Electronic supplement

Table S1. List of mesopelagic fishes identified in the current study of the Benguela Upwelling Systems and the subsystem in which they are present. Those species marked with an * were included in the multivariate analysis because they were caught in the adult stage at more than one station. Fishes reported that are not classified as mesopelagic are marked with an (nm). Total n describes the total number of the species that were found within the entire Benguela System. Stage represents the life stage of each fish which is either larva (L), juvenile (J), and adult (A).

Family	Species	Region	Total n	Stage
Albulidae	*Nemoossis belloci* (nm, bathydemersal)	nBUS	3	J
Bathylagidae	*Melanolagus bericoides**	sBUS, nBUS	42	A
	Melanolagus sp.	sBUS	1	A
Bathylaginae	Bathylaginae (unidentified)	nBUS	1	J
Blenniidae	Blenniidae (unidentified) (nm, benthic)	nBUS	1	J
Bothidae	Bothidae (unidentified) (nm, benthic)	sBUS, nBUS	3	L
Callionymidae	*Paracallionymus costatus* (nm, bathydemersal)	sBUS	60	J & A
Carangidae	*Chloroscombrus chrysurus* (nm, pelagic)	nBUS	1	L
	Seriola lalandi (nm, benthopelagic)	sBUS	1	J
	Trachurus trachurus capensis (nm, benthopelagic)	sBUS, nBUS	50	J
	Trachurus sp. (nm, benthopelagic)	sBUS	1	J
Caristidae	*Platyberyx opalescens*	sBUS, nBUS	28	J
Clupeidae	*Sardinops sagax* (nm, neritic)	nBUS	42	L
Dalatiidae	*Isistius brazilians*	nBUS	1	A
Evermanellidae	*Evermannella balbo*	nBUS	1	A
Gobiidae	*Sufflogobius sp.* (nm, juveniles epipelagic and adults demersal)	nBUS	3	J
	Gobiidae (unidentified) (nm, juveniles epipelagic and adults demersal)	sBUS, nBUS	4	L & J
Gonostomatidae	*Bonapartia pedaliota*	nBUS	1	A
	*Cyclothone sp.**	sBUS, nBUS	177	A
	Gonostoma atlanticum	sBUS	1	A
	Gonostoma denudatum	sBUS, nBUS	1	A
Howellidae	*Howella sherborni**	sBUS, nBUS	10	A
Lestidiidae	*Macroparalepis brevis*		1	J
Lophiidae	Lophiidae (unidentified)	nBUS	1	L
Melamphaidae	*Melamphaes simus*	sBUS	1	A
	*Poromitra megalops**	sBUS, nBUS	4	A
	Scopelogadus beanii	nBUS	7	A
	Melamphaidae (unidentified)*	nBUS	3	A
	Scopelogadus m. mizolepis	nBUS	10	A
	Scopelogadus sp.	nBUS	2	A
Melanocetidae	*Melanocetus johonsonii**	nBUS	4	A
Melanonidae	*Melanonus sp.*	nBUS	1	A

Merlucciidae	*Lyconodes argenteus*	nBUS	1	A
	Melanonus sp.	nBUS	1	A
	Merluccius paradoxus	nBUS	4	L
	Merluccius sp.	sBUS	1	L
Microstominae	cf Microstominae	nBUS	1	J
Myctophidae	*Benthosema suborbitale*	nBUS	2	A
	Ceratoscopelus warmingi	nBUS	1	A
	*Diaphus diadematus**	sBUS, nBUS	10	A
	*Diaphus dumerilii**	nBUS	66	A
	Diaphus garmani	sBUS	1	A
	*Diaphus hudsoni**	sBUS, nBUS	293	J & A
	Diaphus luetkeni	sBUS	1	A
	*Diaphus meadi**	sBUS, nBUS	100	J & A
	Diaphus mollis	sBUS	1	A
	*Diaphus ostenfeldi**	sBUS, nBUS	4	A
	*Diaphus sp.**	sBUS, nBUS	10	J & A
	*Diaphus taaningi**	nBUS	29	A
	*Diogenichthys atlanticus**	sBUS, nBUS	3	A
	*Hygophum hanseni**	nBUS	36	A
	Hygophum proximum	sBUS, nBUS	7	A
	Hygophum sp.	nBUS	8	A
	Lampadena pontifex	nBUS	3	A
	*Lampanyctodes hectoris**	sBUS, nBUS	51	J & A
	Lampanyctus alatus	nBUS	1	A
	*Lampanyctus australis**	sBUS, nBUS	138	A
	*Lampanyctus intricarius**	sBUS, nBUS	10	J & A
	*Lampanyctus lepidolychnus**	sBUS	6	A
	*Lampanyctus photonotus**	sBUS, nBUS	3	A
	*Lampanyctus pusillus**	sBUS, nBUS	5	A
	*Lampanyctus sp.**	sBUS, nBUS	31	L, J, & A
	*Lampichthys procerus**	sBUS, nBUS	1	A
	Lepidophanes guetheri	nBUS	5	A
	*Lobianchia dofleini**	sBUS, nBUS	33	A
	*Lobianchia gemellarii**	sBUS	2	A
	*Metelectrona ventralis**	sBUS, nBUS	13	A
	Myctophum sp.		4	J
	Myctophidae (unidentified)*	sBUS	23	J & A
	Nannobachium achirus	nBUS	1	A
	*Nannobrachium atrum**	nBUS	2	A
	*Notolychnus valdiviae**	sBUS	2	A
	*Notoscopelus resplendens**	nBUS	15	A
	Protomyctophum sp.	sBUS, nBUS	16	J
	*Scopelopsis multipunctatus**	nBUS	11	A
	*Symbolophorus barnardi**	sBUS, nBUS	57	A
	*Symbolophorus boops**	sBUS, nBUS	150	J & A

Nomeidae	*Cubiceps sp.* (nm, pelagic)	nBUS	4	L
Notosudidae	*Scopelosaurus meadi*	sBUS	1	J
Paralepididae	Paralepididae (unidentified)	sBUS, nBUS	14	L, J, & A
Phosichthyidae	*Phosichthys argenteus**	sBUS, nBUS	7	A
	*Vinciguerria attenuata**	sBUS, nBUS	37	A
	Vinciguerria poweriae	sBUS	1	A
	*Vinciguerria sp.**	nBUS	3	A
Platytroctidae	*Sagamichthys schnakenbecki*	nBUS	1	A
	Persparsia kopua	sBUS	1	A
Scomberesocidae	*Scomberesox s. scomberoides* (nm, epipelagic)	sBUS	1	J
	Scomberesox sp. (nm, epipelagic)	nBUS	7	A
Scopelarchidae	*Scopelarchus analis**	nBUS	2	A
Sternoptychidae	*Argyropelecus aculeatus**	nBUS	5	A
	Argyropelecus affinis	nBUS (2)	2	A
	Argyropelecus gigas	nBUS (1)	1	A
	*Argyropelecus hemigymnus**	sBUS, nBUS	32	A
	Argyropelecus sladeni	nBUS (2)	2	A
	*Maurolicus walvisensis**	sBUS, nBUS	592	A
	*Polyipnus polli**	nBUS	2	A
	*Valencienellus tripunctulatus**	sBUS, nBUS	24	J & A
Stomiidae	*Astronesthes caulophorus**	nBUS	2	A
	*Astronesthes sp.**	nBUS	2	A
	*Chauliodus schmidti**	nBUS	5	A
	*Chauliodus sloani**	sBUS, nBUS	14	A
	*Chauliodus sp.**	sBUS, nBUS	2	A
	*Flagellostomias boureei**	nBUS	2	A
	Idiacanthus atlanticum	sBUS	1	A
	*Leptostomias gracilis**	nBUS	4	A
	Leptostomias haplocaulus	nBUS	1	A
	*Melanostomias niger**	sBUS, nBUS	3	A
	Melanostomias sp.	nBUS	1	A
	*Stomias boa**	sBUS, nBUS	38	A
	Stomias longibarbatus	sBUS	1	A
	Stomias sp.	nBUS	1	A
Sygnathidae	Sygnathidae (unidentified) (nm, benthic)	sBUS	1	A
Trachichthyidae	*Hoplostethus melanopus**	nBUS	12	A
Trichiuridae	Trichiuridae (Unidentified)	sBUS	13	J

Table S2. Abundance, Shannon-Wiener diversity (*H'*), and Pilou evenness (*J*) at each station of the southern (St.Nr. 8-26) and northern (St.Nr.31-53) subsystems of the Benguela

Subsystem	Station	Abundance (Indivs. 10 m^{-2})	Diversity (*H'*)	Evenness (*J*)
sBUS	8	20.80	0.35	0.29
	15	4.00	1.44	0.45
	16	10.58	1.63	0.20
	18-6	4.10	1.89	0.37
	18-8	4.86	1.71	0.33
	18-9-1	8.97	2.62	0.29
	18-9-2	1.11	1.31	0.27
	22	10.67	0.37	0.10
	24	0.32	0.00	0.00
	25	13.00	2.19	0.27
	26	18.01	1.83	0.27
nBUS	31	0.00	0.00	0.00
	32	0.64	0.00	0.00
	34	9.38	2.50	0.27
	35	30.04	1.84	0.26
	38	9.50	2.98	0.28
	39-1	14.30	2.34	0.24
	39-3	13.72	2.44	0.23
	39-4	12.46	1.50	0.22
	45	9.90	1.51	0.37
	46	17.02	2.53	0.27
	49	10.18	1.92	0.29
	52	4.54	1.92	0.35
	53	0.08	0.00	0.00

Table S3. SIMPER analysis of mesopelagic fish communities discriminating between station groups determined by cluster analysis. Only species contributing ≥5% are presented. Remaining species: Other.

Contrast	Species	Single contribution	Cummulative contribution
nBUS shelf vs. sBUS shelf			
	Diaphus dumerilii	0.448	0.448
	Maurolicus walvisensis	0.433	0.881
	Lampanyctodes hectoris	0.065	0.946
	Other (3 species)	0.054	1.000
nBUS shelf vs. sBUS offshore2			
	Diaphus dumerilii	0.259	0.259
	Cyclothone spp.	0.115	0.374
	Diaphus meadi	0.104	0.478
	Argyropelecus hemigymnus	0.080	0.558
	Other (42 species)	0.442	1.000
nBUS shelf vs. nBUS offshore1			
	Diaphus dumerilii	0.203	0.203
	Diaphus hudsoni	0.120	0.323
	Lampanyctus australis	0.115	0.439
	Symbolophorus barnardi	0.092	0.530
	Diaphus taaningi	0.090	0.620
	Stomias boa	0.070	0.690
	Melanolagus bericoides	0.058	0.748
	Others (18 species)	0.253	1.000
nBUS shelf vs. nBUS offshore3			
	Diaphus dumerilii	0.243	0.243
	Symbolophorus boops	0.102	0.345
	Lampanyctus australis	0.102	0.447
	Maurolicus walvisensis	0.092	0.539
	Stomias boa	0.066	0.605
	Diaphus hudsoni	0.065	0.670
	Others (23 species)	0.330	1.000
nBUS shelf vs. nBUS offshore2			
	Diaphus dumerilii	0.208	0.208
	Diaphus hudsoni	0.135	0.343
	Lampanyctus australis	0.058	0.401
	Other (36 species)	0.599	1.000
nBUS shelf vs. sBUS offshore1			
	Diaphus dumerilii	0.299	0.299
	Hygophum hanseni	0.239	0.538
	Diaphus meadi	0.103	0.641
	Chauliodus sloani	0.060	0.701
	Diaphus hudsoni	0.060	0.761
	Diogenichthys atlanticus	0.060	0.821

Lobianchia gemellarii	0.059	0.880
Notolychnus valdiviae	0.060	0.940
Symbolophorus barnardi	0.060	1.000
sBUS shelf vs. sBUS offshore2		
Maurolicus walvisensis	0.233	0.233
Cyclothone spp.	0.110	0.343
Diaphus meadi	0.110	0.453
Argyropelecus hemigymnus	0.078	0.531
Valenciennellus tripunctulatus	0.052	0.583
Diaphus hudsoni	0.050	0.633
Other (29 species)	0.367	1.000
sBUS shelf vs. nBUS offshore1		
Maurolicus walvisensis	0.235	0.235
Diaphus hudsoni	0.111	0.345
Lampanyctus australis	0.089	0.434
Diaphus dumerilii	0.084	0.518
Symbolophorus barnardi	0.082	0.600
Diaphus taaningi	0.065	0.665
Stomias boa	0.053	0.718
Other (21 speies)	0.282	1.000
sBUS shelf vs. nBUS offshore3		
Maurolicus walvisensis	0.166	0.166
Symbolophorus boops	0.120	0.286
Lampanyctus australis	0.118	0.404
Stomias boa	0.077	0.481
Diaphus hudsoni	0.076	0.557
Other (26 species)	0.443	1.000
sBUS shelf vs. nBUS offshore2		
Maurolicus walvisensis	0.188	0.188
Diaphus hudsoni	0.137	0.324
Lampanyctus australis	0.058	0.382
Other (38 species)	0.618	1.000
sBUS shelf vs. sBUS offshore1		
Maurolicus walvisensis	0.270	0.270
Hygophum hanseni	0.223	0.493
Diaphus meadi	0.097	0.589
Chauliodus sloani	0.056	0.645
Diaphus hudsoni	0.056	0.701
Diogenichthys atlanticus	0.056	0.757
Lobianchia gemellarii	0.056	0.812
Notolychnus valdiviae	0.056	0.868
Symbolophorus barnardi	0.056	0.924
Other (4 species)	0.076	1.000
sBUS offshore2 vs. nBUS offshore1		
Cyclothone spp.	0.088	0.088
Diaphus meadi	0.078	0.166

Argyropelecus hemigymnus	0.067	0.233
Diaphus dumerilii	0.065	0.298
Lampanyctus australis	0.062	0.360
Symbolophorus barnardi	0.060	0.420
Argyropelecus hemigymnus	0.055	0.475
Diaphus hudsoni	0.051	0.526
Other (37 species)	0.474	1.000
sBUS offshore2 vs. nBUS offshore3		
Symbolophorus boops	0.083	0.083
Cyclothone spp.	0.080	0.163
Lampanyctus australis	0.081	0.244
Diaphus meadi	0.074	0.318
Maurolicus walvisensis	0.073	0.391
Argyropelecus hemigymnus	0.055	0.446
Other (39 species)	0.554	1.000
sBUS offshore2 vs. nBUS offshore 2		
Diaphus hudsoni	0.095	0.095
Cyclothone spp.	0.068	0.163
Argyropelecus hemigymnus	0.064	0.227
Other (46 species)	0.773	1.000
sBUS offshore2 vs. sBUS offshore1		
Hygophum hanseni	0.172	0.172
Cyclothone spp.	0.120	0.292
Argyropelecus hemigymnus	0.081	0.373
Valenciennellus tripunctulatus	0.051	0.424
Diogenichthys atlanticus	0.050	0.474
Lobianchia gemellarii	0.050	0.524
Other (29 species)	0.476	1.000
nBUS offshore1 vs. nBUS offshore3		
Maurolicus walvisensis	0.093	0.093
Symbolophorus barnardi	0.084	0.178
Symbolophorus boops	0.084	0.261
Diaphus dumerilii	0.084	0.345
Diaphus taaningi	0.064	0.409
Other (35 species)	0.591	1.000
nBUS offshore1 vs. nBUS offshore2		
Diaphus dumerilii	0.068	0.068
Diaphus taaningi	0.056	0.124
Symbolophorus barnardi	0.056	0.180
Diaphus hudsoni	0.051	0.231
Other (43 species)	0.769	1.000
nBUS offshore1 vs. sBUS offshore1		
Hygophum hanseni	0.183	0.183
Lampanyctus australis	0.084	0.266
Diaphus meadi	0.079	0.345
Diaphus dumerilii	0.078	0.423

	Diaphus taaningi	0.060	0.483
	Diaphus hudsoni	0.059	0.542
	Stomias boa	0.050	0.592
	Other (23 species)	0.408	1.000
nBUS offshore3 vs. nBUS offshore2			
	Symbolophorus boops	0.085	0.085
	Diaphus hudsoni	0.082	0.166
	Maurolicus walvisensis	0.066	0.232
	Other (41 species)	0.768	1.000
nBUS offshore3 vs. sBUS offshore1			
	Hygophum hanseni	0.163	0.163
	Symbolophorus boops	0.087	0.250
	Lampanyctus australis	0.086	0.336
	Maurolicus walvisensis	0.077	0.413
	Diaphus meadi	0.062	0.475
	Stomias boa	0.055	0.530
	Other (26 species)	0.470	1.000
sBUS offshore1 vs. nBUS offshore2			
	Hygophum hanseni	0.156	0.156
	Diaphus hudsoni	0.085	0.241
	Lampanyctus australis	0.052	0.293
	Other (40 species)	0.707	1.000

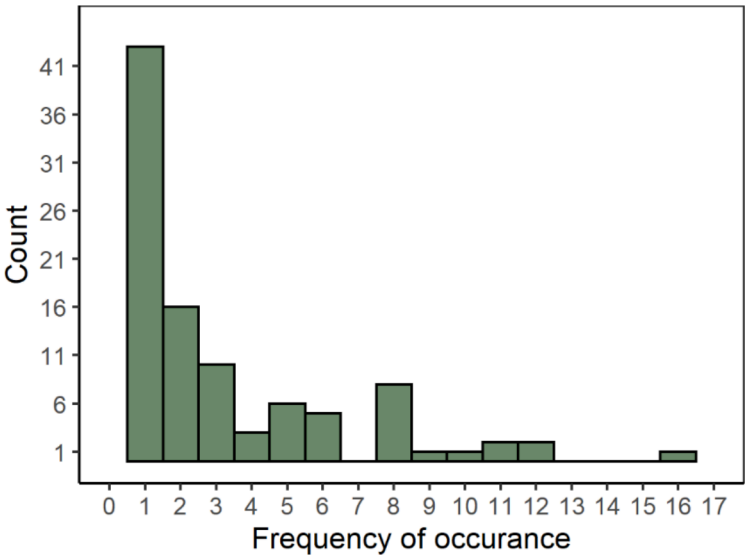

Figure S1. The frequency of occurrence of hauls with a certain number of species. 43 species only occurred at one station: species of which adults appeared at two or more stations were included in multivariate statistics.

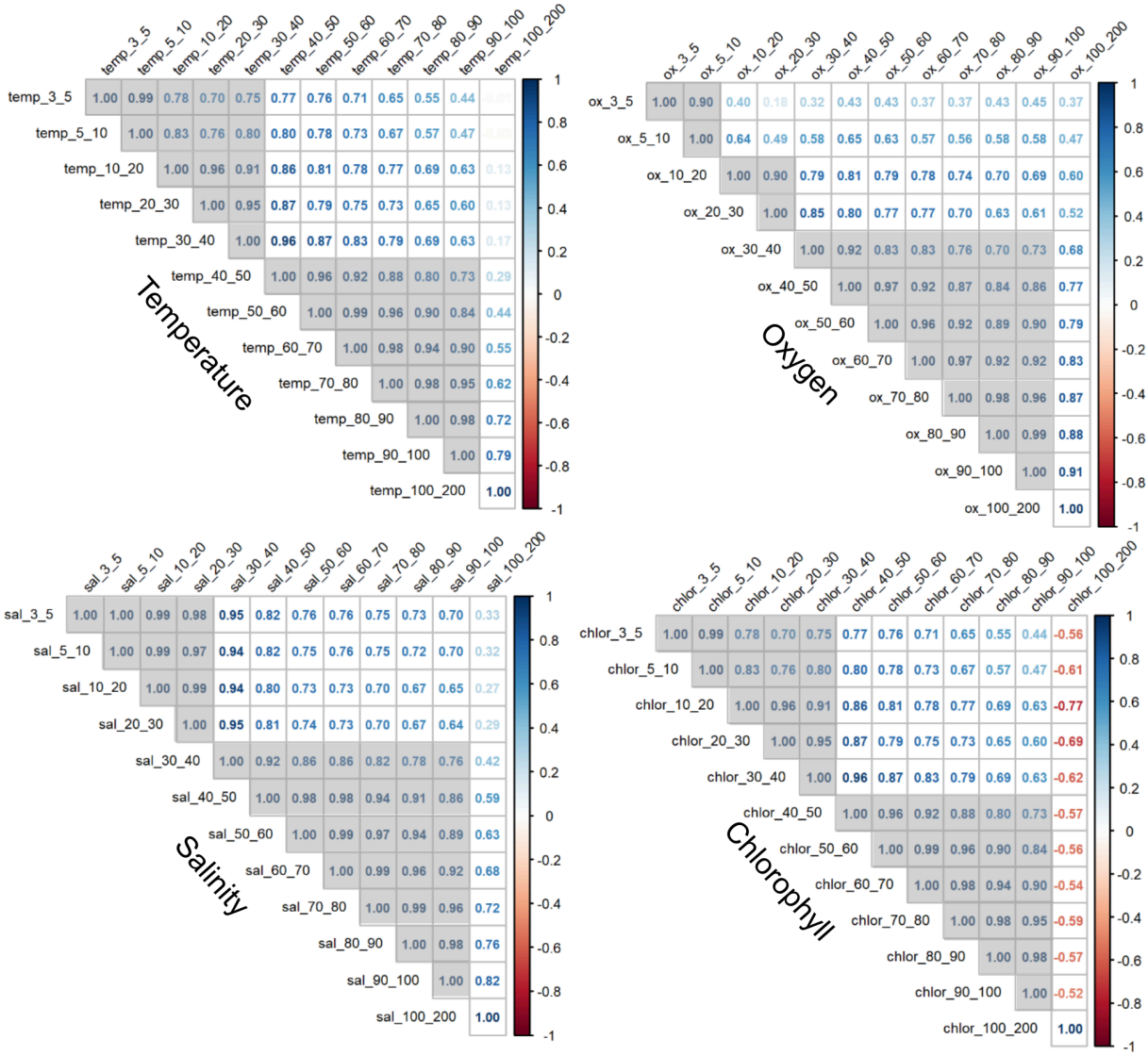

Figure S2. Correlation plots of salinity, temperature, oxygen, and chlorophyll concentration at each depth interval and groups (shaded gray) that were defined for statistical analysis in forward selection procedure in order to avoid statistical errors of overparameterization and multicollinearity in the model.