Mediterranean demersal resources and ecosystems: 25 years of MEDITS trawl surveys
M.T. Spedicato, G. Tserpes, B. Mérigot and E. Massutí (eds)

Scientia Marina 83S1
December 2019, S1-S7, Barcelona (Spain)
ISSN-L: 0214-8358

Spatiotemporal abundance pattern of deep-water rose shrimp, *Parapenaeus longirostris*, and Norway lobster, *Nephrops norvegicus*, in European Mediterranean waters

Mario Sbrana, Walter Zupa, Alessandro Ligas, Francesca Capezzuto, Archontia Chatzispyrou, Maria Cristina Follesa, Vita Gancitano, Beatriz Guijarro, Igor Isajlovic, Angelique Jadaud, Olivera Markovic, Reno Micallef, Panagiota Peristeraki, Corrado Piccinetti, Ioannis Thasitis, Pierluigi Carbonara

Supplementary material

Table S1. – Stratified mean biomass and density indices (kg km^{-2} and N km^{-2} ± standard deviation, SD) per year (1994-2015) of deep-water rose shrimp (*P. longirostris*) in the investigated GSAs. Information on the results of Spearman Rho coefficient analysis is also shown.

GSA		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Spearman Rho
1	kg km^{-2}	0.0	0.2	0.8	1.9	2.1	1.4	1.6	1.9	1.7	0.5	1.3	0.6	1.0	0.6	0.7	4.9	1.5	2.2	3.6	1.6	1.1	1.1	Positive trend
	SD	0.0	0.1	0.2	1.0	1.0	0.6	0.5	1.0	0.3	0.1	0.5	0.4	0.6	0.2	0.3	1.2	1.0	0.8	1.2	0.5	0.3	0.3	
	N km^{-2}	1.1	38.0	98.7	265.6	386.3	169.0	194.3	204.9	219.1	46.1	137.6	59.4	110.7	73.4	83.4	527.2	321.0	257.4	575.5	11265.2	122.4	100.0	Positive trend
	SD	1.1	18.2	31.5	155.2	174.6	59.0	63.0	113.5	43.4	11.0	60.1	47.9	61.8	34.7	28.9	128.9	285.0	69.6	218.7	9029.4	37.4	25.4	
2	kg km^{-2}																		0.3	4.4	0.1	0.7	0.0	Negative trend
	SD																		0.3	4.2	0.1	0.7	0.0	
	N km^{-2}																		68.5	660.7	14.7	103.5	7.2	Negative trend
	SD																		68.5	585.7	14.7	103.5	7.2	
5	kg km^{-2}														0.2	0.4	0.5	0.6	0.1	0.5	0.8	0.4	0.2	NS
	SD														0.1	0.2	0.2	0.3	0.1	0.2	0.3	0.2	0.1	
	N km^{-2}														13.5	46.0	48.2	44.2	12.0	59.2	60.1	45.3	13.0	
	SD														8.0	24.4	19.8	19.3	4.8	20.0	23.3	16.8	7.1	NS
6	kg km^{-2}	0.1	0.2	0.3	0.0	0.2	0.2	1.0	1.5	0.2	0.1	0.6	0.2	0.2	0.2	0.1	0.6	0.9	0.4	0.7	0.9	2.1	1.0	Positive trend
	SD	0.0	0.1	0.2	0.0	0.1	0.1	0.4	0.7	0.1	0.0	0.3	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.2	0.3	0.5	0.2	
	N km^{-2}	12.5	22.2	36.3	2.4	17.5	29.6	128.9	113.7	19.4	4.9	52.1	16.5	11.7	16.6	11.4	58.5	72.9	44.1	285.1	73.2	211.5	159.2	Positive trend
	SD	5.9	10.6	27.0	1.7	9.9	16.5	67.9	46.4	7.3	1.8	26.1	6.2	3.8	10.2	6.0	19.6	27.2	13.3	239.1	22.7	61.0	24.6	
7	kg km^{-2}	0.6	0.3	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.4	0.7	0.6	0.3	1.0	1.4	Positive trend
	SD	0.5	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.4	0.3	0.1	0.3	0.3	
	N km^{-2}	56.4	31.5	0.3	0.2	0.5	17.9	5.6	4.0	1.9	5.2	20.8	5.8	5.1	2.8	2.6	7.6	41.2	46.9	44.6	25.4	86.1	353.3	Positive trend
	SD	40.8	29.9	0.2	0.2	0.3	14.7	2.2	2.5	0.9	2.4	9.5	4.1	3.0	2.3	1.9	4.4	10.5	25.5	24.2	6.8	25.5	88.8	
8	kg km^{-2}	0.3	0.3	0.3	0.2	0.2	1.1	1.9	1.1		0.8	0.9	1.1	1.2	0.7	1.0	0.5	2.4	1.8	2.5	2.5	2.1	2.3	Positive trend
	SD	0.1	0.2	0.1	0.1	0.1	0.4	0.4	0.3		0.5	0.3	0.4	0.3	0.2	0.3	0.1	0.9	0.4	0.3	0.9	0.4	0.4	
	N km^{-2}	21.4	21.1	21.3	19.8	25.3	114.6	124.1	81.7		49.7	86.1	97.5	84.5	45.1	83.8	39.9	226.8	145.2	239.1	289.9	246.2	254.7	Positive trend
	SD	8.6	11.7	7.9	11.3	9.9	39.1	29.4	23.5		31.4	33.2	41.5	33.6	12.9	25.6	8.2	70.9	29.4	40.6	105.9	46.0	48.2	
9	kg km^{-2}	0.6	0.7	0.5	0.8	2.5	4.3	2.8	1.4	1.6	1.5	2.7	3.4	3.8	1.8	3.6	3.4	10.5	7.8	7.5	8.1	5.1	10.7	Positive trend
	SD	0.1	0.1	0.1	0.1	0.3	0.5	0.4	0.2	0.2	0.2	0.3	0.5	0.6	0.2	0.4	0.4	1.0	0.8	0.7	0.8	0.6	1.3	
	N km^{-2}	41.8	56.3	42.2	129.0	352.8	397.7	250.4	126.0	188.3	196.1	252.4	368.8	283.6	173.1	382.2	407.5	1282.4	1014.4	779.9	973.7	754.6	1250.6	Positive trend
	SD	6.0	9.3	5.9	17.8	47.5	37.7	30.1	14.6	23.2	26.6	28.1	62.1	40.8	16.2	44.6	51.7	129.2	118.2	78.2	119.5	131.4	180.0	
10	kg km^{-2}	1.3	1.3	0.9	2.3	3.7	5.6	4.3	3.6	1.8	2.4	3.9	6.2	7.8	2.4	3.5	4.3	7.4	4.2	8.2	9.0	3.0	2.1	Positive trend
	SD	0.3	0.2	0.1	0.3	0.6	0.6	0.6	0.4	0.5	0.4	0.6	0.6	0.8	0.4	0.4	0.5	0.8	0.4	0.9	1.3	0.4	0.3	
	N km^{-2}	130.8	228.5	160.0	411.8	550.9	954.9	756.1	507.2	422.2	533.4	549.2	1121.2	970.0	266.6	474.9	529.4	889.6	653.3	1377.8	1314.1	401.4	253.4	Positive trend
	SD	26.2	44.6	37.4	65.8	90.3	116.0	109.5	68.1	154.1	80.6	88.6	126.1	116.8	36.8	69.2	71.2	95.4	74.8	177.9	202.6	53.6	38.8	
11	kg km^{-2}	0.5	0.5	0.5	1.6	4.5	7.1	3.2	2.1	1.1	4.0	2.6	1.0	2.3	0.8	0.4	2.2	3.1	3.8	3.1	1.6	1.3	1.1	NS
	SD	0.1	0.1	0.1	0.4	1.1	2.1	0.7	0.5	0.2	0.9	0.6	0.3	0.4	0.2	0.1	0.6	0.7	1.0	0.5	0.4	0.3	0.4	
	N km^{-2}	41.4	41.7	62.4	255.0	730.7	829.0	291.0	207.5	130.1	416.9	247.7	96.6	193.3	45.5	47.8	208.5	338.9	441.7	330.6	156.9	115.5	100.3	
	SD	10.4	11.2	16.6	65.9	175.3	246.2	73.4	51.0	27.3	86.5	62.8	25.5	39.3	13.1	10.8	58.5	87.9	117.6	56.2	41.6	26.9	34.0	NS

Table S1 (Cont.). – Stratified mean biomass and density indices (kg km^{-2} and N km^{-2} ± standard deviation, SD) per year (1994-2015) of deep-water rose shrimp (*P. longirostris*) in the investigated GSAs. Information on the results of Spearman Rho coefficient analysis is also shown.

GSA		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Spearman Rho
15	kg km^{-2}												7.5	16.6	12.1	22.3	23.1	14.2	17.1	17.1	15.4	11.7	4.1	NS
	SD												2.0	5.2	3.3	5.4	5.2	4.6	4.3	3.9	5.0	2.8	0.5	
	N km^{-2}												1029.8	3177.4	2186.8	4869.5	4295.0	2369.6	3405.7	3187.5	2183.1	2661.9	940.6	NS
	SD												288.6	1069.9	707.8	1317.5	1055.0	774.2	896.9	762.3	697.6	634.6	97.0	
16	kg km^{-2}	5.9	5.1	7.6	7.5	11.5	15.8	16.0	13.0	4.8	7.4	16.8	11.3	12.4	5.3	11.8	23.9	16.6	13.0	38.2	21.8	10.7	5.4	Positive trend
	SD	2.7	1.8	2.6	2.2	3.3	4.6	5.0	4.4	1.1	2.4	6.3	3.8	5.9	1.9	4.4	10.1	6.6	5.5	11.3	6.3	4.3	1.8	
	N km^{-2}	793.8	785.2	1523.3	1461.8	2448.2	3190.3	2868.7	2548.0	1571.7	1433.3	4565.5	1858.1	1848.4	815.2	2286.9	3563.1	2717.9	2252.1	8012.1	4606.9	3245.1	948.0	Positive trend
	SD	314.4	213.9	450.5	427.1	693.3	877.1	850.2	751.0	484.2	449.1	1888.5	654.2	933.9	284.6	860.1	1510.6	1124.0	880.1	2366.1	1354.4	1911.5	326.4	
17	kg km^{-2}									2.2	3.0	2.4	2.6	3.4	2.1	1.4	0.8	0.9	0.5	0.7	0.7	1.6	3.0	NS
	SD									0.4	0.5	0.5	0.6	0.7	0.6	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.4	
	N km^{-2}									405.6	518.6	362.6	441.4	459.0	270.1	192.1	81.0	105.2	59.4	114.6	92.2	260.4	578.3	Negative trend
	SD									75.6	81.5	66.7	92.7	83.9	70.1	48.2	20.1	22.8	13.4	27.4	18.3	32.3	99.9	
18	kg km^{-2}	0.1	0.3	4.9	2.1	4.2	1.9	2.5	4.2	4.6	5.6	7.3	9.8	7.0	3.3	9.0	7.3	5.2	4.2	5.5	2.1	4.9	2.2	Positive trend
	SD	0.0	0.1	1.0	0.3	0.8	0.3	0.4	0.6	0.6	0.8	1.3	1.5	1.0	0.8	2.0	1.1	0.7	0.7	1.0	0.4	1.0	0.5	
	N km^{-2}	12.5	21.7	870.4	307.3	517.8	209.4	352.2	629.5	603.3	837.3	985.4	1538.7	798.0	338.6	890.2	1097.7	815.3	700.9	791.0	339.2	940.5	286.0	Positive trend
	SD	4.8	9.6	208.6	64.0	105.1	31.4	62.1	83.5	70.3	136.9	218.5	222.1	119.8	72.0	186.5	195.5	145.9	138.7	147.6	90.0	216.2	68.8	
19	kg km^{-2}	5.4	8.1	4.6	6.9	9.4	3.9	3.3	3.2	5.8	7.2	7.8	6.9	7.1	4.4	8.6	12.1	10.8	6.8	8.8	10.1	7.2	11.7	Positive trend
	SD	1.1	1.8	0.8	1.5	2.1	1.0	1.4	0.8	1.1	1.6	1.3	1.5	1.3	0.7	1.5	1.6	1.6	1.6	1.3	2.0	1.4	1.8	
	N km^{-2}	698.1	1051.2	855.3	1123.8	1538.3	723.2	541.8	509.8	949.4	1403.0	1046.9	1167.4	1436.2	940.3	1662.8	2307.6	2066.8	1326.0	1573.4	2237.7	1561.7	1857.3	Positive trend
	SD	177.1	246.8	198.1	300.0	453.3	220.6	192.2	131.1	186.1	342.1	181.2	273.7	371.2	154.5	421.8	472.0	340.9	338.2	303.6	476.3	351.5	286.8	
20	kg km^{-2}	3.5	2.7	5.0	4.1	3.5	3.8	6.5	5.0		6.0	7.9	13.5	6.5		7.2						2.9		Positive trend
	SD	1.4	0.7	1.6	1.2	0.9	0.8	2.2	1.6		1.0	1.9	3.0	1.8		1.8						1.0		
	N km^{-2}	246.3	437.6	734.0	449.1	514.2	810.1	930.1	697.2		1301.9	1580.7	2625.9	1239.0		1475.3						434.2		Positive trend
	SD	96.6	98.6	309.9	239.7	161.4	182.6	284.5	245.4		240.3	398.8	563.0	350.7		362.8						158.6		
22	kg km^{-2}	1.5	3.0	14.6	18.2	10.9	13.5	14.3	13.6		14.2	14.1	13.3	12.9		8.9						10.6		NS
	SD	0.5	0.8	2.7	4.4	1.7	2.0	2.6	2.6		2.4	2.7	2.2	2.3		2.1						1.8		
	N km^{-2}	125.2	559.2	2702.6	2305.2	1599.0	2486.9	2724.2	2139.0		2693.1	2464.5	2294.0	2688.0		1466.8						2233.2		NS
	SD	34.7	159.3	640.1	601.0	257.0	367.9	789.0	411.9		532.9	561.9	392.2	669.3		397.7						433.1		
23	kg km^{-2}	1.4	34.2	27.1	4.8	15.0	15.3	43.4	7.1		45.1	30.6	27.5	34.2		33.7						6.5		NS
	SD	1.1	6.4	11.4	1.7	3.3	4.0	17.4	1.9		17.7	6.7	7.3	9.0		10.0						1.6		
	N km^{-2}	136.3	5290.3	5071.7	589.7	2705.1	4181.9	9348.2	1675.1		9866.3	7405.4	8251.4	8632.1		5316.9						1837.4		NS
	SD	121.3	1065.6	1498.2	180.9	538.0	1092.5	4110.6	525.9		3955.3	2265.2	2486.6	2856.3		1838.2						399.5		
25	kg km^{-2}												0.8	0.3	0.1	0.3	2.1	0.6	3.0	4.0	1.7		1.8	NS
	SD												0.2	0.1	0.0	0.3	0.7	0.2	0.9	1.9	0.7		0.5	
	N km^{-2}												262.4	86.2	25.4	116.0	296.4	96.7	584.8	680.8	229.9		274.6	NS
	SD												50.3	31.9	12.1	78.0	80.5	16.6	171.1	353.5	63.1		64.2	

Table S2. – Stratified mean biomass and density indices (kg km^{-2} and N km^{-2} ± standard deviation, SD) per year (1994-2015) of Norway lobster (*N. norvegicus*) in the investigated GSAs. Information on the results of Spearman Rho coefficient analysis is also shown.

GSA		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Spearman Rho
1	kg km^{-2}	0.6	1.0	1.8	3.4	0.6	0.7	1.0	1.2	2.9	6.2	5.7	2.6	4.4	2.4	1.4	2.4	1.5	1.4	0.6	1.8	2.2	2.0	NS
	SD	0.2	0.4	0.8	2.0	0.3	0.5	0.4	0.5	0.9	2.2	2.9	1.2	1.5	0.7	0.4	1.3	0.5	0.6	0.3	1.0	0.7	0.5	
	N km^{-2}	9.6	19.9	28.4	69.6	16.5	21.2	21.5	20.8	77.3	134.1	106.2	49.1	69.9	24.8	19.1	44.9	28.1	20.8	6.2	21.1	36.3	33.2	
	SD	4.1	6.8	12.0	37.9	7.9	11.6	7.7	8.3	31.8	46.6	53.7	22.0	24.5	7.3	5.6	25.7	9.3	9.2	3.1	12.9	13.6	9.4	NS
2	kg km^{-2}																		1.3	1.6	1.2	0.8	1.8	NS
	SD																		0.5	0.7	0.8	0.4	0.9	
	N km^{-2}																		21.2	552.8	12.4	9.5	23.9	
	SD																		12.2	531.9	7.7	3.7	12.4	NS
5	kg km^{-2}														5.3	6.3	2.5	3.8	1.9	2.3	4.1	2.3	2.2	Negative trend
	SD														2.3	2.8	1.1	1.6	1.0	0.9	1.8	0.7	0.8	
	N km^{-2}														120.0	145.0	61.5	82.9	44.6	55.3	240.6	54.9	49.4	
	SD														59.2	68.3	34.2	33.8	24.1	24.5	135.9	19.2	18.6	NS
6	kg km^{-2}	3.1	3.7	6.7	6.2	2.4	1.3	4.1	11.1	4.7	4.6	5.5	2.5	4.9	4.8	2.2	8.1	3.6	3.9	5.7	6.4	5.6	7.6	Positive trend
	SD	1.0	0.8	1.9	2.1	1.1	0.4	1.8	3.0	1.2	1.3	2.0	0.9	1.2	1.4	0.9	2.8	1.2	1.3	1.8	2.1	1.4	1.9	
	N km^{-2}	135.3	136.8	246.3	245.7	77.9	65.7	244.9	404.7	182.7	169.0	236.8	88.7	157.8	132.2	86.6	300.1	127.6	127.0	224.4	354.1	182.0	233.5	
	SD	34.7	31.2	73.5	88.7	29.8	31.2	135.8	119.3	56.0	49.8	100.0	31.4	36.4	46.2	37.3	115.0	45.0	42.4	65.0	154.0	50.1	61.9	NS
7	kg km^{-2}	4.8	6.2	4.9	2.0	4.2	9.3	14.3	23.2	18.6	14.6	6.6	8.8	10.2	10.7	9.1	11.5	10.0	8.3	4.3	4.9	7.5	9.6	NS
	SD	2.1	1.7	1.8	0.8	2.2	3.3	6.2	6.7	9.5	7.2	3.6	6.1	6.5	5.1	4.1	3.9	2.2	3.0	1.8	2.9	2.9	3.3	
	N km^{-2}	124.4	186.9	160.4	66.9	128.3	196.6	400.1	582.4	513.7	315.9	177.3	204.4	271.5	284.7	260.2	383.5	308.3	221.7	122.6	167.1	203.2	260.4	
	SD	52.2	45.8	55.7	25.7	64.0	52.1	171.5	144.8	232.0	136.2	88.7	130.2	157.2	119.1	102.8	129.6	69.0	73.0	47.6	90.9	72.1	82.4	NS
8	kg km^{-2}	24.2	11.1	24.5	15.8	19.3	18.1	28.6	28.8		46.1	52.4	38.6	27.1	22.1	33.1	40.4	31.7	33.6	34.1	17.4	26.8	15.7	NS
	SD	7.9	2.1	3.1	4.9	4.9	2.1	3.6	4.0		9.7	14.5	14.3	5.3	3.9	5.2	8.2	7.2	7.2	7.6	5.2	3.4	1.8	
	N km^{-2}	628.2	302.3	595.6	325.7	520.5	602.7	662.5	897.7		1077.6	1326.3	1143.1	688.5	527.2	845.4	1158.5	872.5	829.0	905.0	471.6	710.3	431.8	Positive trend
	SD	199.2	51.8	82.0	91.9	134.8	218.2	92.8	185.5		256.4	375.5	518.3	147.4	97.7	134.0	277.9	290.4	203.1	222.9	129.6	97.6	56.7	
9	kg km^{-2}	3.4	3.7	5.6	4.4	6.1	4.4	5.6	6.2	3.7	5.5	4.6	3.4	4.9	5.3	5.5	7.1	5.4	4.4	5.3	3.2	4.1	4.4	NS
	SD	0.4	0.4	0.7	0.6	0.7	0.6	0.8	0.9	0.9	1.2	0.8	0.6	0.8	0.9	0.8	1.1	0.9	0.8	1.1	0.5	0.7	0.7	
	N km^{-2}	91.3	110.1	159.8	121.5	170.9	125.0	179.0	205.3	110.9	179.4	138.2	114.9	145.2	192.8	184.0	251.2	176.2	130.9	180.3	98.3	144.5	141.8	
	SD	11.9	16.3	21.0	15.4	22.1	17.8	24.7	30.7	27.6	40.7	22.7	19.6	23.6	34.1	30.6	46.2	38.1	23.1	40.2	15.5	29.2	25.9	NS
10	kg km^{-2}	1.1	1.1	0.7	1.1	1.7	1.6	0.9	1.1	0.2	0.5	1.4	1.3	1.2	1.2	1.3	1.0	1.2	1.2	1.3	1.0	0.6	0.8	NS
	SD	0.2	0.3	0.1	0.3	0.3	0.3	0.2	0.3	0.1	0.1	0.5	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	
	N km^{-2}	26.2	25.9	15.4	28.4	42.8	43.0	26.9	27.7	5.8	12.9	30.9	43.8	27.4	21.7	21.4	15.0	23.3	27.0	23.9	20.5	11.0	14.3	Negative trend
	SD	5.6	9.3	3.8	8.7	9.9	8.7	7.2	6.4	3.1	2.6	8.6	9.4	4.0	4.9	4.7	3.5	4.9	4.1	4.1	3.6	3.3	2.9	

Table S2 (Cont.). – Stratified mean biomass and density indices (kg km^{-2} and N km^{-2} ± standard deviation, SD) per year (1994-2015) of Norway lobster (*N. norvegicus*) in the investigated GSAs. Information on the results of Spearman Rho coefficient analysis is also shown.

GSA		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Spearman Rho
11	kg km^{-2}	1.7	4.2	3.6	1.6	2.6	2.0	4.0	1.5	2.0	3.0	3.7	2.2	3.3	3.1	4.5	4.3	4.1	1.8	2.7	2.0	2.1	2.3	NS
	SD	0.5	1.3	0.8	0.3	0.6	0.6	1.4	0.5	0.7	0.8	1.1	0.6	0.7	0.7	1.1	1.2	1.0	0.5	0.7	0.6	0.6	0.8	
	N km^{-2}	38.4	102.9	92.7	40.0	61.6	45.7	85.6	31.5	36.6	87.8	91.4	71.4	87.9	92.4	136.1	100.8	87.9	37.1	58.8	45.2	45.3	47.6	
	SD	9.9	31.5	19.2	8.3	15.3	15.1	28.3	8.0	10.3	25.9	28.4	21.2	21.3	22.6	35.1	25.3	20.7	8.7	13.5	16.0	13.0	16.4	NS
15	kg km^{-2}												5.4	10.3	12.5	8.0	16.1	4.0	7.6	4.3	3.2	3.5	3.4	Negative trend
	SD												1.9	4.2	6.8	2.4	10.0	1.2	2.3	1.1	0.9	1.5	1.3	
	N km^{-2}												137.3	214.8	413.0	210.2	413.4	90.4	170.6	154.9	137.0	148.8	151.1	Negative trend
	SD												53.9	85.5	213.6	64.6	278.7	29.0	59.1	38.6	40.2	81.6	51.5	
16	kg km^{-2}	1.4	2.2	4.3	1.5	2.1	2.0	2.0	2.3	2.5	2.1	5.1	3.6	4.4	6.0	6.6	7.0	5.4	4.2	6.2	2.0	0.6	3.3	NS
	SD	0.5	1.1	2.0	0.9	0.9	0.7	0.8	0.9	1.2	0.9	2.0	2.3	1.7	2.8	2.9	3.2	2.3	1.8	2.8	0.7	0.3	1.3	
	N km^{-2}	48.7	96.2	175.0	65.1	76.7	79.7	86.9	118.9	106.0	74.5	142.0	97.7	128.9	170.7	215.2	232.4	158.4	121.4	183.6	60.2	15.3	84.6	
	SD	17.3	48.4	76.0	37.3	34.1	24.0	41.8	53.7	50.2	36.2	58.5	59.4	50.9	73.2	99.1	107.3	63.7	58.3	80.0	20.1	7.4	37.3	NS
17	kg km^{-2}									1.5	1.8	1.9	2.6	2.8	1.0	1.4	1.4	1.0	0.6	0.5	0.9	0.8	0.7	Negative trend
	SD									0.4	0.4	0.3	0.7	0.6	0.2	0.2	0.3	0.2	0.1	0.2	0.2	0.1	0.1	
	N km^{-2}									56.1	94.6	72.9	122.7	145.3	44.4	52.8	42.9	28.4	13.6	18.9	23.6	26.7	24.2	Negative trend
	SD									18.5	26.4	14.7	37.3	41.6	12.4	11.4	9.0	5.9	2.9	8.2	5.5	6.6	4.9	
18	kg km^{-2}	1.4	2.0	2.8	1.4	1.4	1.4	1.4	1.8	1.0	1.3	1.6	1.7	1.6	1.1	3.2	3.1	1.9	1.3	0.8	0.8	0.9	0.5	Negative trend
	SD	0.3	0.6	0.4	0.3	0.2	0.3	0.3	0.4	0.2	0.4	0.3	0.4	0.4	0.3	0.6	0.8	0.4	0.4	0.2	0.2	0.2	0.1	
	N km^{-2}	36.7	64.2	98.3	40.2	44.3	45.8	40.5	57.3	30.4	40.0	40.8	43.0	50.1	26.6	78.5	118.5	74.0	47.0	22.4	21.5	26.9	19.6	Negative trend
	SD	8.1	19.4	20.2	9.1	9.4	11.1	10.6	14.9	8.1	15.0	7.2	9.7	18.9	12.3	17.6	44.3	21.9	19.9	6.1	7.7	6.8	7.2	
19	kg km^{-2}	2.2	1.6	1.1	1.6	1.7	1.5	2.5	1.3	0.8	0.8	0.7	1.5	1.7	1.1	1.5	0.7	0.8	0.6	0.5	0.4	0.4	0.5	Negative trend
	SD	0.8	0.5	0.4	0.4	0.7	0.3	0.9	0.3	0.3	0.2	0.3	0.9	0.4	0.3	0.5	0.2	0.4	0.2	0.1	0.1	0.1	0.1	
	N km^{-2}	46.8	37.7	32.0	47.0	95.2	60.1	218.7	49.7	46.4	43.0	20.8	51.5	90.7	35.7	41.3	25.7	22.1	16.0	14.6	9.6	7.9	9.7	Negative trend
	SD	12.6	9.9	8.2	13.1	37.2	15.3	119.6	15.7	17.6	15.4	6.4	23.3	28.2	9.2	14.3	10.2	12.6	5.1	4.3	3.0	2.6	2.4	
20	kg km^{-2}	5.0	5.8	2.6	4.8	1.8	0.8	1.1	2.2		0.6	0.6	0.4	0.6		0.1						1.2		Negative trend
	SD	3.7	4.8	1.4	2.1	0.8	0.4	0.7	1.1		0.3	0.4	0.3	0.4		0.1						1.1		
	N km^{-2}	285.4	159.2	73.9	131.8	50.9	15.3	18.9	49.5		15.9	16.4	10.0	12.0		4.9						34.8		Negative trend
	SD	241.8	127.7	30.1	57.6	26.0	7.0	9.8	20.3		7.3	10.4	6.5	7.8		4.6						32.0		
22	kg km^{-2}	5.7	3.1	2.9	3.9	3.4	4.5	2.9	4.0		1.1	1.5	2.1	1.5		1.3						1.0		Negative trend
	SD	2.0	0.6	0.7	0.9	0.9	1.2	0.8	1.5		0.3	0.4	0.7	0.4		0.4						0.2		
	N km^{-2}	166.9	79.3	77.5	84.2	80.6	100.6	78.4	99.4		36.5	39.3	56.4	46.5		41.5						25.9		Negative trend
	SD	70.3	19.9	17.1	19.4	18.1	27.0	25.3	40.2		13.5	10.0	21.3	16.0		14.7						6.9		
23	kg km^{-2}		3.7	2.5	0.4	2.9	1.9		2.5		0.3	0.2	0.0	0.1										Negative trend
	SD		1.9	1.2	0.4	2.9	1.9		2.5		0.3	0.2	0.0	0.1										
	N km^{-2}		78.9	49.1	1.8	65.3	58.0		51.0		7.9	4.8	1.4	1.3										Negative trend
	SD		39.5	24.6	1.8	65.3	58.0		51.0		7.9	4.8	1.4	1.3										
25	kg km^{-2}												0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	NS
	SD												0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
	N km^{-2}												0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
	SD												0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	NS

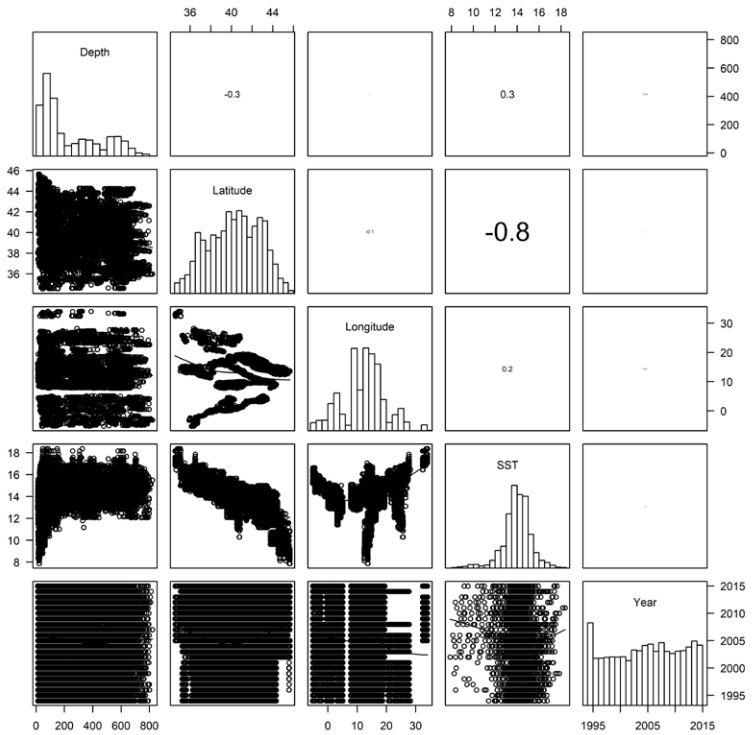

Fig. S1. – Pair-plots for all the explanatory variables in the data set used for the analysis. The upper diagonal panel shows the Pearson correlation coefficient, and the lower diagonal panel shows the scatterplots with a smoother added to visualize the pattern. The font size of the correlation coefficient is proportional to its estimated value.

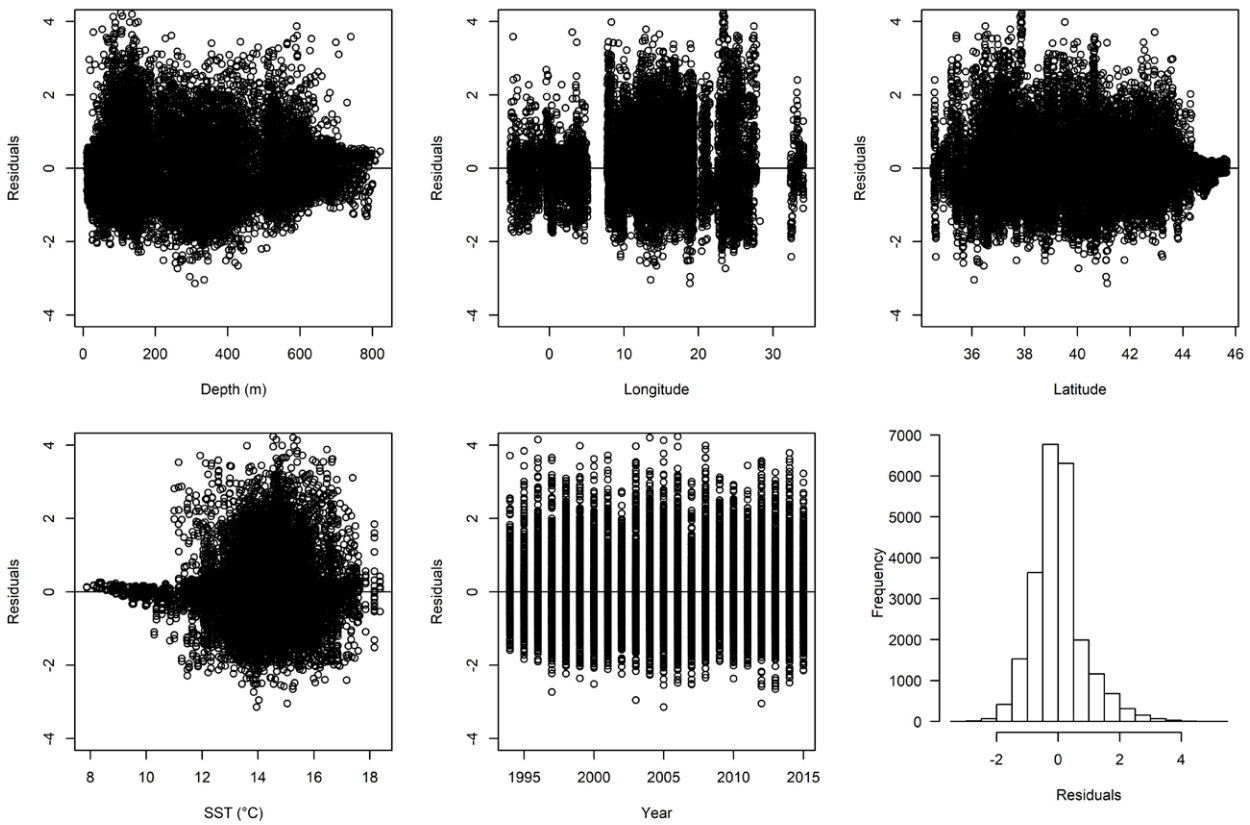

Fig. S2. – Graphs of the validation of the best GAM model for deep-water rose shrimp. From top left, residuals versus depth, residuals versus longitude, residuals versus latitude, residuals versus SST, and residuals versus time (year) to assess homogeneity; bottom right, histogram of residuals to assess normality.

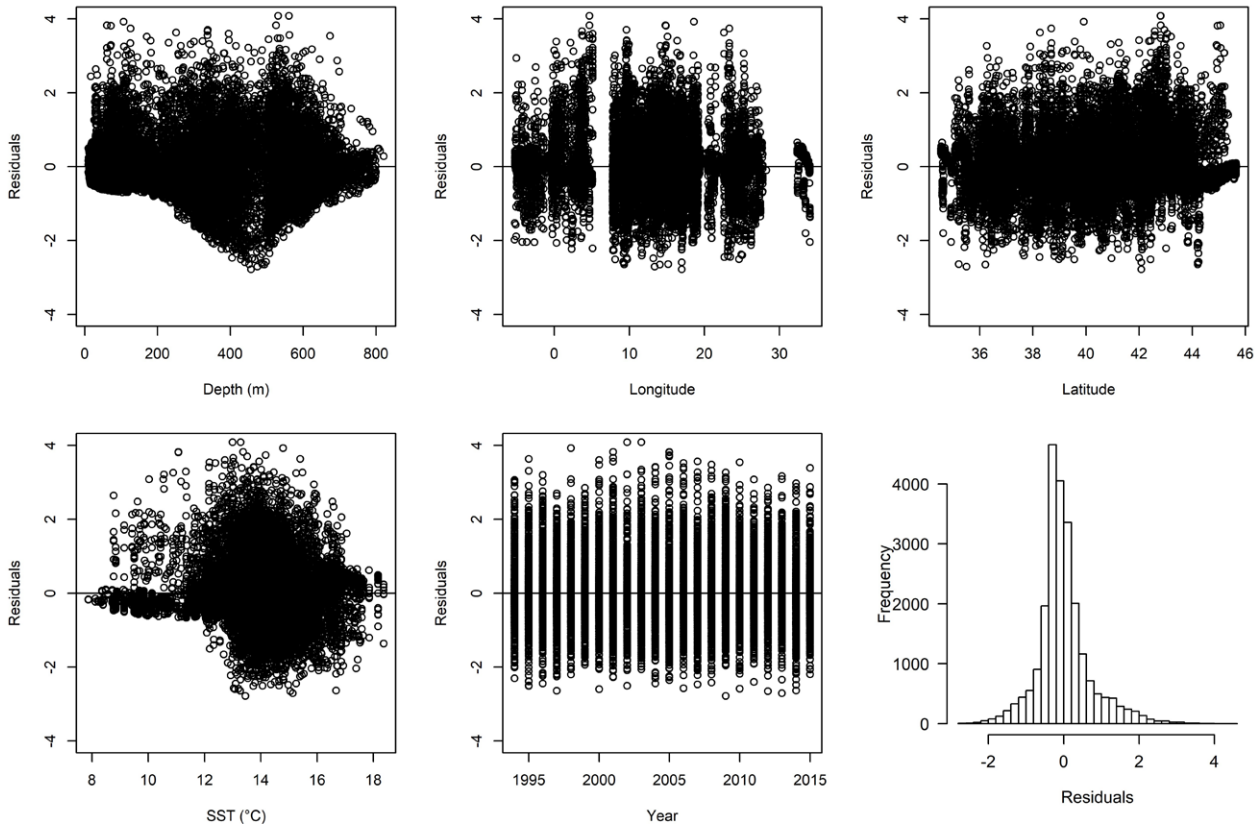

Fig. S3. – Graphs of the validation of the best GAM model for Norway lobster. From top left, residuals versus depth, residuals versus longitude, residuals versus latitude, residuals versus SST, and residuals versus time (year) to assess homogeneity; bottom right, histogram of residuals to assess normality.