

Supplemental online material

Effects of an Adélie penguin colony on coastal meiofaunal assemblages of the Ross Sea (Antarctica)

Cristina Gambi^{1*}, Marco Lo Martire¹, Anna Lucia Cantafaro¹, Cristina Munari², Eugenio Rastelli³, Roberto Danovaro^{1,4}, and Cinzia Corinaldesi^{4,5*}

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¹*Department of Life and Environmental Sciences, Polytechnic University of Marche, 60131 Ancona, Italy*

²*Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Via L. Borsari 46, 44121 Ferrara, Italy*

³*Department of Ecosustainable Marine Biotechnology, Stazione Zoologica “Anton Dohrn”, Fano Marine Centre, Viale Adriatico 1-N, 61032 Fano, Italy*

⁴*National Biodiversity Future Centre (NBFC), 90100 Palermo, Italy*

⁵*Department of Science and Engineering of Matter, Environment and Urban Planning (SIMAU), Polytechnic University of Marche, 60131 Ancona, Italy*

*Corresponding Authors: c.gambi@univpm.it; c.corinaldesi@univpm.it

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Table S1. Sampling sites and environmental and organic matter components within Adelie Cove Bay (AC), Camp Icarus Bay (CI) and Rod Bay (RB) in the Ross Sea. Reported are stations, coordinates and depth, grain size composition, total phytopigments, proteins, carbohydrates and lipids concentrations, the Biopolymeric C concentrations, and the proteins to carbohydrate ratio (PRT/CHO). Data are summarised by Munari et al. (2022).

Bay	Station	Latitude	Longitude	depth m	gravel	sand	silt-clay	Total phytopigments		Proteins		Carbohydrates		Lipids		Biopolymeric C		PRT/CHO ratio
		S	E		%	%	%	$\mu\text{g g}^{-1}$ avg	ds	mg g^{-1} avg	ds	mg g^{-1} avg	ds	mg g^{-1} avg	ds	mgC g^{-1} avg	ds	
AC	ST9	74°46.390	163°57.977	25	0.0	99.0	1.0	15.30	6.98	0.61	0.10	0.24	0.08	0.15	0.04	0.51	0.04	2.5
	ST8	74°46.467	164°00.266	70	0.0	81.6	18.4	126.85	23.86	8.46	1.21	4.00	0.83	1.55	0.40	6.91	0.56	2.1
	ST11	74°46.617	164°02.798	140	0.0	82.8	17.2	42.98	1.17	4.14	1.28	2.28	0.31	0.73	0.06	3.49	0.62	1.8
CI	ST2	74°43.037	164°06.908	25	6.9	91.2	1.9	33.16	24.09	1.67	1.15	1.12	0.89	0.40	0.05	2.07	0.15	1.5
	ST4	74°43.078	164°07.757	70	2.5	91.8	5.8	30.85	18.63	2.16	0.69	1.44	0.06	0.33	0.07	1.88	0.40	1.5
	ST3	74°43.101	164°08.399	140	0.0	87.5	12.5	73.40	11.44	3.58	0.87	1.90	0.41	0.80	0.14	3.12	0.67	1.9
RB	ST5	74°41.831	164°07.532	25	18.3	81.0	0.6	25.55	4.02	2.84	0.82	0.94	0.54	0.33	0.09	2.01	0.68	3.0
	ST10	74°41.918	164°07.896	70	56.4	42.5	1.2	29.35	7.85	3.08	1.00	1.40	0.25	0.46	0.07	2.41	0.60	2.2
	ST6	74°41.972	164°08.208	140	0.0	96.9	3.1	57.54	10.85	3.90	1.14	2.83	0.29	0.86	0.10	3.75	0.56	1.4

Table S2. Output of the PERMANOVA analysis carried out to test for differences in meiofaunal abundance, biomass, diversity as richness of taxa, all and rare taxa composition at increasing depth in the three bays of the Ross Sea (Df= degrees of freedom; MS= mean square; F=F statistic; P = probability level). *** = $p < 0.001$; * = $p < 0.05$; ns: not significant.

	Source	Df	MS	F	P	Bay	Depth	Depth			Bay		
								25m	70m	140m	Adelie Cove Bay (AC)	Camp Icarus Bay (CI)	Rod Bay (RB)
Meiofauna Abundance	Bay (B)	2	20362000.0	14.4	***								
	depth (de)	2	24060000.0	17.0	***								
	Bxde	4	9093700.0	6.4	***			RB>AC	CI>AC&RB	CI>AC	70m&140m>25m	70m & 140m>25m	140m>70m
	Residual	18	1412200.0										
	Total	26											
Biomass	Bay (B)	2	806730.0	19.9	***								
	depth (de)	2	881820.0	21.7	***								
	Bxde	4	288000.0	7.1	***			RB>AC	CI>AC&RB	CI>AC	140m>25m	70m & 140m>25m	ns
	Residual	18	40637.0										
	Total	26											
Richness of taxa	Bay (B)	2	5.1	2.0	Ns								
	depth (de)	2	25.5	10.0	***		140m>25m & 70m						
	Bxde	4	1.3	0.5	Ns								
	Residual	18	2.6										
	Total	26											
All taxa composition	Bay (B)	2	1259.6	2.0	Ns								
	depth (de)	2	4122.5	6.6	***		25m $\neq$ 70m $\neq$ 140m						
	Bxde	4	620.9	1.0	Ns								
	Residual	18	623.8										
	Total	26											

Rare taxa composition	Bay (B)	2	3947.2	1.4	Ns	
	depth (de)	2	9556.9	3.5	***	25m ≠ 70m
	Bxde	4	2419.5	0.9	Ns	≠ 140m
	Residual	18	2767.5			
	Total	26				

Table S3. Output of the PERMANOVA analysis carried out to test for differences in nematode diversity as ES(51), evenness, trophic and species composition, and Maturity Index at increasing depth in the three bays of the Ross Sea (Df= degrees of freedom; MS= mean square; F=F statistic; P = probability level). *** = $p < 0.001$; *= $p < 0.05$; ns: not significant.

	Source	Df	MS	F	P	Bay	Depth	Depth			Bay		
								25m	70m	140m	Adelie Cove Bay (AC)	Camp Icarus Bay (CI)	Rod Bay (RB)
Nematodes													
Diversity as ES(51)	Bay (B)	2	72.7	9.2	***	CI>AC&RB	140m>25m & 70m						
	depth (de)	2	163.3	20.8	***								
	Bxde	4	20.0	2.6	Ns								
	Residual	18	7.9										
	Total	26											
Evenness													
	Bay (B)	2	0.02	2.7	Ns								
	depth (de)	2	0.06	7.7	***								
	Bxde	4	0.03	3.5	*			ns	AC<RB	ns	70m<140m	ns	25m & 140m >70m
	Residual	18	0.01										
	Total	26											
Trophic Structure													
	Bay (B)	2	3366.6	13.9	***								
	depth (de)	2	4074.8	16.8	***								
	Bxde	4	614.8	2.5	*			AC ≠ CI&RD	CI ≠ AC&RD	CI ≠ AC&RD	140m ≠ 25m & 70m	140m ≠ 25m & 70m	70m ≠ 25m & 140m
	Residual	18	243.0										
	Total	26											
Species composition													
	Bay (B)	2	8280.7	6.3	***								

[illegible]

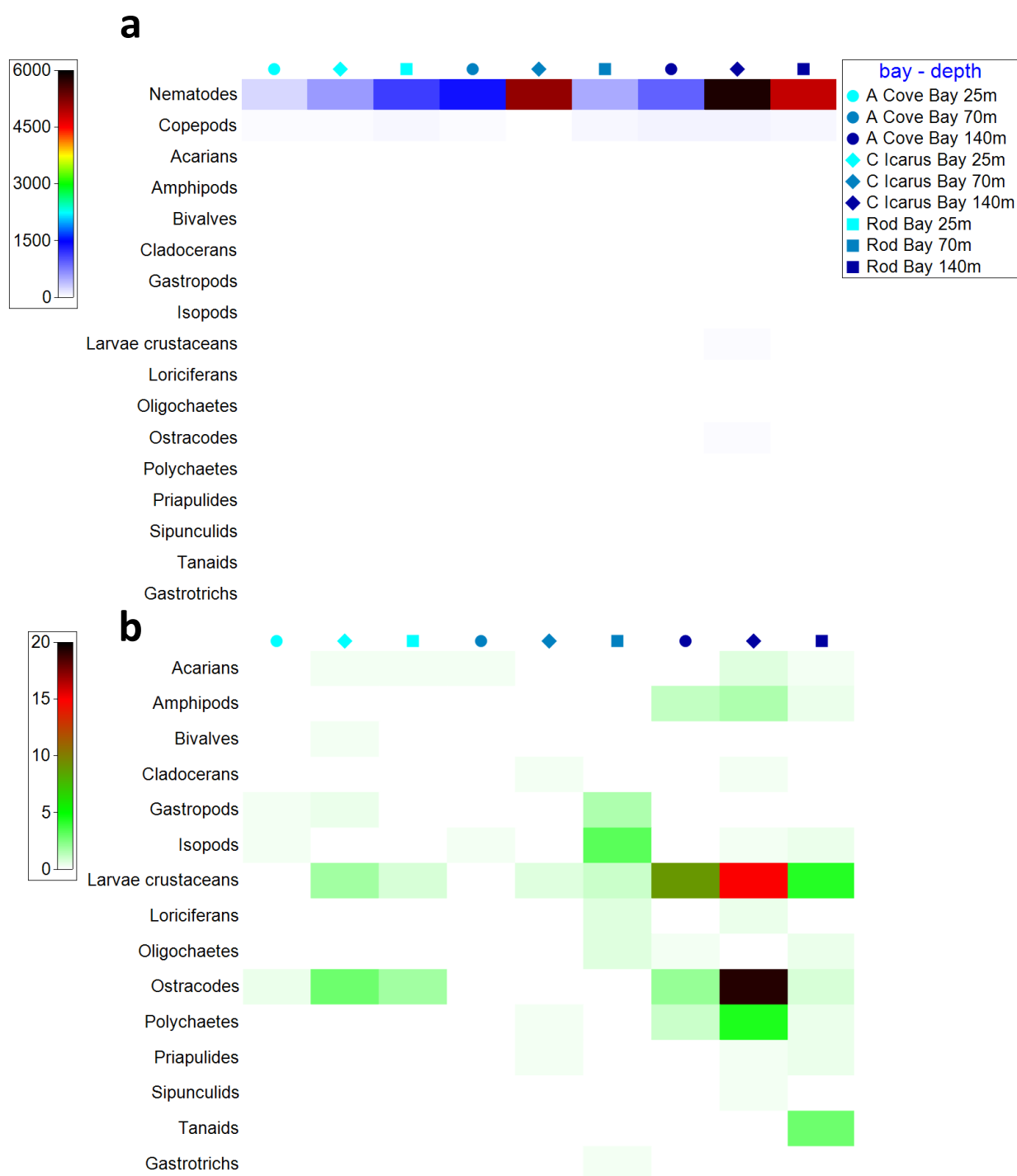


Figure S1. Shade plots based on meiofaunal composition at different depths in Adelie Cove Bay, Camp Icarus Bay, and Rod Bay. Colours indicate taxon abundance as reported in the legend. Reported are the taxonomic composition of meiofaunal a) most abundant taxa and b) rare taxa.

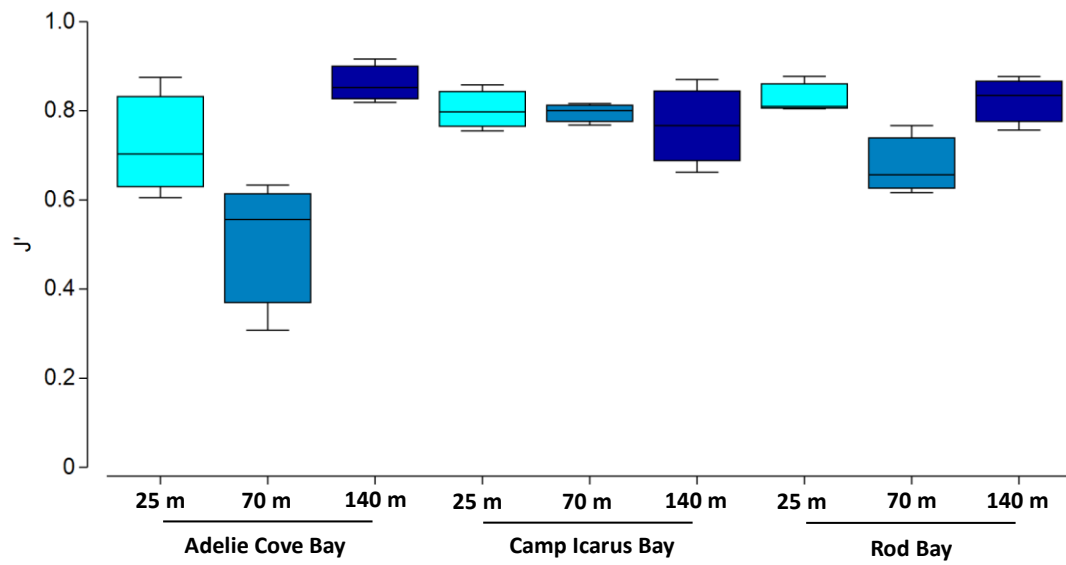


Figure S2. Nematode species evenness (J) at different depths in Adelie Cove Bay, Camp Icarus Bay and Rod Bay.

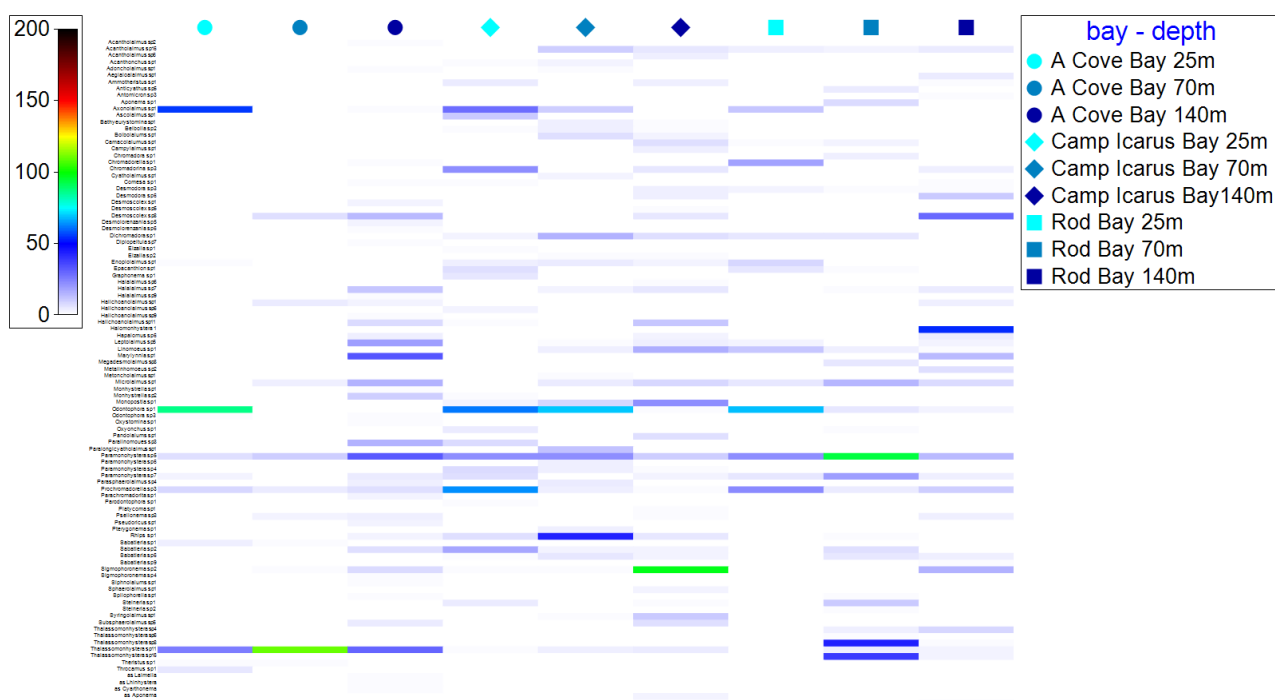


Figure S3. Shade plots based on nematode species composition at different depths in Adelie Cove Bay, Camp Icarus Bay and Rod Bay. Colours indicate species abundance as reported in the legend.