

## Supplementary materials

Table S1. Isotopic values (mean  $\pm$  sd) in epifauna from Cíes archipelago sampled in spring, summer and autumn (2017-2018). List ordered according to increasing  $\delta^{15}\text{N}$  values. FG = functional group; C = carnivorous; D = detritivorous; FF = filter feeder; G = grazer; O = omnivorous; S = suspensivorous. \*: OTUs included as potential dietary sources in SIMMs models.

Category	OTUS	FG	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	n
Bivalvia	<i>Musculus costulatus</i>	FF	-17.93 $\pm$ 1.14	5.60 $\pm$ 0.48	18
Bivalvia	<i>Irus irus</i>	FF	-17.33 $\pm$ 1.07	6.05 $\pm$ 0.50	12
Bivalvia	Other Mytilidae	FF	-17.97 $\pm$ 0.98	6.05 $\pm$ 0.39	18
Amphipoda	<i>Corophium</i> spp.*	S	-17.61 $\pm$ 1.42	6.08 $\pm$ 0.47	17
Amphipoda	<i>Caprella acanthifera</i> *	O	-17.48 $\pm$ 2.06	6.11 $\pm$ 0.28	14
Amphipoda	<i>Apherusa</i> spp.*	O	-16.85 $\pm$ 1.17	6.40 $\pm$ 0.85	18
Amphipoda	Other Gammaridae*	O	-17.10 $\pm$ 1.53	6.40 $\pm$ 0.43	9
Copepoda	Harpacticoida*	S	-19.41 $\pm$ 2.26	6.58 $\pm$ 0.52	18
Amphipoda	<i>Caprella linearis</i> *	D	-16.96 $\pm$ 0.54	6.69 $\pm$ 0.38	6
Amphipoda	<i>Amphilocheus manudens</i> *	O	-17.17 $\pm$ 1.27	6.76 $\pm$ 0.74	16
Decapoda	<i>Porcellana platycheles</i>	D	-18.86 $\pm$ 1.93	7.08 $\pm$ 0.44	11
Isopoda	<i>Cymodoce truncata</i> *	G	-19.58 $\pm$ 1.50	7.11 $\pm$ 0.69	16
Gastropoda	<i>Tricolia pullus</i>	D	-15.29 $\pm$ 2.18	7.12 $\pm$ 0.75	18
Holothuroidea	<i>Aslia lefevrei</i>	S	-12.30 $\pm$ 2.14	7.14 $\pm$ 0.64	12
Isopoda	<i>Dynamene bidentata</i> *	G	-18.84 $\pm$ 2.29	7.28 $\pm$ 0.92	16
Ophiuroidea	<i>Ophiotrix fragilis</i>	S	-22.32 $\pm$ 3.09	7.28 $\pm$ 0.56	7
Gastropoda	<i>Elysia</i> spp.	G	-18.57 $\pm$ 2.49	7.33 $\pm$ 0.74	18
Gastropoda	<i>Peringia ulvae</i>	G	-15.32 $\pm$ 0.96	7.33 $\pm$ 0.53	17
Gastropoda	<i>Bittium reticulatum</i>	D	-16.86 $\pm$ 0.65	7.34 $\pm$ 0.57	7
Ophiuroidea	<i>Amphipholis squamata</i>	S	-23.14 $\pm$ 4.71	7.37 $\pm$ 0.57	17
Decapoda	<i>Pisidia longicornis</i>	D	-17.45 $\pm$ 0.54	7.43 $\pm$ 0.41	4
Gastropoda	<i>Calliostoma zizyphinum</i>	O	-16.43 $\pm$ 1.37	7.73 $\pm$ 1.37	13
Polychaeta	Nereididae	O	-21.29 $\pm$ 3.25	7.74 $\pm$ 1.05	15
Platyhelminthes	<i>Stylochoplana maculata</i>	C	-16.95 $\pm$ 1.38	7.82 $\pm$ 0.53	16
Gastropoda	<i>Doto fragilis</i>	C	-15.24 $\pm$ 0.45	8.67 $\pm$ 1.09	5
Decapoda	<i>Hippolyte varians</i> *	O	-17.00 $\pm$ 1.23	8.74 $\pm$ 0.60	17
Pycnogonida	<i>Endeis</i> spp.	C	-18.98 $\pm$ 0.89	9.24 $\pm$ 0.60	12
Polychaeta	Polynoidae	C	-17.57 $\pm$ 1.68	9.26 $\pm$ 0.71	15
Mysidacea	<i>Siriella armata</i> *	C	-17.34 $\pm$ 0.91	10.02 $\pm$ 0.52	18

Table S2: Bhattacharyya's coefficients (BC) for pairwise prey comparisons on percent diet contribution by SIMMs outputs (with or without priors) in the pipefish *Syngnathus acus* sampled on Cies archipelago in Spring-Summer 2016. Models (TEFs for  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ): A - Averaged ecosystem (Minagawa & Wada 1984, Post, 2002); B - Semi-experimentally derived (Post 2002, Sweeting et al. 2007a,b); Experimentally derived from Syngnathids fed on diets M (C), AM (D), and averaged values of C and D (E) (present study). Non-significant overlapping distributions (disimilarity) are shown in bold (Bhattacharyya's Coefficients < 0.6). Am – Amphipoda, Co - Copepoda, Ca - Caridea, Is – Isopoda, My – Mysidacea.

Source pairs	Models (Trophic Enrichment Factors – TEFs)				
	A) 0.39 $\delta^{13}\text{C}$ 3.40 $\delta^{15}\text{N}$	B) 1.5 $\delta^{13}\text{C}$ 3.40 $\delta^{15}\text{N}$	C) 2.50 $\delta^{13}\text{C}$ 3.91 $\delta^{15}\text{N}$	D) 4.14 $\delta^{13}\text{C}$ 4.25 $\delta^{15}\text{N}$	E) 3.32 $\delta^{13}\text{C}$ 4.08 $\delta^{15}\text{N}$
Without priors					
Am x Co	<b>0.363</b>	<b>0.135</b>	<b>0.032</b>	<b>0.119</b>	0.944
Am x Ca	<b>0.021</b>	0.864	<b>0.089</b>	0.853	<b>0.328</b>
Am x Is	<b>0.336</b>	<b>0.131</b>	<b>0.034</b>	0.645	0.892
Am x My	<b>0.262</b>	<b>0.188</b>	<b>0.016</b>	0.767	<b>0.162</b>
Co x Ca	<b>0.000</b>	<b>0.024</b>	0.964	<b>0.070</b>	<b>0.490</b>
Co x Is	0.989	0.996	0.995	0.652	0.960
Co x My	0.918	0.975	0.974	<b>0.056</b>	<b>0.359</b>
Ca x Is	<b>0.000</b>	<b>0.026</b>	0.966	<b>0.453</b>	0.670
Ca x My	<b>0.000</b>	<b>0.057</b>	0.896	0.979	0.936
Is x My	0.956	0.966	0.972	<b>0.406</b>	<b>0.531</b>
With priors					
Am x Co	0.681	0.619	<b>0.384</b>	<b>0.062</b>	0.898
Am x Ca	<b>0.006</b>	<b>0.505</b>	<b>0.469</b>	<b>0.315</b>	<b>0.194</b>
Am x Is	<b>0.180</b>	<b>0.122</b>	<b>0.024</b>	0.847	<b>0.569</b>
Am x My	<b>0.091</b>	<b>0.157</b>	<b>0.059</b>	<b>0.222</b>	<b>0.083</b>
Co x Ca	<b>0.000</b>	<b>0.051</b>	0.953	<b>0.001</b>	<b>0.166</b>
Co x Is	<b>0.425</b>	<b>0.421</b>	<b>0.324</b>	<b>0.231</b>	<b>0.465</b>
Co x My	<b>0.200</b>	<b>0.482</b>	<b>0.500</b>	<b>0.000</b>	<b>0.061</b>
Ca x Is	<b>0.000</b>	<b>0.000</b>	<b>0.534</b>	<b>0.438</b>	0.872
Ca x My	<b>0.000</b>	<b>0.000</b>	0.676	0.912	0.922
Is x My	0.667	0.941	0.952	<b>0.337</b>	0.697

Fig. S1. Relationship between isotopic signatures in *H. guttulatus* breeders (dorsal fin) at the end of the breeding season and the corresponding discrimination factors. Diets A (*Artemia*), AM (*Artemia* + Mysidacea) and M (Mysidacea) (see Materials & Methods for further details). Legend: W and R indicate wild and rearing origin, respectively.

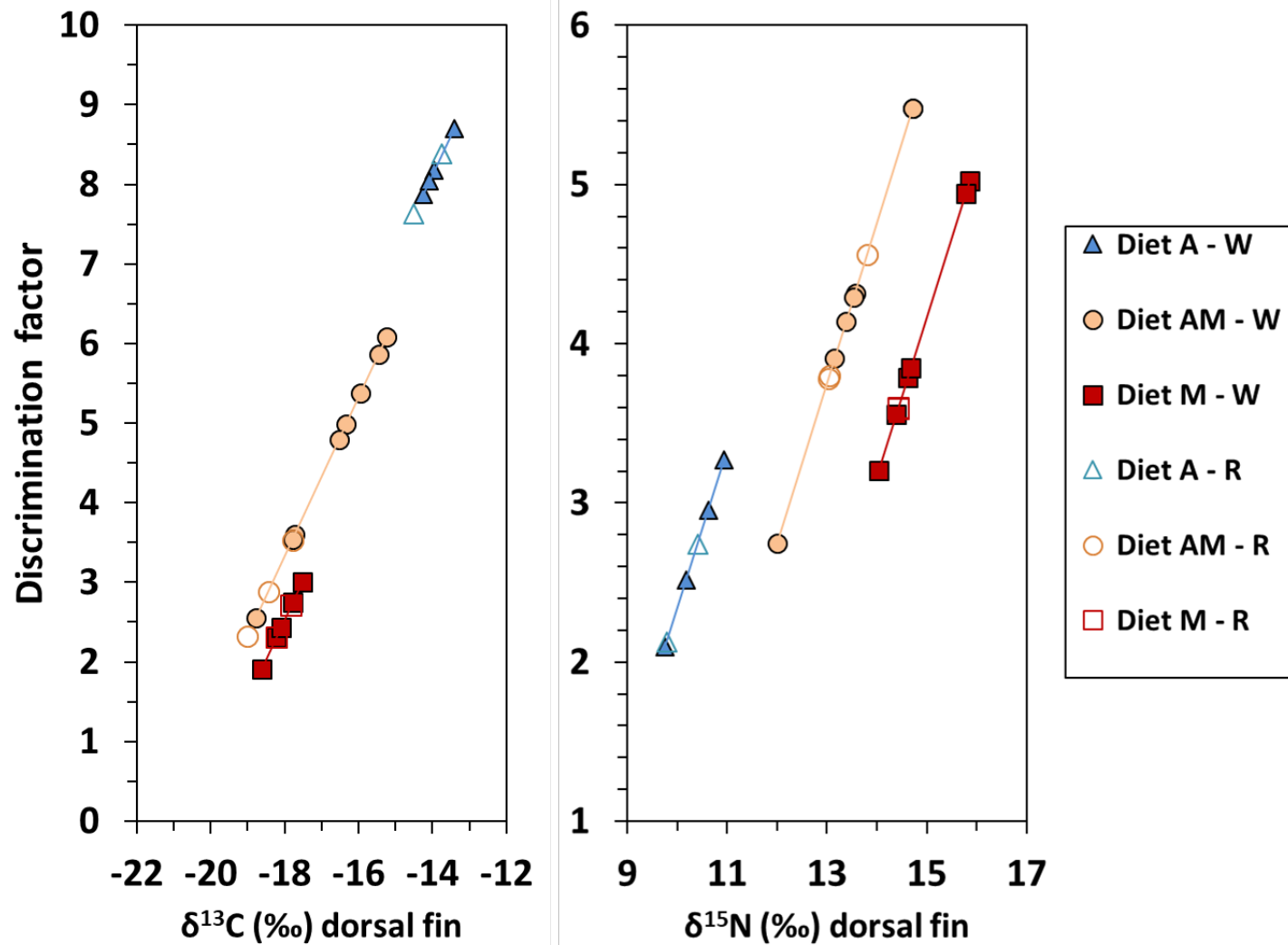


Fig. S2. Average isotopic signatures (mean  $\pm$  sd) in experimental diets (A, AM and M) and marine potential prey sources used included in SIMMs. See Materials and Methods section for further details.

