

Supplementary materials

Table S1. Taxonomic list and mean density (ind.m⁻²±SE) of polychaetes in the mangrove vegetated habitats and mudflats in the Persian Gulf and Gulf of Oman.

Species	Gwadar		Sirik		Nayband	
	Vegetated	Mudflat	Vegetated	Mudflat	Vegetated	Mudflat
<i>Perinereis horsti</i> (Gravier, 1899)	56±13	-	37.81±6.7	16±0.0	-	-
<i>Neanthes glandicincta</i> (Southern, 1921)	54.4±21.04	155.42±35.12	36.57±12.56	609.45±105.9	16±0.0	-
<i>Tylonereis bogoyawlenskyi</i> (Fauvel, 1911)	16±0.0	16±0.0	-	-	-	16±0.0
<i>Perinereis nuntia</i> (Lamarck, 1818)	16±0.0	-	-	-	-	-
<i>Namalycastis</i> sp. (Hartman, 1959)	16±0.0	-	-	-	-	-
<i>Aricidea fragilis</i> (Webster, 1879)	-	154±35	-	-	-	-
<i>Levinsenia gracilis</i> (Tauber, 1879)	16±0.0	-	-	-	-	-
<i>Melinna monoceroides</i> (Fauvel, 1936)	-	16±0.0	-	-	-	-
<i>Sigambra sundarbanensis</i> (Bhowmik, Ghoshal, Salazar-Vallejo & Mandal, 2021)	16±0.0	48±19.32	-	-	-	-
<i>Prionospio</i> sp. (Malmgren, 1867)	-	16±0.0	-	-	-	-
<i>Paleaequor</i> sp. (Watson Russell, 1986)	-	48±14.53	-	-	-	-
<i>Linopherus hirsuta</i> (Wesenberg-Lund, 1949)	16±0.0	-	-	-	-	-
<i>Lepidonotus purpureus</i> (Potts, 1910)	16±0.0	16±0.0	-	-	-	-
<i>Questa riseri</i> (Giere & Erséus, 1998)	16±0.0	-	-	-	-	-
<i>Capitella aberranta</i> (Hartman & Fauchald, 1971)	-	16±0.0	-	-	-	-
<i>Mediomastus warrenae</i> (Green, 2002)	16±0.0	-	-	-	-	-
<i>Heteromastus</i> sp.1 (Eisig, 1887)	34±9.45	57.6±16.42	16±0.0	16±0.0	-	-
<i>Heteromastus</i> sp.2 (Eisig, 1887)	46±16.76	32.85±4.8	-	26.66±6.73	-	-
<i>Heteromastus</i> sp.3 (Eisig, 1887)	22±7.8	19.2±6.8	-	16±0.0	-	-

<i>Heteromastus</i> sp.4 (Eisig, 1887)	17.6±1.4	16±0.0	-	16±0.0	-	-
<i>Leonnates indicus</i> (Kinberg, 1865)	16±0.0	-	-	-	-	-
<i>Scolecopsis squamata</i> (Müller, 1806)	-	16±0.0	-	-	-	-
<i>Scolecopsis</i> sp. (Blainville, 1828)	-	16±0.0	-	-	-	-
<i>Glycinde</i> sp. (Müller, 1858)	16±0.0	-	-	-	-	-
<i>Ctenodrilus</i> sp. (Claparède, 1863)	16±0.0	-	-	-	-	-
<i>Marphysa sanguinea</i> (Monro, 1933)	-	16±0.0	-	-	-	-
<i>Simplisetia erythraeensis</i> (Fauvel, 1918)	-	-	-	16±0.0	40±11.87	-
<i>Marphysa</i> sp. (Quatrefages, 1866)	-	-	16±0.0	-	-	-
<i>Phyllodoce</i> sp. (Lamarck, 1818)	-	-	16±0.0	-	-	-
<i>Armandia</i> sp. (Filippi, 1861)	-	-	-	-	16±0.0	-
<i>Syllis gracilis</i> (Grube, 1840)	-	-	-	-	32±6.93	-
<i>Lepidonotus</i> sp. (Leach, 1816)	-	-	-	-	16±0.0	-
<i>Armandia intermedia</i> (Fauvel, 1902)	-	-	-	-	16±0.0	-

Table S2. Result of SIMPER analysis determining the major species leading to the polychaete community structure difference between regions (GT: Gwadar, SK: Sirik and NY: Nyband), habitats (V: vegetated and M: mudflat) and seasons (W: winter and S: summer) in mangrove ecosystems in the Persian Gulf and Gulf of Oman ($\geq 50\%$ cumulative frequency).

Groups GT & SK	Average dissimilarity = 83.91				
Species	Average abundance (Group GT)	Average abundance (Group SK)	Average dissimilarity	Contribution (%)	Cumulative (%)
<i>Neanthes glandicincta</i>	3.01	8.73	23.17	27.61	27.61
<i>Perinereis horsti</i>	1.47	2.29	14.76	17.58	45.19
<i>Heteromastus sp.1</i>	2.06	0.8	10.08	12.02	57.21
Groups GT & NY	Average dissimilarity = 99.39				
Species	Average abundance (Group GT)	Average abundance (Group NY)	Average dissimilarity	Contribution (%)	Cumulative (%)
<i>Simplisetia erythraeensis</i>	0	3	15.06	15.16	15.16
<i>Heteromastus sp.1</i>	2.06	0	9.57	9.63	24.79
<i>Heteromastus sp.2</i>	2.14	0	8.98	9.03	33.82
<i>Neanthes glandicincta</i>	3.01	0	8.46	8.51	42.33
<i>Heteromastus sp.4</i>	1.57	0	8.27	8.32	50.65
Groups SK & NY	Average dissimilarity = 100.00				
Species	Average abundance (Group SK)	Average abundance (Group NY)	Average dissimilarity	Contribution (%)	Cumulative (%)
<i>Neanthes glandicincta</i>	8.73	0	23.28	23.28	23.28
<i>Simplisetia erythraeensis</i>	0.13	3	20.26	20.26	43.54
<i>Perinereis horsti</i>	2.29	0	19.92	19.92	63.46
Groups V (vegetated) & M (mudflats)	Average dissimilarity = 83.83				
Species	Average abundance (Group V)	Average abundance (Group M)	Average dissimilarity	Contribution (%)	Cumulative (%)
<i>Neanthes glandicincta</i>	1.69	10.48	27.68	33.02	33.02
<i>Perinereis horsti</i>	2.81	0.14	11.32	13.5	46.53
<i>Heteromastus sp.1</i>	1.22	1.72	8.08	9.64	56.17
Groups W (winter) & S (summer)	Average dissimilarity = 79.38				
Species	Average abundance (Group W)	Average abundance (Group S)	Average dissimilarity	Contribution (%)	Cumulative (%)
<i>Neanthes glandicincta</i>	3.74	7.86	25.04	31.55	31.55
<i>Perinereis horsti</i>	1.42	2.29	13.14	16.55	48.1
<i>Heteromastus sp.1</i>	1.01	2.16	8.76	11.03	59.14

Table S3. Result of SIMPER analysis determining the major traits leading to the polychaete community structure difference between regions (GT: Gwadar, SK: Sirik and NY: Nyband), habitats (V: vegetated and M: mudflat) and seasons (W: winter and S: summer) in mangrove ecosystems in the Persian Gulf and Gulf of Oman ($\geq 50\%$ cumulative frequency).

Groups GT & SK	Average dissimilarity = 41.30				
Trait	Average abundance (Group GT)	Average abundance (Group SK)	Average dissimilarity	Contribution (%)	Cumulative (%)
Ec.up	0.55	0.14	1.81	4.39	4.39
Fe.dsn	0.55	0.14	1.81	4.39	8.78
Ec.do	0.51	0.14	1.75	4.23	13.01
Mo.sih	0.49	0.14	1.73	4.18	17.19
Mo.seh	0.49	0.14	1.73	4.18	21.37
Fe.nsd	0.49	0.14	1.73	4.18	25.55
Fe.sd	0.49	0.14	1.73	4.18	29.72
Mo.no	0.51	0.14	1.7	4.12	33.84
AB.IV	0.55	0.3	1.7	4.12	37.96
Fe.sc	0.29	0.42	1.3	3.16	52.53
Groups GT & NY	Average dissimilarity = 52.95				
Trait	Average abundance (Group GT)	Average abundance (Group NY)	Average dissimilarity	Contribution (%)	Cumulative (%)
AMBI.IV	0.55	0	2.31	4.35	8.86
Si.100	0.57	0.17	2.22	4.19	13.04
Eco.up	0.55	0	2.06	3.88	16.93
Fe.dsn	0.55	0	2.06	3.88	20.81
Si.20	0.29	0.52	1.97	3.73	24.54
Eco.do	0.51	0	1.96	3.71	28.24
Mob.no	0.51	0	1.96	3.71	31.95
MoRe.sihe	0.49	0	1.93	3.65	35.6
MoRe.sehe	0.49	0	1.93	3.65	39.24
Fe.nsd	0.49	0	1.93	3.65	46.89
Groups SK & NY	Average dissimilarity = 36.79				
Trait	Average abundance (Group SK)	Average abundance (Group NY)	Average dissimilarity	Contribution (%)	Cumulative (%)
Lif.0	0.02	0.52	2.7	7.34	7.34
Si.20	0.39	0.52	2.28	6.21	13.55
Si.100	0.39	0.17	2.09	5.67	19.21
Fe.sd	0.14	0.35	1.78	4.84	24.05
Si.10	0	0.35	1.68	4.58	28.63
Si.80	0.37	0.17	1.6	4.34	37.55
Eco.ope-ven	0.28	0	1.54	4.19	46.08
Fe.pre	0.42	0.35	1.5	4.07	50.15
Groups V & M	Average dissimilarity = 33.44				
Trait	Average abundance (Group V)	Average abundance (Group M)	Average dissimilarity	Contribution (%)	Cumulative (%)
Si.80	0.24	0.5	1.56	4.66	4.66
Fe.pre	0.23	0.5	1.46	4.36	9.02
AMBI.IV	0.4	0.43	1.35	4.05	13.07
Lif.3	0.37	0.05	1.33	3.97	17.04
Si.100	0.52	0.41	1.28	3.82	20.86
Fe.sca	0.37	0.07	1.26	3.77	24.63
Si.80	0.5	0.38	1.25	3.74	28.37
Eco.ope-ven	0.32	0.02	1.19	3.56	31.94
Fe.pre	0.53	0.45	1.11	3.31	38.74
Mig.n	0.32	0.33	1.08	3.23	41.97
Fe.sd	0.34	0.33	1.07	3.19	45.16

MoRe.sihe	0.31	0.33	1.05	3.15	51.47
Groups W & S	Average dissimilarity = 32.71				
Trait	Average abundance (Group W)	Average abundance (Group S)	Average dissimilarity	Contribution (%)	Cumulative (%)
Si.20	0.27	0.48	1.43	4.37	4.37
Fe.sca	0.27	0.45	1.39	4.26	8.63
Fe.her	0.24	0.27	1.25	3.83	12.46
Si.80	0.44	0.48	1.19	3.64	16.1
Mob.no	0.32	0.35	1.18	3.6	23.35
Lif.3	0.24	0.24	1.18	3.6	26.95
Si.100	0.47	0.48	1.15	3.52	34.01
AMBL.IV	0.42	0.4	1.14	3.49	37.51
Eco.ope-ven	0.18	0.24	1.13	3.45	44.41
Fe.sd	0.32	0.37	1.12	3.42	47.83
Fe.pre	0.51	0.48	1.12	3.41	51.24