 1. Academic Press, London, p 244–258 Present study
Decapoda	Present study
Echinoidea	McClintock JB (1994) Trophic biology of Antarctic shallow-water echinoderms. Mar Ecol Prog Ser 111:191–202 Norkko A, Thrush SF, Cummings V, Gibbs HL, Andrew N, Norkko J, Schwarz A-M (2007) Trophic structure of coastal Antarctic food webs associated with changes in sea ice and food supply. Ecology 88:2810–2820 Pearse JS, Giese AC (1966) Food, reproduction and organic constitution of the Antarctic echinoid *Sterechinus neumayeri* (Meissner). Biol Bull 130:387–401
Gastropoda	Dayton PK, Robilliard GA, Paine RT (1970) Benthic faunal zonation as a result of Anchor Ice at McMurdo Sound, Antarctica. In: Holdgate M (ed) Antarctic ecology, Book 1. Academic Press, London, p 244–258 Norkko A, Thrush SF, Cummings V, Gibbs HL, Andrew N, Norkko J, Schwarz A-M (2007) Trophic structure of coastal Antarctic food webs associated with changes in sea ice and food supply. Ecology 88:2810–2820 Wägele H (1989) Diet of some Antarctic nudibranchs (Gastropoda, Opisthobranchia, Nudibranchia). Mar Biol 100:439–441 Present study
Holothuroidea	Gillies CL, Stark JS, Johnstone GJ, Smith SDA (2012) Carbon flow and trophic structure of an Antarctic coastal benthic community as determined by $\delta^{13}C$ and $\delta^{15}N$. Est Coast Shelf Sci 97:44–57

	Gutt J (1991) On the distribution and ecology of holothurians in the Weddell Sea (Antarctica). Polar Biol 11:145–155
	McClintock JB (1994) Trophic biology of Antarctic shallow-water echinoderms. Mar Ecol Prog Ser 111:191–202
Hydrozoa	–
Isopoda	Dearborn JH (1967) Food and reproduction of *Glyptonotus antarcticus* (Crustacea: Isopoda) at McMurdo Sound, Antarctica. T Roy Soc NZ 8:163–168
	Gillies CL, Stark JS, Johnstone GJ, Smith SDA (2012) Carbon flow and trophic structure of an Antarctic coastal benthic community as determined by $\delta^{13}C$ and $\delta^{15}N$. Est Coast Shelf Sci 97:44–57
Nemertea	Corbisier T, Petti MV, Skowronski RP, Brito TS (2004) Trophic relationships in the nearshore zone of Martel Inlet (King George Island, Antarctica): $\delta^{13}C$ stable-isotope analysis. Polar Biol 27:75–82
	Smale DA, Barnes DKA, Fraser KPP, Mann PJ, Brown MP (2007) Scavenging in Antarctica: Intense variation between sites and seasons in shallow benthic necrophagy. J Exp Mar Biol Ecol 349:405–417
Ophuroidea	Dearborn JH, Hendler G, Edwards KC (1996) The diet of *Ophiosparte gigas* (Echinodermata: Ophiuroidea) along the Antarctic Peninsula, with comments on its taxonomic status. Polar Biol 16:309–320
	Lane A, Riddle MJ (2004) Toxicity of dispersed and undispersed diesel in sediments to the Antarctic Ophiuroid *Ophiura crassa*. Australas J Ecotoxicol 10:115–121
	McClintock JB (1994) Trophic biology of Antarctic shallow-water echinoderms. Mar Ecol Prog Ser 111:191–202
Perciformes	Casaux R, Barrera-Oro E, Baroni A, Ramón A (2003) Ecology of inshore notothenioid fish from the Danco Coast, Antarctic Peninsula. Polar Biol 26:157–165
	Foster BA, Montgomery JC (1993) Planktivory in benthic nototheniid fish in McMurdo Sound, Antarctica. Environ Biol Fishes 36:313–318
	Kiest KA (1993) A relationship of diet to prey abundance and the foraging behaviour of *Trematomus bernacchii*. Polar Biol 13:291–296
	La Mesa M, Dalú M, Vacchi M (2004) Trophic ecology of the emerald notothen *Trematomus bernacchii* (Pisces, Nototheniidae) from Terra Nova Bay, Ross Sea, Antarctica. Polar Biol 27:721–728
	Williams R (1988) The inshore marine fishes of the Vestfold Hills region, Antarctica. Hydrobiologia 165:161–167
Polychaeta	Fauchald K, Jumars PA (1979) The diet of worms: a study of polychaete feeding guilds. Oceanogr Mar Biol Annu Rev 17:193–284
Porifera	–
Pycnogonida	Gillies CL, Stark JS, Johnstone GJ, Smith SDA (2012) Carbon flow and trophic structure of an Antarctic coastal benthic community as determined by $\delta^{13}C$ and $\delta^{15}N$. Est Coast Shelf Sci 97:44–57
	Present study
Tanaidacea	Blazewicz-Paszkowycz M, Ligowski R (2002) Diatoms as food source indicator for some Antarctic Cumacea and Tanaidacea (Crustacea). Antarct Sci 14:11–15
	Gillies CL, Stark JS, Johnstone GJ, Smith SDA (2012) Carbon flow and trophic structure of an Antarctic coastal benthic community as determined by $\delta^{13}C$ and $\delta^{15}N$. Est Coast Shelf Sci 97:44–57
	Oliver JS, Slattery PN (1985) Effects of crustacean predators on species composition and population structure of soft-bodied infauna from McMurdo Sound, Antarctica. Ophelia 24:155–175