The following supplement accompanies the article

Glacial dropstones: islands enhancing seafloor species richness of benthic megafauna in West Antarctic Peninsula fjords

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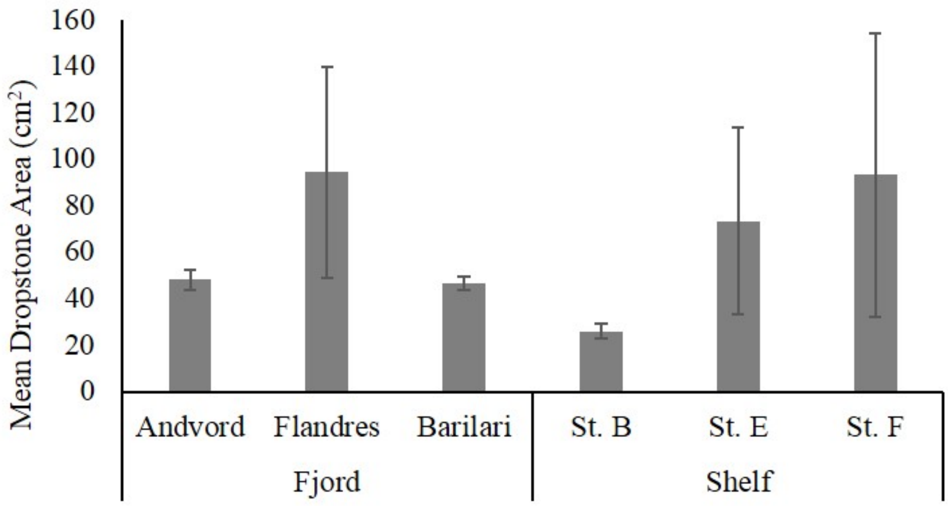

Fig. S1. Mean dropstone area (cm^2) by sampling site. Error bars provide 95% confidence intervals.

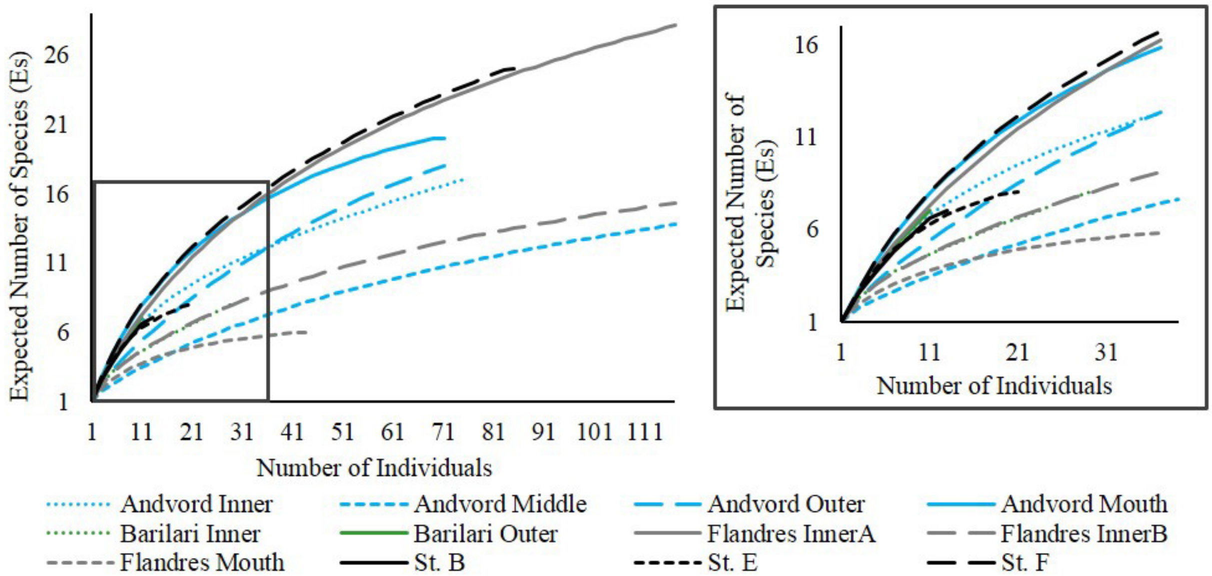

Fig. S2. Rarefaction curves for each sampling site showing the expected number of species across sampled individuals. Note that shelf stations B, E and F as well as Barilari Inner basin have < 30 individuals. The enlarged area shows the trajectories of each curve when sampling < 30 individuals.

Table S1. Sampling site positions (decimal degrees) and average bottom depths (m).

Site	**Latitude (°S)**	**Longitude (°W)**	**Depth (m)**
Andvord Bay	64.838	62.630	671
Inner	64.860	62.562	525
Middle	64.820	62.655	437
Outer	64.780	62.737	543
Mouth	64.781	62.877	531
Flandres Bay	65.046	63.260	493
InnerA	65.054	63.105	679
InnerB	65.105	63.146	678
Outer	65.003	63.316	724
Barilari Bay	65.920	64.716	620
Inner	65.944	64.637	610
Outer	65.773	64.855	630
St. B	64.857	65.345	578
St. E	65.973	67.293	597
St. F	66.984	69.713	590

Table S2. Summary of the environmental data utilized for the Canonical Analysis of Principal Coordinates. Temperature data represents bottom temperatures >350m collected via CTD. Primary production rates represent annual estimates based on uptake rates of silicic acid during incubations onboard at the time benthic images were collected.

Distance (km)	PP_N ($mgCm^{-2}y^{-1}$)	PP_Si ($mgCm^{-2}y^{-1}$)	Temp. (°C)	Density (m^{-2})	Percent Hard (%)	Sediment (%)	Area (cm^2)	Transect	Site
6.2	528.68	366.47	-0.034	5.61	0.374	60.6	40.3	1285	Andvord Inner
6.2	609.83	511.55	-0.035	3.8	0.296	62.9	56.6	1286	Andvord Inner
11.1	273.35	333.95	0.048	10.1	0.69	68.7	49.3	1337	Andvord Middle
11.1	317.17	419.09	0.01	8.18	0.533	67.1	43.9	1338	Andvord Middle
20.8	247.39	308.27	0.013	1.6	0.212	61.2	70.1	1289	Andvord Mouth
20.8	-	417.85	-0.0002	2.65	0.417	65.9	66	1290	Andvord Mouth
16.4	566.43	354.27	0.017	3.59	0.245	65.7	46.3	1283	Andvord Outer
16.4	675.51	419.04	0.042	4.91	0.265	68.9	48.4	1284	Andvord Outer
8.71	543.79	405.05	0.952	2.92	0.128	76.4	50.2	1295	Barilari Inner
871	-	-	0.932	2.15	0.056	80.6	37.6	1297	Barilari Inner
27.7	526.97	533.38	0.919	2.14	0.088	74.3	50	1300	Barilari Outer
6.3	420.72	364.86	0.827	2.83	0.32	62.1	92.8	1279	Flandres InnerA
6.3	505.05	566.54	0.757	3.28	0.3	65.2	126.8	1280	Flandres InnerA
7.8	430.74	328.69	0.754	8.38	0.971	56.5	118.4	1276	Flandres InnerB
7.8	444.86	356.82	0.753	13.2	1	54.8	67.5	1278	Flandres InnerB
16.4	442.45	508.62	0.926	1.24	0.561	45.5	163	1281	Flandres Outer
16.4	610.73	654.27	0.971	2.09	0.475	44	136.6	1282	Flandres Outer

Table S3. List of megafaunal morphotypes (or putative species) identified in this study. Morphotypes unique to this study compared to those identified in Grange and Smith (2013) for the same study sites are denoted with *.

Annelida
Amythas membranifera
Chaetopterus sp. 1 *
Prionosyllis kerguelensis
Sabellid sp. 1
Polynoid sp. 2
Serpulida sp. 1 *
Arthropoda – Crustacea
Ampeliscid amphipod
Amphipod sp. 1 - Eusirid
Amphipod sp. 3 *Anthomastus* commensal *
Ceratoserolis meridionalis
Krill sp. 1 *
Notocrangon antarcticus
Scallpeliformes sp. 1 *
Arthropoda – Pycnogonida
Pycnogonid asp. 1
Pycnogonid asp. 4 *
Brachiopoda
Brachiopod sp. 1
Bryozoa
Bryozoan sp. 1 (*Cellarinella* sp.) *
Bryozoan sp. 2 (*Camptoplites* sp.)
Bryozoan sp. 3 (*Cellaria* sp.) *
Bryozoan sp. 4 *
Bryozoan sp. 5 *
Bryozoan sp. 6 *
Reteporella sp. *
Chordata – Tunicata
Cnemidocarpa verrucosa
Pyura bouvetensis
Tunicate sp. 2
Tunicate sp. 4
Tunicate sp. 5
Tunicate sp. 11 *
Tunicate sp. 12 *
Chordata – Pisces
Chaenodraco winsonii
Fish sp. 1
Fish sp. 5 (*Channichthyidae* sp.)
Pleuragramma antarcticum
Cnidaria
Anemone sp. 2
Anemone sp. 3
Anemone sp. 7
Anemone sp. 14 *
Hormathiid anemone sp. 1
Primnoid sp. 1
Coral sp. 1 *
Hydroid sp. 1
Hydroid sp. 5 (*Ophiodes arboreus*?) *
Ptychogastria polaris
Echinodermata – Asteroidea
Asteroid sp. 1
Asteroid sp. 3 (*Diplasterias brucei*)
Asteroid sp. 9 (*Lophaster gaini*) *
Cuenotaster involutus
Echinodermata – Crinoidea
Crinoid sp. 4 *
Echinodermata – Echinoidea
Echinoid sp. 1 (*Sterechinus neumayerai*?)
Echinodermata – Holothuroidea
Rhapidothuria racowitzai
Echinodermata – Ophiuroidea
Ophionotus victoriae
Ophiosparte gigas
Ophiuroid sp. 1 *
Mollusca
Bivalve sp. 2
Marseniopsis sp. 1 (*Marseniopsis mollis*?)
Nemertea
Parborlasia corrugatus
Porifera
Porifera sp. 1 *
Porifera sp. 2 *
Porifera sp. 3 *
Porifera sp. 4 (*Leucetta leptoraphis*?) *
Porifera sp. 5 (*Suberites* sp.?) *
Porifera sp. 6 (*Homaxinella* sp.?) *
Porifera sp. 7 *
Porifera sp. 8 *
Stylocordyla borealis
Cinachyra antarctica
Demospongiae sp. 1
Demospongiae sp. 2
Demospongiae sp. 4
Demospongiae sp. 6 (*Kirkpatrickia varilosa*)
Demospongiae sp. 7
Hexactinellida sp. 1

Table S4. Rank abundance of top five morphotypes across all sites.

FJORD		
Andvord Bay	**Flandres Bay**	**Barilari Bay**
Bryozoan sp. 5	*Diplasterias brucei*	Tunicate sp. 5
Serpulida sp. 1	Brachiopod sp. 1	Bryozoan sp. 5
Notocrangon antarcticus	*Prionosyllis kerguelensis*	Bryozoan sp. 2
Amythas membranifera	Porifera sp. 7	Ophiuroid sp. 1
Anemone sp. 2	Porifera sp. 8	*Prionosyllis kerguelensis*
SHELF		
St. B	**St. E**	**St. F**
Hydroid sp. 4	Tunicate sp. 2	Porifera sp. 3
Bryozoan sp. 5	Demospongiae sp. 7	Hydroid sp. 4
Diplasterias brucei	Ophiuroid sp. 1	Porifera sp. 8
Scalpelliformes sp. 1	Hormathiid sp. 1	Brachiopod sp. 1
Tunicate sp. 5	*Chaetopterus* sp. 1	Bryozoan sp. 5

Table S5. Fixed and random effects estimates for richness and abundance GLMMs. Area = dropstone plan area (cm^2), Sediment = percentage of dropstone plan area covered in sediment, PercentHard = the percentage of seafloor in an image to consist of exposed hard substrate, Density = dropstone density (m^{-2}), and Habitat = distinction whether the dropstone occurred in the fjord or on the open shelf. Estimates represent the proportion of variance explained by that effect. Note that significant p-values are denoted with * and the "estimate" for effects represents the proportion of variance explained.

GLMM Fixed and Random Effect Estimates

	Richness Model		Abundance Model	
Fixed Effects	Estimate	p-value	Estimate	p-value
log(Area)	0.311	$< 2e^{-16}$ *	0.512	$< 2e^{-16}$ *
Sediment	0.020	0.64	-0.029	0.55
Percent Hard	0.008	0.86	-0.003	0.96
Density	0.037	0.34	0.039	0.49
Habitat	0.296	0.08	0.148	0.53
Random Effects	Estimate	p-value	Estimate	p-value
Stone	-	-	0.407	-
Transect	-	-	0.127	-
Site	0.012	-	-	-

Table S6. Summary of results from Canonical Analysis of Principal Coordinates (CAP). R^2 and p-values were determined using the "adonis" function in R for each environmental parameter; Area = Dropstone plan area, Sediment = Plan area of sediment cover, Density = dropstone density (m^{-2}), PercentHard = percentage of exposed hard substrate, Temp = bottom temperature >350 m, Distance = distance from nearest glacial terminus (km), PP_Si = annual primary production (mg C m^{-2} d^{-1}) based on average of two silicic acid uptake incubations.

Fit of Environmental Parameters								
	AREA	SEDIMENT	PERCENT HARD	DENSITY	TEMP	DISTANCE	PP_Si	PP_N
R^2	0.148	0.116	0.111	0.124	0.198	0.072	0.169	0.053
p-value	0.075	0.179	**0.042***	**0.0003***	0.065	0.150	**0.003***	0.583