

1 **Supplementary material**

2 **Appendix S1.** Output of the distance based multivariate analysis (DISTLM) performed to test the
3 statistical significance of the regression of γ - versus α - and β -diversity when the effect of water
4 depth, treated as a covariate, is excluded from the model. In the regression analyses, all tests were
5 based on Euclidean distances calculated among observations from untransformed data. The
6 following abbreviations are used: degrees of freedom (df), sum of squares (SS), and mean squares
7 (MS).

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	df	SS	MS
Covariables	1	254.6	
Regression	2	1770.0	885.0
Residual	14	1035.7	74.0
Total	17	3060.3	

	pseudo-F	11.9634
	permutation P	0.0007
	Proportion of variation explained	0.5784

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14 **Appendix S2.** List of the exclusive species found in each of the habitats investigated: A. North-
 15 Western Mediterranean; B. Central Mediterranean; and C. Eastern Mediterranean.
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A North Western Mediterranean Sea

canyon		open slope	
Species	%	Species	%
<i>Setosabatieria sp1</i>	1.1	<i>Richtersia sp1</i>	1.0
<i>Acantholaimus sp3</i>	1.0	<i>Halichoanolaimus sp2</i>	0.7
<i>Platycoma sp1</i>	1.0	<i>Litinium sp1</i>	0.7
<i>Daptonema sp2</i>	0.8	<i>Platycoma sp1</i>	0.7
<i>Acantholaimus sp8</i>	0.6	<i>Parodontophora sp2</i>	0.5
<i>Vasostoma sp1</i>	0.6	<i>Praecanthonchus sp1</i>	0.5
<i>Aegialoalaimus sp2</i>	0.5	<i>Syringolaimus sp3</i>	0.5
<i>Enoploides sp1</i>	0.5	<i>Amphimonhystrella sp2</i>	0.3
<i>Hopperia sp2</i>	0.5	<i>Diplopetloides sp2</i>	0.3
<i>Minolaimus sp1</i>	0.5	<i>Eleutherolaimus sp1</i>	0.3
<i>Adoncholaimus sp1</i>	0.3	<i>Micoletzkyia sp2</i>	0.3
<i>Aegialoalaimus sp3</i>	0.3	<i>Minolaimus sp1</i>	0.3
<i>Bathyeurystomina sp2</i>	0.3	<i>Paramonhystera sp1</i>	0.3
<i>Choanolaimus sp1</i>	0.3	<i>Pierrickia sp3</i>	0.3
<i>Disconema sp1</i>	0.3	<i>Tarvaia sp1</i>	0.3
<i>Dolicholaimus sp 1</i>	0.3	<i>Theristus sp4</i>	0.3
<i>Gammanema sp1</i>	0.3	<i>Acantholaimus sp7</i>	0.2
<i>Odontophora sp 1</i>	0.3	<i>Anticyathus sp1</i>	0.2
<i>Oxystomina sp2</i>	0.3	<i>Antomicron sp1</i>	0.2
<i>Prochaetosoma sp1</i>	0.3	<i>Chromadorina sp1</i>	0.2
<i>Terschellingia sp1</i>	0.3	<i>Daptonema sp4</i>	0.2
<i>Acantholaimus sp9</i>	0.2	<i>Desmodora sp3</i>	0.2
<i>Desmoscolex sp2</i>	0.2	<i>Desmoscolex sp3</i>	0.2
<i>Halalaimus sp3</i>	0.2	<i>Halalaimus sp2</i>	0.2
<i>Metalinhomoeus sp1</i>	0.2	<i>Hopperia sp3</i>	0.2
<i>Micoletzkyia sp1</i>	0.2	<i>Metasphaerolaimus sp1</i>	0.2
<i>Microlaimus sp1</i>	0.2	<i>Pareudesmoscolex sp1</i>	0.2
<i>Monhystera sp1</i>	0.2	<i>Sabatieria sp 4</i>	0.2
<i>Paradesmodora sp1</i>	0.2	<i>Tubolaimoides sp1</i>	0.2
<i>Paramonhystera sp2</i>	0.2		
<i>Paraspherolaimus sp1</i>	0.2		
<i>Phanoderma sp1</i>	0.2		
<i>Promonhystera sp1</i>	0.2		
<i>Pseudolella sp1</i>	0.2		
<i>Rhabdocoma sp1</i>	0.2		
<i>Sigmophorenema sp1</i>	0.2		
<i>Synonchiella sp1</i>	0.2		

B Central Mediterranean Sea

Canyon		open slope		basin		coral rubble	
Species	%	Species	%	Species	%	Species	%
<i>Adoncholaimus sp2</i>	2.5	<i>Sphaerolaimus sp6</i>	1.8	<i>Paracomesoma sp1</i>	4.9	<i>Richtersia sp 11</i>	6.8
<i>Aegialoalaimus sp4</i>	1.7	<i>Pareudesmoscolex sp 8</i>	1.2	<i>Comesoma sp1</i>	3.6	<i>Desmoscolex sp 7</i>	2.2
<i>Halichoanolaimus sp4</i>	1.4	<i>Terschellingia sp4</i>	1.2	<i>Neotonchus sp1</i>	2.4	<i>Desmoscolex sp 8</i>	1.9
<i>Areaolaimus sp1</i>	0.8	<i>Diplopetoides sp2</i>	0.9	<i>Vasostoma sp2</i>	2.0	<i>Quadricoma sp1</i>	1.7
<i>Adoncholaimus sp1</i>	0.6	<i>Bathyeurystomina sp4</i>	0.6	<i>Doliolaimus sp1</i>	1.6	<i>Richtersia sp 4</i>	1.4
<i>Ammotheristus sp1</i>	0.6	<i>Leptolaimus sp2</i>	0.6	<i>Molgolaimus sp2</i>	1.6	<i>Desmolorenzenia sp1</i>	1.2
<i>Oxystomina sp2</i>	0.6	<i>Paramesacanthion sp1</i>	0.6	<i>Gammanema sp1</i>	1.2	<i>Desmoscolex sp 6</i>	1.2
<i>Disconema sp2</i>	0.4	<i>Rhabdodemia sp2</i>	0.6	<i>Spirinia sp1</i>	1.2	<i>Hapalomus sp1</i>	1.2
<i>Elzalia sp3</i>	0.4	<i>Acantholaimus sp3</i>	0.3	<i>Halalaimus sp2</i>	0.8	<i>Bathyepsilonema sp 2</i>	1.0
<i>Gerlachius sp1</i>	0.4	<i>Bathyeurystomina sp2</i>	0.3	<i>Chromadorina sp1</i>	0.4	<i>Eleutherolaimus sp1</i>	1.0
<i>Paracyatholaimus sp1</i>	0.4	<i>Bolbolaimus sp2</i>	0.3	<i>Daptonema sp2</i>	0.4	<i>Pareudesmoscolex sp 6</i>	1.0
<i>Setosabatieria sp1</i>	0.4	<i>Campylaimus sp1</i>	0.3	<i>Disconema sp1</i>	0.4	<i>Richtersia sp2</i>	1.0
<i>Theristus sp5</i>	0.4	<i>Desmodora sp 5</i>	0.3	<i>Dolicholaimus sp 1</i>	0.4	<i>Acantholaimus sp3</i>	0.7
<i>Aegialoalaimus sp2</i>	0.2	<i>Desmodora sp1</i>	0.3	<i>Enoplolaimus sp1</i>	0.4	<i>Cyartonema sp1</i>	0.7
<i>Antomicron sp2</i>	0.2	<i>Desmoscolex sp4</i>	0.3	<i>Gnomoxyala sp1</i>	0.4	<i>Pareudesmoscolex sp 5</i>	0.7
<i>Bathyeurystomina sp3</i>	0.2	<i>Dichromadora sp1</i>	0.3	<i>Laimella sp1</i>	0.4	<i>Desmodora sp 7</i>	0.5
<i>Cervonema sp1</i>	0.2	<i>Leptolaimoides sp2</i>	0.3	<i>Micoletzkyia sp1</i>	0.4	<i>Desmoscolex sp 1</i>	0.5
<i>Dolicholaimus sp 2</i>	0.2	<i>Leptolaimus sp3</i>	0.3	<i>Minolaimus sp1</i>	0.4	<i>Desmoscolex sp 9</i>	0.5
<i>Halalaimus sp8</i>	0.2	<i>Linhystera sp3</i>	0.3	<i>Nemanema sp1</i>	0.4	<i>Endeolophos sp1</i>	0.5
<i>Halalaimus sp5</i>	0.2	<i>Molgolaimus sp1</i>	0.3	<i>Paramonohystera sp1</i>	0.4	<i>Pareudesmoscolex sp 7</i>	0.5
<i>Innocuonema sp2</i>	0.2	<i>Pandolaimus sp1</i>	0.3			<i>Sphaerolaimus sp5</i>	0.5
<i>Metadesmolaimus sp2</i>	0.2	<i>Parachromadorita sp1</i>	0.3			<i>Amphimonhystrella sp3</i>	0.2
<i>Metalinhomoeus sp2</i>	0.2	<i>Platycomopsis sp1</i>	0.3			<i>Anoplostoma sp1</i>	0.2
<i>Odontophora sp 1</i>	0.2	<i>Theristus sp1</i>	0.3			<i>Bathyepsilonema sp 1</i>	0.2
<i>Paramicrolaimus sp1</i>	0.2	<i>Tricoma sp 4</i>	0.3			<i>Chaetonema sp1</i>	0.2
<i>Paramicrolaimus sp2</i>	0.2					<i>Desmogerlachia sp1</i>	0.2
<i>Paraspherolaimus sp1</i>	0.2					<i>Halichoanolaimus sp3</i>	0.2
<i>Polysigma sp3</i>	0.2					<i>Metasphaerolaimus sp1</i>	0.2
<i>Pselionema sp4</i>	0.2					<i>Metasphaerolaimus sp2</i>	0.2
<i>Pselionema sp5</i>	0.2					<i>Monhystera sp1</i>	0.2
<i>Southerniella sp2</i>	0.2					<i>Onchium sp1</i>	0.2
<i>Terschellingia sp2</i>	0.2					<i>Rhips sp 1</i>	0.2
<i>Terschellingia sp3</i>	0.2					<i>Richtersia sp 8</i>	0.2
<i>Thalassoalaimus sp3</i>	0.2					<i>Stygodesmodora sp1</i>	0.2
						<i>Thalassironus sp1</i>	0.2
						<i>Trileptium sp1</i>	0.2
						<i>Trissonchulus sp1</i>	0.2
						<i>Tubolaimoides sp1</i>	0.2
						<i>Xenolaimus sp 1</i>	0.2

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C Eastern Mediterranean Sea

canyon		open slope		bathyal plain	
Species	%	Species	%	Species	%
<i>Pierrickia sp3</i>	14.5	<i>Pierrickia sp4</i>	9.9	<i>Wieseria sp1</i>	8.1
<i>Metalinhomoeus sp1</i>	3.2	<i>Metacycolaimus sp1</i>	3.1	<i>Chromadorita sp1</i>	5.9
<i>Minolaimus sp1</i>	3.2	<i>Sabatieria sp 5</i>	3.1	<i>Terschellingia sp1</i>	3.7
<i>Linhystera sp1</i>	2.4	<i>Theristus sp2</i>	3.1	<i>Viscosia sp1</i>	3.4
<i>Amphimonhystrella sp3</i>	1.6	<i>Pselionema sp2</i>	2.3	<i>Daptonema sp1</i>	2.8
<i>Halalaimus sp2</i>	1.6	<i>Aegialoalaimus sp1</i>	1.5	<i>Nemanema sp1</i>	2.8
<i>Litinium sp1</i>	1.6	<i>Desmoscolex sp1</i>	1.5	<i>Metadesmolaimus sp1</i>	2.3
<i>Acantholaimus sp3</i>	0.8	<i>Diplopeltoides sp2</i>	1.5	<i>Paramonohystera sp1</i>	2.3
<i>Amphimonhystrella sp2</i>	0.8	<i>Halalaimus sp11</i>	1.5	<i>Scaptrella sp1</i>	2.3
<i>Campylaimus sp3</i>	0.8	<i>Microlaimus sp2</i>	1.5	<i>Paralinhomoeus sp1</i>	2.0
<i>Cervonema sp3</i>	0.8	<i>Richtersia sp1</i>	1.5	<i>Microlaimus sp1</i>	2.0
<i>Chaetosoma sp1</i>	0.8	<i>Sphaerolaimus sp2</i>	1.5	<i>Neochromadora sp1</i>	1.8
<i>Cyartonema sp3</i>	0.8	<i>Campylaimus sp1</i>	0.8	<i>Acantholaimus sp1</i>	1.4
<i>Deontolaimus sp1</i>	0.8	<i>Chromadorella sp2</i>	0.8	<i>Astomonema sp1</i>	1.4
<i>Halalaimus sp4</i>	0.8	<i>Chromadorina sp2</i>	0.8	<i>Cobbia sp 1</i>	1.4
<i>Halichoanolaimus sp4</i>	0.8	<i>Crenopharynx sp1</i>	0.8	<i>Comesoma sp1</i>	1.4
<i>Leptolaimoides sp4</i>	0.8	<i>Daptonema sp3</i>	0.8	<i>Cyartonema sp1</i>	1.4
<i>Metadasynemoides sp1</i>	0.8	<i>Disconema sp2</i>	0.8	<i>Cytolaimium sp1</i>	1.4
<i>Minolaimus sp2</i>	0.8	<i>Draconema sp2</i>	0.8	<i>Diplopeltoides sp1</i>	1.4
<i>Paralongicyatholaimus sp1</i>	0.8	<i>Elzalia sp2</i>	0.8	<i>Diplopeltula sp1</i>	1.4
<i>Sabatieria sp1</i>	0.8	<i>Elzalia sp3</i>	0.8	<i>Dorylaimopsis sp1</i>	1.4
		<i>Halalaimus sp8</i>	0.8	<i>Graphonema sp1</i>	1.4
		<i>Halalaimus sp6</i>	0.8	<i>Karkinochromadora</i>	1.4
		<i>Sabatieria sp 4</i>	0.8	<i>Laimella sp1</i>	1.4
		<i>Southerniella sp3</i>	0.8	<i>Paramicrolaimus sp1</i>	1.4
		<i>Spilophorella sp3</i>	0.8	<i>Setosabatieria sp1</i>	1.4
		<i>Trissonchulus sp2</i>	0.8	<i>Southerniella sp1</i>	1.4
				<i>Amphimonhystera sp1</i>	0.9
				<i>Hypodontolaimus sp1</i>	0.9
				<i>Leptolaimoides sp1</i>	0.9
				<i>Pselionema sp1</i>	0.9
				<i>Quadricoma sp1</i>	0.9
				<i>Omicronema sp1</i>	0.6
				<i>Pierrickia sp1</i>	0.6
				<i>Promonhystera sp1</i>	0.6
				<i>Rhynchonema sp1</i>	0.6
				<i>Disconema sp1</i>	0.6
				<i>Molgolaimus sp1</i>	0.6
				<i>Pandolaimus sp1</i>	0.6
				<i>Pseudolella sp1</i>	0.6
				<i>Rhabdocoma sp1</i>	0.6

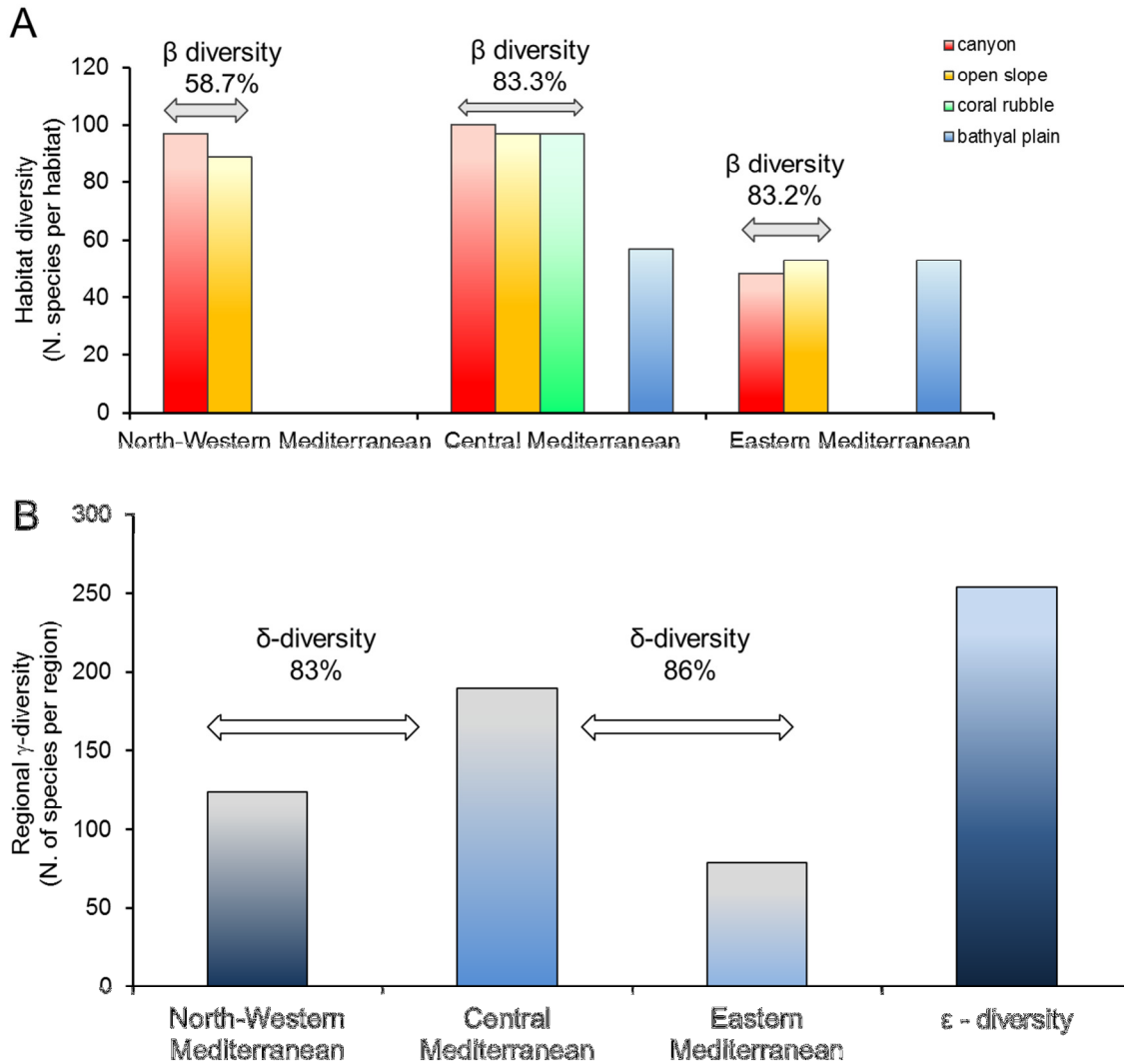
23 **Appendix S3.** Concentrations of organic matter compounds in the sediments of the investigated
 24 sites.

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Habitat	Site	Phytopigments $\mu\text{g g}^{-1}$	Proteins mg g^{-1}	Carbohydrates mg g^{-1}	Lipids mg g^{-1}	Biopolymeric C mg C g^{-1}
Lacaze-Duthiers canyon	LD2	9.390	2.630	3.510	0.830	3.320
Cap de Creus canyon	CC1	19.530	2.120	3.970	1.440	3.710
Northern open slope	NS2	4.310	2.320	4.890	0.140	3.200
Southern open slope	SS2	2.860	0.340	1.330	0.280	0.910
Canyon B	2	1.560	0.430	1.730	0.050	0.940
Canyon C	9	3.520	0.780	1.310	0.170	1.030
Northern Open slope	11	6.800	1.440	0.500	0.280	1.110
Southern Open slope	77	11.020	1.120	0.810	0.610	1.330
Bathyal plain	St 7	12.900	1.569	5.089	0.321	3.045
Coral rubble	19	3.940	0.430	0.380	0.360	0.630
Coral rubble	33	5.190	0.580	0.340	0.360	0.690
Samaria	11	0.690	0.200	1.380	0.100	0.720
Western open slope	12	0.500	0.270	2.480	0.190	1.270
Eastern open slope	5	0.690	0.300	1.420	0.420	1.030
Bathyal plain	A13	2.840	0.125	1.970	0.089	0.922
Bathyal plain	A20	23.200	0.112	2.090	0.092	0.966
Bathyal plain	A14	2.210	0.098	1.630	0.087	0.771
Bathyal plain	A17	1.760	0.067	2.400	0.061	1.042

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44 **Appendix S4.** Habitat diversity and average β -diversity among habitats in each investigated region
 45 (A) and γ -, ϵ -diversity and δ -diversity among regions (B), excluding the sampling sites located
 46 along the bathyal plains in the Central and Eastern Mediterranean.
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58 **Appendix S5.** Relative abundances of the different trophic groups of nematodes across the three
59 Mediterranean basins

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Trophic group	North Western	Central	Eastern
	Mediterranean	Mediterranean	Mediterranean
	%	%	%
Selective deposit feeders (1A)	33	40	41
Non-selective deposit feeders (1B)	26	20	24
Diatom feeders (2A)	25	23	25
Predators/omnivorous (2B)	16	17	10

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