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Supplementary Material

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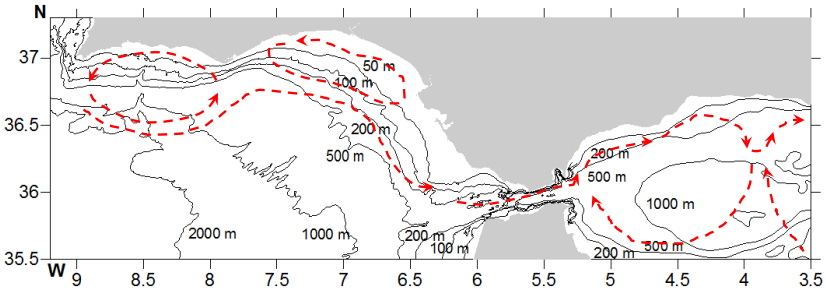

Fig. S1: Simplified scheme of the main surface circulation in the northern shelves of the Gulf of Cadiz and Alboran Sea based on García-Lafuente *et al*. (2006).

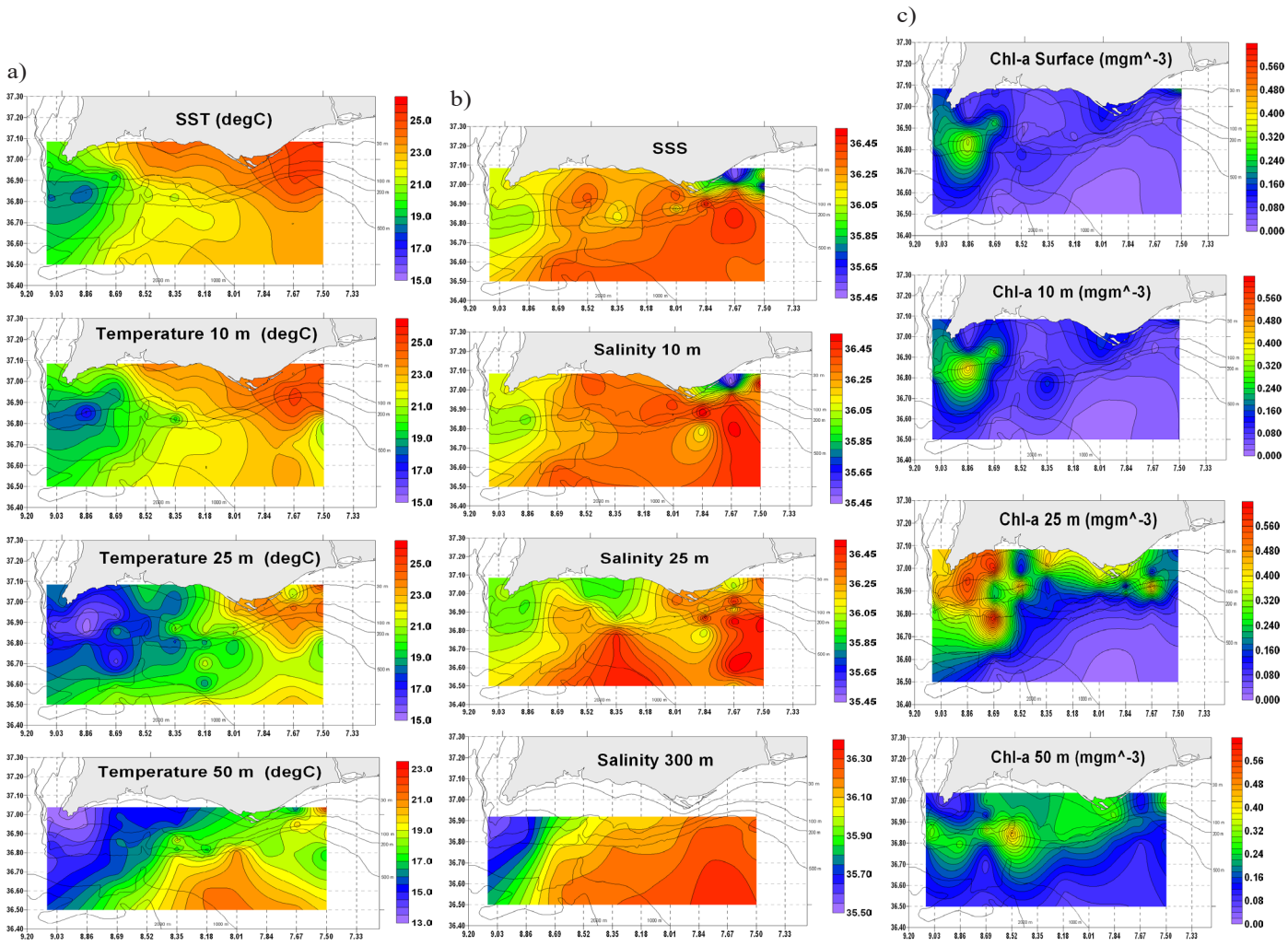

Fig. S2: Physical parameters for the Algarve sampling area: a) temperature (ºC), b) salinity and c) chlorophyll-a (mg.L^{-1}) at surface (1st panel), and at 10 m (2nd panel), 25 m (3rd panel) and 50/300 m (4th panel) depth.

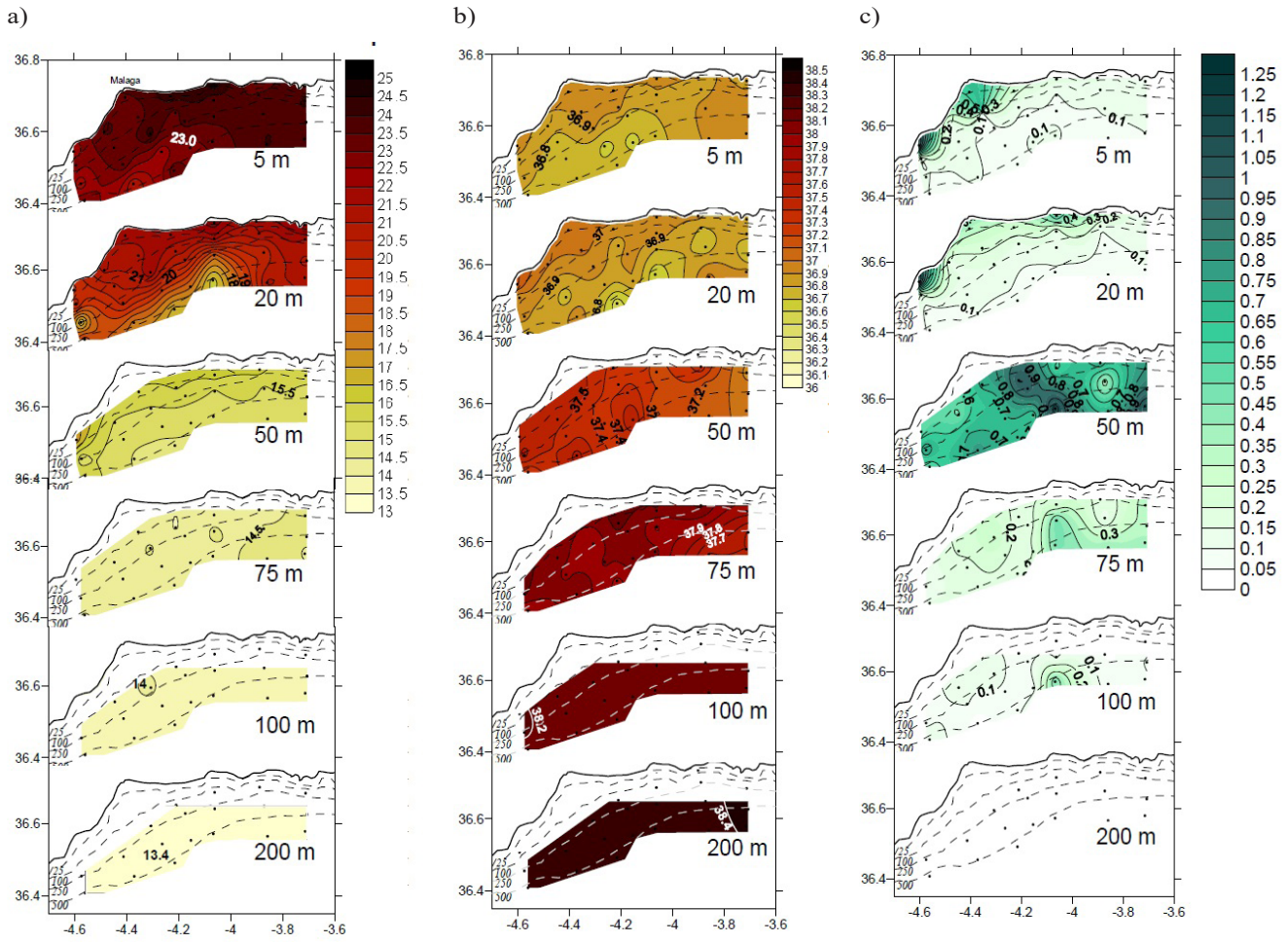

Fig. S3: Physical parameters for the Alboran sampling area: a) temperature (ºC), b) salinity and c) chlorophyll-a (mg.L^{-1}) at surface (5m) to 200 m depth. The small black dots represent the sampling sites. Modified from Macías *et al*. (2011).

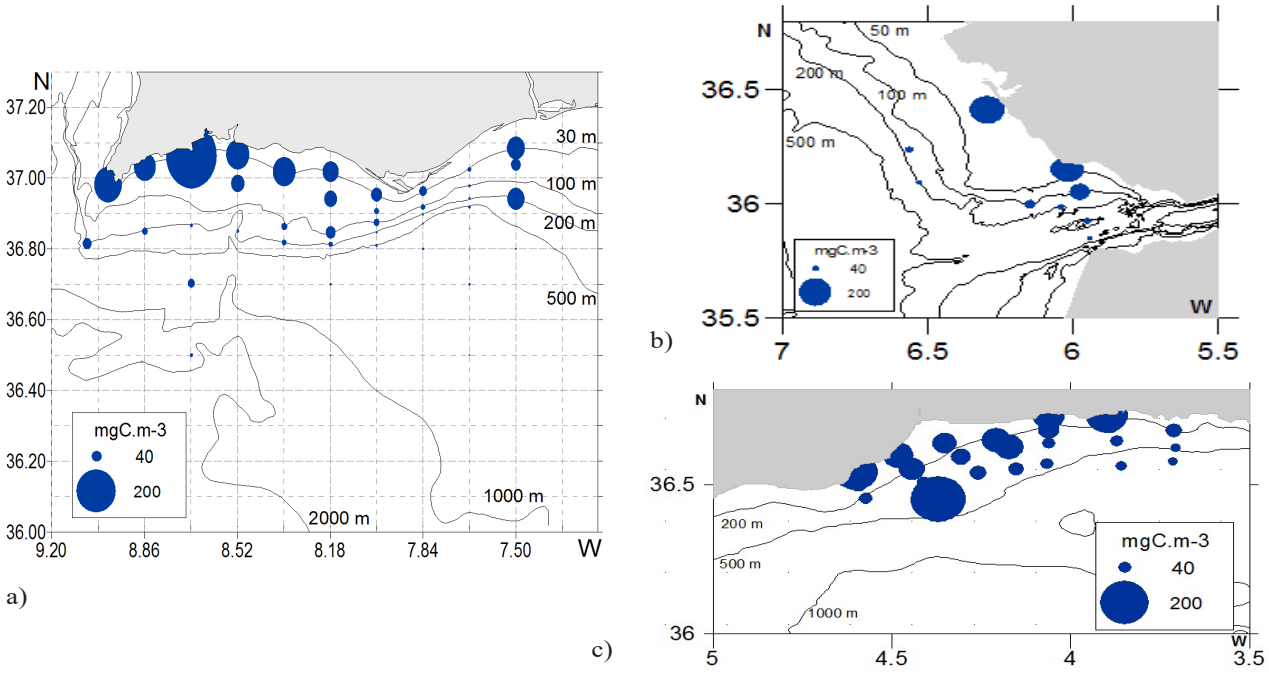

Fig. S4: Spatial data for zooplankton biomass (mg C.m^{-3}) for each sampling area: a) Algarve shelf detail (area I in Fig. 1a); b) Strait of Gibraltar detail (area II in Fig. 1a); c) northern Alboran detail (area III in Fig. 1a).

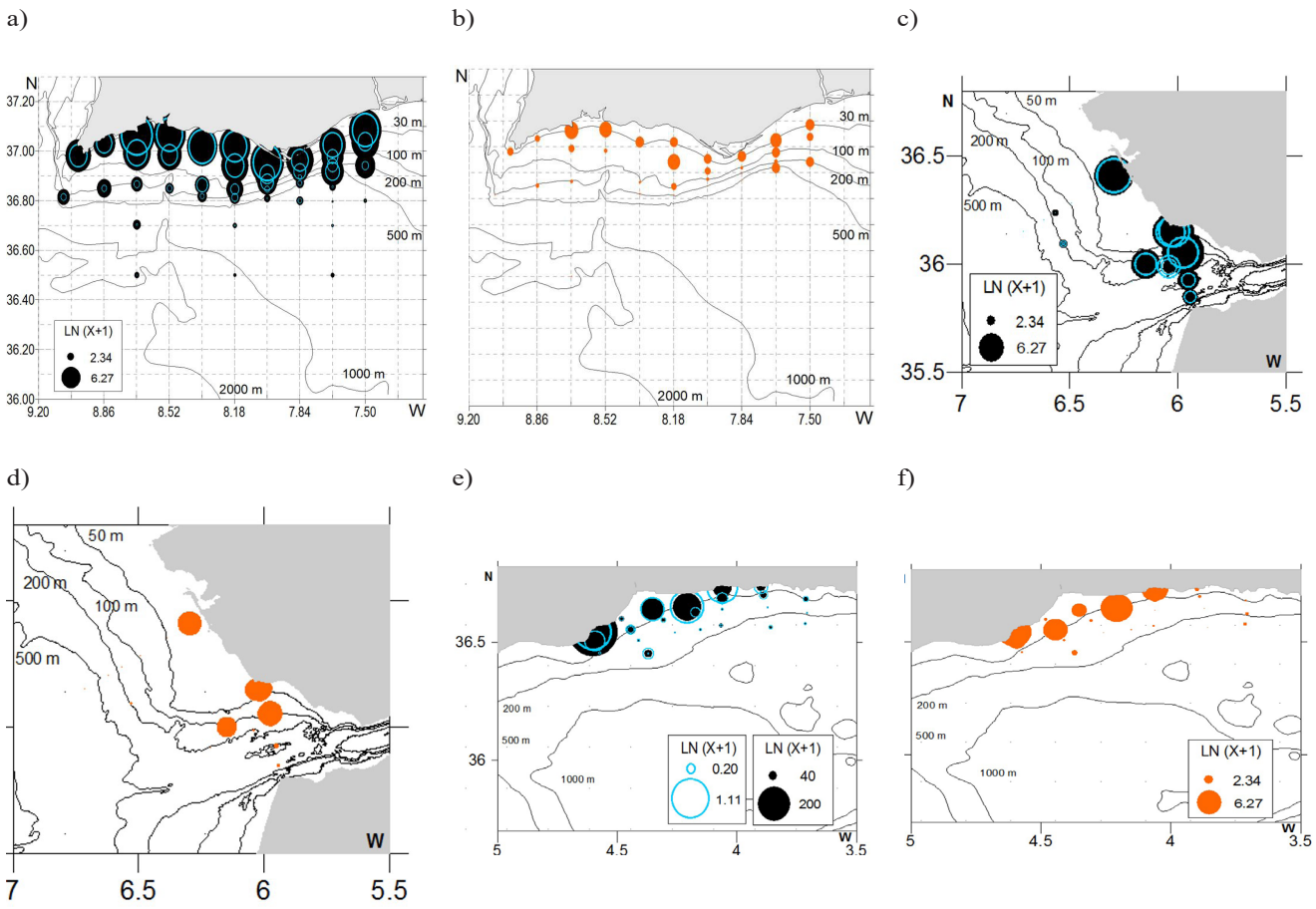

Fig. S5: Spatial data for the total larval abundance (ln [x + 1] where x = ind.10 m^{-3}) in Algarve (a, b), Gibraltar (c, d) and Alboran (e, f) sampling areas. Data refers to the abundance of all zoeal stages (black bubbles) and first larval stage (blue bubbles) [a, c, e], and megalopae/decapodid stage (orange bubbles) [b, d, f]. The same scale applies when only one is presented for each area.

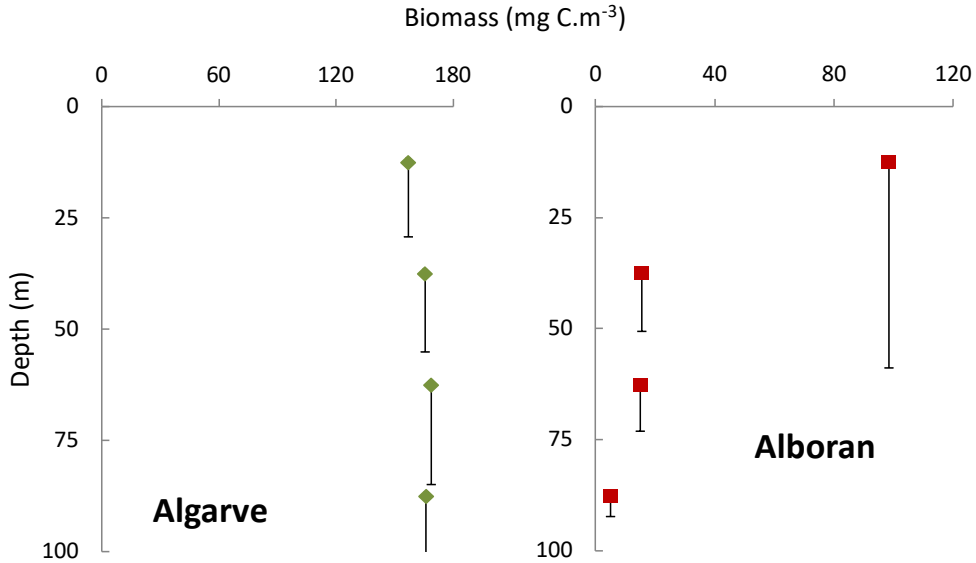

Fig. S6: Vertical biomass values (mg $C.m^{-3}$) by each sampling area (diamond - Algarve, LHPR data; square - Alboran). Data refer to values registered in each depth interval of the water column.

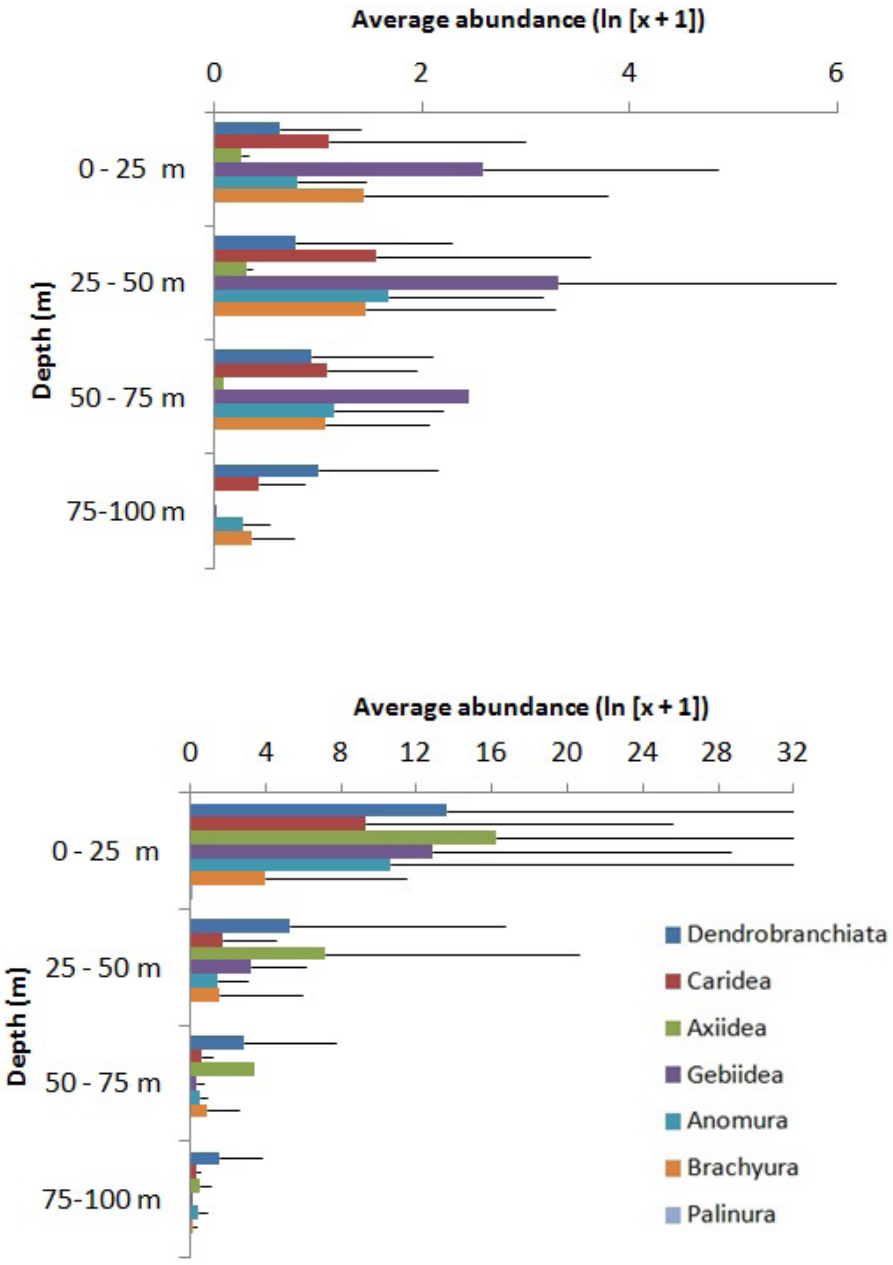

Fig. S7: Average vertical abundance (ln [x + 1] where x = ind.10 m^{-3}) of decapod larvae grouped according to their respective infra-order by sampling location (Algarve area - LHPR data).

Table S1. Number of decapod larvae (N), frequency of occurrence (F) and average abundance (A) in the water column (number of larvae 10 m^{-3} ± SD) for the different taxa registered in the Algarve, Strait of Gibraltar and Alboran Sea samples. Captured stages (D - decapodid, M – megalopa), adult habitats and the number of stages in the larval cycle are also presented for each taxa (in the case of Dendrobranchiata shrimps, the first 3 stages correspond to protozoeas).

			Algarve				Gibraltar				Alboran			
Taxa	Larval cycle	Adults habitat	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Dendrobranchiata (Shrimps)														
Aristeus antennatus	Long	Oceanic epibenthic	II	1	0.002	0.0004 ± 0.003	-	-	-	-	-	-	-	-
Gennadas elegans	Long	Mesopelagic	I-VI	66	0.14	0.07 ± 0.12	-	-	-	-	I-VII	1774	8.97	1.04 ± 0.69
Gennadas spp.	Long	Mesopelagic	III	4	0.01	0.002 ± 0.02	II	1	0.005	0.01 ± 0.03	I	1	0.01	0.001 ± 0.006
Melicertus kerathurus	Long	Coastal	I-III,V-VII, D	73	0.15	0.03 ± 0.17	II, III, V, D	20	0.10	0.10 ± 0.25	-	-	-	-
Benthesicymidae n.id.	-	-	II	1	0.002	0.0004 ± 0.003	-	-	-	-	-	-	-	-
Parapenaeus longirostris	Long	Oceanic epibenthic	I-IV	23	0.05	0.02 ± 0.09	I, II	3	0.02	0.04 ± 0.11	V	1	0.01	0.003 ± 0.014
Penaeopsis serrata	Long	Coastal	IV, VI, VII	6	0.01	0.007 ± 0.04	-	-	-	-	-	-	-	-
Penaeopsis spp.	Long	Coastal	IV, V, VII	3	0.01	0.01 ± 0.05	-	-	-	-	V	1	0.01	0.002 ± 0.01
Aristaeopsis spp.	Long	Oceanic epibenthic	I-VI	24	0.05	0.02 ± 0.13	-	-	-	-	-	-	-	-
Marsupenaeus japonicus	Long	Oceanic epibenthic	IV	1	0.002	0.002 ± 0.01	-	-	-	-	-	-	-	-
Penaeidae n.id.	-	-	I, II, VI	3	0.01	0.01 ± 0.03	-	-	-	-	-	-	-	-
Sicyonia carinata	Long	Oceanic epibenthic	II-V	13	0.03	0.02 ± 0.08	I-III, V	11	0.05	0.1 ± 0.23	III-V	7	0.04	0.03 ± 0.06
Solenocera membranacea	Long	Oceanic epibenthic	I-VIII	300	0.63	0.2 ± 0.3	II-IV	9	0.04	0.1 ± 0.13	I-VII	399	2.02	0.45 ± 0.45
Eusergestes arcticus	Long	Mesopelagic	I-IV	14	0.03	0.004 ± 0.02	I	1	0.01	0.01 ± 0.03	I-V, D	486	2.46	0.22 ± 0.35
Sergestes atlanticus	Long	Epipelagic	II-V	32	0.07	0.03 ± 0.08	-	-	-	-	III	1	0.01	0.01 ± 0.04
Deosergestes corniculum	Long	Epipelagic	I-III, V	50	0.11	0.03 ± 0.08	III	1	0.01	0.01 ± 0.02	III, IV	3	0.02	0.005 ± 0.014
Sergestes henseni	Long	Mesopelagic	I, III, V	4	0.01	0.01 ± 0.02	-	-	-	-	II-V	19	0.1	0.04 ± 0.08
Sergestes cornutus	Long	Mesopelagic	D	3	0.01	0.0003 ± 0.002	-	-	-	-	-	-	-	-
Parasergestes vigilax	Long	Epipelagic	II-V	6	0.01	0.01 ± 0.04	-	-	-	-	-	-	-	-
Allosergestes sargassi	Long	Mesopelagic	II, IV, V, D	28	0.06	0.01 ± 0.04	-	-	-	-	-	-	-	-
Allosergestes pectinatus	Long	Mesopelagic	D	22	0.05	0.004 ± 0.01	-	-	-	-	-	-	-	-
Sergestes spp.	Long	Epipelagic	I-III	20	0.04	0.01 ± 0.04	-	-	-	-	II, V, D, J	25	0.13	0.02 ± 0.04
Sergia robusta	Long	Mesopelagic	II-V, D	51	0.11	0.02 ± 0.04	-	-	-	-	I-V, D	211	1.07	0.13 ± 0.2
Sergestidae n.id.	-	-	I, III, D	66	0.14	0.01 ± 0.01	D	1	0.01	0.02 ± 0.05	-	-	-	-
Lucifer spp.	Long	Epipelagic	D	2	0.004	0.0002 ± 0.002	-	-	-	-	I, II	2	0.01	0.002 ± 0.01

(continued)

Table S1 continued

Taxa	Larval cycle	Adults habitat	Algarve				Gibraltar				Alboran			
			Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Caridea (Caridean shrimps)														
Stenopus spinosus	Long	Cosmopolite	I	2	0.004	0.001 ± 0.01	-	-	-	-	-	-	-	-
Nematocarcinus spp.	Long	Mesopelagic	I	1	0.002	0.001 ± 0.004	-	-	-	-	-	-	-	-
Acanthephyra spp.	Long	Cosmopolite	II-VI, IX	13	0.03	0.01 ± 0.02	-	-	-	-	III	1	0.01	0.001 ± 0.006
Pasiphaea sivado	Medium	Cosmopolite	I-IV, D, J	159	0.33	0.02 ± 0.06	-	-	-	-	-	-	-	-
Pasiphaea multidentata	Medium	Cosmopolite	-	-	-	-	-	-	-	-	D, J	3	0.02	0.002 ± 0.01
Pasiphaeidae n.id.	-	-	IV	1	0.002	0.003 ± 0.02	-	-	-	-	-	-	-	-
Rhynchocinetidae n.id.	-	-	-	-	-	-	-	-	-	-	I	1	0.01	0.002 ± 0.01
Palaemon elegans	Long	Intertidal	I-VIII	20	0.04	0.04 ± 0.15	III	1	0.01	0.02 ± 0.05	-	-	-	-
Palaemon serratus	Long	Intertidal	I, III, IV	4	0.01	0.01 ± 0.04	I, IX	2	0.01	0.05 ± 0.13	-	-	-	-
Palaemon longirostris	Long	Intertidal	II-V	8	0.02	0.02 ± 0.07	II-V	4	0.02	0.03 ± 0.08	-	-	-	-
Palaemonetes varians	Long	Intertidal	I	1	0.002	0.001 ± 0.004	-	-	-	-	-	-	-	-
Palaemon spp.	Long	Intertidal	I-VIII	13	0.03	0.03 ± 0.08	-	-	-	-	I, II, V	4	0.02	0.02 ± 0.05
Pontonia spp.	Long	Coastal	II, IV	10	0.02	0.02 ± 0.07	-	-	-	-	II-V	5	0.03	0.01 ± 0.03
Pontoniinae n.id.	-	Coastal	I, II, V	72	0.15	0.1 ± 0.3	I	5	0.02	0.05 ± 0.1	-	-	-	-
Pontoniinae n.id. type Mesocaris	-	-	-	-	-	-	VIII	1	0.01	0.02 ± 0.05	-	-	-	-
Periclimenes spp.	Long	Coastal	II-IV, VI, VII, IX	21	0.04	0.03 ± 0.07	II-IX	25	0.13	0.07 ± 0.24	V, VIII	3	0.02	0.005 ± 0.02
Athanas nitescens	Long	Coastal	I-IX, D	1133	2.38	0.27 ± 0.68	I-IX, D	245	1.16	1.13 ± 1.22	I-VIII, D	318	1.61	0.2 ± 0.5
Alpheus glaber	Long	Cosmopolite	II-IX	852	1.79	0.54 ± 0.71	I-IX	521	2.47	1.57 ± 1.18	I-IX, D	764	3.86	0.81 ± 0.97
Alpheus spp.	Long	Cosmopolite	I-IX, D	226	0.47	0.07 ± 0.25	II-IV, VI-IX, D	44	0.21	0.28 ± 0.44	I-IX, J	259	1.31	0.17 ± 0.51
Alpheidae n.id.	-	-	I, II, V-IX	62	0.13	0.09 ± 0.3	I-III, VI-IX	46	0.23	0.19 ± 0.55	-	-	-	-
Eualus cranchii	Long	Coastal	I-IX	1198	2.52	0.57 ± 0.99	I-IX	1066	5.05	1.46 ± 1.93	IV, V	4	0.02	0.01 ± 0.03
Eualus occultus	Long	Coastal	I-IX	225	0.47	0.17 ± 0.45	I-IX	1074	5.08	1.62 ± 1.5	-	-	-	-
Eualus spp.	Long	Coastal	-	-	-	-	I-IX	30	0.14	0.26 ± 0.47	I-IX	211	1.07	0.37 ± 0.6
Hippolyte spp.	Long	Coastal	I-VI	30	0.06	0.04 ± 0.2	I-V	1152	5.45	1.36 ± 1.87	I, II, V-VII, D	12	0.06	0.01 ± 0.04
Lysmata spp.	Long	Intertidal	I-VI, IX	70	0.15	0.07 ± 0.14	I-III, V-VII, IX	64	0.3	0.03 ± 0.1	II, V, VI, VIII	10	0.05	0.01 ± 0.02
Lysmata seticaudata	Long	Intertidal	-	-	-	-	II-VII, IX	1	0.18	0.05 ± 0.13	II-VI, IX	17	0.09	0.03 ± 0.09

(continued)

Table S1 continued

			Algarve				Gibraltar				Alboran			
Taxa	Larval cycle	Adults habitat	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Lysmata spp type "Bourdillon-Casanova"	Long	Intertidal	-	-	-	-	I	4	0.02	0.22 ± 0.5	-	-	-	-
Hippolytidae n.id.	-	Coastal	I-IX, D	50	0.11	0.02 ± 0.1	I-IV, VI, VII, D	19	0.09	0.46 ± 0.45	-	-	-	-
Hippolytidae n.id. type A	-	-	IV-VIII	12	0.03	0.01 ± 0.03	-	-	-	-	-	-	-	-
Processa edulis crassipes	Long	Intertidal	II-VIII	122	0.26	0.15 ± 0.33	III, VI, IX	3	0.02	0.02 ± 0.04	-	-	-	-
Processa edulis edulis	Long	Intertidal	II-VIII	212	0.45	0.16 ± 0.44	II-VII, IX	40	0.19	0.34 ± 0.41	I-VIII	466	2.36	0.42 ± 0.88
Processa modica carolii	Long	Coastal	I-IX	396	0.83	0.3 ± 0.62	I-IX	61	0.29	0.37 ± 0.59	I-IX	205	1.04	0.29 ± 0.68
Processa modica modica	Long	Coastal	I-VII	700	1.47	0.46 ± 0.86	IV-VII	10	0.05	0.12 ± 0.23	-	-	-	-
Processa canaliculata	Long	Oceanic epibenthic	I, III	10	0.02	0.01 ± 0.04	I	1	0.01	0.01 ± 0.03	II	1	0.01	0.002 ± 0.013
Processa macrodactyla	Long	Coastal	-	-	-	-	-	-	-	-	I-VII, IX	83	0.42	0.13 ± 0.51
Processa nouveli holthuisi	Long	Coastal	III-IX	203	0.43	0.11 ± 0.31	IV, VI, VII, IX	40	0.19	0.24 ± 0.47	-	-	-	-
Processa nouveli nouveli	Long	Coastal	II-IX	364	0.76	0.27 ± 0.43	II-IX	113	0.53	0.69 ± 0.73	I-IX, D	867	4.38	0.66 ± 0.98
Processa ? elegantula	Long	Coastal	-	-	-	-	-	-	-	-	VIII, IX	22	0.11	0.03 ± 0.16
Processa nouveli	Long	Coastal	-	-	-	-	II, III	8	0.04	0.18 ± 0.52	-	-	-	-
Processa spp.	Long	Oceanic epibenthic	I-IX, D	2996	6.29	0.48 ± 0.995	I-IX, D	1223	5.79	1.74 ± 1.71	I-IX, D, J	275	1.39	0.17 ± 0.5
Processa sp. 2	Long	-	-	-	-	-	-	-	-	-	VI, VII, IX	3	0.02	0.001 ± 0.01
Plesionika spp.	Long	Coastal	I-IX	221	0.46	0.14 ± 0.22	I-V	98	0.46	0.61 ± 0.52	I-V	49	0.25	0.09 ± 0.13
Pandalina brevirostris	Long	Coastal	I-VII	219	0.46	0.08 ± 0.32	I-VII	96	0.45	0.51 ± 0.67	I-VII, D	50	0.25	0.04 ± 0.08
Stylopandalus spp.	Long	Coastal	-	-	-	-	-	-	-	-	II-IX	58	0.29	0.09 ± 0.11
Pandalidae n.id.	-	-	I-VII, IX	92	0.19	0.04 ± 0.18	I, II, IV, VIII, IX	10	0.05	0.15 ± 0.22	I-III, V, D, J	10	0.05	0.006 ± 0.03
Pandalidae n.id. type A	-	-	III-V	4	0.01	0.01 ± 0.04	-	-	-	-	-	-	-	-
Aegaeon spp.	Medium	Cosmopolite	I-III, V, VI, IX, D	41	0.09	0.03 ± 0.13	I-III, VI, VII	9	0.05	0.05 ± 0.14	III-V	3	0.02	0.02 ± 0.06
Pontophilus spinosus	Long	Coastal	I-III	11	0.02	0.02 ± 0.15	-	-	-	-	I, II	6	0.03	0.005 ± 0.04
Crangon crangon	Medium	Coastal	D	1	0.002	0.001 ± 0.01	-	-	-	-	-	-	-	-
Philocheras bispinosus bispinosus	Medium	Coastal	I-V	511	1.07	0.12 ± 0.38	I-V	19	0.1	0.08 ± 0.23	I-V, D	1171	5.92	0.33 ± 0.79

(continued)

Table S1 continued

Taxa	Larval cycle	Adults habitat	Algarve				Gibraltar				Alboran			
			Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Philocheras bispinosus neglectus	Medium	Coastal	I-V	46	0.1	0.1 ± 0.23	I-V	304	1.44	0.98 ± 1.39	II-V	21	0.11	0.05 ± 0.15
Philocheras bispinosus	Medium	Coastal	-	-	-	-	-	-	-	-	III, D	4	0.02	0.001 ± 0.006
Philocheras echinulatus	Medium	Oceanic epibenthic	IV, V	5	0.01	0.01 ± 0.07	I, IV, V	16	0.08	0.12 ± 0.29	-	-	-	-
Philocheras fasciatus	Medium	Intertidal	V	1	0.002	0.004 ± 0.03	I, II, IV	4	0.02	0.04 ± 0.12	-	-	-	-
Philocheras sculptus	Medium	Coastal	I-V, D	49	0.1	0.03 ± 0.13	I-V	287	1.36	0.8 ± 1.2	I	1	0.01	0.002 ± 0.009
Philocheras spp.	Medium	Oceanic epibenthic	I-V, D	991	2.08	0.24 ± 0.58	I-V, D	111	0.56	0.36 ± 1.3	I, II, IV, V, D	22	0.11	0.02 ± 0.1
Axiidea, Gebiidea (Ghost shrimps)														
Callianassa tyrrhena	Medium	Endobenthic	I-III	7	0.01	0.02 ± 0.1	-	-	-	-	I-IV	25	0.13	0.12 ± 0.37
Callianassa truncata	Medium	Endobenthic	I	1	0.002	0.002 ± 0.01	-	-	-	-	I-IV, D	3589	18.14	1.1 ± 1.4
Callianassa subterranea	Medium	Endobenthic	-	-	-	-	-	-	-	-	I-III	8	0.04	0.02 ± 0.05
Callianassidae SL16	Medium	Endobenthic	II	1	0.002	0.0004 ± 0.003	II	2	0.01	0.01 ± 0.03	I	1	0.01	0.001 ± 0.007
Callianassidae L17	Medium	Endobenthic	I, II	4	0.01	0.01 ± 0.05	I, II	10	0.01	0.16 ± 0.44	-	-	-	-
Callianassidae n.id.	-	-	III, D	2	0.004	0.001 ± 0.006	II	1	0.05	0.03 ± 0.09	II-IV	6	0.03	0.02 ± 0.07
Jaxea nocturna	Medium	Endobenthic	I-IV	54	0.11	0.08 ± 0.18	-	-	-	-	I-VI	46	0.23	0.14 ± 0.28
Upogebia pusilla	Medium	Endobenthic	I-IV	6104	12.82	1.18 ± 1.53	I-IV	1435	6.79	2.09 ± 1.81	I-IV	623	3.15	0.46 ± 0.85
Upogebia deltaura	Medium	Endobenthic	I-IV	5615	11.79	0.91 ± 1.58	I-IV	2529	11.97	2.34 ± 2.16	I-IV	547	2.77	0.56 ± 1.07
Upogebia spp.	Medium	Endobenthic	III,IV, D	102	0.21	0.03 ± 0.1	I, II, IV, D	14	0.05	0.16 ± 0.31	D	7	0.04	0.006 ± 0.03
Scyllaridae (Slipper lobsters)														
Scyllarus spp.	Very long	Coastal	I, II, IV, V, VII	25	0.05	0.03 ± 0.07	I, II, VI	4	0.02	0.03 ± 0.05	IV	1	0.01	0.001 ± 0.006
Paguridae, Diogenidae (Hermit crabs)														
Clibarianus erythropus	Medium	Intertidal	I, II	185	0.39	0.1 ± 0.3	I	2	0.01	0.06 ± 0.13	-	-	-	-
Paguristes eremita	Medium	Cosmopolite	I, III	5	0.01	0.01 ± 0.08	-	-	-	-	-	-	-	-
Dardanus arrosor	Medium	Coastal	I, III	2	0.004	0.002 ± 0.01	I	3	0.01	0.04 ± 0.07	I, II	27	0.14	0.05 ± 0.08
Diogenes pugilator	Medium	Intertidal	I-V, M	9217	19.36	0.6 ± 1.35	I-V, M	2543	12.04	2.66 ± 3.21	I-V, M	3719	18.8	0.63 ± 1.29
Calcinus tubularis	Medium	Intertidal	I, II	30	0.06	0.05 ± 0.19	I	3	0.02	0.11 ± 0.2	I-III	95	0.48	0.16 ± 0.26
Pagurus spp.	Medium	Cosmopolite	I-IV, M	1296	2.72	0.26 ± 0.7	I-IV, M	775	3.67	2.11 ± 1.81	I-IV, M	109	0.55	0.12 ± 0.31
Nematopagurus longicornis	Medium	Oceanic epibenthic	I, III, IV	3	0.01	0.002 ± 0.01	I	4	0.02	0.04 ± 0.08	II	3	0.02	0.006 ± 0.02
Spiropagurus elegans	Medium	Coastal	I	2	0.004	0.01 ± 0.04	I	1	0.01	0.03 ± 0.09	-	-	-	-

(continued)

Table S1 continued

			Algarve				Gibraltar				Alboran			
Taxa	Larval cycle	Adults habitat	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Anapagurus spp.	Medium	Cosmopolite	I-IV, M	673	1.41	0.16 ± 0.48	I-IV, M	462	2.19	1.08 ± 1.52	I-IV, M	511	2.58	0.24 ± 0.66
Parapagurus pilosimanus	Medium	Cosmopolite	I-III	5	0.01	0.003 ± 0.01	-	-	-	-	-	-	-	-
Parapagurus spp.	Medium	Cosmopolite	II-IV	5	0.01	0.003 ± 0.01	-	-	-	-	-	-	-	-
Paguridae n.id.	-	Cosmopolite	M	1	0.002	0.0004 ± 0.003	-	-	-	-	-	-	-	-
Paguridae n.id. type ASM3	-	-	I, II, IV	5	0.01	0.002 ± 0.008	-	-	-	-	-	-	-	-
Galatheidae (Squat lobsters)														
Galathea dispersa	Medium	Coastal	I-V	337	0.71	0.23 ± 0.51	I-V	761	3.6	1.3 ± 1.34	-	-	-	-
Galathea intermedia	Medium	Coastal	I-V	158	0.33	0.15 ± 0.37	I-V	550	2.6	0.73 ± 1.32	-	-	-	-
Galathea nexa	Medium	Coastal	-	-	-	-	I-III, V	19	0.09	0.12 ± 0.28	-	-	-	-
Galathea squamifera	Medium	Coastal	I	1	0.002	0.001 ± 0.004	I-III, V	27	0.13	0.22 ± 0.5	-	-	-	-
Galathea strigosa	Medium	Coastal	-	-	-	-	III	1	0.01	0.03 ± 0.09	-	-	-	-
Galathea S22	Medium	-	I-IV	67	0.14	0.05 ± 0.09	I	11	0.05	0.08 ± 0.12	I-III	14	0.07	0.03 ± 0.06
Galathea FSL21	Medium	-	I-III	8	0.02	0.18 ± 0.29	-	-	-	-	-	-	-	-
Galathea spp.	Medium	Coastal	I, M	53	0.11	0.02 ± 0.06	I-IV, M	36	0.17	0.41 ± 0.47	I-V, M	111	0.56	0.09 ± 0.26
Munida spp.	Medium	Cosmopolite	-	-	-	-	-	-	-	-	II	1	0.01	0.001 ± 0.006
Brachyura (crabs)														
Pisidia longicornis	Short	Coastal	I, II, M	1274	2.68	0.28 ± 0.8	I, II, M	1275	6.03	1.63 ± 1.92	I, II, M	35	0.18	0.05 ± 0.2
Porcellana platycheles	Short	Coastal	I, II	2	0.004	0.003 ± 0.03	-	-	-	-	II	2	0.01	0.01 ± 0.04
Homola barbata	Long	Cosmopolite	I-III	9	0.02	0.01 ± 0.03	I	1	0.01	0.01 ± 0.03	-	-	-	-
Ethusa mascarone	Medium	Coastal	I-III	8	0.02	0.02 ± 0.09	I	3	0.02	0.15 ± 0.05	I-IV	35	0.18	0.09 ± 0.16
Medorippe lanata	Medium	Coastal	III	1	0.002	0.001 ± 0.01	I	1	0.01	0.02 ± 0.05	-	-	-	-
Calappa granulata	Medium	Oceanic epibenthic	I-III	98	0.21	0.11 ± 0.19	I, III	46	0.22	0.28 ± 0.48	I-IV	55	0.28	0.1 ± 0.26
Ilia nucleus	Medium	Coastal	-	-	-	-	I	1	0.01	0.06 ± 0.17	I-III	19	0.1	0.05 ± 0.1
Ebalia cranchii	Medium	Oceanic epibenthic	II	1	0.002	0.001 ± 0.008	I	1	0.01	0.01 ± 0.03	I-IV	19	0.1	0.03 ± 0.14
Ebalia nux	Medium	Oceanic epibenthic	I-IV	25	0.05	0.02 ± 0.06	I, II	10	0.05	0.10 ± 0.24	II	1	0.01	0.001 ± 0.01
Ebalia tuberosa	Medium	Oceanic epibenthic	I-IV	10	0.02	0.01 ± 0.04	I-IV	98	0.46	0.49 ± 0.77	II-IV	4	0.02	0.005 ± 0.02
Ebalia tumefacta	Medium	Oceanic epibenthic	I-IV	497	1.04	0.28 ± 0.52	I-III, M	134	0.63	0.54 ± 0.84	I-IV, M	72	0.36	0.11 ± 0.28
Ebalia spp.	Medium	Oceanic epibenthic	M	151	0.32	0.03 ± 0.08	M	20	0.09	0.18 ± 0.3	I-III, M	12	0.06	0.03 ± 0.11
Inachus spp.	Short	Coastal	II, M	16	0.03	0.01 ± 0.02	I, II, M	11	0.06	0.08 ± 0.17	-	-	-	-
Macropodia spp.	Short	Coastal	I, M	3	0.01	0.001 ± 0.01	I, II, M	103	0.52	1.57 ± 3.92	-	-	-	-

(continued)

Table S1 continued

Taxa	Larval cycle	Adults habitat	Algarve				Gibraltar				Alboran			
			Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Hyas spp.	Short	Coastal	I	1	0.002	0.0004 ± 0.003	-	-	-	-	-	-	-	-
Hebstia condyliata	Short	Coastal	I	1	0.002	0.003 ± 0.02	I, II	9	0.05	0.21 ± 0.34	-	-	-	-
Pisa spp.	Short	Coastal	I, II, M	6	0.01	0.007 ± 0.05	I, M	6	0.03	0.11 ± 0.27	M	6	0.03	0.005 ± 0.03
Achaeus cranchii	Short	Coastal	I, II, M	14	0.03	0.007 ± 0.03	I, II, M	43	0.2	0.49 ± 0.87	I, II, M	14	0.07	0.033 ± 0.13
Eurynome spp.	Short	Coastal	I, II, M	23	0.05	0.01 ± 0.06	I, II, M	8	0.04	0.05 ± 0.13	I, II, M	10	0.05	0.02 ± 0.11
Acanthonyx lunulatus	Medium	Coastal	-	-	-	-	II	1	0.01	0.03 ± 0.09	II	1	0.01	0.002 ± 0.01
Maja sp.	Short	Coastal	M	1	0.002	0.0001 ± 0.001	I, II, M	4	0.02	0.06 ± 0.17	-	-	-	-
Majidae n.id. type "1"	-	-	I, II	81	0.17	0.1 ± 0.2	I, II	390	1.85	2.05 ± 2.28	-	-	-	-
Ergasticus clouei	Short	Oceanic epibenthic	I, II	4	0.01	0.002 ± 0.02	-	-	-	-	-	-	-	-
Majidae n.id.	-	Coastal	II, M	51	0.11	0.01 ± 0.02	I, II, M	127	0.64	1.84 ± 3.28	I, II	5	0.03	0.01 ± 0.04
Heterocrypta maltzani	Medium	Coastal	-	-	-	-	-	-	-	-	II	2	0.01	0.005 ± 0.03
Parthenope spp.	Medium	Cosmopolite	I-IV, M	326	0.68	0.13 ± 0.34	I-IV, M	183	0.87	0.6 ± 0.86	I-IV, M	26	0.13	0.02 ± 0.05
Parthenope ASM16	Medium	-	I-IV	67	0.14	0.07 ± 0.24	II	1	0.01	0.01 ± 0.04	-	-	-	-
Parthenope ASM19	Medium	-	I	1	0.002	0.001 ± 0.01	-	-	-	-	-	-	-	-
Atelecyclus spp.	Medium	Coastal	III-V, M	21	0.04	0.01 ± 0.07	I-V	20	0.1	0.11 ± 0.3	II, III, M	57	0.29	0.05 ± 0.35
Atelecyclidae n.id.	-	-	II-V	6	0.01	0.005 ± 0.03	-	-	-	-	-	-	-	-
Atelecyclus undecimdentatus?	Medium	Coastal	III-V	47	0.1	0.05 ± 0.22	-	-	-	-	-	-	-	-
Pirimela denticulata	Medium	Coastal	I-III	6	0.01	0.01 ± 0.09	I-IV	48	0.23	0.23 ± 0.72	III	2	0.01	0.005 ± 0.02
Thia scutellata	Medium	Coastal	I-IV, M	191	0.4	0.11 ± 0.36	I, II, IV	15	0.07	0.21 ± 0.31	I-IV	37	0.19	0.15 ± 0.38
Corystes cassivelaunus	Medium	Coastal	-	-	-	-	-	-	-	-	I	1	0.01	0.001 ± 0.007
Geryonidae n.id.	-	-	-	-	-	-	IV	1	0.01	0.01 ± 0.02	I, III, IV	8	0.04	0.01 ± 0.05
Sirpus zariquieyi	Medium	Coastal	I-IV	92	0.19	0.09 ± 0.41	-	-	-	-	I, II, IV	9	0.05	0.03 ± 0.08
Carcinus maenas	Medium	Intertidal	I	3	0.01	0.01 ± 0.07	-	-	-	-	-	-	-	-
Carcinus aestuarii	Medium	Intertidal	-	-	-	-	-	-	-	-	II-IV	14	0.07	0.05 ± 0.22
Portumnus latipes	Medium	Coastal	M	4	0.01	0.001 ± 0.005	-	-	-	-	II, IV, M	4	0.02	0.009 ± 0.04
Bathynectes maravigna	Medium	Coastal	I, II, M	35	0.07	0.02 ± 0.1	I, II, IV	72	0.34	0.55 ± 0.85	-	-	-	-
Bathynectes sp.	Medium	Coastal	-	-	-	-	-	-	-	-	I-IV, M	97	0.49	0.09 ± 0.32
Macropipus tuberculatus	Medium	Coastal	-	-	-	-	-	-	-	-	I-IV	76	0.38	0.14 ± 0.47
Necora puber	Medium	Coastal	V, M	4	0.01	0.001 ± 0.012	-	-	-	-	-	-	-	-
Liocarcinus spp.	Medium	Cosmopolite	I-V, M, J	7024	14.75	0.49 ± 1.01	I-V, M	1604	7.59	2.73 ± 2.7	I-V, M	513	2.59	0.35 ± 0.62

(continued)

Table S1 continued

			Algarve				Gibraltar				Alboran			
Taxa	Larval cycle	Adults habitat	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD	Stages	N	F (%)	A ± SD
Polybius henslowii	Medium	Cosmopolite	-	-	-	-	-	-	-	-	IV	1	0.01	0.001 ± 0.004
Polybiinae n.id.	-	Coastal	I-III, V, M	14	0.03	0.01 ± 0.03	-	-	-	-	M	1	0.01	0.04 ± 0.004
Portunidae n.id.	-	-	-	-	-	-	J	1	0.01	0.02 ± 0.05	-	-	-	-
Monodaeus couchii	Medium	Oceanic epibenthic	II, M	45	0.09	0.006 ± 0.015	I, III, M	6	0.03	0.04 ± 0.13	M	2	0.01	0.002 ± 0.01
Xantho spp.	Medium	Coastal	I-IV, M	738	1.55	0.22 ± 0.5	I-IV	228	1.08	1.08 ± 0.8	I-IV, M	66	0.33	0.05 ± 0.09
Xanthidae n.id.	-	-	I-IV, M	167	0.35	0.03 ± 0.16	M	4	0.02	0.04 ± 0.1	-	-	-	-
Nanocassiope melanodactyla	Medium	Coastal	-	-	-	-	-	-	-	-	I-IV	43	0.22	0.05 ± 0.26
Eriphia verrucosa	Medium	Intertidal	I, II	44	0.09	0.05 ± 0.21	-	-	-	-	-	-	-	-
Pilumnus spp.	Medium	Coastal	I-IV, M	673	1.41	0.2 ± 0.6	I-IV, M	341	1.61	1.47 ± 1.78	I-IV, M	195	0.99	0.21 ± 0.52
Goneplax rhomboides	Medium	Coastal	I-V, M	589	1.24	0.16 ± 0.37	I-IV, M	179	0.84	0.75 ± 0.78	I-IV, M	892	4.51	0.34 ± 0.66
Goneplacidae n.id.	-	-	M	9	0.02	0.001 ± 0.01	-	-	-	-	-	-	-	-
Pinnotheres pisum	Medium	Coastal	II-IV	5	0.01	0.01 ± 0.07	I-III, M	34	0.17	0.31 ± 0.74	I-III, M, J	38	0.19	0.06 ± 0.25
Nepinnotheres pinnotheres	Medium	Coastal	I, II	50	0.11	0.07 ± 0.28	I, II	10	0.05	0.23 ± 0.48	I, II	4	0.02	0.02 ± 0.08
Pinnotheridae n.id.	-	Coastal	-	-	-	-	-	-	-	-	I, II, M	12	0.06	0.05 ± 0.22
Plagusiinae n.id.	-	Coastal	II-IV	7	0.01	0.006 ± 0.03	-	-	-	-	-	-	-	-
Plagusiinae n.id.type ASM29	-	-	I, II	5	0.01	0.003 ± 0.02	I	1	0.01	0.02 ± 0.05	-	-	-	-
Pachygrapsus spp.	Long	Intertidal	I-V, M	1284	2.70	0.27 ± 0.54	I-III	18	0.09	0.21 ± 0.3	I-IV	9	0.05	0.015 ± 0.03
Ocypode cursor ?	Medium	Coastal	I-V	179	0.38	0.18 ± 0.54	I-IV	68	0.34	0.57 ± 1.54	-	-	-	-
Brachynotus atlanticus	Medium	Intertidal	-	-	-	-	I	1	0.01	0.06 ± 0.17	-	-	-	-
Brachynotus sexdentatus	Medium	Intertidal	-	-	-	-	-	-	-	-	II-V	59	0.3	0.1 ± 0.36
Brachynotus sp.	Medium	Intertidal	-	-	-	-	-	-	-	-	I-IV	9	0.05	0.03 ± 0.11
Brachyura n.id.	-	-	II, M	5	0.01	0.003 ± 0.02	I, II, M	5	0.02	0.09 ± 0.19	III, M	11	0.06	0.01 ± 0.05

Table S2. Principal Component Analysis results presenting the main components that explain sample variability for the measured environmental factors, biomass and biodiversity indices (Shannon diversity - H'(log_e), taxonomic distinctness - delta*) in each studied area: a) Algarve, b) Alboran Sea.

	PC1			PC2			PC3		
	Eigenvalues	**% variation**	**Cum % variation**	**Eigenvalues**	**% variation**	**Cum % variation**	**Eigenvalues**	**% variation**	**Cum % variation**
	2.45	51.1	51.1	1.2	24.9	76.0	0.811	16.9	92.9
Variable									
Temperature	-0.452			**0.768**			-0.437		
Chl-a	0.021			-0.072			0.034		
Biomass	0			0			0		
H'(loge)	-0.6			0.07			**0.778**		
Station depth	0.412			**0.543**			0.404		
Distance to coast	**0.516**			0.324			0.197		

	PC1		
	Eigenvalues	**% variation**	**Cum % variation**
	1.29	81.3	81.3
Variable			
Temperature	0.069		
Chl-a	0.013		
Biomass	0		
H'(loge)	0.159		
Station depth	-0.866		
Distance to coast	-0.469		

Table S3. SIMPER percentages (Contrib% - similarity contribution percentage) of the most spatially abundant taxa contributing to the similarities between samples for each sampling area and all distance to coast groups considering first stage (ZI) and last stage (megalopae/decapodids) larvae.

	ZI		Megalopa/Decapodid	
	Taxa	**Contrib%**	**Taxa**	**Contrib%**
		Algarve		
Group < 10 km	(Average similarity: 33.93%)		(Average similarity: 26.30%)	
	Upogebia deltaura	13.62	*Liocarcinus* spp.	51.15
	Diogenes pugilator	13.32	*Diogenes pugilator*	22.64
	Processa spp.	11.94	-	-
	Pachygrapsus spp.	10.28	-	-
Group 10-20 km	(Average similarity: 27.76%)		*(Average similarity: 31.66%)*	
	Pachygrapsus spp.	22.32	*Liocarcinus* spp.	61.49
	Goneplax rhomboides	16.06	*Diogenes pugilator*	10.86
	Xantho spp.	9.52	-	-
	Processa spp.	6.05	-	-
Group 21-30 km	(Average similarity: 17.75%)		(Average similarity: 19.94%)	
	Goneplax rhomboides	21.76	*Liocarcinus* spp	55.75
	Xantho spp.	18.36	Majidae n.id.	7.56
	Pachygrapsus spp.	17.99	-	-
Group 31-50 km			(Average similarity: 26.73%)	
	-	-	*Monodaeus couchii*	41.92
	-	-	Sergestidae n.id.	16.47
		Gibraltar		
Group < 10 km	(Average similarity: 29.08%)		(Average similarity: 21.5%)	
	Pagurus spp.	12.83	*Diogenes pugilator*	21.85
	Pisidia longicornis	9.14	*Liocarcinus* spp.	17.18
	Pilumnus spp.	8.69	*Macropodia* spp.	16.81
	Diogenes pugilator	7.62	-	-
	Upogebia deltaura	7.53	-	-
Group 10-20 km	(Average similarity: 21.36%)		(Average similarity: 9.04%)	
	Upogebia deltaura	25.28	*Liocarcinus* spp.	77.31
	Pagurus spp.	17.48	*Galathea* spp.	22.69
	Xantho spp.	14.99	-	-
Group 31-50 km	(Average similarity: 47.57%)		(Average similarity: 6.94%)	
	Upogebia deltaura	22.92	Majidae n.id. Tipo “1”	39.93
	Diogenes pugilator	15.93	*Liocarcinus* spp.	21.63
	Majidae n.id. Type “1”	10.42	-	-
		Alboran		
Group < 10 km	(Average similarity: 24.59%)		(Average similarity: 10.97%)	
	Callianassa truncata	24.55	*Liocarcinus* spp.	50.68
	Goneplax rhomboides	24.4	*Diogenes pugilator*	18.61
Group 10-20 km	(Average similarity: 31.66%)		(Average similarity: 10.21%)	
	Gennadas elegans	59.56	*Sergestes* spp.	55.37
	Goneplax rhomboides	11.23	*Eusergestes arcticus*	20.52

Table S4. SIMPER percentages (Contrib% - similarity contribution percentage) of the most vertically abundant taxa contributing to the similarities between samples for each sampling area and all depth interval groups. Taxa were grouped according to the combination of factors: number of stages in the larval cycle (C3 - long), adult habitats (H1 - intertidal, H3 - endobenthic, H4 - oceanic epibenthic, H5 - Epipelagic, H6 - Mesopelagic, H7 - Cosmopolite) and taxonomic group (T1 - Shrimps, T2 - Caridean shrimps, T4 - Ghost shrimps, T7 - Crabs).

	Taxa	**Contrib%**	**Taxa**	**Contrib%**
	Algarve		**Alboran**	
Group 0-25 m	(Average similarity: 27.92%)		(Average similarity: 36.66%)	
	C3 x T7 x H1	34.43	C3 x T1 x H6	32.41
	C3 x T2 x H4	18.75	C3 x T2 x H7	17.50
	C3 x T2 x H7	15.71	C2 x T4 x H3	8.41
Group 25-50 m	(Average similarity: 30.13%)		(Average similarity: 21.72%)	
	C3 x T7 x H1	31.13	C3 x T1 x H6	38.30
	C3 x T2 x H4	19.23	C3 x T2 x H7	16.37
	C3 x T2 x H7	11.60	-	-
Group 50-75 m	(Average similarity: 19.64%)		(Average similarity: 41.97%)	
	C3 x T1 x H5	18.36	C3 x T1 x H6	74.31
	C3 x T2 x H4	16.59	C3 x T1 x H4	10.20
	C3 x T7 x H1	15.80	-	-
Group 75-100 m	(Average similarity: 13.77%)		(Average similarity: 31.34%)	
	C3 x T1 x H6	35.41	C3 x T1 x H6	68.33
	C3 x T1 x H4	31.64	C3 x T1 x H4	17.4