

Supplementary Material for ‘New insights into the Weddell Sea ecosystem applying a quantitative network approach’

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Equations for calculating species properties

Weighted properties: Interaction Strength

We used the estimation of the interaction strength as the weighted property for the species of the Weddell Sea food web. The main equation to estimate the interaction strength IS was:

$$IS = \alpha X_R \frac{m_R}{m_C}$$

where α is the search rate, X_R is the resource density, and m_R and m_C are the body mass for the resource and the consumer, respectively (Pawar, Dell, and Van M. Savage 2012). We assume the case where resources are scarce because this resembles field conditions (figure 3 e & f and equation 3 from Pawar, Dell, and Van M. Savage (2012)). Then the search rate for 2D interactions (see main text) is calculated as:

$$\alpha = \alpha_{2D} m_C^{0.68 \pm 0.12}$$

For 3D interactions it is calculated as:

$$\alpha = \alpha_{3D} m_C^{1.05 \pm 0.08}$$

where $\alpha_{2D} = 10^{-3.08}$ and $\alpha_{3D} = 10^{-1.77}$ are the intercepts for each interaction dimensionality.

As the resource density X_R is not known for our study case we estimated it according to the equation S18 and supplementary figures 2i & j (individuals/m² - m³) from Pawar, Dell, and Van M. Savage (2012):

$$X_R = X_0 m_R^{-p_x}$$

where p_x is -0.79 ± 0.08 for 2D and -0.86 ± 0.07 for 3D.

Interaction Strength variability

With the aim of taking into account the variability of the exponents in α and X_R estimations, we run 1000 simulations for calculating each pairwise predator-prey interaction. Due to the skewness nature of the estimated interaction distributions, we considered the median as the summarizing value. Such a skewness is shown in the following histogram for the interquartile range:

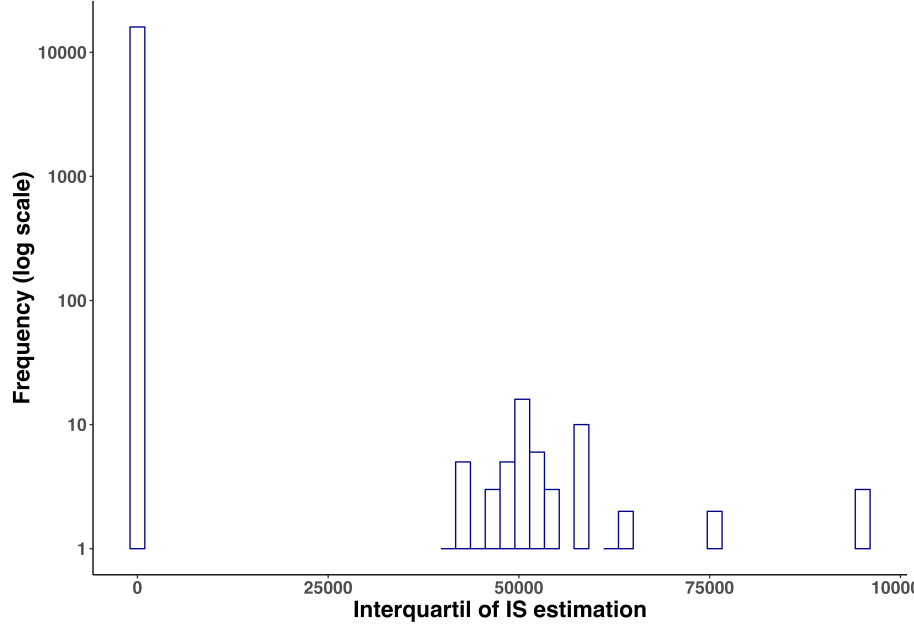


Figure 1: Frequency distribution of interquartile range for the estimated interaction strengths of the Weddell Sea food web. Total number of interactions = 16041.

Unweighted properties

As unweighted properties we calculated degree, trophic level and trophic similarity. The degree k is simply the total number of feeding links in which the species participates. It was calculated as:

$$L = \sum_{i=1}^S k_i$$

where L is the total number of feeding links for the i^{th} species in the food web; here denoted as k_i . The trophic level refers to a species' vertical position in the food web, relative to the primary producers that support the community. Species that do not consume any other species in the web are primary producers or other basal resources; species with no predators are top predators; those with both predators and prey are intermediate consumers. Trophic levels TP were calculated for every species based on its position in the food web using the "prey-averaged technique":

$$TP_i = \frac{\sum_j TP_j}{n_i} + 1$$

where n_i is the total number of prey taxa consumed by taxon i , and TP_j represents the trophic position of all prey items j of taxon i (Thompson et al. 2007). The trophic similarity TS between every pair of species in the food web was calculated using the following algorithm:

$$TS = \frac{c}{a + b + c}$$

where c is the number of predators and prey common to the two species, a is the number of predators and prey unique to one species, and b is the number of predators and prey unique to the other species. When the two species have the same set of predators and prey, $TS = 1$; when the two species have no common predators or common prey, $TS = 0$ (Martinez 1991).

Table 1 shows the mentioned properties for every species of the Weddell Sea food web.

Table 1: Weighted (interaction strength) and unweighted properties of the trophic species of Weddell Sea food web. Ordered by decreasing median interaction strength. median IS = median interaction strength, Q1 IS = First quartil of the IS distribution, Q3 IS = Third quartil of the IS distribution, TL = trophic level, TS = trophic similarity.

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|----------------------------|-----------|-----------|-----------|--------|------|-------|
| Mesonychoteuthis hamiltoni | 0.0001967 | 0.0001365 | 0.0002661 | 29 | 4.41 | 0.028 |
| Orcinus orca | 0.0001557 | 0.0001065 | 0.0003278 | 26 | 5.03 | 0.037 |
| Mirounga leonina | 0.0001314 | 0.0000940 | 0.0001565 | 56 | 4.87 | 0.080 |
| Hydrurga leptonyx | 0.0001162 | 0.0000811 | 0.0001403 | 67 | 4.72 | 0.094 |
| Leptonychotes weddelli | 0.0001137 | 0.0000815 | 0.0001387 | 59 | 4.86 | 0.084 |
| Ommatophoca rossii | 0.0001125 | 0.0000826 | 0.0001351 | 56 | 4.87 | 0.080 |
| Galiteuthis glacialis | 0.0001121 | 0.0000936 | 0.0001554 | 30 | 3.26 | 0.039 |
| Physeter macrocephalus | 0.0001037 | 0.0000809 | 0.0001732 | 20 | 4.47 | 0.048 |
| Arctocephalus gazella | 0.0001021 | 0.0000747 | 0.0001269 | 61 | 4.67 | 0.093 |
| Gonatus antarcticus | 0.0000965 | 0.0000725 | 0.0001377 | 36 | 4.31 | 0.046 |
| Kondakovia longimana | 0.0000959 | 0.0000761 | 0.0001235 | 25 | 3.26 | 0.039 |
| Champscephalus gunnari | 0.0000912 | 0.0000270 | 0.0001233 | 46 | 3.72 | 0.086 |
| Tursiops truncatus | 0.0000908 | 0.0000732 | 0.0001471 | 20 | 4.47 | 0.048 |
| Aptenodytes forsteri | 0.0000874 | 0.0000675 | 0.0001019 | 53 | 4.78 | 0.084 |
| Martialia hyadesi | 0.0000857 | 0.0000690 | 0.0001195 | 33 | 4.52 | 0.043 |
| Macronectes halli | 0.0000854 | 0.0000614 | 0.0000959 | 11 | 4.94 | 0.026 |
| Notothenia marmorata | 0.0000836 | 0.0000522 | 0.0001147 | 44 | 4.09 | 0.091 |
| Macrourus holotrachys | 0.0000835 | 0.0000626 | 0.0001004 | 85 | 4.70 | 0.112 |
| Lagenorhynchus cruciger | 0.0000815 | 0.0000653 | 0.0001302 | 20 | 4.47 | 0.048 |
| Macrourus whitsoni | 0.0000795 | 0.0000532 | 0.0001007 | 92 | 4.55 | 0.124 |
| Alluroteuthis antarcticus | 0.0000770 | 0.0000614 | 0.0000820 | 19 | 4.25 | 0.029 |
| Cryodraco antarcticus | 0.0000768 | 0.0000546 | 0.0001008 | 30 | 3.52 | 0.089 |
| Moroteuthis ingens | 0.0000761 | 0.0000352 | 0.0001278 | 46 | 4.04 | 0.074 |
| Pygoscelis adeliae | 0.0000750 | 0.0000352 | 0.0001053 | 7 | 3.78 | 0.026 |
| Balaenoptera physalus | 0.0000745 | 0.0000379 | 0.0001051 | 37 | 4.04 | 0.081 |
| Pleuragramma antarcticum | 0.0000740 | 0.0000520 | 0.0000868 | 69 | 3.58 | 0.076 |
| Lobodon carcinophaga | 0.0000715 | 0.0000447 | 0.0001174 | 28 | 4.24 | 0.061 |
| Pagetopsis macropterus | 0.0000713 | 0.0000567 | 0.0000829 | 76 | 4.64 | 0.113 |
| Dacodraco hunteri | 0.0000709 | 0.0000580 | 0.0000854 | 65 | 4.80 | 0.101 |
| Balaenoptera musculus | 0.0000699 | 0.0000368 | 0.0000972 | 37 | 4.04 | 0.081 |
| Megaptera novaeangliae | 0.0000633 | 0.0000520 | 0.0000759 | 4 | 3.26 | 0.024 |
| Chionodraco hamatus | 0.0000628 | 0.0000442 | 0.0000852 | 42 | 3.82 | 0.107 |
| Muraenolepis marmoratus | 0.0000627 | 0.0000317 | 0.0000874 | 36 | 3.19 | 0.104 |
| Dissostichus mawsoni | 0.0000613 | 0.0000368 | 0.0001260 | 87 | 4.12 | 0.126 |
| Macronectes giganteus | 0.0000611 | 0.0000434 | 0.0000743 | 16 | 4.30 | 0.044 |
| Notothenia coriiceps | 0.0000583 | 0.0000003 | 0.0000827 | 130 | 4.27 | 0.126 |
| Chionodraco myersi | 0.0000571 | 0.0000474 | 0.0000757 | 37 | 4.09 | 0.094 |
| Gymnoscopelus nicholsi | 0.0000561 | 0.0000198 | 0.0000722 | 59 | 3.71 | 0.087 |
| Psychroteuthis glacialis | 0.0000544 | 0.0000296 | 0.0000777 | 23 | 3.91 | 0.054 |
| Fulmarus glacialis | 0.0000542 | 0.0000313 | 0.0000914 | 17 | 4.33 | 0.052 |
| Chaenodraco wilsoni | 0.0000534 | 0.0000438 | 0.0000781 | 32 | 3.30 | 0.091 |
| Bathylagus antarcticus | 0.0000530 | 0.0000137 | 0.0000637 | 61 | 3.36 | 0.073 |
| Trematomus hansonii | 0.0000523 | 0.0000011 | 0.0000716 | 109 | 4.36 | 0.134 |
| Balaenoptera acutorostrata | 0.0000518 | 0.0000347 | 0.0000767 | 29 | 3.74 | 0.078 |
| Parvicorbucula socialis | 0.0000517 | 0.0000004 | 0.0000727 | 91 | 2.00 | 0.136 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-----------------------------|-----------|-----------|-----------|--------|------|-------|
| Gymnoscopelus opisthopterus | 0.0000517 | 0.0000153 | 0.0000643 | 54 | 3.40 | 0.082 |
| Psilaster charcoti | 0.0000501 | 0.0000017 | 0.0000603 | 59 | 4.40 | 0.082 |
| Daption capense | 0.0000496 | 0.0000334 | 0.0000867 | 15 | 4.39 | 0.051 |
| Pagodroma nivea | 0.0000489 | 0.0000329 | 0.0000621 | 11 | 4.21 | 0.045 |
| Procellaria aequinoctialis | 0.0000487 | 0.0000191 | 0.0000769 | 8 | 4.25 | 0.026 |
| Pagetopsis maculatus | 0.0000484 | 0.0000385 | 0.0000640 | 37 | 4.09 | 0.094 |
| Electrona antarctica | 0.0000481 | 0.0000221 | 0.0000574 | 65 | 3.48 | 0.105 |
| Sterna vittata | 0.0000475 | 0.0000439 | 0.0000511 | 2 | 3.88 | 0.012 |
| Protomyctophum bolini | 0.0000422 | 0.0000187 | 0.0000523 | 61 | 3.44 | 0.077 |
| Thalassoica antarctica | 0.0000419 | 0.0000222 | 0.0000743 | 19 | 4.32 | 0.053 |
| Pareledone charcoti | 0.0000406 | 0.0000181 | 0.0000520 | 83 | 4.57 | 0.108 |
| Gymnodraco acuticeps | 0.0000388 | 0.0000153 | 0.0000767 | 61 | 3.70 | 0.118 |
| Aphrodroma brevirostris | 0.0000388 | 0.0000303 | 0.0000548 | 11 | 4.20 | 0.045 |
| Notolepis coatsi | 0.0000387 | 0.0000216 | 0.0000484 | 58 | 3.50 | 0.073 |
| Trematomus loennbergii | 0.0000356 | 0.0000004 | 0.0000686 | 133 | 4.11 | 0.115 |
| Gymnoscopelus braueri | 0.0000354 | 0.0000139 | 0.0000612 | 62 | 3.52 | 0.087 |
| Pentanymphe antarcticum | 0.0000349 | 0.0000212 | 0.0000586 | 140 | 3.93 | 0.099 |
| Racovitzia glacialis | 0.0000348 | 0.0000140 | 0.0000727 | 53 | 3.54 | 0.114 |
| Cygnodraco mawsoni | 0.0000348 | 0.0000225 | 0.0000588 | 84 | 3.98 | 0.139 |
| Pachyptila desolata | 0.0000342 | 0.0000212 | 0.0000509 | 33 | 4.23 | 0.079 |
| Oceanites oceanicus | 0.0000340 | 0.0000191 | 0.0000455 | 8 | 4.07 | 0.033 |
| Pareledone antarctica | 0.0000324 | 0.0000020 | 0.0000589 | 107 | 4.41 | 0.120 |
| Artedidraco orianae | 0.0000318 | 0.0000098 | 0.0000586 | 52 | 3.76 | 0.117 |
| Gerlachea australis | 0.0000314 | 0.0000208 | 0.0000535 | 72 | 3.93 | 0.134 |
| Callochiton gaussi | 0.0000305 | 0.0000247 | 0.0000397 | 15 | 3.00 | 0.012 |
| Halobaena caerulea | 0.0000292 | 0.0000208 | 0.0000653 | 22 | 4.25 | 0.060 |
| Epimeria rubriques | 0.0000289 | 0.0000096 | 0.0000369 | 85 | 3.47 | 0.157 |
| Muraenolepis microps | 0.0000283 | 0.0000005 | 0.0000573 | 88 | 3.69 | 0.133 |
| Eusirus perdentatus | 0.0000275 | 0.0000028 | 0.0000372 | 114 | 3.87 | 0.171 |
| Euphausia superba | 0.0000273 | 0.0000000 | 0.0000388 | 163 | 2.27 | 0.120 |
| Puncturella conica | 0.0000271 | 0.0000003 | 0.0000434 | 80 | 2.98 | 0.093 |
| Pachycara brachycephalum | 0.0000255 | 0.0000159 | 0.0000325 | 67 | 3.97 | 0.132 |
| Prionodraco evansii | 0.0000255 | 0.0000152 | 0.0000479 | 61 | 3.45 | 0.115 |
| Epimeria robusta | 0.0000246 | 0.0000116 | 0.0000315 | 90 | 3.46 | 0.159 |
| Sterna paradisaea | 0.0000243 | 0.0000149 | 0.0000468 | 7 | 4.04 | 0.031 |
| Tryphosella murrayi | 0.0000242 | 0.0000192 | 0.0000286 | 96 | 3.88 | 0.160 |
| Pseudosagitta maxima | 0.0000232 | 0.0000103 | 0.0000253 | 15 | 3.16 | 0.044 |
| Pogonophryne permitini | 0.0000232 | 0.0000007 | 0.0000383 | 104 | 3.93 | 0.142 |
| Hyperia macrocephala | 0.0000224 | 0.0000193 | 0.0000256 | 58 | 4.36 | 0.135 |
| Desmonema glaciale | 0.0000223 | 0.0000163 | 0.0000277 | 19 | 3.72 | 0.058 |
| Pseudosagitta gazellae | 0.0000217 | 0.0000197 | 0.0000223 | 11 | 3.18 | 0.029 |
| Pogonophryne marmorata | 0.0000217 | 0.0000012 | 0.0000518 | 70 | 3.68 | 0.119 |
| Trematomus eulepidotus | 0.0000216 | 0.0000042 | 0.0000574 | 71 | 3.64 | 0.117 |
| Pogonophryne phyllopogon | 0.0000216 | 0.0000006 | 0.0000437 | 103 | 3.92 | 0.145 |
| Abyssorhomene nodimanus | 0.0000214 | 0.0000071 | 0.0000361 | 137 | 4.21 | 0.130 |
| Pogonophryne barsukovi | 0.0000213 | 0.0000005 | 0.0000430 | 104 | 3.93 | 0.142 |
| Pogonophryne scotti | 0.0000212 | 0.0000004 | 0.0000467 | 104 | 3.93 | 0.142 |
| Primno macropa | 0.0000200 | 0.0000154 | 0.0000237 | 74 | 3.56 | 0.150 |
| Trematomus pennellii | 0.0000194 | 0.0000003 | 0.0000575 | 192 | 4.04 | 0.158 |
| Eusirus antarcticus | 0.0000184 | 0.0000171 | 0.0000216 | 53 | 3.17 | 0.148 |
| Liljeborgia georgiana | 0.0000182 | 0.0000048 | 0.0000234 | 146 | 3.46 | 0.153 |
| Aethotaxis mitopteryx | 0.0000181 | 0.0000008 | 0.0000351 | 109 | 3.88 | 0.149 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-------------------------------------|-----------|-----------|-----------|--------|------|-------|
| <i>Themisto gaudichaudii</i> | 0.0000180 | 0.0000138 | 0.0000214 | 74 | 3.56 | 0.150 |
| <i>Trematomus nicolai</i> | 0.0000173 | 0.0000003 | 0.0000435 | 113 | 3.85 | 0.140 |
| <i>Periphylla periphylla</i> | 0.0000169 | 0.0000121 | 0.0000211 | 19 | 3.72 | 0.058 |
| <i>Callianira antarctica</i> | 0.0000168 | 0.0000083 | 0.0000297 | 28 | 3.60 | 0.064 |
| <i>Beroe cucumis</i> | 0.0000164 | 0.0000134 | 0.0000228 | 18 | 3.33 | 0.040 |
| <i>Clione antarctica</i> | 0.0000163 | 0.0000135 | 0.0000177 | 56 | 2.58 | 0.075 |
| <i>Lyrocteis flavopallidus</i> | 0.0000129 | 0.0000066 | 0.0000187 | 28 | 3.60 | 0.064 |
| <i>Dipulmaris antarctica</i> | 0.0000129 | 0.0000109 | 0.0000173 | 14 | 3.80 | 0.040 |
| <i>Solmundella bitentaculata</i> | 0.0000128 | 0.0000100 | 0.0000172 | 8 | 3.90 | 0.020 |
| <i>Cyllopus lucasii</i> | 0.0000123 | 0.0000000 | 0.0000244 | 165 | 2.39 | 0.156 |
| <i>Clione limacina</i> | 0.0000123 | 0.0000110 | 0.0000134 | 51 | 3.87 | 0.073 |
| <i>Clio pyramidata</i> | 0.0000123 | 0.0000102 | 0.0000137 | 58 | 3.16 | 0.088 |
| <i>Paraceradocus gibber</i> | 0.0000120 | 0.0000000 | 0.0000309 | 151 | 2.80 | 0.171 |
| <i>Eukrohnia hamata</i> | 0.0000112 | 0.0000093 | 0.0000135 | 38 | 3.16 | 0.075 |
| <i>Sagitta marri</i> | 0.0000109 | 0.0000073 | 0.0000113 | 17 | 3.16 | 0.048 |
| <i>Urticinopsis antarctica</i> | 0.0000109 | 0.0000023 | 0.0000172 | 27 | 3.76 | 0.078 |
| <i>Thysanoessa macrura</i> | 0.0000107 | 0.0000000 | 0.0000220 | 145 | 2.41 | 0.117 |
| <i>Atolla wyvillei</i> | 0.0000107 | 0.0000048 | 0.0000126 | 20 | 3.52 | 0.065 |
| <i>Scolymastra joubini</i> | 0.0000106 | 0.0000083 | 0.0000207 | 44 | 2.00 | 0.156 |
| <i>Euphausia crystallorophias</i> | 0.0000106 | 0.0000000 | 0.0000302 | 132 | 2.08 | 0.119 |
| <i>Anoxycalyx joubini</i> | 0.0000104 | 0.0000078 | 0.0000198 | 48 | 2.00 | 0.153 |
| <i>Aegires albus</i> | 0.0000101 | 0.0000006 | 0.0000157 | 60 | 3.00 | 0.092 |
| <i>Odontaster meridionalis</i> | 0.0000099 | 0.0000059 | 0.0000105 | 41 | 2.97 | 0.053 |
| <i>Dimophyes arctica</i> | 0.0000098 | 0.0000044 | 0.0000114 | 20 | 3.52 | 0.065 |
| <i>Diphyes antarctica</i> | 0.0000098 | 0.0000044 | 0.0000114 | 20 | 3.52 | 0.065 |
| <i>Rhodalia miranda</i> | 0.0000098 | 0.0000044 | 0.0000114 | 20 | 3.52 | 0.065 |
| <i>Rossella nuda</i> | 0.0000096 | 0.0000071 | 0.0000164 | 45 | 2.00 | 0.159 |
| <i>Heterophoxus videns</i> | 0.0000095 | 0.0000000 | 0.0000151 | 157 | 2.51 | 0.153 |
| <i>Bargmannia</i> | 0.0000093 | 0.0000079 | 0.0000119 | 56 | 3.33 | 0.091 |
| <i>Rhincalanus gigas</i> | 0.0000093 | 0.0000000 | 0.0000133 | 166 | 2.15 | 0.135 |
| <i>Euphausia frigida</i> | 0.0000086 | 0.0000000 | 0.0000223 | 137 | 2.27 | 0.119 |
| <i>Melphidippa antarctica</i> | 0.0000085 | 0.0000036 | 0.0000222 | 121 | 3.04 | 0.119 |
| <i>Paraeuchaeta antarctica</i> | 0.0000084 | 0.0000000 | 0.0000117 | 171 | 2.21 | 0.135 |
| <i>Rhachotropis antarctica</i> | 0.0000078 | 0.0000000 | 0.0000191 | 185 | 3.02 | 0.176 |
| <i>Ammothea carolinensis</i> | 0.0000078 | 0.0000039 | 0.0000330 | 135 | 3.93 | 0.099 |
| <i>Calanus propinquus</i> | 0.0000078 | 0.0000000 | 0.0000113 | 165 | 2.15 | 0.135 |
| <i>Calanoides acutus</i> | 0.0000077 | 0.0000000 | 0.0000111 | 166 | 2.17 | 0.136 |
| <i>Vibilia stebbingi</i> | 0.0000076 | 0.0000063 | 0.0000083 | 90 | 3.56 | 0.143 |
| <i>Vibilia antarctica</i> | 0.0000076 | 0.0000063 | 0.0000083 | 91 | 3.56 | 0.142 |
| <i>Cnemidocarpa verrucosa</i> | 0.0000074 | 0.0000014 | 0.0000166 | 7 | 2.00 | 0.041 |
| <i>Nymphon gracillimum</i> | 0.0000074 | 0.0000037 | 0.0000334 | 135 | 3.93 | 0.099 |
| <i>Metridia gerlachei</i> | 0.0000074 | 0.0000001 | 0.0000100 | 166 | 2.15 | 0.134 |
| <i>Conchoecia hettacra</i> | 0.0000070 | 0.0000062 | 0.0000087 | 77 | 3.24 | 0.119 |
| <i>Limacina helicina antarctica</i> | 0.0000061 | 0.0000052 | 0.0000072 | 62 | 3.16 | 0.092 |
| <i>Stylocordyla borealis</i> | 0.0000058 | 0.0000044 | 0.0000100 | 43 | 2.00 | 0.157 |
| <i>Kirkpatrickia variolosa</i> | 0.0000056 | 0.0000043 | 0.0000098 | 46 | 2.00 | 0.152 |
| <i>Rossella racovitzae</i> | 0.0000056 | 0.0000044 | 0.0000095 | 48 | 2.00 | 0.154 |
| <i>Tetilla leptoderma</i> | 0.0000052 | 0.0000040 | 0.0000089 | 49 | 2.00 | 0.152 |
| <i>Serolella bouveri</i> | 0.0000051 | 0.0000009 | 0.0000162 | 90 | 3.99 | 0.157 |
| <i>Serolis polita</i> | 0.0000051 | 0.0000009 | 0.0000162 | 90 | 3.99 | 0.157 |
| <i>Conchoecia antipoda</i> | 0.0000050 | 0.0000001 | 0.0000075 | 135 | 2.33 | 0.142 |
| <i>Nuttallochiton mirandus</i> | 0.0000049 | 0.0000037 | 0.0000063 | 54 | 3.00 | 0.043 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-------------------------------|-----------|-----------|-----------|--------|------|-------|
| Uristes gigas | 0.0000048 | 0.0000000 | 0.0000220 | 184 | 2.84 | 0.161 |
| Rossella antarctica | 0.0000043 | 0.0000031 | 0.0000079 | 43 | 2.00 | 0.157 |
| Rossella tarenja | 0.0000043 | 0.0000031 | 0.0000079 | 43 | 2.00 | 0.157 |
| Systenopora contracta | 0.0000041 | 0.0000028 | 0.0000092 | 31 | 2.00 | 0.125 |
| Mycale acerata | 0.0000041 | 0.0000031 | 0.0000079 | 44 | 2.00 | 0.156 |
| Oediceroides calmani | 0.0000039 | 0.0000000 | 0.0000238 | 153 | 2.77 | 0.166 |
| Waldeckia obesa | 0.0000037 | 0.0000024 | 0.0000221 | 197 | 3.52 | 0.138 |
| Epimeriella walkeri | 0.0000037 | 0.0000000 | 0.0000204 | 217 | 2.88 | 0.148 |
| Luidiaster gerlachei | 0.0000036 | 0.0000004 | 0.0000066 | 18 | 3.76 | 0.083 |
| Tritoniella belli | 0.0000036 | 0.0000022 | 0.0000060 | 87 | 2.98 | 0.085 |
| Axociella nidificata | 0.0000036 | 0.0000026 | 0.0000068 | 43 | 2.00 | 0.157 |
| Chorismus antarcticus | 0.0000035 | 0.0000000 | 0.0000100 | 213 | 3.14 | 0.139 |
| Cassidulinoides parkerianus | 0.0000035 | 0.0000001 | 0.0000054 | 86 | 2.00 | 0.124 |
| Cibicides refulgens | 0.0000035 | 0.0000000 | 0.0000054 | 89 | 2.00 | 0.129 |
| Globocassidulina crassa | 0.0000035 | 0.0000000 | 0.0000054 | 89 | 2.00 | 0.129 |
| Ekmocucumis turqueti turqueti | 0.0000035 | 0.0000031 | 0.0000061 | 16 | 2.00 | 0.110 |
| Eulagisca gigantea | 0.0000034 | 0.0000005 | 0.0000165 | 142 | 3.80 | 0.167 |
| Laetmonice producta | 0.0000034 | 0.0000008 | 0.0000147 | 136 | 3.94 | 0.178 |
| Isodyctia cavicornuta | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Isodyctia toxophila | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Tedania oxeata | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Tedania tantulata | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Tedania vanhoeffeni | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Tentorium papillatum | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Tentorium semisuberites | 0.0000033 | 0.0000026 | 0.0000063 | 43 | 2.00 | 0.157 |
| Lenticulina antarctica | 0.0000033 | 0.0000000 | 0.0000054 | 90 | 2.00 | 0.130 |
| Isodyctia steifera | 0.0000033 | 0.0000026 | 0.0000063 | 44 | 2.00 | 0.156 |
| Haliclona dancoi | 0.0000033 | 0.0000026 | 0.0000061 | 47 | 2.00 | 0.151 |
| Haliclona tenella | 0.0000033 | 0.0000026 | 0.0000061 | 47 | 2.00 | 0.151 |
| Abyssorchomene rossi | 0.0000032 | 0.0000000 | 0.0000233 | 164 | 2.65 | 0.156 |
| Polyeunoa laevis | 0.0000032 | 0.0000012 | 0.0000177 | 111 | 3.82 | 0.168 |
| Primnoisis antarctica | 0.0000032 | 0.0000015 | 0.0000081 | 39 | 3.52 | 0.117 |
| Neogloboquadriana pachyderma | 0.0000030 | 0.0000000 | 0.0000054 | 93 | 2.00 | 0.134 |
| Ophioperla ludwigi | 0.0000030 | 0.0000020 | 0.0000043 | 97 | 3.36 | 0.114 |
| Cephalodiscus | 0.0000029 | 0.0000021 | 0.0000031 | 4 | 2.00 | 0.038 |
| Clathria pauper | 0.0000028 | 0.0000021 | 0.0000050 | 43 | 2.00 | 0.157 |
| Iophon radiatus | 0.0000028 | 0.0000021 | 0.0000050 | 43 | 2.00 | 0.157 |
| Aporocidaris milleri | 0.0000028 | 0.0000019 | 0.0000031 | 60 | 3.31 | 0.075 |
| Calyx arcuarius | 0.0000027 | 0.0000022 | 0.0000049 | 44 | 2.00 | 0.156 |
| Acodontaster conspicuus | 0.0000027 | 0.0000008 | 0.0000043 | 13 | 3.00 | 0.042 |
| Epimeria macrodonta | 0.0000027 | 0.0000000 | 0.0000204 | 198 | 2.68 | 0.145 |
| Homaxinella balfourensis | 0.0000027 | 0.0000021 | 0.0000048 | 47 | 2.00 | 0.155 |
| Ophiurolepis gelida | 0.0000026 | 0.0000000 | 0.0000064 | 206 | 2.99 | 0.140 |
| Colossendeis scotti | 0.0000026 | 0.0000017 | 0.0000402 | 135 | 3.93 | 0.099 |
| Flustra antarctica | 0.0000026 | 0.0000019 | 0.0000061 | 31 | 2.00 | 0.125 |
| Nematoflustra flagellata | 0.0000026 | 0.0000019 | 0.0000061 | 31 | 2.00 | 0.125 |
| Acodontaster hodgsoni | 0.0000026 | 0.0000009 | 0.0000044 | 13 | 3.00 | 0.042 |
| Astrocllamys bruneus | 0.0000026 | 0.0000009 | 0.0000076 | 37 | 3.52 | 0.095 |
| Bathydorus spinosus | 0.0000026 | 0.0000019 | 0.0000044 | 43 | 2.00 | 0.157 |
| Phorbas areolatus | 0.0000026 | 0.0000019 | 0.0000044 | 43 | 2.00 | 0.157 |
| Phorbas glaberrima | 0.0000026 | 0.0000019 | 0.0000044 | 43 | 2.00 | 0.157 |
| Odontaster validus | 0.0000026 | 0.0000001 | 0.0000048 | 234 | 3.30 | 0.143 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-------------------------------------|-----------|-----------|-----------|--------|------|-------|
| <i>Eunoe spica</i> | 0.0000026 | 0.0000011 | 0.0000253 | 214 | 4.04 | 0.151 |
| <i>Ophiurolepis brevirima</i> | 0.0000025 | 0.0000000 | 0.0000054 | 223 | 3.01 | 0.143 |
| <i>Harpovoluta charcoti</i> | 0.0000025 | 0.0000008 | 0.0000037 | 79 | 3.02 | 0.089 |
| <i>Bathyplores bongraini</i> | 0.0000025 | 0.0000023 | 0.0000042 | 17 | 2.00 | 0.111 |
| <i>Bathyplores gourdoni</i> | 0.0000025 | 0.0000023 | 0.0000042 | 17 | 2.00 | 0.111 |
| <i>Solaster dawsoni</i> | 0.0000024 | 0.0000007 | 0.0000046 | 29 | 3.72 | 0.079 |
| <i>Ctenocidaris spinosa</i> | 0.0000024 | 0.0000017 | 0.0000028 | 75 | 3.25 | 0.075 |
| <i>Latrunculia apicalis</i> | 0.0000024 | 0.0000018 | 0.0000041 | 43 | 2.00 | 0.157 |
| <i>Latrunculia brevis</i> | 0.0000024 | 0.0000018 | 0.0000041 | 43 | 2.00 | 0.157 |
| <i>Acodontaster capitatus</i> | 0.0000024 | 0.0000009 | 0.0000040 | 13 | 3.00 | 0.042 |
| <i>Polymastia isidis</i> | 0.0000024 | 0.0000018 | 0.0000040 | 43 | 2.00 | 0.157 |
| <i>Echiniphimedia hodgsoni</i> | 0.0000024 | 0.0000013 | 0.0000033 | 83 | 2.97 | 0.129 |
| <i>Polymastia invaginata</i> | 0.0000023 | 0.0000018 | 0.0000039 | 44 | 2.00 | 0.156 |
| <i>Gorgonocephalus chiliensis</i> | 0.0000023 | 0.0000015 | 0.0000039 | 25 | 3.17 | 0.080 |
| <i>Notocidaris mortenseni</i> | 0.0000022 | 0.0000017 | 0.0000027 | 54 | 3.00 | 0.046 |
| <i>Reteporella hippocrepis</i> | 0.0000022 | 0.0000015 | 0.0000048 | 31 | 2.00 | 0.125 |
| <i>Pontiothauma ergata</i> | 0.0000022 | 0.0000008 | 0.0000045 | 41 | 4.24 | 0.117 |
| <i>Ekmocucumis steineni</i> | 0.0000021 | 0.0000019 | 0.0000036 | 16 | 2.00 | 0.110 |
| <i>Ekmocucumis turqueti</i> | 0.0000021 | 0.0000019 | 0.0000036 | 16 | 2.00 | 0.110 |
| <i>Austrodoris kerguelensis</i> | 0.0000021 | 0.0000011 | 0.0000042 | 36 | 3.00 | 0.098 |
| <i>Arteidraco loennbergi</i> | 0.0000021 | 0.0000006 | 0.0000285 | 133 | 3.88 | 0.143 |
| <i>Notocrangon antarcticus</i> | 0.0000021 | 0.0000000 | 0.0000058 | 178 | 2.88 | 0.101 |
| <i>Eucranta mollis</i> | 0.0000021 | 0.0000009 | 0.0000044 | 68 | 2.00 | 0.158 |
| <i>Chiridota weddellensis</i> | 0.0000020 | 0.0000019 | 0.0000036 | 17 | 2.00 | 0.111 |
| <i>Molpadia musculus</i> | 0.0000020 | 0.0000019 | 0.0000036 | 17 | 2.00 | 0.111 |
| <i>Ophionotus victoriae</i> | 0.0000020 | 0.0000000 | 0.0000033 | 217 | 2.97 | 0.147 |
| <i>Eunoe spica spicoides</i> | 0.0000020 | 0.0000010 | 0.0000212 | 249 | 3.94 | 0.142 |
| <i>Barrukia cristata</i> | 0.0000020 | 0.0000009 | 0.0000027 | 99 | 3.71 | 0.150 |
| <i>Molgula pedunculata</i> | 0.0000020 | 0.0000006 | 0.0000072 | 5 | 2.00 | 0.048 |
| <i>Gnathiphimedia mandibularis</i> | 0.0000020 | 0.0000012 | 0.0000027 | 102 | 3.00 | 0.115 |
| <i>Oediceroides emarginatus</i> | 0.0000020 | 0.0000000 | 0.0000309 | 153 | 2.77 | 0.166 |
| <i>Ceratoserolis meridionalis</i> | 0.0000020 | 0.0000010 | 0.0000212 | 90 | 3.99 | 0.157 |
| <i>Frontoserolis bouvieri</i> | 0.0000020 | 0.0000010 | 0.0000212 | 90 | 3.99 | 0.157 |
| <i>Eunoe hartmanae</i> | 0.0000020 | 0.0000008 | 0.0000107 | 152 | 3.78 | 0.167 |
| <i>Harmothoe crosetensis</i> | 0.0000019 | 0.0000010 | 0.0000054 | 170 | 3.73 | 0.154 |
| <i>Harmothoe hartmanae</i> | 0.0000019 | 0.0000010 | 0.0000054 | 170 | 3.73 | 0.154 |
| <i>Epimeria similis</i> | 0.0000019 | 0.0000000 | 0.0000256 | 159 | 2.49 | 0.148 |
| <i>Fasciculiporoides ramosa</i> | 0.0000019 | 0.0000013 | 0.0000042 | 31 | 2.00 | 0.125 |
| <i>Ophioperla koehleri</i> | 0.0000019 | 0.0000009 | 0.0000027 | 21 | 2.00 | 0.075 |
| <i>Promachocrinus kerguelensis</i> | 0.0000018 | 0.0000010 | 0.0000042 | 8 | 2.00 | 0.055 |
| <i>Anthometra adriani</i> | 0.0000018 | 0.0000007 | 0.0000030 | 7 | 2.00 | 0.047 |
| <i>Bathypanoploea schellenbergi</i> | 0.0000018 | 0.0000000 | 0.0000256 | 195 | 2.87 | 0.146 |
| <i>Harmothoe spinosa</i> | 0.0000017 | 0.0000009 | 0.0000035 | 212 | 3.72 | 0.146 |
| <i>Doloidraco longedorsalis</i> | 0.0000017 | 0.0000007 | 0.0000253 | 168 | 3.72 | 0.150 |
| <i>Aplidium vastum</i> | 0.0000017 | 0.0000005 | 0.0000060 | 5 | 2.00 | 0.048 |
| <i>Corella eumyota</i> | 0.0000017 | 0.0000005 | 0.0000060 | 5 | 2.00 | 0.048 |
| <i>Cinachya antarctica</i> | 0.0000017 | 0.0000012 | 0.0000030 | 44 | 2.00 | 0.157 |
| <i>Camptoplites tricornis</i> | 0.0000017 | 0.0000012 | 0.0000036 | 31 | 2.00 | 0.125 |
| <i>Caulastraea curvata</i> | 0.0000017 | 0.0000012 | 0.0000036 | 31 | 2.00 | 0.125 |
| <i>Chondriovelum adeliense</i> | 0.0000017 | 0.0000012 | 0.0000036 | 31 | 2.00 | 0.125 |
| <i>Flustra angusta</i> | 0.0000017 | 0.0000012 | 0.0000036 | 31 | 2.00 | 0.125 |
| <i>Isoschizoporella tricuspis</i> | 0.0000017 | 0.0000012 | 0.0000036 | 31 | 2.00 | 0.125 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-------------------------------|-----------|-----------|-----------|--------|------|-------|
| Melicerita obliqua | 0.0000017 | 0.0000012 | 0.0000036 | 31 | 2.00 | 0.125 |
| Synoicum adareanum | 0.0000017 | 0.0000004 | 0.0000053 | 5 | 2.00 | 0.048 |
| Alexandrella mixta | 0.0000017 | 0.0000008 | 0.0000029 | 59 | 3.92 | 0.142 |
| Ypsilocucumis turricata | 0.0000017 | 0.0000015 | 0.0000028 | 17 | 2.00 | 0.111 |
| Cinachyra barbata | 0.0000016 | 0.0000012 | 0.0000030 | 43 | 2.00 | 0.157 |
| Ctenocidaris perrieri | 0.0000016 | 0.0000011 | 0.0000018 | 68 | 3.27 | 0.067 |
| Iphimediella cyclogena | 0.0000016 | 0.0000008 | 0.0000035 | 86 | 3.44 | 0.115 |
| Ophiosparte gigas | 0.0000016 | 0.0000004 | 0.0000087 | 301 | 3.43 | 0.155 |
| Ainigmaptilon antarcticus | 0.0000016 | 0.0000009 | 0.0000020 | 23 | 2.00 | 0.102 |
| Alcyonium antarcticum | 0.0000016 | 0.0000009 | 0.0000020 | 23 | 1.00 | 0.096 |
| Armadillologorgia cyathella | 0.0000016 | 0.0000009 | 0.0000020 | 23 | 2.00 | 0.102 |
| Primnoella | 0.0000016 | 0.0000009 | 0.0000020 | 23 | 2.00 | 0.102 |
| Trematomus scotti | 0.0000015 | 0.0000004 | 0.0000322 | 146 | 3.82 | 0.153 |
| Maxilliphimedia longipes | 0.0000015 | 0.0000007 | 0.0000029 | 60 | 3.26 | 0.136 |
| Laternula elliptica | 0.0000015 | 0.0000006 | 0.0000027 | 30 | 2.00 | 0.094 |
| Paramoera walkeri | 0.0000015 | 0.0000007 | 0.0000030 | 60 | 3.92 | 0.143 |
| Ctenocidaris gigantea | 0.0000015 | 0.0000011 | 0.0000017 | 70 | 3.27 | 0.071 |
| Limopsis marionensis | 0.0000014 | 0.0000007 | 0.0000024 | 29 | 2.00 | 0.094 |
| Eurythenes gryllus | 0.0000014 | 0.0000007 | 0.0000364 | 210 | 3.53 | 0.136 |
| Artedidraco skottsbergi | 0.0000014 | 0.0000006 | 0.0000293 | 135 | 3.86 | 0.138 |
| Ctenocidaris gilberti | 0.0000014 | 0.0000011 | 0.0000017 | 53 | 3.00 | 0.042 |
| Trematomus lepidorhinus | 0.0000013 | 0.0000004 | 0.0000394 | 95 | 3.81 | 0.123 |
| Sterechinus neumayeri | 0.0000012 | 0.0000000 | 0.0000027 | 141 | 2.68 | 0.119 |
| Perknaster fuscus antarcticus | 0.0000012 | 0.0000003 | 0.0000034 | 10 | 2.67 | 0.055 |
| Harpagifer antarcticus | 0.0000012 | 0.0000003 | 0.0000393 | 78 | 3.80 | 0.102 |
| Austroflustra vulgaris | 0.0000012 | 0.0000008 | 0.0000027 | 31 | 2.00 | 0.125 |
| Bathydoris clavigera | 0.0000012 | 0.0000006 | 0.0000024 | 46 | 3.16 | 0.107 |
| Taeniogyrus contortus | 0.0000012 | 0.0000009 | 0.0000018 | 20 | 2.00 | 0.110 |
| Abyssocucumis liouvillei | 0.0000011 | 0.0000010 | 0.0000020 | 16 | 2.00 | 0.110 |
| Achlyonice violaeuspidata | 0.0000011 | 0.0000010 | 0.0000019 | 17 | 2.00 | 0.111 |
| Astrotoma agassizii | 0.0000011 | 0.0000000 | 0.0000025 | 223 | 2.86 | 0.123 |
| Phyllocomus crocea | 0.0000011 | 0.0000005 | 0.0000021 | 66 | 2.00 | 0.152 |
| Ascidia challengerii | 0.0000011 | 0.0000003 | 0.0000035 | 5 | 2.00 | 0.048 |
| Notaeolidia gigas | 0.0000011 | 0.0000005 | 0.0000022 | 28 | 3.90 | 0.105 |
| Momoculodes scabriculosus | 0.0000011 | 0.0000005 | 0.0000022 | 49 | 2.00 | 0.144 |
| Pseudorchomene coatsi | 0.0000011 | 0.0000005 | 0.0000022 | 49 | 2.00 | 0.144 |
| Pteraster affinis aculeatus | 0.0000010 | 0.0000004 | 0.0000020 | 12 | 3.00 | 0.042 |
| Bostrychopora dentata | 0.0000010 | 0.0000007 | 0.0000023 | 31 | 2.00 | 0.125 |
| Lageneschara lyrulata | 0.0000010 | 0.0000007 | 0.0000023 | 31 | 2.00 | 0.125 |
| Austrocidaris canaliculata | 0.0000010 | 0.0000005 | 0.0000020 | 25 | 3.77 | 0.030 |
| Lysasterias perrieri | 0.0000010 | 0.0000003 | 0.0000020 | 30 | 3.46 | 0.088 |
| Glyptonotus antarcticus | 0.0000010 | 0.0000005 | 0.0000015 | 121 | 3.88 | 0.117 |
| Psolus antarcticus | 0.0000010 | 0.0000009 | 0.0000018 | 16 | 2.00 | 0.110 |
| Psolus dubiosus | 0.0000010 | 0.0000009 | 0.0000018 | 16 | 2.00 | 0.110 |
| Epimeria georgiana | 0.0000010 | 0.0000000 | 0.0000271 | 139 | 2.53 | 0.169 |
| Neobuccinum eatoni | 0.0000010 | 0.0000004 | 0.0000021 | 34 | 3.00 | 0.100 |
| Pista spinifera | 0.0000010 | 0.0000004 | 0.0000019 | 66 | 2.00 | 0.152 |
| Terebella ehlersi | 0.0000010 | 0.0000004 | 0.0000019 | 66 | 2.00 | 0.152 |
| Psolus charcoti | 0.0000009 | 0.0000009 | 0.0000016 | 16 | 2.00 | 0.110 |
| Mesothuria lactea | 0.0000009 | 0.0000009 | 0.0000016 | 17 | 2.00 | 0.111 |
| Parschisturella ceruviata | 0.0000009 | 0.0000005 | 0.0000018 | 45 | 2.00 | 0.139 |
| Tubularia ralphii | 0.0000009 | 0.0000004 | 0.0000021 | 53 | 3.44 | 0.122 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|------------------------------------|-----------|-----------|-----------|--------|------|-------|
| <i>Pseudostichopus mollis</i> | 0.0000009 | 0.0000008 | 0.0000015 | 17 | 2.00 | 0.111 |
| <i>Pseudostichopus villosus</i> | 0.0000009 | 0.0000008 | 0.0000015 | 17 | 2.00 | 0.111 |
| <i>Psolidium incertum</i> | 0.0000009 | 0.0000008 | 0.0000015 | 17 | 2.00 | 0.111 |
| <i>Trachythyone parva</i> | 0.0000009 | 0.0000008 | 0.0000015 | 17 | 2.00 | 0.111 |
| <i>Pyura setosa</i> | 0.0000009 | 0.0000002 | 0.0000030 | 5 | 2.00 | 0.048 |
| <i>Diplasterias brucei</i> | 0.0000008 | 0.0000004 | 0.0000016 | 29 | 3.83 | 0.052 |
| <i>Macroptychaster accrescens</i> | 0.0000008 | 0.0000004 | 0.0000013 | 46 | 3.80 | 0.076 |
| Arcturidae | 0.0000008 | 0.0000005 | 0.0000016 | 30 | 2.00 | 0.117 |
| <i>Tritonia antarctica</i> | 0.0000008 | 0.0000004 | 0.0000020 | 28 | 2.50 | 0.104 |
| <i>Yolida eightsi</i> | 0.0000008 | 0.0000004 | 0.0000016 | 37 | 2.00 | 0.102 |
| <i>Notasterias armata</i> | 0.0000008 | 0.0000004 | 0.0000014 | 12 | 3.00 | 0.042 |
| <i>Pyura tunicata</i> | 0.0000008 | 0.0000002 | 0.0000027 | 5 | 2.00 | 0.048 |
| <i>Scotoplanes globosa</i> | 0.0000008 | 0.0000007 | 0.0000014 | 17 | 2.00 | 0.111 |
| <i>Notasterias stylophora</i> | 0.0000008 | 0.0000004 | 0.0000012 | 12 | 3.00 | 0.042 |
| <i>Pyura discoveryi</i> | 0.0000007 | 0.0000002 | 0.0000026 | 5 | 2.00 | 0.048 |
| <i>Labidiaster annulatus</i> | 0.0000007 | 0.0000004 | 0.0000018 | 144 | 3.89 | 0.128 |
| <i>Cylindrotheca closterium</i> | 0.0000007 | 0.0000006 | 0.0000009 | 81 | 1.00 | 0.202 |
| <i>Gyrodinium lachryama</i> | 0.0000007 | 0.0000005 | 0.0000009 | 35 | 2.00 | 0.107 |
| <i>Aega antarctica</i> | 0.0000007 | 0.0000004 | 0.0000013 | 30 | 2.00 | 0.117 |
| <i>Lophaster gaini</i> | 0.0000007 | 0.0000003 | 0.0000012 | 12 | 3.00 | 0.042 |
| <i>Pyura bouvetensis</i> | 0.0000006 | 0.0000002 | 0.0000023 | 5 | 2.00 | 0.048 |
| <i>Elpidia glacialis</i> | 0.0000006 | 0.0000005 | 0.0000011 | 17 | 2.00 | 0.111 |
| <i>Laetmogone wyvillethompsoni</i> | 0.0000006 | 0.0000005 | 0.0000011 | 17 | 2.00 | 0.111 |
| <i>Echinopsolus acanthocola</i> | 0.0000006 | 0.0000005 | 0.0000010 | 16 | 2.00 | 0.110 |
| <i>Gnathia calva</i> | 0.0000006 | 0.0000002 | 0.0000052 | 48 | 3.56 | 0.126 |
| <i>Probuccinum tenuistriatum</i> | 0.0000006 | 0.0000001 | 0.0000537 | 41 | 4.24 | 0.117 |
| <i>Propeleda longicaudata</i> | 0.0000006 | 0.0000002 | 0.0000010 | 25 | 2.00 | 0.073 |
| <i>Thalassiosira antarctica</i> | 0.0000006 | 0.0000005 | 0.0000008 | 81 | 1.00 | 0.202 |
| <i>Hyperiella dilatata</i> | 0.0000006 | 0.0000000 | 0.0000134 | 129 | 2.15 | 0.157 |
| <i>Ophioceres incipiens</i> | 0.0000005 | 0.0000000 | 0.0000084 | 154 | 2.69 | 0.120 |
| <i>Liothyrella uva</i> | 0.0000005 | 0.0000003 | 0.0000008 | 2 | 2.00 | 0.041 |
| <i>Liothyrella uva antarctica</i> | 0.0000005 | 0.0000003 | 0.0000008 | 2 | 2.00 | 0.041 |
| <i>Amauropsis rossiana</i> | 0.0000005 | 0.0000002 | 0.0000014 | 30 | 3.32 | 0.105 |
| <i>Magellania fragilis</i> | 0.0000005 | 0.0000003 | 0.0000008 | 2 | 2.00 | 0.041 |
| <i>Limopsis lillei</i> | 0.0000005 | 0.0000002 | 0.0000009 | 29 | 2.00 | 0.094 |
| <i>Marseniopsis conica</i> | 0.0000005 | 0.0000002 | 0.0000013 | 28 | 3.00 | 0.103 |
| <i>Marseniopsis mollis</i> | 0.0000005 | 0.0000002 | 0.0000013 | 28 | 3.00 | 0.103 |
| <i>Marginella ealesa</i> | 0.0000005 | 0.0000002 | 0.0000009 | 28 | 2.00 | 0.114 |
| <i>Newnesia antarctica</i> | 0.0000005 | 0.0000002 | 0.0000009 | 28 | 2.00 | 0.114 |
| <i>Trematomus bernacchii</i> | 0.0000005 | 0.0000002 | 0.0000134 | 118 | 3.62 | 0.104 |
| <i>Amphidinium hadai</i> | 0.0000004 | 0.0000003 | 0.0000006 | 35 | 2.00 | 0.107 |
| <i>Sycozoa sigillinoides</i> | 0.0000004 | 0.0000001 | 0.0000014 | 5 | 2.00 | 0.048 |
| <i>Falsimargarita gemma</i> | 0.0000004 | 0.0000002 | 0.0000008 | 28 | 2.00 | 0.114 |
| <i>Diastylis mawsoni</i> | 0.0000004 | 0.0000003 | 0.0000005 | 8 | 2.00 | 0.044 |
| <i>Ekleptostylis debroyeri</i> | 0.0000004 | 0.0000003 | 0.0000005 | 8 | 2.00 | 0.044 |
| <i>Chaetoceros socialis</i> | 0.0000004 | 0.0000003 | 0.0000004 | 81 | 1.00 | 0.202 |
| <i>Fissidentalium majorinum</i> | 0.0000003 | 0.0000003 | 0.0000007 | 6 | 2.00 | 0.035 |
| <i>Natatolana meridionalis</i> | 0.0000003 | 0.0000002 | 0.0000007 | 31 | 2.00 | 0.117 |
| <i>Natatolana obtusata</i> | 0.0000003 | 0.0000002 | 0.0000007 | 31 | 2.00 | 0.116 |
| <i>Natatolana oculata</i> | 0.0000003 | 0.0000002 | 0.0000007 | 30 | 2.00 | 0.117 |
| <i>Cuenotaster involutus</i> | 0.0000003 | 0.0000002 | 0.0000013 | 8 | 2.00 | 0.061 |
| <i>Nacella concinna</i> | 0.0000003 | 0.0000002 | 0.0000008 | 21 | 3.00 | 0.083 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-------------------------------------|-----------|-----------|-----------|--------|------|-------|
| Lissarca notorcadensis | 0.0000003 | 0.0000002 | 0.0000006 | 32 | 2.00 | 0.094 |
| Trophon longstaffi | 0.0000003 | 0.0000001 | 0.0000018 | 34 | 3.00 | 0.098 |
| Pelagobia longicirrata | 0.0000002 | 0.0000001 | 0.0000013 | 137 | 2.12 | 0.132 |
| Compsothyris racovitzae | 0.0000002 | 0.0000001 | 0.0000003 | 2 | 2.00 | 0.041 |
| Magellania joubini | 0.0000002 | 0.0000001 | 0.0000003 | 2 | 2.00 | 0.041 |
| Golfingia margaritacea margaritacea | 0.0000002 | 0.0000001 | 0.0000003 | 2 | 2.00 | 0.047 |
| Munna globicauda | 0.0000002 | 0.0000001 | 0.0000004 | 30 | 2.00 | 0.117 |
| Baseodiscus antarcticus | 0.0000002 | 0.0000001 | 0.0000003 | 90 | 3.53 | 0.070 |
| Lineus longifissus | 0.0000002 | 0.0000001 | 0.0000003 | 90 | 3.53 | 0.070 |
| Parborlasia corrugatus | 0.0000002 | 0.0000001 | 0.0000003 | 90 | 3.53 | 0.070 |
| Alomasoma belyaevi | 0.0000002 | 0.0000001 | 0.0000003 | 2 | 2.00 | 0.047 |
| Monocaulus parvula | 0.0000002 | 0.0000000 | 0.0000021 | 115 | 2.37 | 0.145 |
| Cyclocardia astartoides | 0.0000002 | 0.0000000 | 0.0000004 | 18 | 2.00 | 0.075 |
| Vanadis antarctica | 0.0000002 | 0.0000000 | 0.0000007 | 140 | 2.34 | 0.165 |
| Perknaster densus | 0.0000002 | 0.0000002 | 0.0000007 | 7 | 2.00 | 0.060 |
| Cycethra verrucosa mawsoni | 0.0000001 | 0.0000001 | 0.0000006 | 7 | 2.00 | 0.060 |
| Alacia belgicae | 0.0000001 | 0.0000001 | 0.0000004 | 124 | 2.08 | 0.130 |
| Alacia hettacra | 0.0000001 | 0.0000001 | 0.0000004 | 124 | 2.08 | 0.130 |
| Boroecia antipoda | 0.0000001 | 0.0000001 | 0.0000004 | 124 | 2.08 | 0.130 |
| Metaconchoecia isocheira | 0.0000001 | 0.0000001 | 0.0000004 | 124 | 2.08 | 0.130 |
| Crania lecointei | 0.0000001 | 0.0000001 | 0.0000002 | 2 | 2.00 | 0.041 |
| Notioceramus anomalus | 0.0000001 | 0.0000001 | 0.0000006 | 7 | 2.00 | 0.060 |
| Cadulus dalli antarcticum | 0.0000001 | 0.0000001 | 0.0000003 | 6 | 2.00 | 0.035 |
| Golfingia nordenskojoeldi | 0.0000001 | 0.0000001 | 0.0000002 | 2 | 2.00 | 0.047 |
| Phascolion strombi | 0.0000001 | 0.0000001 | 0.0000002 | 2 | 2.00 | 0.047 |
| Perknaster sladeni | 0.0000001 | 0.0000001 | 0.0000005 | 7 | 2.00 | 0.060 |
| Silicularia rosea | 0.0000001 | 0.0000001 | 0.0000005 | 118 | 2.37 | 0.143 |
| Hamingia | 0.0000001 | 0.0000000 | 0.0000001 | 2 | 2.00 | 0.047 |
| Rhynchonereella bongraini | 0.0000001 | 0.0000000 | 0.0000003 | 84 | 2.12 | 0.114 |
| Maxmuelleria faex | 0.0000001 | 0.0000000 | 0.0000001 | 2 | 2.00 | 0.047 |
| Kampylaster incurvatus | 0.0000001 | 0.0000001 | 0.0000004 | 7 | 2.00 | 0.060 |
| Golfingia anderssoni | 0.0000001 | 0.0000000 | 0.0000001 | 2 | 2.00 | 0.047 |
| Coscinodiscus oculoides | 0.0000001 | 0.0000000 | 0.0000002 | 81 | 1.00 | 0.202 |
| Golfingia ohlini | 0.0000001 | 0.0000000 | 0.0000001 | 2 | 2.00 | 0.047 |
| Golfingia mawsoni | 0.0000001 | 0.0000001 | 0.0000001 | 2 | 2.00 | 0.047 |
| Echiurus antarcticus | 0.0000001 | 0.0000000 | 0.0000001 | 2 | 2.00 | 0.047 |
| Djerboa furcipes | 0.0000001 | 0.0000000 | 0.0000005 | 116 | 2.08 | 0.154 |
| Oradarea edentata | 0.0000001 | 0.0000000 | 0.0000005 | 115 | 2.08 | 0.154 |
| Haplocheira plumosa | 0.0000001 | 0.0000000 | 0.0000005 | 115 | 2.08 | 0.156 |
| Pseudo-Nitzschia liniola | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| Ihlea racovitzai | 0.0000000 | 0.0000000 | 0.0000001 | 76 | 2.08 | 0.089 |
| Salpa gerlachei | 0.0000000 | 0.0000000 | 0.0000001 | 76 | 2.08 | 0.089 |
| Euchaetomera antarcticus | 0.0000000 | 0.0000000 | 0.0000151 | 105 | 2.36 | 0.133 |
| Pseudo-Nitzschia subcurvata | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| Manguinea fusiformis | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| Pseudo-Nitzschia heimii | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| Edwardsia meridionalis | 0.0000000 | 0.0000000 | 0.0000001 | 75 | 2.15 | 0.113 |
| Isosicyonis alba | 0.0000000 | 0.0000000 | 0.0000001 | 75 | 2.15 | 0.113 |
| Clavularia frankiliana | 0.0000000 | 0.0000000 | 0.0000012 | 101 | 2.35 | 0.138 |
| Stellarima microtrias | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| Peraeospinosus pushkini | 0.0000000 | 0.0000000 | 0.0000060 | 104 | 2.36 | 0.101 |
| Porosira pseudodenticulata | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|--|-----------|-----------|-----------|--------|------|-------|
| <i>Thalassiosira tumida</i> | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira ritscheri</i> | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira lentiginosa</i> | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| <i>Ophiacantha antarctica</i> | 0.0000000 | 0.0000000 | 0.0000004 | 90 | 2.16 | 0.125 |
| <i>Abyssorchomene plebs</i> | 0.0000000 | 0.0000000 | 0.0000222 | 107 | 2.08 | 0.159 |
| <i>Nitzschia lecontei</i> | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| <i>Parmaphorella mawsoni</i> | 0.0000000 | 0.0000000 | 0.0000003 | 86 | 2.00 | 0.128 |
| <i>Salpa thompsoni</i> | 0.0000000 | 0.0000000 | 0.0000173 | 108 | 2.28 | 0.103 |
| <i>Actinocyclus actinochilus</i> | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| <i>Dictyocha speculum</i> | 0.0000000 | 0.0000000 | 0.0000000 | 30 | 1.00 | 0.110 |
| <i>Porosira glacialis</i> | 0.0000000 | 0.0000000 | 0.0000001 | 81 | 1.00 | 0.202 |
| <i>Isotealia antarctica</i> | 0.0000000 | 0.0000000 | 0.0000001 | 74 | 2.21 | 0.106 |
| <i>Thalassiosira gracilis expecta</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Ampelisca richardsoni</i> | 0.0000000 | 0.0000000 | 0.0000011 | 108 | 2.00 | 0.159 |
| <i>Actinocyclus spiritus</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Camylaspis maculata</i> | 0.0000000 | 0.0000000 | 0.0000000 | 66 | 2.00 | 0.097 |
| <i>Eudorella splendida</i> | 0.0000000 | 0.0000000 | 0.0000000 | 68 | 2.00 | 0.102 |
| <i>Vaunthompsonia indermis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 68 | 2.00 | 0.102 |
| <i>Proboscia truncata</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Azpeitia tabularis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Porania antarctica</i> | 0.0000000 | 0.0000000 | 0.0000000 | 72 | 2.12 | 0.108 |
| <i>Rhizosolenia antennata</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Manguinea rigida</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Eucampia antarctica</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira trifulta</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Nitzschia kerguelensis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Odontella weissflogii</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira gravida</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Nototanais dimorphus</i> | 0.0000000 | 0.0000000 | 0.0000000 | 69 | 2.00 | 0.104 |
| <i>Nototanais antarcticus</i> | 0.0000000 | 0.0000000 | 0.0000000 | 70 | 2.00 | 0.105 |
| <i>Actinocyclus utricularis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Banquisia belgicae</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Chaetoceros concavicornis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Chaetoceros criophilum</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Corethron criophilum</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Pseudo-Nitzschia prolongatoides</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira frenguelliopsis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira australis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Thalassiosira gracilis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Porania antarctica glabra</i> | 0.0000000 | 0.0000000 | 0.0000000 | 72 | 2.12 | 0.108 |
| <i>Chaetoceros flexuosum</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Proboscia alata</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Oswaldella antarctica</i> | 0.0000000 | 0.0000000 | 0.0000009 | 93 | 2.00 | 0.128 |
| <i>Proboscia inermi</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Sterechinus antarcticus</i> | 0.0000000 | 0.0000000 | 0.0000017 | 121 | 2.47 | 0.101 |
| <i>Bodo saltans</i> | 0.0000000 | 0.0000000 | 0.0000000 | 32 | 3.00 | 0.108 |
| <i>Chaetoceros bulbosum</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Chaetoceros dictyota</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Chaetoceros pelagicus</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Fragilariopsis separanda</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Fragilariopsis linearis</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| <i>Fragilariopsis nana</i> | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |

| Species | median IS | Q1 IS | Q3 IS | Degree | TL | TS |
|-------------------------------|-----------|-----------|-----------|--------|------|-------|
| Fragilariopsis obliquecostata | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Fragilariopsis rhombica | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Fragilariopsis ritscheri | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Fragilariopsis kerguelensis | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Trichotoxon reinboldii | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Phaeocystis antarctica | 0.0000000 | 0.0000000 | 0.0000000 | 30 | 1.00 | 0.110 |
| Fragilariopsis sublinearis | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Nematocarcinus lanceopes | 0.0000000 | 0.0000000 | 0.0000007 | 90 | 2.39 | 0.111 |
| Eucopia australis | 0.0000000 | 0.0000000 | 0.0000258 | 105 | 2.36 | 0.133 |
| Anthomastus bathyproctus | 0.0000000 | 0.0000000 | 0.0000010 | 84 | 2.02 | 0.133 |
| Chaetoceros neglectum | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Fragilariopsis curta | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Fragilariopsis pseudonana | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Fragilariopsis vanheurckii | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Nitzschia neglecta | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Silicoflagellata | 0.0000000 | 0.0000000 | 0.0000000 | 30 | 1.00 | 0.110 |
| Antarctomysis maxima | 0.0000000 | 0.0000000 | 0.0000288 | 105 | 2.36 | 0.133 |
| Navicula glaciei | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Navicula schefferae | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Bathylbiaster loripes | 0.0000000 | 0.0000000 | 0.0000011 | 101 | 2.67 | 0.131 |
| Fragilariopsis cylindrus | 0.0000000 | 0.0000000 | 0.0000000 | 81 | 1.00 | 0.202 |
| Sediment | 0.0000000 | 0.0000000 | 0.0000000 | 57 | 1.00 | 0.064 |
| Austrosignum grande | 0.0000000 | 0.0000000 | 0.0000012 | 89 | 2.00 | 0.138 |
| Phytodetritus | 0.0000000 | 0.0000000 | 0.0000000 | 226 | 1.00 | 0.094 |
| Abatus curvidens | 0.0000000 | 0.0000000 | 0.0000000 | 2 | 2.00 | 0.039 |
| Abatus shackeltoni | 0.0000000 | 0.0000000 | 0.0000000 | 2 | 2.00 | 0.039 |
| Abatus cavernosus | 0.0000000 | 0.0000000 | 0.0000000 | 2 | 2.00 | 0.039 |
| Abatus nimrodi | 0.0000000 | 0.0000000 | 0.0000000 | 2 | 2.00 | 0.039 |
| Gersemia antarctica | 0.0000000 | 0.0000000 | 0.0000034 | 87 | 2.08 | 0.132 |

Extinction simulations and stability

We performed extinction simulations, one at a time, for every species in the Weddell Sea food web. In order to assess the impact on the stability of the food web we statistically compared a stability index before and after performing the extinction. For this, we applied Quasi-Sign Stability *QSS* that calculates the proportion of matrices that are locally stable. These matrices are created by sampling the values of the community matrix (the Jacobian) from a uniform distribution, preserving the sign structure: positive for predators and negative for prey. This stability index was originally proposed by Allesina and Pascual (2008). For the *QSS* calculation we used a uniform distribution between 0 and maximum values given by the parameters negative, positive and self-damping, corresponding to the sign of interactions and self-limitation effect. Since we had estimated the interaction strength for each interaction of the Weddell Sea food web, the limits of the distribution were *negative* * $-x$, *positive* * x , *self - damping* * x , where x is the value of the strength for the interaction in question. The x for the self-limitation effect of the species is 0 unless the species present cannibalism. We performed 1000 extinction simulations for every species. Our results showed that the proportion of Jacobians that were locally stable was zero, probably due to the absence of self-limitation in the species. Thus, we considered the distribution of maximum eigenvalues as the stability index, hereafter *QSS*. For testing if the *QSS* difference before and after the extinction is positive or negative we performed a contrast. This means that for each simulation we made the difference of the *QSS* after extinction with the median value of the 1000 simulations of *QSS* for the whole network, thus we obtained a distribution of *QSS* differences.

We used the R package multiweb to calculate *QSS* and to test the *QSS* difference before and after performing

the extinction (Saravia 2019). Two functions were specifically created for these analyses: ‘calc_QSS’ and ‘calc_QSS_extinction_dif’.

Table 2 summarizes the *QSS* results for every species extinction of the Weddell Sea food web.

Table 2: Summary of maximum eigenvalue (*QSS*) distribution of differences before and after performing extinction simulations in the Weddell Sea food web. Ordered by decreasing proportion of positive differences. Prop dif *QSS* + = Proportion of positive differences, Prop dif *QSS* - = Proportion of negative differences, median dif*QSS* relat = median of relative *QSS* differences.

| Species | Prop dif <i>QSS</i> + | Prop dif <i>QSS</i> - | median dif <i>QSS</i> relat |
|-------------------------------------|-----------------------|-----------------------|-----------------------------|
| Hydrurga leptonyx | 0.651 | 0.349 | 0.0582380 |
| Arctocephalus gazella | 0.613 | 0.387 | 0.0322909 |
| Mirounga leonina | 0.581 | 0.419 | 0.0312906 |
| Mesonychoteuthis hamiltoni | 0.573 | 0.427 | 0.0265289 |
| Orcinus orca | 0.570 | 0.430 | 0.0232904 |
| Macrourus holotrachys | 0.568 | 0.432 | 0.0239889 |
| Notothenia marmorata | 0.563 | 0.437 | 0.0183958 |
| Macrourus whitsoni | 0.558 | 0.442 | 0.0223483 |
| Ommatophoca rossii | 0.558 | 0.442 | 0.0236585 |
| Leptonychotes weddelli | 0.551 | 0.449 | 0.0204262 |
| Dissostichus mawsoni | 0.547 | 0.453 | 0.0195471 |
| Notothenia coriiceps | 0.544 | 0.456 | 0.0181917 |
| Pagetopsis macropterus | 0.542 | 0.458 | 0.0133901 |
| Clio pyramidata | 0.539 | 0.461 | 0.0132594 |
| Edwardsia meridionalis | 0.534 | 0.466 | 0.0111048 |
| Galiteuthis glacialis | 0.532 | 0.468 | 0.0117626 |
| Megaptera novaeangliae | 0.530 | 0.470 | 0.0100044 |
| Nototanaia antarcticus | 0.530 | 0.470 | 0.0081931 |
| Isosicyonis alba | 0.529 | 0.471 | 0.0091071 |
| Natatolana meridionalis | 0.529 | 0.471 | 0.0083387 |
| Echiurus antarcticus | 0.528 | 0.472 | 0.0097771 |
| Paraceradocus gibber | 0.527 | 0.473 | 0.0088182 |
| Martialia hyadesi | 0.526 | 0.474 | 0.0086266 |
| Nitzschia neglecta | 0.526 | 0.474 | 0.0082240 |
| Aptenodytes forsteri | 0.525 | 0.475 | 0.0092236 |
| Pleuragramma antarcticum | 0.525 | 0.475 | 0.0127623 |
| Trematomus pennellii | 0.525 | 0.475 | 0.0092681 |
| Golfingia nordenskoeldi | 0.523 | 0.477 | 0.0093687 |
| Chionodraco myersi | 0.522 | 0.478 | 0.0079624 |
| Silicoflagellata | 0.522 | 0.478 | 0.0067129 |
| Thalassiosira gravida | 0.522 | 0.478 | 0.0079688 |
| Thalassiosira ritscheri | 0.522 | 0.478 | 0.0089235 |
| Trematomus loennbergii | 0.521 | 0.479 | 0.0090177 |
| Ctenocidaris perrieri | 0.520 | 0.480 | 0.0045898 |
| Eucopia australis | 0.520 | 0.480 | 0.0063218 |
| Bathyiaster loripes | 0.519 | 0.481 | 0.0071585 |
| Camylaspis maculata | 0.519 | 0.481 | 0.0075011 |
| Cylindrotheca closterium | 0.519 | 0.481 | 0.0071210 |
| Kondakovia longimana | 0.519 | 0.481 | 0.0065312 |
| Psychroteuthis glacialis | 0.519 | 0.481 | 0.0047244 |
| Golfingia margaritacea margaritacea | 0.518 | 0.482 | 0.0061283 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|---------------------------------|----------------|----------------|---------------------|
| Notaeolidia gigas | 0.518 | 0.482 | 0.0106079 |
| Ekleptostylis debroyeri | 0.517 | 0.483 | 0.0090180 |
| Notasterias stylophora | 0.517 | 0.483 | 0.0042340 |
| Tedania vanhoeffeni | 0.517 | 0.483 | 0.0087910 |
| Trematomus hansonii | 0.517 | 0.483 | 0.0058990 |
| Caulastraea curvata | 0.516 | 0.484 | 0.0096405 |
| Crania leointei | 0.516 | 0.484 | 0.0037504 |
| Cyllopus lucasii | 0.516 | 0.484 | 0.0047906 |
| Dimophyes arctica | 0.516 | 0.484 | 0.0068132 |
| Magellania joubini | 0.516 | 0.484 | 0.0054193 |
| Perknaster densus | 0.516 | 0.484 | 0.0027993 |
| Phorbas glaberrima | 0.516 | 0.484 | 0.0060650 |
| Flustra antarctica | 0.515 | 0.485 | 0.0039654 |
| Fragilariopsis linearis | 0.515 | 0.485 | 0.0033586 |
| Pseudo-Nitzschia prolongatoides | 0.515 | 0.485 | 0.0089807 |
| Trematomus nicolai | 0.515 | 0.485 | 0.0062671 |
| Aethotaxis mitopteryx | 0.514 | 0.486 | 0.0043803 |
| Ekmocucumis turqueti | 0.514 | 0.486 | 0.0080713 |
| Acodontaster conspicuus | 0.513 | 0.487 | 0.0040223 |
| Urticinopsis antarctica | 0.513 | 0.487 | 0.0046915 |
| Bathypanoploea schellenbergi | 0.512 | 0.488 | 0.0042547 |
| Cassidulinoides parkerianus | 0.512 | 0.488 | 0.0059199 |
| Desmonema glaciale | 0.512 | 0.488 | 0.0033888 |
| Golfingia anderssoni | 0.512 | 0.488 | 0.0075599 |
| Isodyctia steifera | 0.512 | 0.488 | 0.0044246 |
| Lageneschara lyrulata | 0.512 | 0.488 | 0.0036662 |
| Pagetopsis maculatus | 0.512 | 0.488 | 0.0048215 |
| Pogonophryne marmorata | 0.512 | 0.488 | 0.0030079 |
| Gorgonocephalus chiliensis | 0.511 | 0.489 | 0.0045626 |
| Kirkpatrickia variolosa | 0.511 | 0.489 | 0.0027825 |
| Rossella antarctica | 0.511 | 0.489 | 0.0022915 |
| Anthomastus bathyproctus | 0.510 | 0.490 | 0.0047369 |
| Chaetoceros criophilum | 0.510 | 0.490 | 0.0016969 |
| Chaetoceros socialis | 0.510 | 0.490 | 0.0033011 |
| Macroptychaster accrescens | 0.510 | 0.490 | 0.0027970 |
| Ophionotus victoriae | 0.510 | 0.490 | 0.0022531 |
| Pogonophryne scotti | 0.510 | 0.490 | 0.0048291 |
| Serolella bouveri | 0.510 | 0.490 | 0.0047019 |
| Dictyocha speculum | 0.509 | 0.491 | 0.0034916 |
| Mesothuria lactea | 0.509 | 0.491 | 0.0020680 |
| Ophiurolepis gelida | 0.509 | 0.491 | 0.0038004 |
| Pachyptila desolata | 0.509 | 0.491 | 0.0028994 |
| Pseudosagitta gazellae | 0.509 | 0.491 | 0.0031234 |
| Artedidraco loennbergi | 0.508 | 0.492 | 0.0038814 |
| Gerlachea australis | 0.508 | 0.492 | 0.0039727 |
| Phorbas areolatus | 0.508 | 0.492 | 0.0032709 |
| Polymastia invaginata | 0.508 | 0.492 | 0.0037578 |
| Porosira pseudodenticulata | 0.508 | 0.492 | 0.0017527 |
| Propeleda longicaudata | 0.508 | 0.492 | 0.0024102 |
| Trophon longstaffi | 0.508 | 0.492 | 0.0039214 |
| Bargmannia | 0.507 | 0.493 | 0.0033179 |
| Baseodiscus antarcticus | 0.507 | 0.493 | 0.0029885 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|------------------------------------|----------------|----------------|---------------------|
| <i>Dolloidraco longedorsalis</i> | 0.507 | 0.493 | 0.0038833 |
| <i>Gnathiphimedia mandibularis</i> | 0.507 | 0.493 | 0.0038035 |
| <i>Gymnoscopelus braueri</i> | 0.507 | 0.493 | 0.0049433 |
| <i>Harpovoluta charcoti</i> | 0.507 | 0.493 | 0.0015015 |
| <i>Lenticulina antarctica</i> | 0.507 | 0.493 | 0.0017082 |
| <i>Lyrocteis flavopallidus</i> | 0.507 | 0.493 | 0.0042962 |
| <i>Ophiacantha antarctica</i> | 0.507 | 0.493 | 0.0022393 |
| <i>Callianira antarctica</i> | 0.506 | 0.494 | 0.0027097 |
| <i>Isotealia antarctica</i> | 0.506 | 0.494 | 0.0027374 |
| <i>Moroteuthis ingens</i> | 0.506 | 0.494 | 0.0035174 |
| <i>Solaster dawsoni</i> | 0.506 | 0.494 | 0.0030059 |
| <i>Solmundella bitentaculata</i> | 0.506 | 0.494 | 0.0015497 |
| <i>Stellarima microtrias</i> | 0.506 | 0.494 | 0.0019913 |
| <i>Camptoplites tricornis</i> | 0.505 | 0.495 | 0.0009800 |
| <i>Cinachyra barbata</i> | 0.505 | 0.495 | 0.0016805 |
| <i>Clione antarctica</i> | 0.505 | 0.495 | 0.0023987 |
| <i>Eulagisca gigantea</i> | 0.505 | 0.495 | 0.0007266 |
| <i>Fulmarus glacialis</i> | 0.505 | 0.495 | 0.0018270 |
| <i>Natatolana oculata</i> | 0.505 | 0.495 | 0.0011171 |
| <i>Reteporella hippocrepis</i> | 0.505 | 0.495 | 0.0019210 |
| <i>Rhynchonereella bongraini</i> | 0.505 | 0.495 | 0.0022910 |
| <i>Sterna vittata</i> | 0.505 | 0.495 | 0.0023508 |
| <i>Stylocordyla borealis</i> | 0.505 | 0.495 | 0.0033806 |
| <i>Trematomus bernacchii</i> | 0.505 | 0.495 | 0.0021561 |
| <i>Waldeckia obesa</i> | 0.505 | 0.495 | 0.0024522 |
| <i>Chaetoceros concavicornis</i> | 0.504 | 0.496 | 0.0013448 |
| <i>Falsimargarita gemma</i> | 0.504 | 0.496 | 0.0012544 |
| <i>Globocassidulina crassa</i> | 0.504 | 0.496 | 0.0020306 |
| <i>Liljeborgia georgiana</i> | 0.504 | 0.496 | 0.0013039 |
| <i>Monocaulus parvula</i> | 0.504 | 0.496 | 0.0005649 |
| <i>Nitzschia kerguelensis</i> | 0.504 | 0.496 | 0.0020456 |
| <i>Parborlasia corrugatus</i> | 0.504 | 0.496 | 0.0013657 |
| <i>Pareledone charcoti</i> | 0.504 | 0.496 | 0.0013661 |
| <i>Physeter macrocephalus</i> | 0.504 | 0.496 | 0.0008654 |
| <i>Pogonophryne phyllopogon</i> | 0.504 | 0.496 | 0.0011003 |
| <i>Thysanoessa macrura</i> | 0.504 | 0.496 | 0.0012274 |
| <i>Abyssocucumis liouvillei</i> | 0.503 | 0.497 | 0.0012950 |
| <i>Bathydoris clavigera</i> | 0.503 | 0.497 | 0.0028458 |
| <i>Labidiaster annulatus</i> | 0.503 | 0.497 | 0.0003740 |
| <i>Salpa thompsoni</i> | 0.503 | 0.497 | 0.0009690 |
| <i>Serolis polita</i> | 0.503 | 0.497 | 0.0008018 |
| <i>Astrochlamys bruneus</i> | 0.502 | 0.498 | 0.0008001 |
| <i>Cryodraco antarcticus</i> | 0.502 | 0.498 | 0.0016087 |
| <i>Epimeria georgiana</i> | 0.502 | 0.498 | 0.0006987 |
| <i>Euchaetomera antarcticus</i> | 0.502 | 0.498 | 0.0013019 |
| <i>Pentanymphe antarcticum</i> | 0.502 | 0.498 | 0.0005864 |
| <i>Perknaster sladeni</i> | 0.502 | 0.498 | 0.0008425 |
| <i>Pogonophryne permitini</i> | 0.502 | 0.498 | 0.0002546 |
| <i>Probuccinum tenuistriatum</i> | 0.502 | 0.498 | 0.0013972 |
| <i>Rhachotropis antarctica</i> | 0.502 | 0.498 | 0.0007659 |
| <i>Acodontaster hodgsoni</i> | 0.501 | 0.499 | 0.0011094 |
| <i>Austrocidaris canaliculata</i> | 0.501 | 0.499 | 0.0003520 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|---------------------------------------|----------------|----------------|---------------------|
| <i>Axociella nidificata</i> | 0.501 | 0.499 | 0.0002910 |
| <i>Chaetoceros dictyota</i> | 0.501 | 0.499 | 0.0000346 |
| <i>Cuenotaster involutus</i> | 0.501 | 0.499 | 0.0007711 |
| <i>Fragilariopsis cylindrus</i> | 0.501 | 0.499 | 0.0002557 |
| <i>Gersemia antarctica</i> | 0.501 | 0.499 | 0.0010437 |
| <i>Liothyrella uva</i> | 0.501 | 0.499 | 0.0006468 |
| <i>Pyura discoveryi</i> | 0.501 | 0.499 | 0.0007100 |
| <i>Thalassiosira australis</i> | 0.501 | 0.499 | 0.0012156 |
| <i>Ainigmaptilon antarcticus</i> | 0.500 | 0.500 | -0.0001649 |
| <i>Cibicides refulgens</i> | 0.500 | 0.500 | 0.0001178 |
| <i>Flustra angusta</i> | 0.500 | 0.500 | -0.0001896 |
| <i>Gymnodraco acuticeps</i> | 0.500 | 0.500 | 0.0000998 |
| <i>Harmotoe hartmanae</i> | 0.500 | 0.500 | 0.0003728 |
| <i>Limopsis lillei</i> | 0.500 | 0.500 | 0.0004295 |
| <i>Pachycara brachycephalum</i> | 0.500 | 0.500 | -0.0000500 |
| <i>Psilaster charcoti</i> | 0.500 | 0.500 | 0.0001576 |
| <i>Rhodalia miranda</i> | 0.500 | 0.500 | 0.0002211 |
| <i>Rossella tarenja</i> | 0.500 | 0.500 | 0.0000790 |
| <i>Tetilla leptoderma</i> | 0.500 | 0.500 | 0.0001494 |
| <i>Thalassiosira trifurcata</i> | 0.500 | 0.500 | -0.0000996 |
| <i>Chiridota weddellensis</i> | 0.499 | 0.501 | -0.0010806 |
| <i>Isoschizoporella tricuspidis</i> | 0.499 | 0.501 | -0.0002841 |
| <i>Parvicorbicula socialis</i> | 0.499 | 0.501 | -0.0001631 |
| <i>Phaeocystis antarctica</i> | 0.499 | 0.501 | -0.0001461 |
| <i>Sycozoa sigillinoides</i> | 0.499 | 0.501 | -0.0011296 |
| <i>Synoicum adareanum</i> | 0.499 | 0.501 | -0.0002467 |
| <i>Trachythoe parva</i> | 0.499 | 0.501 | -0.0003053 |
| <i>Tryphosella murrayi</i> | 0.499 | 0.501 | -0.0005343 |
| <i>Armadillogorgia cyathella</i> | 0.498 | 0.502 | -0.0023066 |
| <i>Austrosignum grande</i> | 0.498 | 0.502 | -0.0003971 |
| <i>Cygnodraco mawsoni</i> | 0.498 | 0.502 | -0.0002223 |
| <i>Fragilariopsis kerguelensis</i> | 0.498 | 0.502 | -0.0007914 |
| <i>Maxmuelleria faex</i> | 0.498 | 0.502 | -0.0010493 |
| <i>Muraenolepis microps</i> | 0.498 | 0.502 | -0.0004239 |
| <i>Thalassiosira gracilis expecta</i> | 0.498 | 0.502 | -0.0002924 |
| <i>Chionodraco hamatus</i> | 0.497 | 0.503 | -0.0012882 |
| <i>Diphyes antarctica</i> | 0.497 | 0.503 | -0.0017090 |
| <i>Epimeria similis</i> | 0.497 | 0.503 | -0.0016099 |
| <i>Eunoe spica spicoides</i> | 0.497 | 0.503 | -0.0006674 |
| <i>Fragilariopsis rhombica</i> | 0.497 | 0.503 | -0.0012413 |
| <i>Oswaldella antarctica</i> | 0.497 | 0.503 | -0.0017838 |
| <i>Pseudo-Nitzschia heimii</i> | 0.497 | 0.503 | -0.0013588 |
| <i>Ypsilocucumis turricata</i> | 0.497 | 0.503 | -0.0008072 |
| <i>Bathylagus antarcticus</i> | 0.496 | 0.504 | -0.0012683 |
| <i>Bostrychopora dentata</i> | 0.496 | 0.504 | -0.0030830 |
| <i>Dipulmaris antarctica</i> | 0.496 | 0.504 | -0.0022872 |
| <i>Hamingia</i> | 0.496 | 0.504 | -0.0030751 |
| <i>Lagenorhynchus cruciger</i> | 0.496 | 0.504 | -0.0019112 |
| <i>Odontella weissflogii</i> | 0.496 | 0.504 | -0.0011033 |
| <i>Ophioperla ludwigi</i> | 0.496 | 0.504 | -0.0007503 |
| <i>Psolus antarcticus</i> | 0.496 | 0.504 | -0.0023681 |
| <i>Pyura tunicata</i> | 0.496 | 0.504 | -0.0025805 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|------------------------------------|----------------|----------------|---------------------|
| <i>Scolymastra joubini</i> | 0.496 | 0.504 | -0.0018918 |
| <i>Vaunthompsonia indermis</i> | 0.496 | 0.504 | -0.0019649 |
| <i>Ammothea carolinensis</i> | 0.495 | 0.505 | -0.0017501 |
| <i>Calyx arcuarius</i> | 0.495 | 0.505 | -0.0019267 |
| <i>Echiniphimedia hodgsoni</i> | 0.495 | 0.505 | -0.0027247 |
| <i>Eunoe hartmanae</i> | 0.495 | 0.505 | -0.0016984 |
| <i>Glyptonotus antarcticus</i> | 0.495 | 0.505 | -0.0014988 |
| <i>Gonatus antarcticus</i> | 0.495 | 0.505 | -0.0027379 |
| <i>Gymnoscopelus nicholsi</i> | 0.495 | 0.505 | -0.0010180 |
| <i>Newnesia antarctica</i> | 0.495 | 0.505 | -0.0025157 |
| <i>Oradarea edentata</i> | 0.495 | 0.505 | -0.0044435 |
| <i>Paramoera walkeri</i> | 0.495 | 0.505 | -0.0023683 |
| <i>Pontiothauma ergata</i> | 0.495 | 0.505 | -0.0023953 |
| <i>Salpa gerlachei</i> | 0.495 | 0.505 | -0.0017212 |
| <i>Trematomus lepidorhinus</i> | 0.495 | 0.505 | -0.0016022 |
| <i>Trematomus scotti</i> | 0.495 | 0.505 | -0.0012912 |
| <i>Anthometra adriani</i> | 0.494 | 0.506 | -0.0024176 |
| <i>Barrukia cristata</i> | 0.494 | 0.506 | -0.0023785 |
| <i>Eusirus perdentatus</i> | 0.494 | 0.506 | -0.0046083 |
| <i>Harmothoe spinosa</i> | 0.494 | 0.506 | -0.0022896 |
| <i>Muraenolepis marmoratus</i> | 0.494 | 0.506 | -0.0028276 |
| <i>Notolepis coatsi</i> | 0.494 | 0.506 | -0.0019983 |
| <i>Nototanais dimorphus</i> | 0.494 | 0.506 | -0.0017890 |
| <i>Porania antarctica glabra</i> | 0.494 | 0.506 | -0.0015953 |
| <i>Vibilia stebbingi</i> | 0.494 | 0.506 | -0.0014300 |
| <i>Azpeitia tabularis</i> | 0.493 | 0.507 | -0.0029656 |
| <i>Bathyplores bongraini</i> | 0.493 | 0.507 | -0.0007116 |
| <i>Fragilariopsis ritscheri</i> | 0.493 | 0.507 | -0.0029602 |
| <i>Iphimediella cyclogena</i> | 0.493 | 0.507 | -0.0026846 |
| <i>Isodyctia cavicornuta</i> | 0.493 | 0.507 | -0.0020899 |
| <i>Latrunculia brevis</i> | 0.493 | 0.507 | -0.0029820 |
| <i>Terebella ehlersi</i> | 0.493 | 0.507 | -0.0034257 |
| <i>Trematomus eulepidotus</i> | 0.493 | 0.507 | -0.0010600 |
| <i>Abyssorhomene plebs</i> | 0.492 | 0.508 | -0.0024938 |
| <i>Actinocyclus spiritus</i> | 0.492 | 0.508 | -0.0019679 |
| <i>Alomasoma belyaevi</i> | 0.492 | 0.508 | -0.0042964 |
| <i>Echinopsolus acanthocola</i> | 0.492 | 0.508 | -0.0057993 |
| <i>Harmothoe crosetensis</i> | 0.492 | 0.508 | -0.0028233 |
| <i>Luidiaster gerlachei</i> | 0.492 | 0.508 | -0.0033875 |
| <i>Ophioceres incipiens</i> | 0.492 | 0.508 | -0.0034192 |
| <i>Phytodetritus</i> | 0.492 | 0.508 | -0.0045845 |
| <i>Pogonophryne barsukovi</i> | 0.492 | 0.508 | -0.0032684 |
| <i>Polymastia isidis</i> | 0.492 | 0.508 | -0.0054013 |
| <i>Primnoella</i> | 0.492 | 0.508 | -0.0025488 |
| <i>Scotoplanes globosa</i> | 0.492 | 0.508 | -0.0021334 |
| <i>Sterechinus antarcticus</i> | 0.492 | 0.508 | -0.0036710 |
| <i>Thalassiosira lentiginosa</i> | 0.492 | 0.508 | -0.0029557 |
| <i>Trichotoxon reinboldii</i> | 0.492 | 0.508 | -0.0022528 |
| <i>Eurythenes gryllus</i> | 0.491 | 0.509 | -0.0068590 |
| <i>Gymnoscopelus opisthopterus</i> | 0.491 | 0.509 | -0.0047407 |
| <i>Hyperia macrocephala</i> | 0.491 | 0.509 | -0.0016421 |
| <i>Laetmonice producta</i> | 0.491 | 0.509 | -0.0035854 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|-------------------------------|----------------|----------------|---------------------|
| Metridia gerlachei | 0.491 | 0.509 | -0.0041704 |
| Natatolana obtusata | 0.491 | 0.509 | -0.0028313 |
| Neogloboquadriana pachyderma | 0.491 | 0.509 | -0.0033988 |
| Protomyctophum bolini | 0.491 | 0.509 | -0.0040030 |
| Artefidraco orianae | 0.490 | 0.510 | -0.0056516 |
| Bathyplores gourdoni | 0.490 | 0.510 | -0.0048060 |
| Ceratoserolis meridionalis | 0.490 | 0.510 | -0.0052969 |
| Champsoccephalus gunnari | 0.490 | 0.510 | -0.0024889 |
| Eucampia antarctica | 0.490 | 0.510 | -0.0036513 |
| Fragilariopsis sublinearis | 0.490 | 0.510 | -0.0060890 |
| Lineus longifissus | 0.490 | 0.510 | -0.0018020 |
| Manguinea rigida | 0.490 | 0.510 | -0.0034919 |
| Navicula schefferae | 0.490 | 0.510 | -0.0032010 |
| Nitzschia lecontei | 0.490 | 0.510 | -0.0036853 |
| Notasterias armata | 0.490 | 0.510 | -0.0025762 |
| Proboscia truncata | 0.490 | 0.510 | -0.0042327 |
| Systenopora contracta | 0.490 | 0.510 | -0.0018426 |
| Balaenoptera physalus | 0.489 | 0.511 | -0.0036744 |
| Compsothyris racovitzae | 0.489 | 0.511 | -0.0032968 |
| Eudorella splendida | 0.489 | 0.511 | -0.0032353 |
| Eukrohnia hamata | 0.489 | 0.511 | -0.0048904 |
| Haliclona tenella | 0.489 | 0.511 | -0.0037653 |
| Melphidippa antarctica | 0.489 | 0.511 | -0.0045582 |
| Thalassiosira antarctica | 0.489 | 0.511 | -0.0032131 |
| Abatus curvidens | 0.488 | 0.512 | -0.0054183 |
| Cephalodiscus | 0.488 | 0.512 | -0.0038693 |
| Chorismus antarcticus | 0.488 | 0.512 | -0.0030444 |
| Clavularia frankiliana | 0.488 | 0.512 | -0.0051405 |
| Djerboa furcipes | 0.488 | 0.512 | -0.0037924 |
| Elpidia glacialis | 0.488 | 0.512 | -0.0045144 |
| Fragilariopsis obliquecostata | 0.488 | 0.512 | -0.0052588 |
| Frontoserolis bouvieri | 0.488 | 0.512 | -0.0032634 |
| Golfingia mawsoni | 0.488 | 0.512 | -0.0054661 |
| Lysasterias perrieri | 0.488 | 0.512 | -0.0049979 |
| Peraeospinosus pushkini | 0.488 | 0.512 | -0.0066603 |
| Primnoisis antarctica | 0.488 | 0.512 | -0.0063024 |
| Puncturella conica | 0.488 | 0.512 | -0.0056781 |
| Tedania oxecta | 0.488 | 0.512 | -0.0065368 |
| Abatus shackeltoni | 0.487 | 0.513 | -0.0030984 |
| Abyssorhomene nodimanus | 0.487 | 0.513 | -0.0031439 |
| Boroecia antipoda | 0.487 | 0.513 | -0.0061579 |
| Chaetoceros bulbosum | 0.487 | 0.513 | -0.0039333 |
| Chaetoceros flexuosum | 0.487 | 0.513 | -0.0047528 |
| Coscinodiscus oculoides | 0.487 | 0.513 | -0.0053402 |
| Fragilariopsis curta | 0.487 | 0.513 | -0.0070815 |
| Fragilariopsis vanheurckii | 0.487 | 0.513 | -0.0062002 |
| Lobodon carcinophaga | 0.487 | 0.513 | -0.0063867 |
| Molpadia musculus | 0.487 | 0.513 | -0.0047462 |
| Oediceroides calmani | 0.487 | 0.513 | -0.0062316 |
| Primno macropa | 0.487 | 0.513 | -0.0029989 |
| Pseudo-Nitzschia subcurvata | 0.487 | 0.513 | -0.0041229 |
| Rhizosolenia antennata | 0.487 | 0.513 | -0.0056520 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|----------------------------------|----------------|----------------|---------------------|
| <i>Atolla wyvillei</i> | 0.486 | 0.514 | -0.0065291 |
| <i>Banquisia belgicae</i> | 0.486 | 0.514 | -0.0076616 |
| <i>Eucranta mollis</i> | 0.486 | 0.514 | -0.0050463 |
| <i>Fragilariopsis nana</i> | 0.486 | 0.514 | -0.0072714 |
| <i>Kampylaster incurvatus</i> | 0.486 | 0.514 | -0.0044364 |
| <i>Limopsis marionensis</i> | 0.486 | 0.514 | -0.0057213 |
| <i>Odontaster meridionalis</i> | 0.486 | 0.514 | -0.0036272 |
| <i>Pseudorchomene coatsi</i> | 0.486 | 0.514 | -0.0053202 |
| <i>Pseudostichopus villosus</i> | 0.486 | 0.514 | -0.0047324 |
| <i>Psolus charcoti</i> | 0.486 | 0.514 | -0.0057572 |
| <i>Rhincalanus gigas</i> | 0.486 | 0.514 | -0.0036697 |
| <i>Acodontaster capitatus</i> | 0.485 | 0.515 | -0.0083951 |
| <i>Cadulus dalli antarcticum</i> | 0.485 | 0.515 | -0.0067344 |
| <i>Chondriovelum adeliense</i> | 0.485 | 0.515 | -0.0048009 |
| <i>Epimeria macrodonta</i> | 0.485 | 0.515 | -0.0063029 |
| <i>Notocidaris mortenseni</i> | 0.485 | 0.515 | -0.0059463 |
| <i>Oediceroides emarginatus</i> | 0.485 | 0.515 | -0.0041345 |
| <i>Paraeuchaeta antarctica</i> | 0.485 | 0.515 | -0.0031913 |
| <i>Pelagobia longicirrata</i> | 0.485 | 0.515 | -0.0033949 |
| <i>Pseudosagitta maxima</i> | 0.485 | 0.515 | -0.0051500 |
| <i>Pyura bouvetensis</i> | 0.485 | 0.515 | -0.0049726 |
| <i>Sagitta marri</i> | 0.485 | 0.515 | -0.0039593 |
| <i>Aega antarctica</i> | 0.484 | 0.516 | -0.0057122 |
| <i>Amauropsis rossiana</i> | 0.484 | 0.516 | -0.0067281 |
| <i>Artedidraco skottsbergi</i> | 0.484 | 0.516 | -0.0078217 |
| <i>Cinachyra antarctica</i> | 0.484 | 0.516 | -0.0082003 |
| <i>Cyclocardia astartoides</i> | 0.484 | 0.516 | -0.0032747 |
| <i>Gyrodinium lachryama</i> | 0.484 | 0.516 | -0.0056621 |
| <i>Laternula elliptica</i> | 0.484 | 0.516 | -0.0040563 |
| <i>Lissarca notorcadensis</i> | 0.484 | 0.516 | -0.0058492 |
| <i>Nematocarcinus lanceopes</i> | 0.484 | 0.516 | -0.0045953 |
| <i>Porosira glacialis</i> | 0.484 | 0.516 | -0.0092357 |
| <i>Racovitzia glacialis</i> | 0.484 | 0.516 | -0.0060069 |
| <i>Rossella racovitzae</i> | 0.484 | 0.516 | -0.0085166 |
| <i>Thalassiosira tumida</i> | 0.484 | 0.516 | -0.0042616 |
| <i>Uristes gigas</i> | 0.484 | 0.516 | -0.0058431 |
| <i>Alacia hettacra</i> | 0.483 | 0.517 | -0.0088251 |
| <i>Cnemidocarpa verrucosa</i> | 0.483 | 0.517 | -0.0061612 |
| <i>Ctenocidaris gigantea</i> | 0.483 | 0.517 | -0.0070339 |
| <i>Ctenocidaris gilberti</i> | 0.483 | 0.517 | -0.0076822 |
| <i>Euphausia frigida</i> | 0.483 | 0.517 | -0.0064351 |
| <i>Macronectes halli</i> | 0.483 | 0.517 | -0.0047482 |
| <i>Bodo saltans</i> | 0.482 | 0.518 | -0.0066985 |
| <i>Corella eumyota</i> | 0.482 | 0.518 | -0.0072362 |
| <i>Halobaena caerulea</i> | 0.482 | 0.518 | -0.0056020 |
| <i>Momoculodes scabriculosus</i> | 0.482 | 0.518 | -0.0059426 |
| <i>Notioceramus anomalus</i> | 0.482 | 0.518 | -0.0066014 |
| <i>Pseudostichopus mollis</i> | 0.482 | 0.518 | -0.0070969 |
| <i>Silicularia rosea</i> | 0.482 | 0.518 | -0.0049115 |
| <i>Tedania tantulata</i> | 0.482 | 0.518 | -0.0055678 |
| <i>Abyssorchomene rossi</i> | 0.481 | 0.519 | -0.0087070 |
| <i>Bathydorus spinosus</i> | 0.481 | 0.519 | -0.0031180 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|--------------------------------------|----------------|----------------|---------------------|
| <i>Callochiton gaussi</i> | 0.481 | 0.519 | -0.0082165 |
| <i>Colossendeis scotti</i> | 0.481 | 0.519 | -0.0086793 |
| <i>Ekmocucumis turqueti turqueti</i> | 0.481 | 0.519 | -0.0094141 |
| <i>Epimeriella walkeri</i> | 0.481 | 0.519 | -0.0053542 |
| <i>Eunoe spica</i> | 0.481 | 0.519 | -0.0107645 |
| <i>Eusirus antarcticus</i> | 0.481 | 0.519 | -0.0055932 |
| <i>Hyperietta dilatata</i> | 0.481 | 0.519 | -0.0080893 |
| <i>Ihlea racovitzai</i> | 0.481 | 0.519 | -0.0055195 |
| <i>Iophon radiatus</i> | 0.481 | 0.519 | -0.0047174 |
| <i>Manguinea fusiformis</i> | 0.481 | 0.519 | -0.0056759 |
| <i>Maxilliphimedia longipes</i> | 0.481 | 0.519 | -0.0080127 |
| <i>Procellaria aequinoctialis</i> | 0.481 | 0.519 | -0.0099933 |
| <i>Chaetoceros neglectum</i> | 0.480 | 0.520 | -0.0086514 |
| <i>Cycethra verrucosa mawsoni</i> | 0.480 | 0.520 | -0.0070076 |
| <i>Diastylis mawsoni</i> | 0.480 | 0.520 | -0.0077050 |
| <i>Oceanites oceanicus</i> | 0.480 | 0.520 | -0.0096389 |
| <i>Ophioperla koehleri</i> | 0.480 | 0.520 | -0.0062868 |
| <i>Pista spinifera</i> | 0.480 | 0.520 | -0.0119714 |
| <i>Proboscia inermi</i> | 0.480 | 0.520 | -0.0050531 |
| <i>Sterna paradisaea</i> | 0.480 | 0.520 | -0.0059022 |
| <i>Alcyonium antarcticum</i> | 0.479 | 0.521 | -0.0070165 |
| <i>Astrotoma agassizii</i> | 0.479 | 0.521 | -0.0069480 |
| <i>Beroe cucumis</i> | 0.479 | 0.521 | -0.0103777 |
| <i>Conchoecia antipoda</i> | 0.479 | 0.521 | -0.0061575 |
| <i>Fasciculiporoides ramosa</i> | 0.479 | 0.521 | -0.0067969 |
| <i>Parschisturella ceruviata</i> | 0.479 | 0.521 | -0.0083520 |
| <i>Aegires albus</i> | 0.478 | 0.522 | -0.0131985 |
| <i>Arcturidae</i> | 0.478 | 0.522 | -0.0093868 |
| <i>Ascidia challengerii</i> | 0.478 | 0.522 | -0.0102953 |
| <i>Dacodraco hunteri</i> | 0.478 | 0.522 | -0.0087207 |
| <i>Navicula glaciei</i> | 0.478 | 0.522 | -0.0069482 |
| <i>Proboscia alata</i> | 0.478 | 0.522 | -0.0088419 |
| <i>Taeniogyrus contortus</i> | 0.478 | 0.522 | -0.0092234 |
| <i>Actinocyclus utricularis</i> | 0.477 | 0.523 | -0.0094535 |
| <i>Conchoecia hettacra</i> | 0.477 | 0.523 | -0.0111213 |
| <i>Marginella ealesa</i> | 0.477 | 0.523 | -0.0060792 |
| <i>Molgula pedunculata</i> | 0.477 | 0.523 | -0.0115538 |
| <i>Mycale acerata</i> | 0.477 | 0.523 | -0.0058197 |
| <i>Nymphon gracillimum</i> | 0.477 | 0.523 | -0.0100160 |
| <i>Perknaster fuscus antarcticus</i> | 0.477 | 0.523 | -0.0071113 |
| <i>Calanoides acutus</i> | 0.476 | 0.524 | -0.0092773 |
| <i>Macronectes giganteus</i> | 0.476 | 0.524 | -0.0073498 |
| <i>Nematoflustra flagellata</i> | 0.476 | 0.524 | -0.0081824 |
| <i>Pareledone antarctica</i> | 0.476 | 0.524 | -0.0103898 |
| <i>Periphylla periphylla</i> | 0.476 | 0.524 | -0.0058954 |
| <i>Tentorium papillatum</i> | 0.476 | 0.524 | -0.0142374 |
| <i>Calanus propinquus</i> | 0.475 | 0.525 | -0.0087820 |
| <i>Pteraster affinis aculeatus</i> | 0.475 | 0.525 | -0.0113114 |
| <i>Yolida eightsi</i> | 0.475 | 0.525 | -0.0111348 |
| <i>Antarctomysis maxima</i> | 0.474 | 0.526 | -0.0100091 |
| <i>Aplidium vastum</i> | 0.474 | 0.526 | -0.0053685 |
| <i>Ctenocidaris spinosa</i> | 0.474 | 0.526 | -0.0094631 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|-----------------------------|----------------|----------------|---------------------|
| Diplasterias brucei | 0.474 | 0.526 | -0.0093896 |
| Phascolion strombi | 0.474 | 0.526 | -0.0079501 |
| Polyeunoa laevis | 0.474 | 0.526 | -0.0112179 |
| Psolus dubiosus | 0.474 | 0.526 | -0.0133871 |
| Tentorium semisuberites | 0.474 | 0.526 | -0.0093909 |
| Chaetoceros pelagicus | 0.473 | 0.527 | -0.0114724 |
| Liothyrella uva antarctica | 0.473 | 0.527 | -0.0107839 |
| Marseniopsis conica | 0.473 | 0.527 | -0.0072547 |
| Tritonia antarctica | 0.473 | 0.527 | -0.0069894 |
| Achlyonice violaceuspidata | 0.472 | 0.528 | -0.0062392 |
| Alacia belgicae | 0.472 | 0.528 | -0.0121889 |
| Alluroteuthis antarcticus | 0.472 | 0.528 | -0.0098426 |
| Fissidentalium majorinum | 0.472 | 0.528 | -0.0115593 |
| Haplocheira plumosa | 0.472 | 0.528 | -0.0071960 |
| Heterophoxus videns | 0.472 | 0.528 | -0.0092052 |
| Homaxinella balfourensis | 0.472 | 0.528 | -0.0111236 |
| Nacella concinna | 0.472 | 0.528 | -0.0125569 |
| Nuttallochiton mirandus | 0.472 | 0.528 | -0.0106262 |
| Abatus nimrodi | 0.471 | 0.529 | -0.0106339 |
| Epimeria robusta | 0.471 | 0.529 | -0.0091283 |
| Phyllocomus crocea | 0.471 | 0.529 | -0.0099082 |
| Pyura setosa | 0.471 | 0.529 | -0.0099551 |
| Tubularia ralphii | 0.471 | 0.529 | -0.0087011 |
| Alexandrella mixta | 0.470 | 0.530 | -0.0100610 |
| Amphidinium hadai | 0.470 | 0.530 | -0.0162466 |
| Aphrodroma brevirostris | 0.470 | 0.530 | -0.0120683 |
| Daption capense | 0.470 | 0.530 | -0.0117756 |
| Fragilariopsis separanda | 0.470 | 0.530 | -0.0110773 |
| Golfingia ohlini | 0.470 | 0.530 | -0.0103279 |
| Haliclona dancoi | 0.470 | 0.530 | -0.0062884 |
| Lophaster gaini | 0.470 | 0.530 | -0.0118007 |
| Ophiosparte gigas | 0.470 | 0.530 | -0.0143844 |
| Tritoniella belli | 0.470 | 0.530 | -0.0102254 |
| Ampelisca richardsoni | 0.469 | 0.531 | -0.0105817 |
| Fragilariopsis pseudonana | 0.469 | 0.531 | -0.0094783 |
| Laetmogone wyvillethompsoni | 0.469 | 0.531 | -0.0111505 |
| Magellania fragilis | 0.469 | 0.531 | -0.0108887 |
| Notocrangon antarcticus | 0.469 | 0.531 | -0.0124162 |
| Anoxycalyx joubini | 0.468 | 0.532 | -0.0112583 |
| Euphausia superba | 0.468 | 0.532 | -0.0132986 |
| Isodyctia toxophila | 0.468 | 0.532 | -0.0120358 |
| Melicerita obliqua | 0.468 | 0.532 | -0.0109312 |
| Pseudo-Nitzschia liniola | 0.468 | 0.532 | -0.0117700 |
| Austroflustra vulgaris | 0.467 | 0.533 | -0.0143087 |
| Pagodroma nivea | 0.467 | 0.533 | -0.0124542 |
| Porania antarctica | 0.467 | 0.533 | -0.0119238 |
| Sterechinus neumayeri | 0.467 | 0.533 | -0.0108242 |
| Themisto gaudichaudii | 0.467 | 0.533 | -0.0099845 |
| Vibilia antarctica | 0.467 | 0.533 | -0.0138880 |
| Austroboris kerguelenensis | 0.466 | 0.534 | -0.0128756 |
| Munna globicauda | 0.466 | 0.534 | -0.0134759 |
| Odontaster validus | 0.466 | 0.534 | -0.0111110 |

| Species | Prop dif QSS + | Prop dif QSS - | median difQSS relat |
|--------------------------------------|----------------|----------------|---------------------|
| <i>Psolidium incertum</i> | 0.466 | 0.534 | -0.0128606 |
| <i>Marseniopsis mollis</i> | 0.465 | 0.535 | -0.0104161 |
| <i>Clathria pauper</i> | 0.463 | 0.537 | -0.0110658 |
| <i>Corethron criophilum</i> | 0.463 | 0.537 | -0.0157120 |
| <i>Ekmocucumis steineni</i> | 0.463 | 0.537 | -0.0129377 |
| <i>Promachocrinus kerguelensis</i> | 0.463 | 0.537 | -0.0140451 |
| <i>Harpagifer antarcticus</i> | 0.462 | 0.538 | -0.0109307 |
| <i>Parmaphorella mawsoni</i> | 0.462 | 0.538 | -0.0148042 |
| <i>Pygoscelis adeliae</i> | 0.462 | 0.538 | -0.0125573 |
| Sediment | 0.462 | 0.538 | -0.0108079 |
| <i>Tursiops truncatus</i> | 0.462 | 0.538 | -0.0144362 |
| <i>Abatus cavernosus</i> | 0.461 | 0.539 | -0.0145956 |
| <i>Balaenoptera musculus</i> | 0.461 | 0.539 | -0.0157692 |
| <i>Latrunculia apicalis</i> | 0.461 | 0.539 | -0.0126983 |
| <i>Thalassiosira gracilis</i> | 0.461 | 0.539 | -0.0180251 |
| <i>Electrona antarctica</i> | 0.460 | 0.540 | -0.0154413 |
| <i>Epimeria rubriques</i> | 0.460 | 0.540 | -0.0159455 |
| <i>Rossella nuda</i> | 0.460 | 0.540 | -0.0134992 |
| <i>Thalassoica antarctica</i> | 0.460 | 0.540 | -0.0137090 |
| <i>Clione limacina</i> | 0.459 | 0.541 | -0.0131543 |
| <i>Prionodraco evansii</i> | 0.459 | 0.541 | -0.0147278 |
| <i>Vanadis antarctica</i> | 0.459 | 0.541 | -0.0164304 |
| <i>Gnathia calva</i> | 0.458 | 0.542 | -0.0137810 |
| <i>Chaenodraco wilsoni</i> | 0.457 | 0.543 | -0.0136870 |
| <i>Metaconchoecia isocheira</i> | 0.457 | 0.543 | -0.0175275 |
| <i>Euphausia crystallorophias</i> | 0.456 | 0.544 | -0.0147971 |
| <i>Ophiurolepis brevirima</i> | 0.456 | 0.544 | -0.0193088 |
| <i>Thalassiosira frenguelliopsis</i> | 0.456 | 0.544 | -0.0151378 |
| <i>Actinocyclus actinochilus</i> | 0.454 | 0.546 | -0.0145288 |
| <i>Limacina helicina antarctica</i> | 0.454 | 0.546 | -0.0162732 |
| <i>Neobuccinum eatoni</i> | 0.452 | 0.548 | -0.0184613 |
| <i>Aporocidaris milleri</i> | 0.447 | 0.553 | -0.0213657 |
| <i>Balaenoptera acutorostrata</i> | 0.423 | 0.577 | -0.0264863 |

Interaction strength distribution

The statistical distribution that best fitted the empirical interaction strength distribution was a ‘log-Normal’ due to the skew towards weaker interactions. Table 3 shows the results for the six candidate models used.

Table 3: Model comparison for the distribution of interaction strengths of the Weddell Sea food web. Order by best fit. References: df = degrees of freedom, AIC = Akaike Information Criterion, deltaAIC = difference with best fit. Log-Normal is the best model.

| Model | df | AIC | deltaAIC |
|-------------|----|-----------|-----------|
| log-Normal | 2 | -359277.3 | 0.00 |
| Gamma | 2 | -358374.4 | 902.90 |
| Power-law | 2 | -348537.2 | 10740.04 |
| Exponential | 1 | -327199.0 | 32078.28 |
| Normal | 2 | -289859.5 | 69417.78 |
| Uniform | 2 | -243904.0 | 115373.33 |

| Model | df | AIC | deltaAIC |
|-------|----|-----|----------|
|-------|----|-----|----------|

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