

1 **Supplementary material**

2 **Table S1.** Parameters chosen and their respective percentage of deviance explained in the
 3 Delta-GLM applied to survey CPUEs with spatio-temporal interaction parameter forced for
 4 the 19 species of the study. MEV: Moran's Eigenvectors. * represents a significant effect of
 5 the spatio-temporal interaction parameter.

<i>presence / absence</i>	<i>area</i>	<i>year</i>	<i>sediment</i>	<i>area-by-year</i>	<i>MEV</i>
<i>Chelidonichthys cuculus</i>	33.6	2.1	5.4	0.0	11.4
<i>Chelidonichthys lucerna</i>	11.2			0.0	0.9
<i>Dicentrarchus labrax</i>	14.1	2.2	1.0	0.0	4.3
<i>Gadus morhua</i>	12.7	6.8		0.0	2.1
<i>Limanda limanda</i>	26.2	1.5	4.6	23.7	14.7
<i>Loligo spp.</i>	19.3	6.1	1.9	37.6	1.0
<i>Merlangius merlangus</i>	28.8		2.0	0.0	7.9
<i>Microstomus kitt</i>	22.1	4.0		0.0	4.5
<i>Mullus surmuletus</i>	11.3	10.1	2.4	0.0	3.9
<i>Mustelus asterias</i>	25.4	3.1		0.0	3.4
<i>Platichthys flesus</i>	19.0	4.1	3.8	0.0	13.5
<i>Pleuronectes platessa</i>	23.9	2.0	3.2	0.0	4.6
<i>Raja clavata</i>	22.7	2.2	0.9	0.0	3.0
<i>Scyliorhinus canicula</i>	33.0		1.3	30.1	9.3
<i>Sepia officinalis</i>	17.3	6.2	2.3	32.4	3.8
<i>Spondyliosoma cantharus</i>	29.9		2.5	30.7	10.0
<i>Trisopterus luscus</i>	19.5	2.8		0.0	1.2
<i>Trisopterus minutus</i>	16.9	1.6	1.0	0.0	3.5
<i>Zeus faber</i>	6.9	4.2	1.1	0.0	1.6
<i>abundance</i>	<i>area</i>	<i>year</i>	<i>sediment</i>	<i>area-by-year</i>	<i>MEV</i>
<i>Chelidonichthys cuculus</i>	20.3	2.7	1.9	38.0	5.9
<i>Chelidonichthys lucerna</i>	16.6			51.9	
<i>Dicentrarchus labrax</i>	20.5	3.5	1.4	39.0	4.7
<i>Gadus morhua</i>	23.2	13.1		38.5	
<i>Limanda limanda</i>	23.6	8.0	2.5	27.3	9.6
<i>Loligo spp.</i>	13.7	13.5		38.9 *	
<i>Merlangius merlangus</i>	25.1	4.3	2.4	29.8 *	15.6
<i>Microstomus kitt</i>	21.4	9.0	2.9	36.4	9.9
<i>Mullus surmuletus</i>	19.4	12.6		37.0	
<i>Mustelus asterias</i>	29.5	5.2	1.7	49.9 *	

<i>Platichthys flesus</i>	9.3			35.4	25.1
<i>Pleuronectes platessa</i>	19.9	3.5	5.7	22.2	22.7
<i>Raja clavata</i>	25.4	12.7		39.9	6.5
<i>Scyliorhinus canicula</i>	21.7	1.9	1.4	37.9 *	13.8
<i>Sepia officinalis</i>	26.6	6.7	3.6	30.7	
<i>Spondyliosoma cantharus</i>	26.5	8.4	1.5	34.8	
<i>Trisopterus luscus</i>	23.2	12.2		34.1	
<i>Trisopterus minutus</i>	21.3	5.3		50.9 *	5.1
<i>Zeus faber</i>	12.7	7.5		49.0	8.3

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8 **Table S2.** Akaike information criterion (AIC) values and number of parameters (Nparam) for
9 models with and without spatio-temporal interaction parameter. * represents the lowest AIC
10 value. / denotes models with convergence failure. For those models which have a lower AIC
11 with the interaction parameter, Local Index of Collocation (LIC) and significance of the
12 overlap between models with and without interactions (obtained with 5000 random
13 permutations) were added.

	Model	AIC with interactions	Nparam with interactions	AIC without interactions	Nparam without interactions	LIC	significance
<i>Chelidonichthys cuculus</i>	P / A	/	833	1234.33 *	88		
	> 0	6787.64	823	6527.23 *	69		
<i>Chelidonichthys lucerna</i>	P / A	/	783	1693.47 *	46		
	> 0	1883.13	782	1810.30 *	46		
<i>Dicentrarchus labrax</i>	P / A	/	879	1793.21 *	74		
	> 0	3380.31	872	3273.02 *	74		
<i>Gadus morhua</i>	P / A	/	819	1588.88 *	66		
	> 0	2926.03	816	2847.21 *	64		
<i>Limanda limanda</i>	P / A	1432.83	525	995.02 *	63		
	> 0	5600.96	517	5485.70 *	54		
<i>Loligo spp.</i>	P / A	1329.26	525	928.16 *	68		
	> 0	6207.94	520	6088.82 *	61		
<i>Merlangius merlangus</i>	P / A	/	764	1355.32 *	60		
	> 0	6166.69	755	6113.31 *	67		
<i>Microstomus kitt</i>	P / A	/	584	949.17 *	53		
	> 0	1641.15	584	1631.07 *	56		
<i>Mullus surmuletus</i>	P / A	/	873	1796.35 *	73		
	> 0	5544.09	867	5355.76 *	67		
<i>Mustelus asterias</i>	P / A	/	824	1342.01 *	73	0.61	0.02
	> 0	2414.01 *	820	2533.45	68		
<i>Platichthys flesus</i>	P / A	/	264	613.10 *	43		
	> 0	1161.68	256	1106.73 *	16		
<i>Pleuronectes platessa</i>	P / A	/	603	1233.55 *	67		
	> 0	6408.38	609	6236.19 *	65		
<i>Raja clavata</i>	P / A	/	853	1487.87 *	73	0.78	<u>$\theta < 0.0002$</u>
	> 0	2304.46 *	852	2330.36	68		
<i>Scyliorhinus canicula</i>	P / A	2125.25	882	1382.85 *	69		
	> 0	8419.57	881	8326.62 *	81		

<i>Sepia officinalis</i>	P / A	1309.59	457	989.01 *	61		
	> 0	1967.02	454	1855.43 *	59		
<i>Spondyliosoma cantharus</i>	P / A	2112.75	831	1409.78 *	68		
	> 0	8038.94	820	7800.40 *	69		
<i>Trisopterus luscus</i>	P / A	/	648	972.28 *	54		
	> 0	8081.56	646	7812.70 *	55		
<i>Trisopterus minutus</i>	P / A	/	872	1750.77 *	78		
	> 0	5801.93 *	869	5872.73	69	0.49	0.04
<i>Zeus faber</i>	P / A	/	801	697.03 *	69		
	> 0	1540.08	800	1503.07 *	64		

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16 **Table S3.** Parameters chosen and their respective percentage of deviance explained in the
 17 Delta-GLM applied to commercial CPUEs for the 19 species of the study. MEV: Moran's
 18 Eigenvectors. * represents *area-by-month* replaced by *month* alone in the model.

presence / absence	<i>area-by-month</i>	<i>year</i>	<i>gear-by-length</i>	<i>sediment</i>	<i>MEV</i>
<i>Chelidonichthys cuculus</i>	15.5	2.2	0.5	3.9	1.8
<i>Chelidonichthys lucerna</i>	10.6	1.0	0.9	1.0	3.1
<i>Dicentrarchus labrax</i>	15.4	1.2	1.0	3.1	3.4
<i>Gadus morhua</i>	17.1	6.1	1.0	0.7	4.0
<i>Limanda limanda</i>	11.1	1.5	0.7	0.9	2.8
<i>Loligo spp.</i>	14.3	10.4	0.3	1.2	1.7
<i>Merlangius merlangus</i>	17.6	0.9	0.9	0.4	3.3
<i>Microstomus kitt</i>	15.0	2.1	0.3	1.1	4.0
<i>Mullus surmuletus</i>	14.4	2.3	1.7	0.9	2.3
<i>Mustelus asterias</i>	4.6 *	1.5	1.0	2.8	8.3
<i>Platichthys flesus</i>	5.1 *	1.5	0.5	1.9	7.8
<i>Pleuronectes platessa</i>	7.9	0.6	1.3	0.9	2.4
<i>Raja clavata</i>	14.8	1.0	0.2	1.8	4.8
<i>Scylliorhinus canicula</i>	15.4	3.5	0.8	1.7	3.3
<i>Sepia officinalis</i>	17.5	3.6	1.1		4.0
<i>Spondyliosoma cantharus</i>	16.9	2.5	1.2	2.9	2.9
<i>Trisopterus luscus</i>	9.8	0.9	1.7	1.3	2.7
<i>Trisopterus minutus</i>	17.4	6.4	2.2	2.4	6.2
<i>Zeus faber</i>	2.3 *	1.5	5.2	2.7	4.4
abundance	<i>area-by-month</i>	<i>year</i>	<i>gear-by-length</i>	<i>sediment</i>	<i>MEV</i>
<i>Chelidonichthys cuculus</i>	37.2	6.5	13.3	10.5	11.8
<i>Chelidonichthys lucerna</i>	33.1	7.3	16.4	0.8	20.8
<i>Dicentrarchus labrax</i>	45.9	2.7	6.7	4.8	17.9
<i>Gadus morhua</i>	32.6	5.4	9.5	1.5	27.1
<i>Limanda limanda</i>	26.3	4.8	13.8	0.4	26.0
<i>Loligo spp.</i>	49.0	10.1	1.0	8.9	12.9
<i>Merlangius merlangus</i>	41.0	6.5	12.7	0.5	23.8
<i>Microstomus kitt</i>	40.6	6.3	8.4	2.5	26.4
<i>Mullus surmuletus</i>	40.0	8.3	12.1	1.8	19.2
<i>Mustelus asterias</i>	50.7	11.8	8.7	12.1	7.6
<i>Platichthys flesus</i>	43.0	6.5	10.0	3.3	22.5
<i>Pleuronectes platessa</i>	21.4	3.8	17.0	0.3	22.3
<i>Raja clavata</i>	46.2	10.4	7.9	7.5	5.3

<i>Scyliorhinus canicula</i>	46.8	4.2	6.6	10.2	6.1
<i>Sepia officinalis</i>	55.5	11.6	6.4	9.4	5.2
<i>Spondylisoma cantharus</i>	36.3	2.1	12.2	5.2	23.9
<i>Trisopterus luscus</i>	33.2	5.4	9.8	3.3	29.3
<i>Trisopterus minutus</i>	55.8	2.7	5.4	2.6	6.8
<i>Zeus faber</i>	49.4	7.6	10.7	7.1	

20 **Table S4.** Parameters chosen and their respective percentage of deviance explained in the
 21 Delta-GLM applied to survey CPUEs for the 19 species of the study. MEV: Moran's
 22 Eigenvectors.

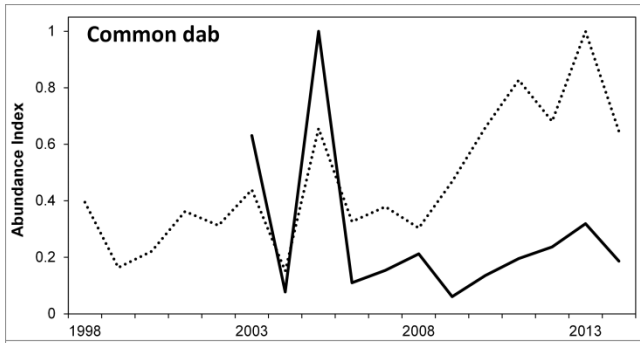
presence / absence	area	year	sediment	MEV
<i>Chelidonichthys cuculus</i>	33.4	2.3	5.2	13.2
<i>Chelidonichthys lucerna</i>	11.8			
<i>Dicentrarchus labrax</i>	15.7	2.1	1.0	1.4
<i>Gadus morhua</i>	13.3	6.8		1.3
<i>Limanda limanda</i>	25.4	1.5	4.3	16.2
<i>Loligo</i> spp.	18.4	6.1	1.7	2.5
<i>Merlangius merlangus</i>	28.8		2.0	7.9
<i>Microstomus kitt</i>	22.2	4.1		4.6
<i>Mullus surmuletus</i>	13.2	10.1	2.1	1.8
<i>Mustelus asterias</i>	23.5	3.1		6.0
<i>Platichthys flesus</i>	19.5	4.0	3.7	12.6
<i>Pleuronectes platessa</i>	23.6	2.2	1.8	8.7
<i>Raja clavata</i>	22.7	2.2	0.9	3.0
<i>Scyliorhinus canicula</i>	33.3		1.3	9.7
<i>Sepia officinalis</i>	17.3	6.2	2.3	3.8
<i>SpondylIOSoma cantharus</i>	30.5		2.5	10.9
<i>Trisopterus luscus</i>	18.4	2.7		
<i>Trisopterus minutus</i>	15.9	1.5	1.0	4.7
<i>Zeus faber</i>	6.9	4.2	1.1	1.6
abundance	area	year	sediment	MEV
<i>Chelidonichthys cuculus</i>	21.7	3.0	1.6	3.5
<i>Chelidonichthys lucerna</i>	16.6			
<i>Dicentrarchus labrax</i>	18.4	3.9	1.4	8.7
<i>Gadus morhua</i>	23.2	13.1		
<i>Limanda limanda</i>	22.3	7.5	2.7	11.6
<i>Loligo</i> spp.	13.1	14.0		
<i>Merlangius merlangus</i>	25.1	4.3	2.4	15.6
<i>Microstomus kitt</i>	22.0	8.5	2.9	9.9
<i>Mullus surmuletus</i>	19.4	12.6		
<i>Mustelus asterias</i>	28.8	5.9	1.7	
<i>Platichthys flesus</i>	9.3			25.1
<i>Pleuronectes platessa</i>	19.9	3.5	5.7	22.7
<i>Raja clavata</i>	27.8	10.4		6.5
<i>Scyliorhinus canicula</i>	21.4	2.2	1.4	13.8

<i>Sepia officinalis</i>	23.8	6.9	3.3	3.6
<i>Spondyliosoma cantharus</i>	26.4	7.5	1.2	1.9
<i>Trisopterus luscus</i>	23.2	12.2		8.6
<i>Trisopterus minutus</i>	22.7	3.9		5.1
<i>Zeus faber</i>	13.4	6.8		8.3

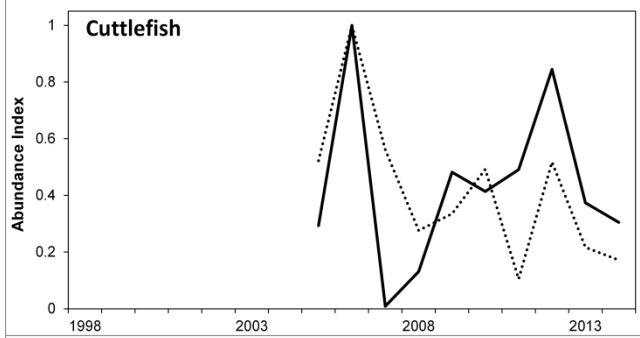
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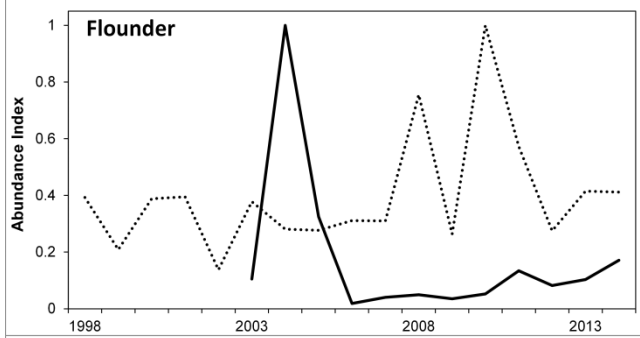
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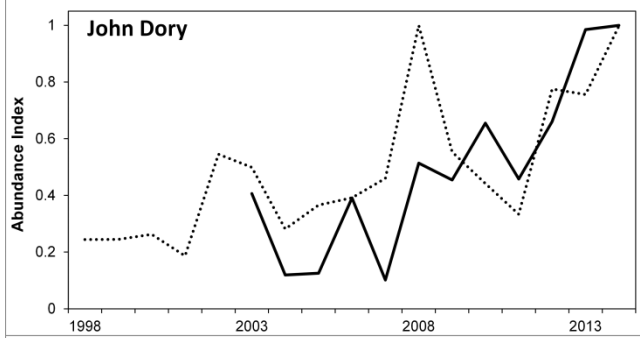
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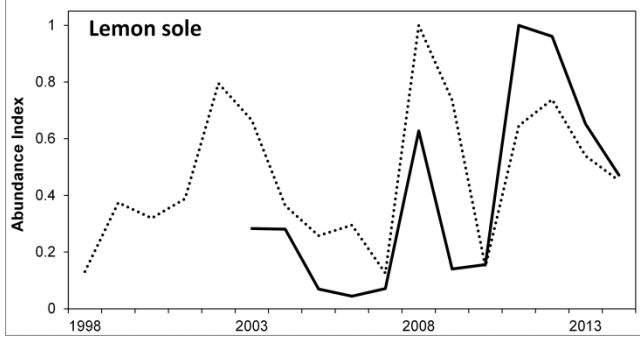
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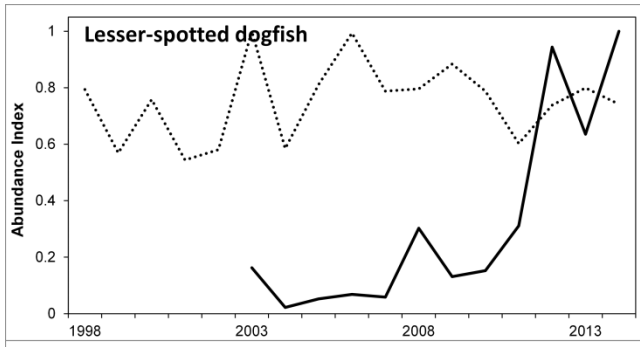
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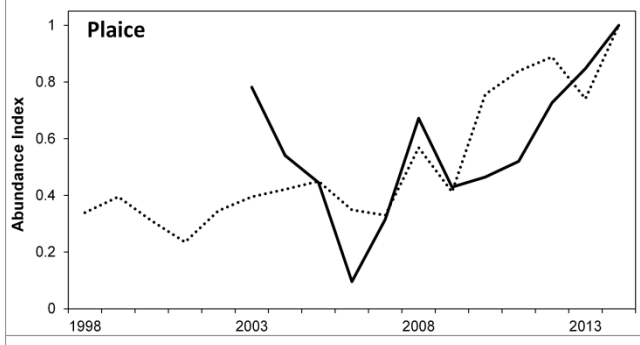
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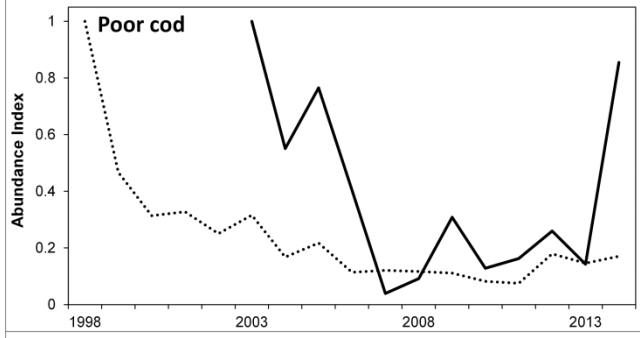
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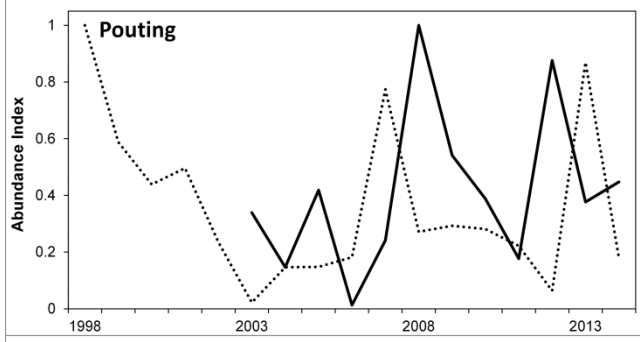
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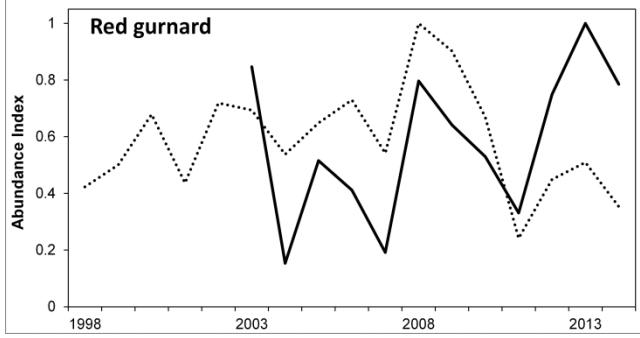
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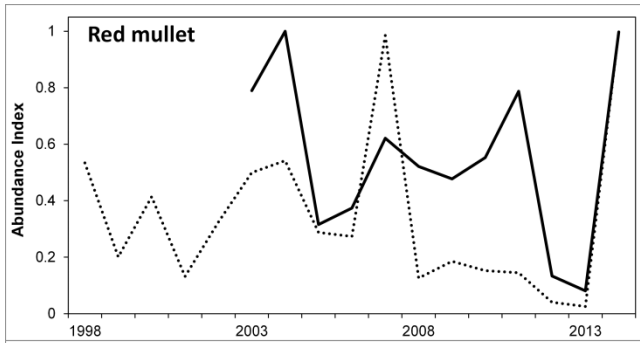
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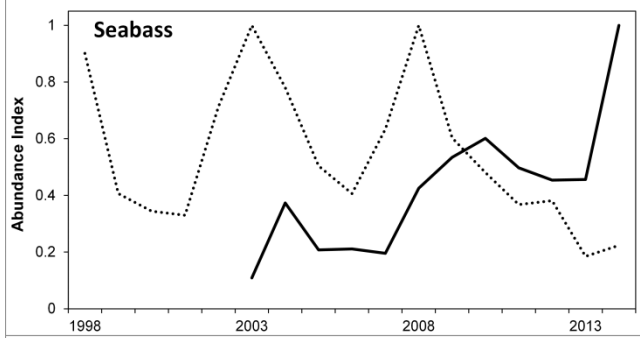
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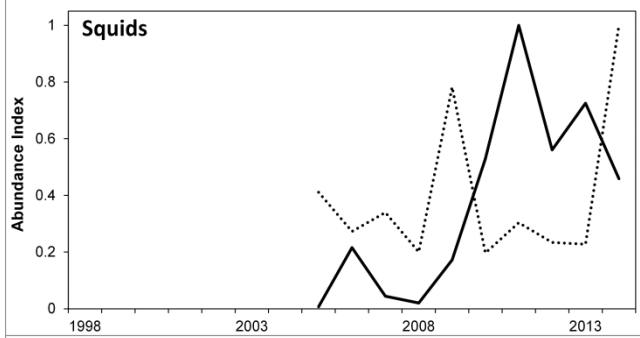
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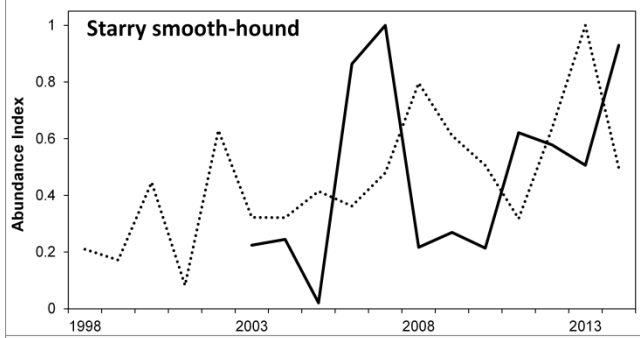
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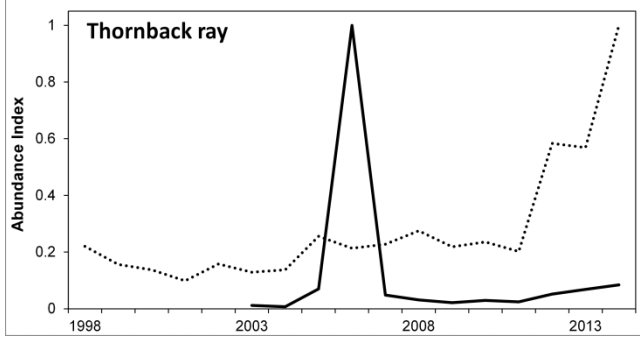
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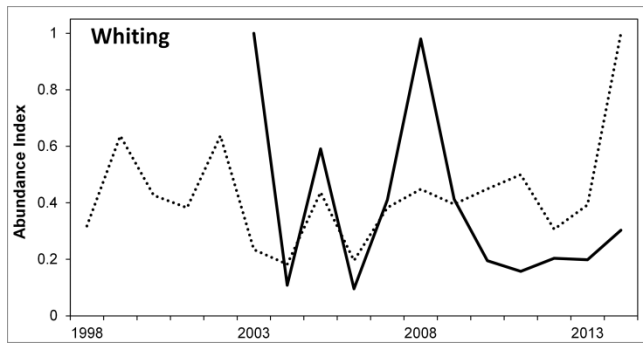


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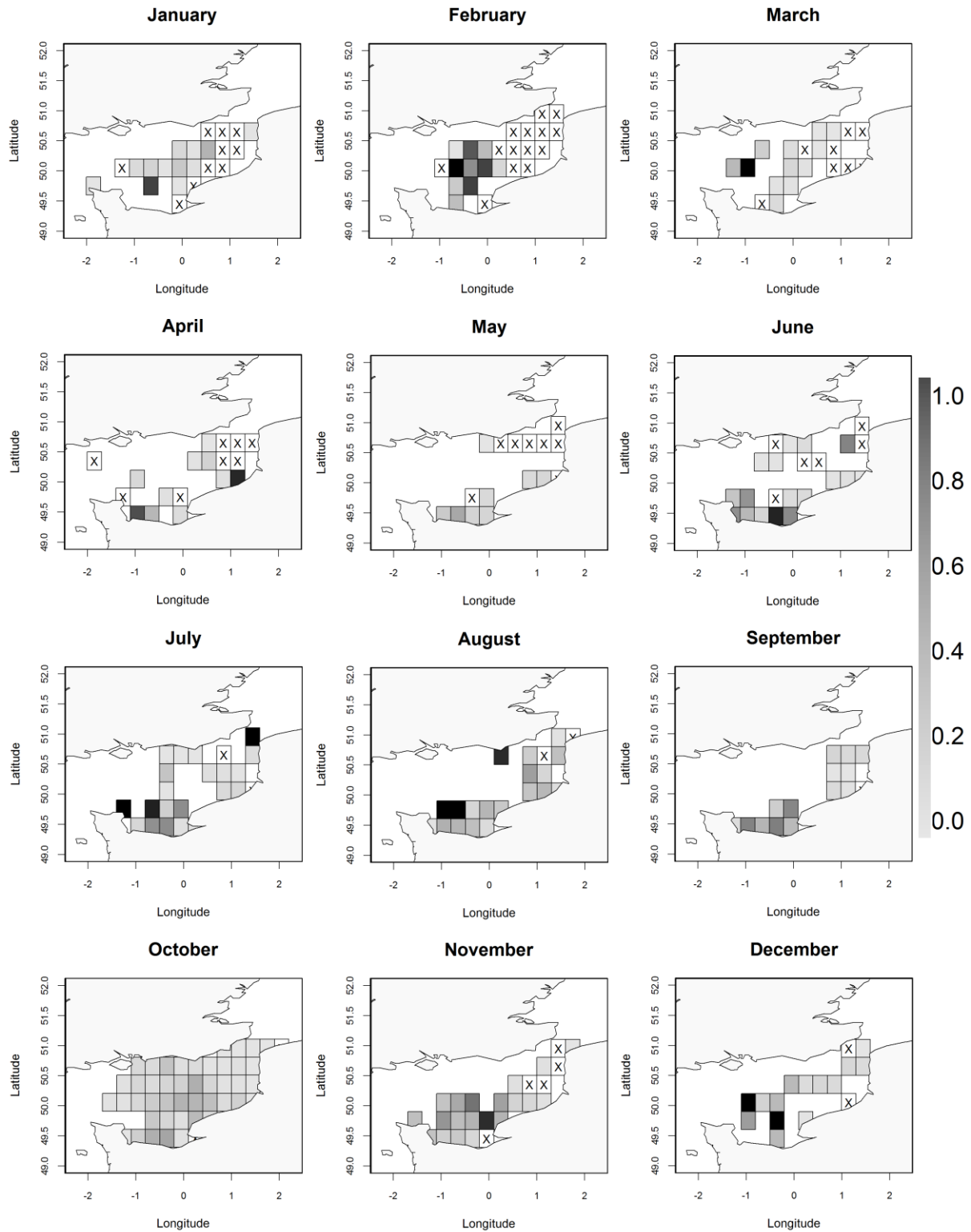


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41 **Figure S1.** Annual abundance index estimated from Channel Ground Fish Survey (CGFS;

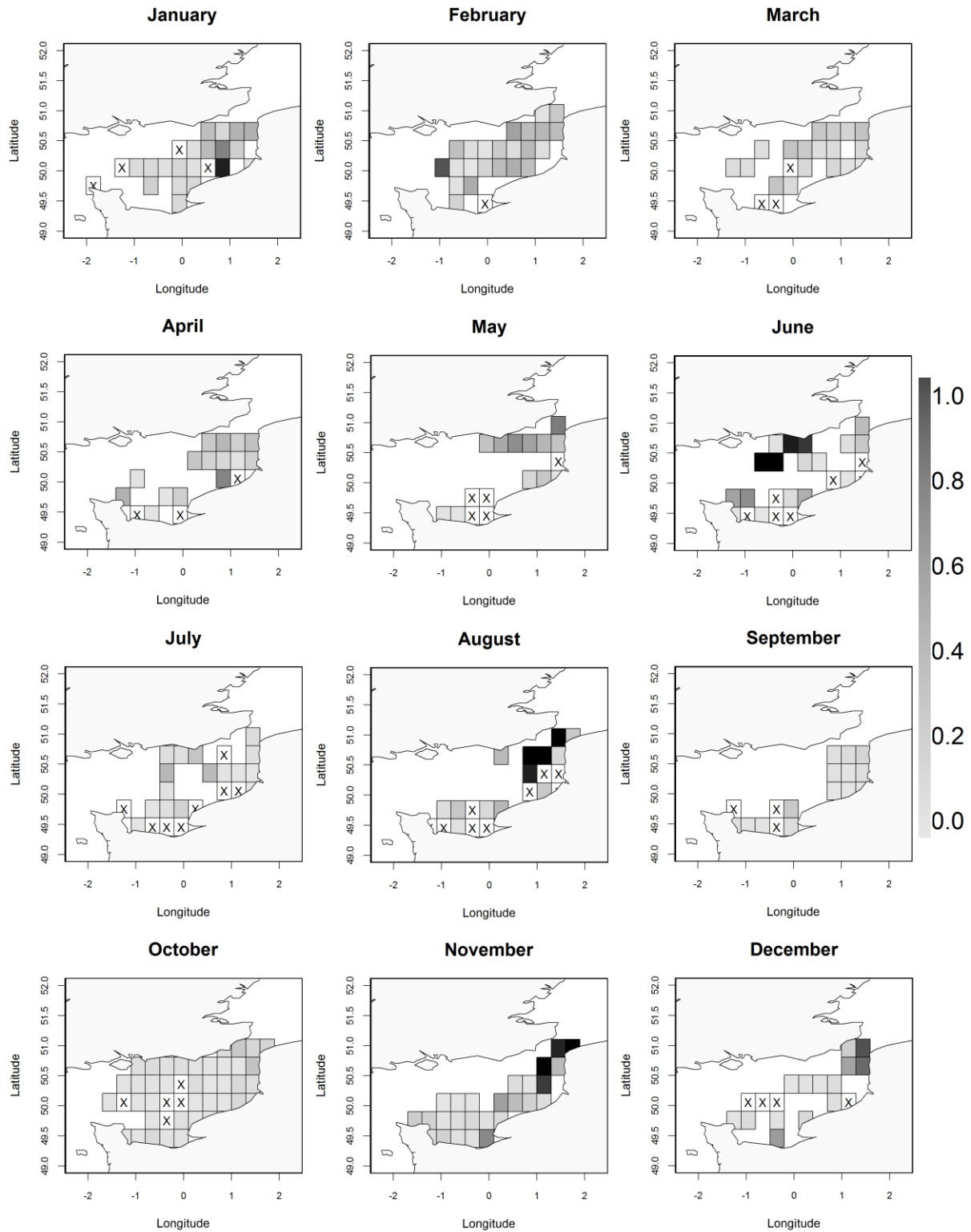
42 dotted line) and OBSMER (solid line) for the 16 additional species.

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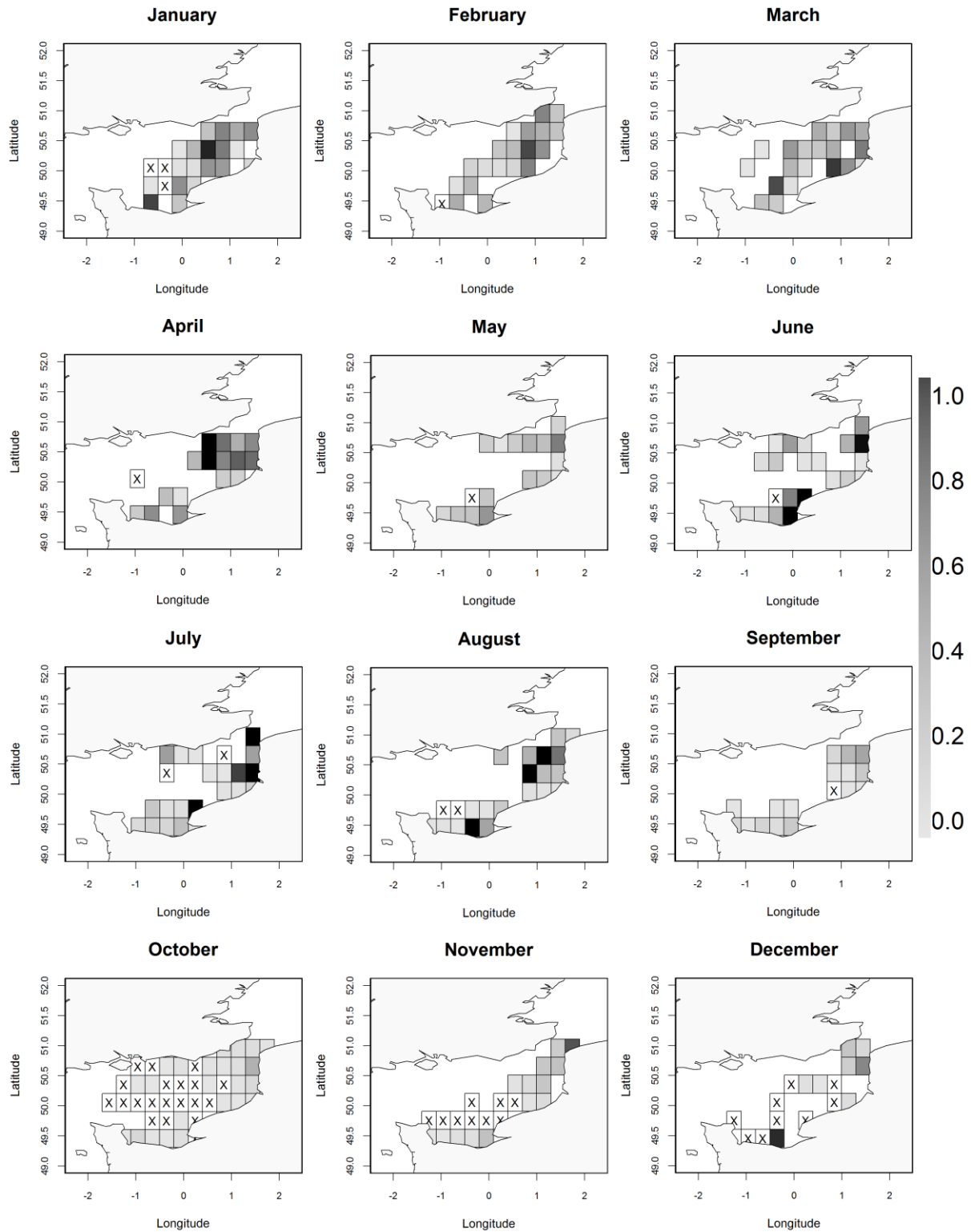
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45 **Figure S2.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for
 46 black seabream. 'X' represents areas where no individual of a species was ever fished during
 47 a month in the database.



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49 **Figure S3.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for
 50 cod. 'X' represents areas where no individual of a species was ever fished during a month in
 51 the database.



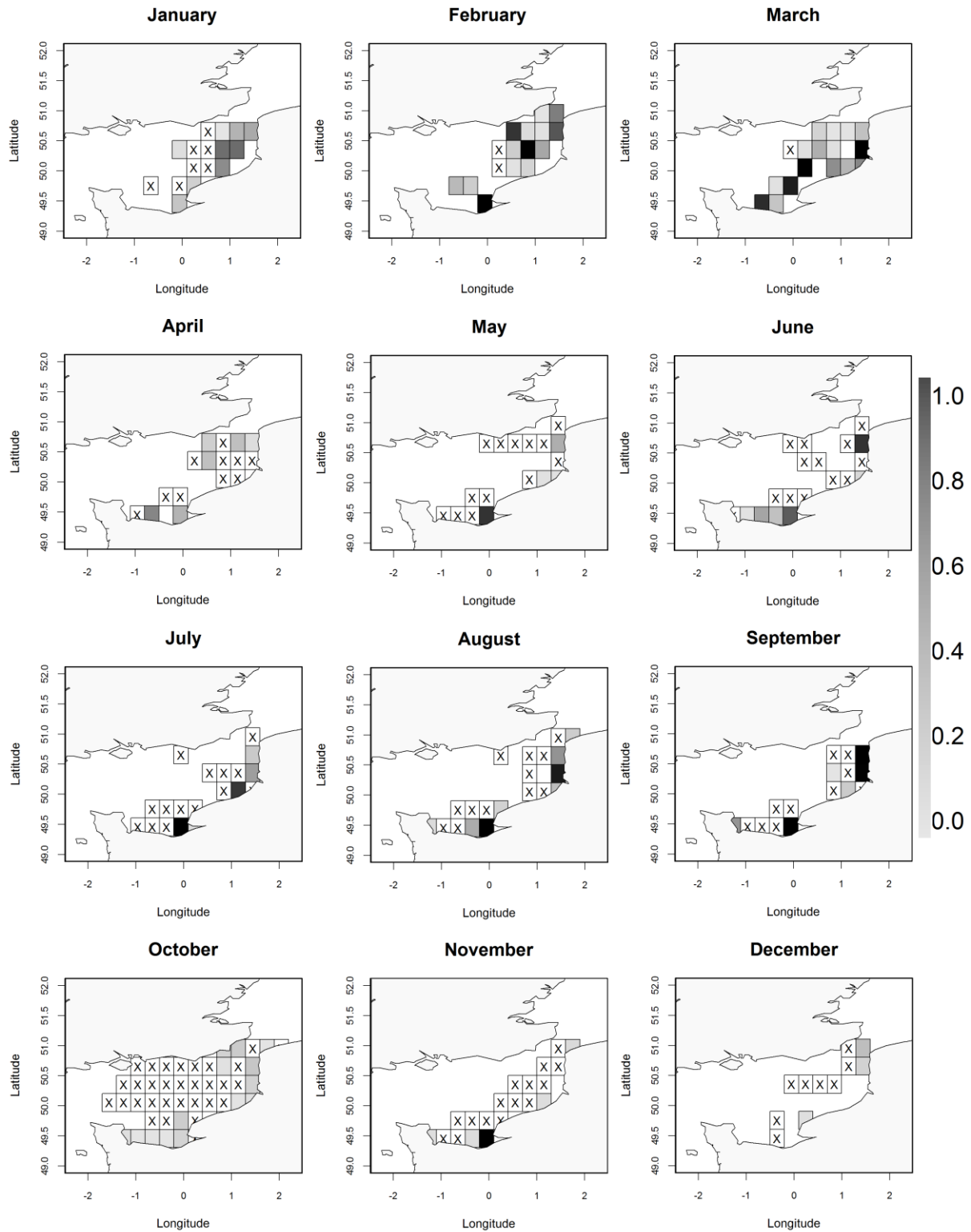
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53 **Figure S4.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

54 common dab. 'X' represents areas where no individual of a species was ever fished during a

55 month in the database.

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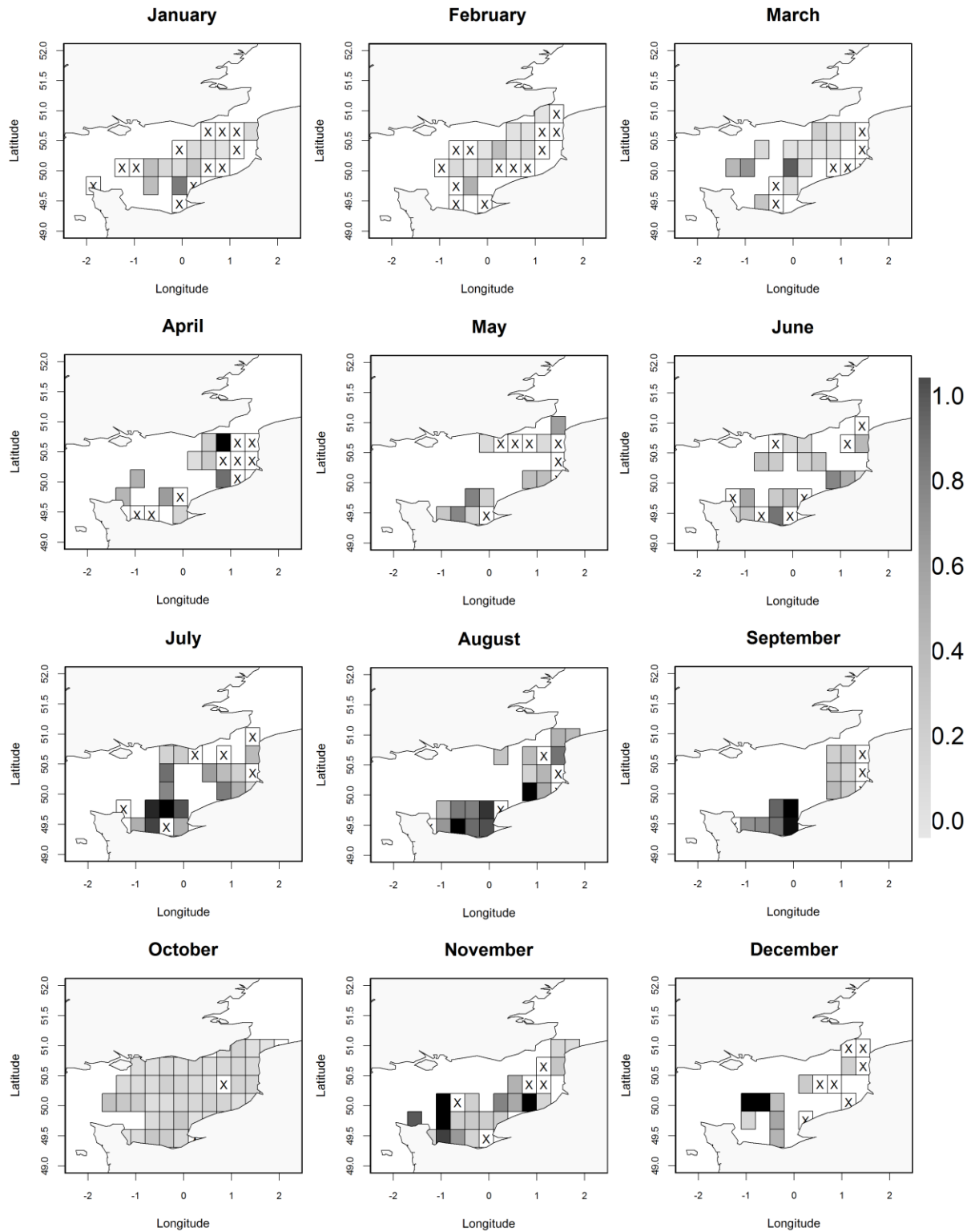
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58 **Figure S5.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

59 flounder. 'X' represents areas where no individual of a species was ever fished during a

60 month in the database.

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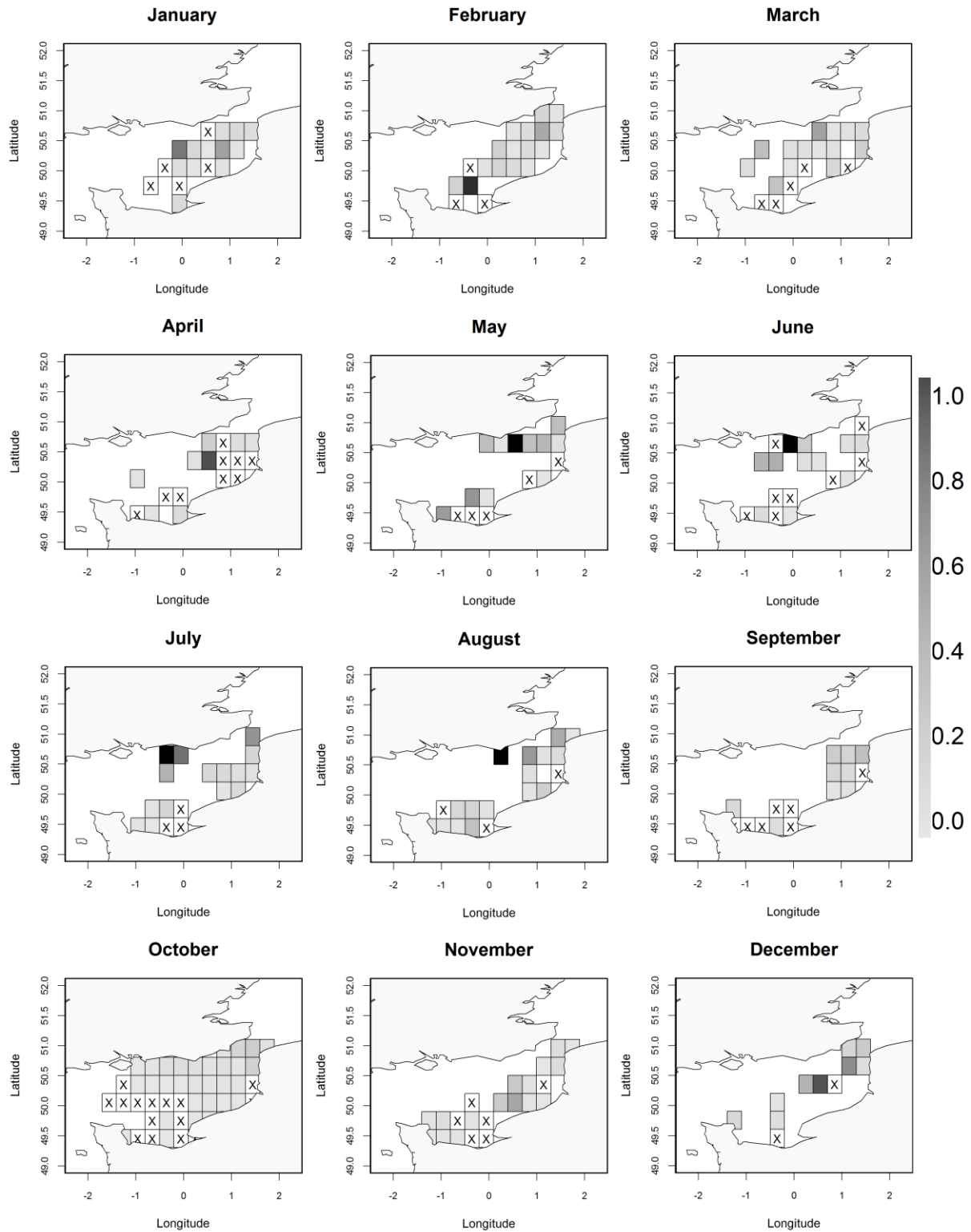
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63 **Figure S6.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

64 John Dory. 'X' represents areas where no individual of a species was ever fished during a

65 month in the database.

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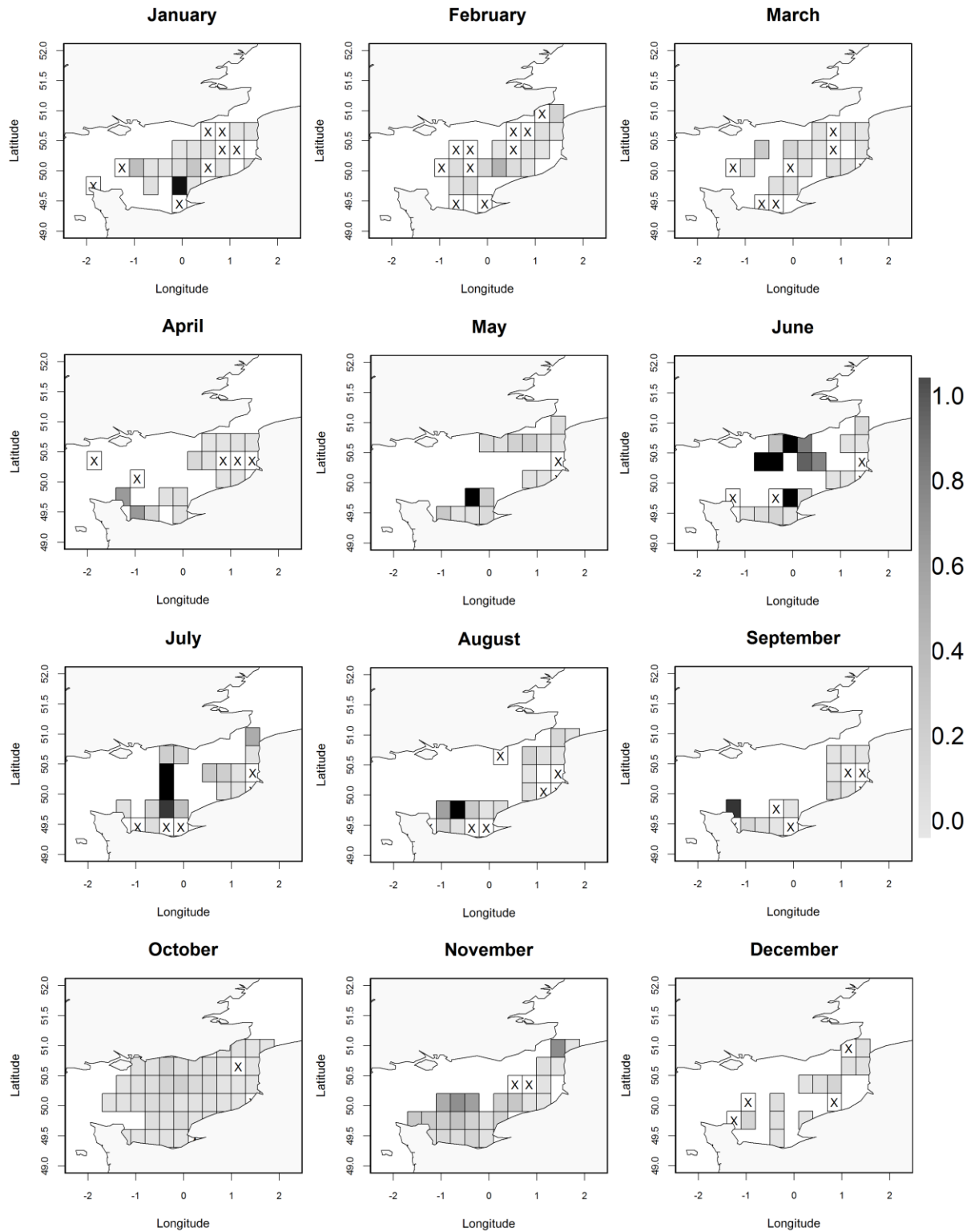
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68 **Figure S7.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

69 lemon sole. ‘X’ represents areas where no individual of a species was ever fished during a

70 month in the database.

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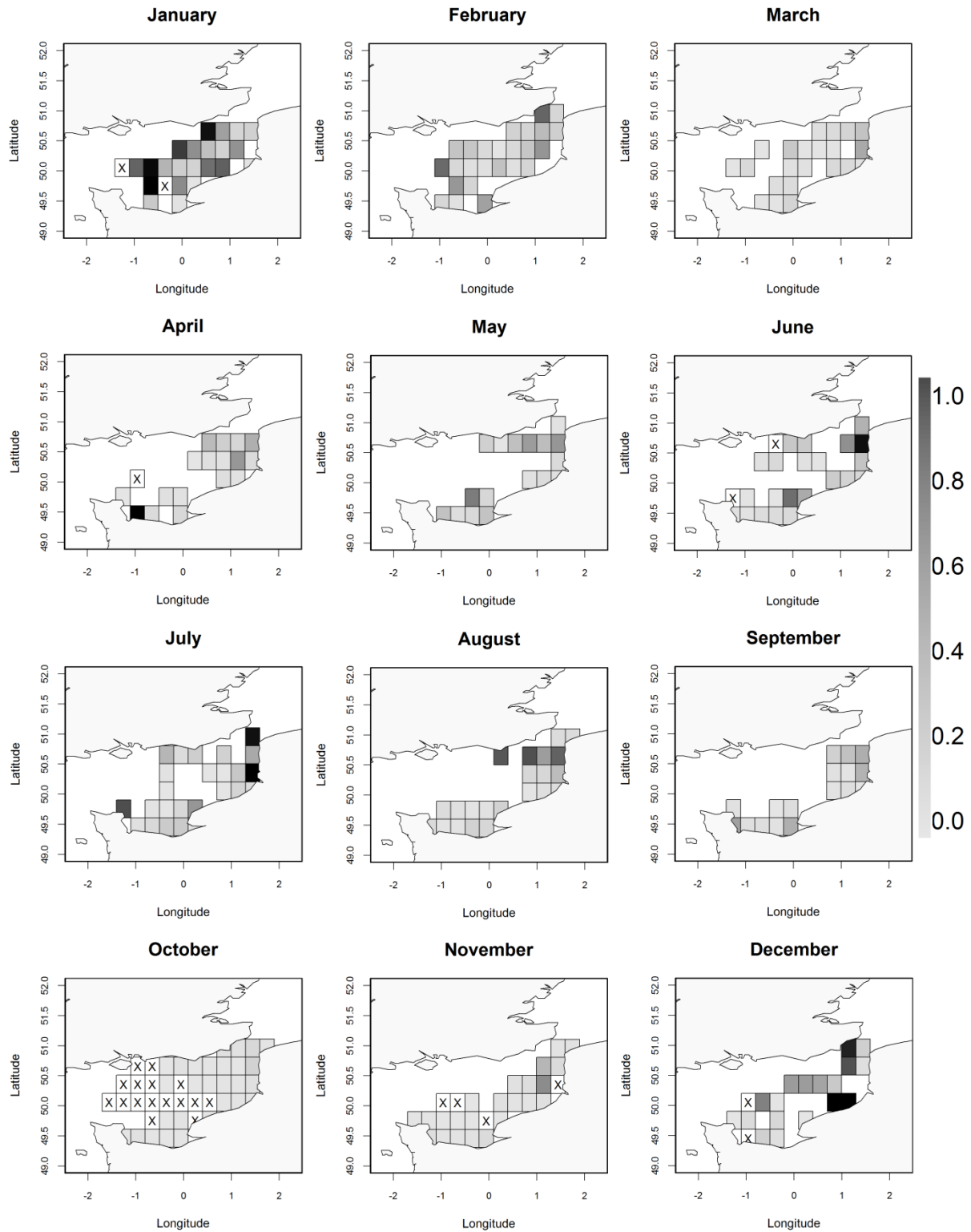
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73 **Figure S8.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

74 lesser-spotted dogfish. 'X' represents areas where no individual of a species was ever fished

75 during a month in the database.

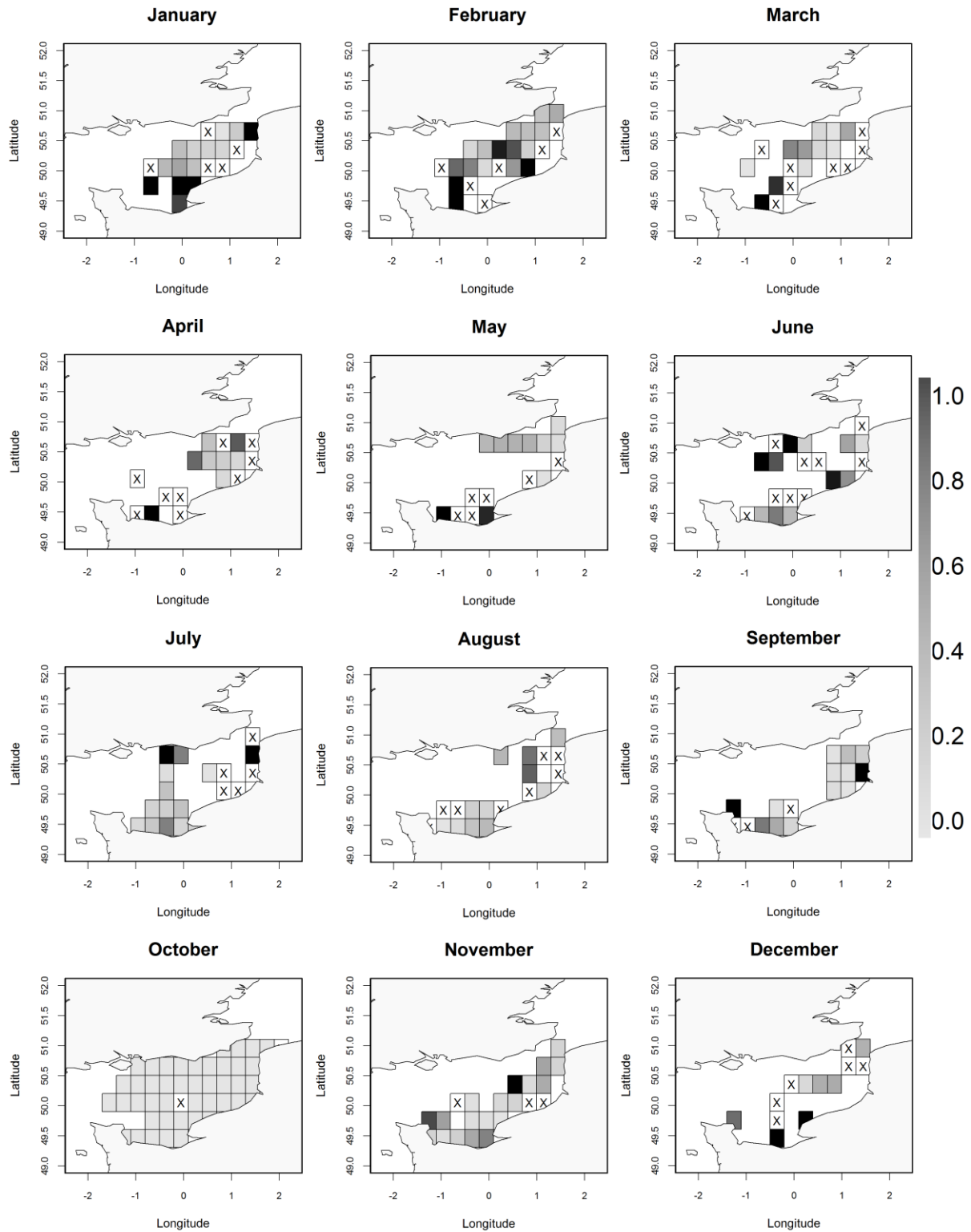
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78 **Figure S9.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for
 79 plaice. 'X' represents areas where no individual of a species was ever fished during a month
 80 in the database.

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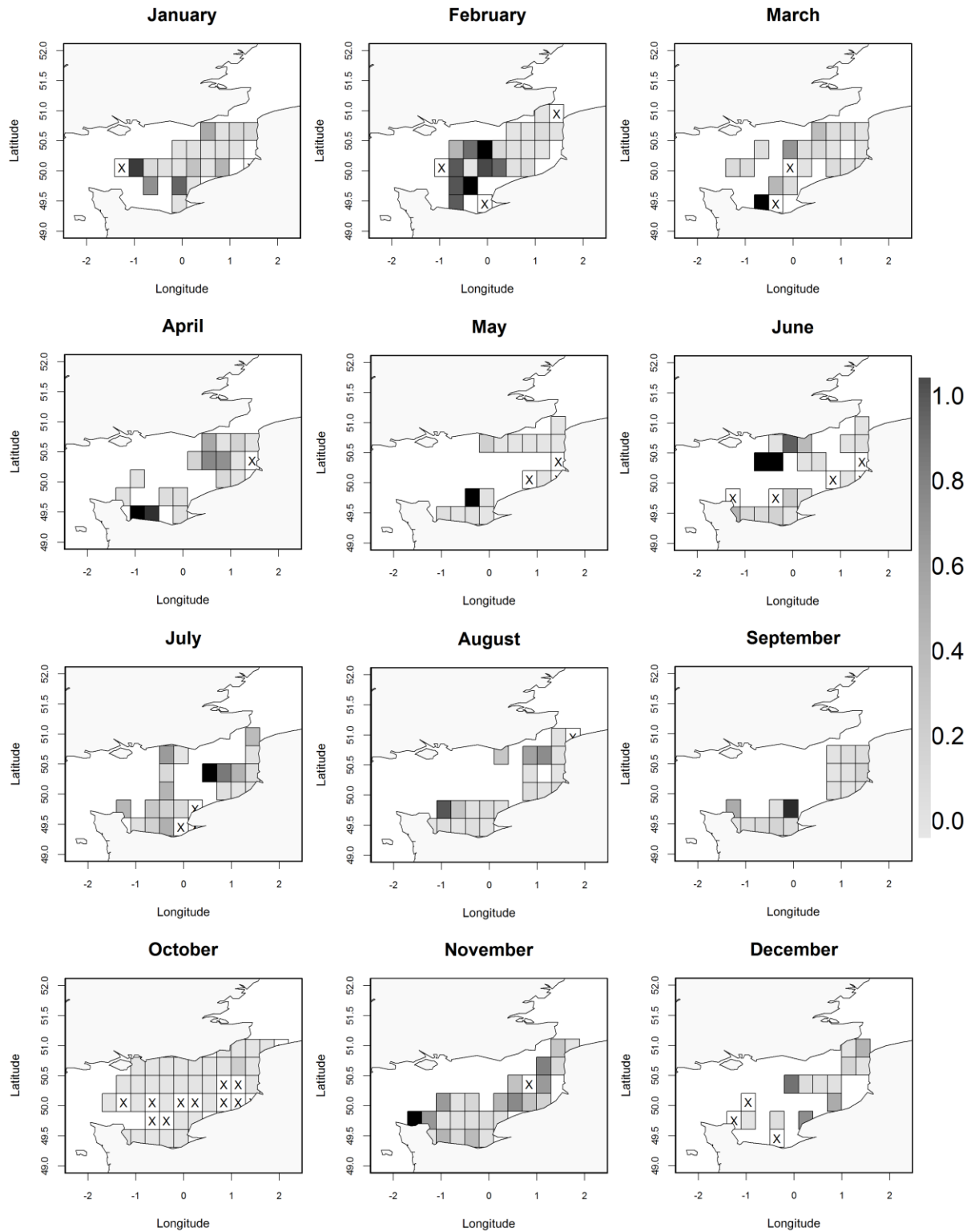
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83 **Figure S10.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

84 poor cod. 'X' represents areas where no individual of a species was ever fished during a

85 month in the database.

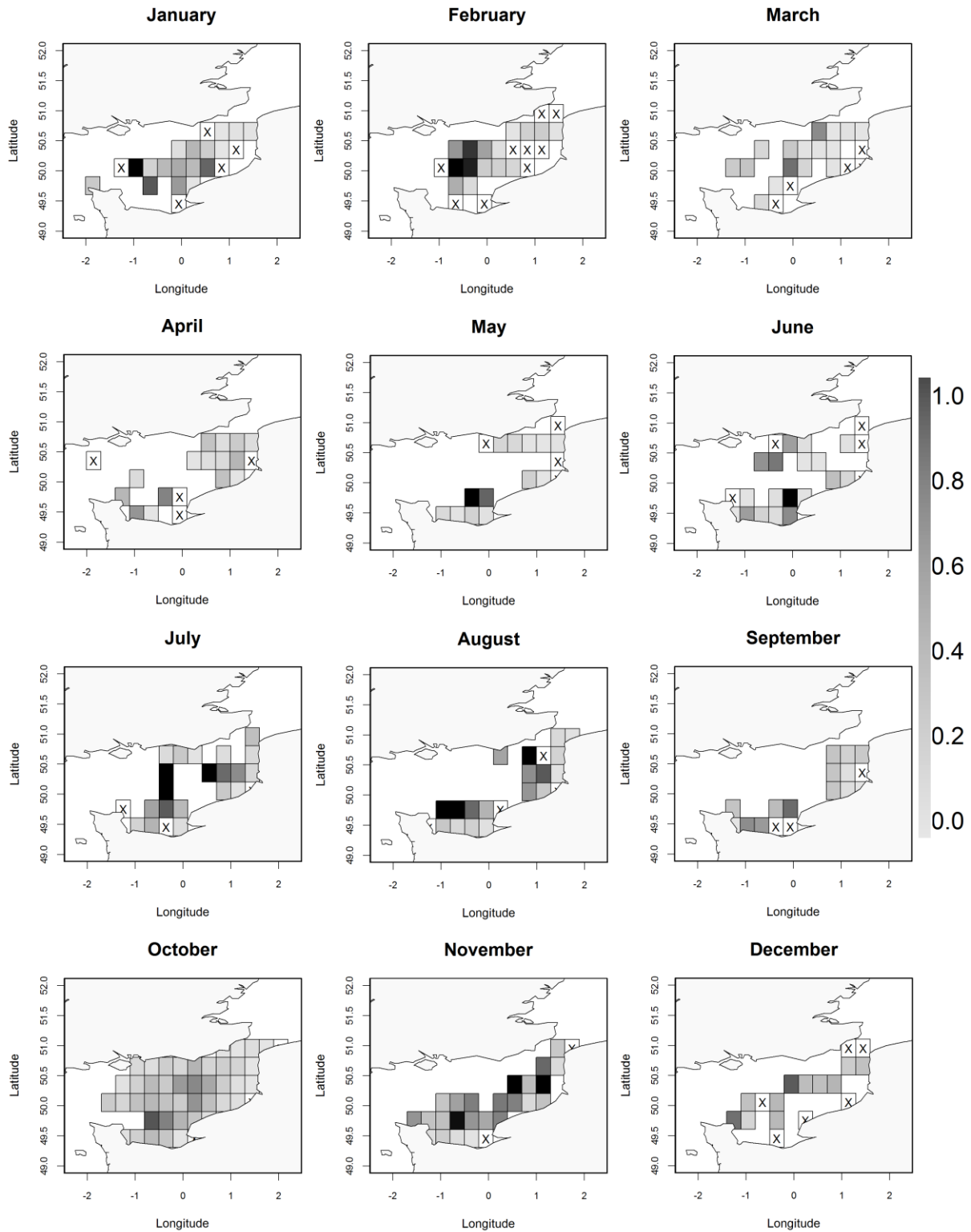
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88 **Figure S11.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for
 89 pouting. ‘X’ represents areas where no individual of a species was ever fished during a month
 90 in the database.

91



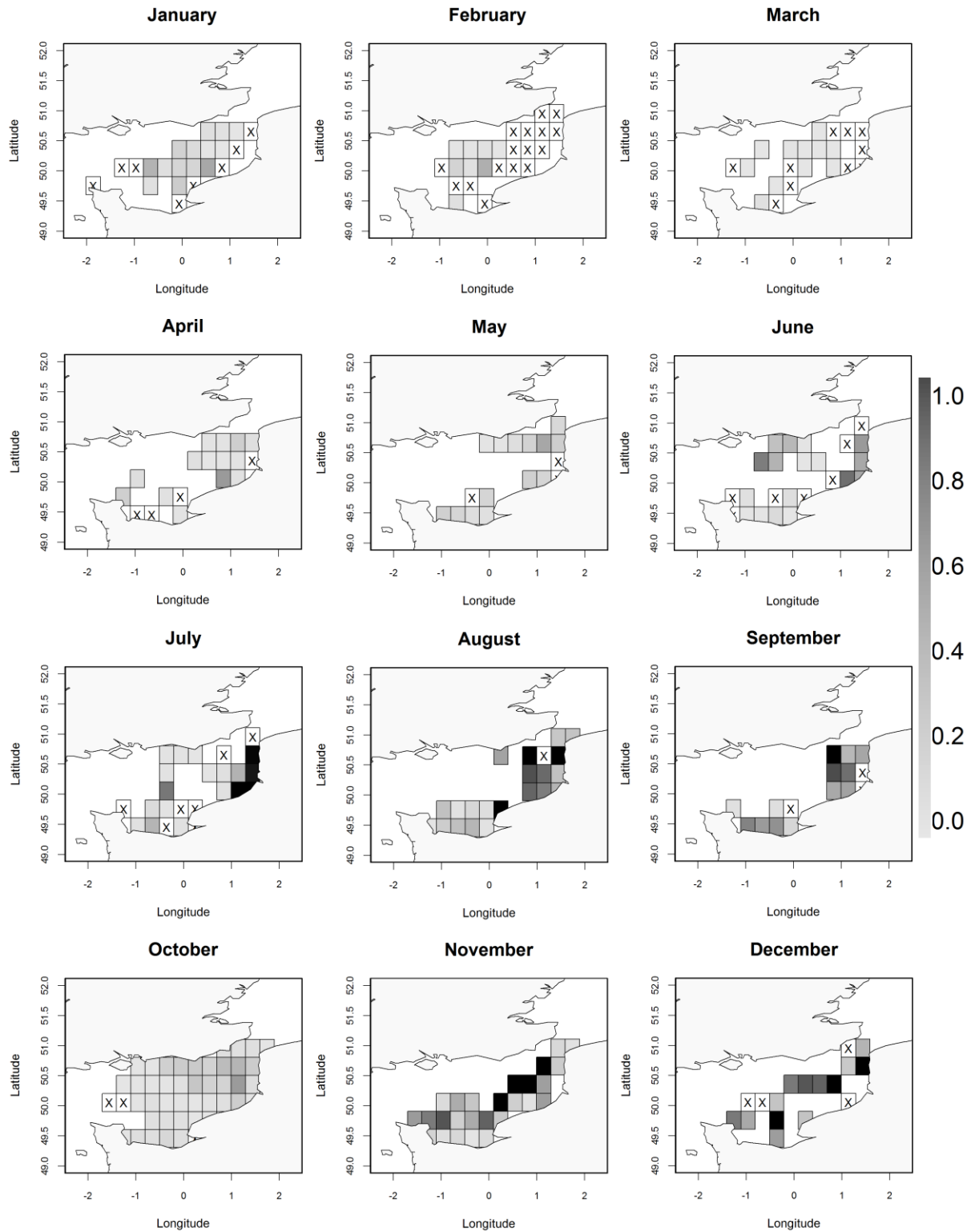
92

93 **Figure S12.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

94 red gurnard. 'X' represents areas where no individual of a species was ever fished during a

95 month in the database.

96



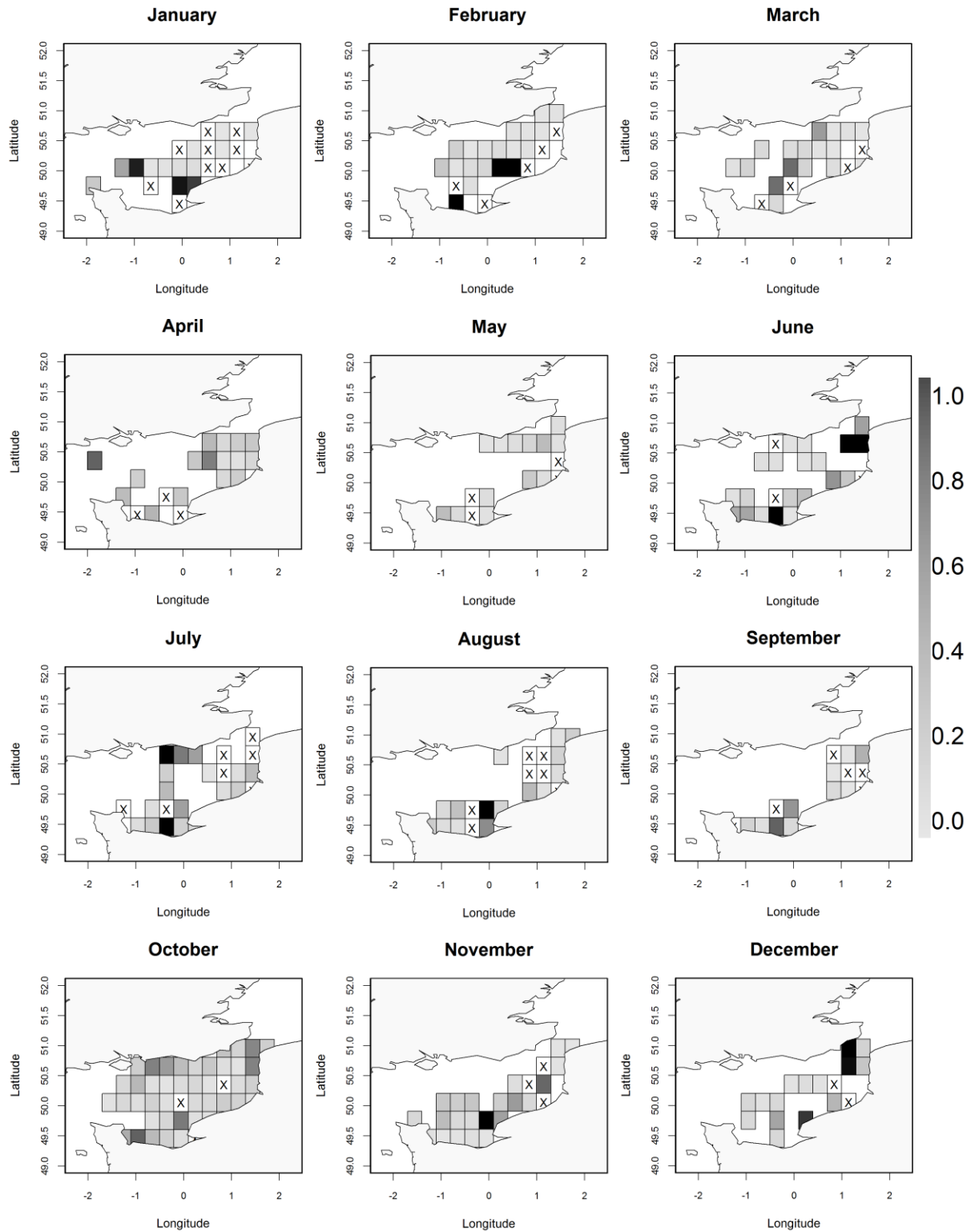
97

98 **Figure S13.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

99 red mullet. 'X' represents areas where no individual of a species was ever fished during a

100 month in the database.

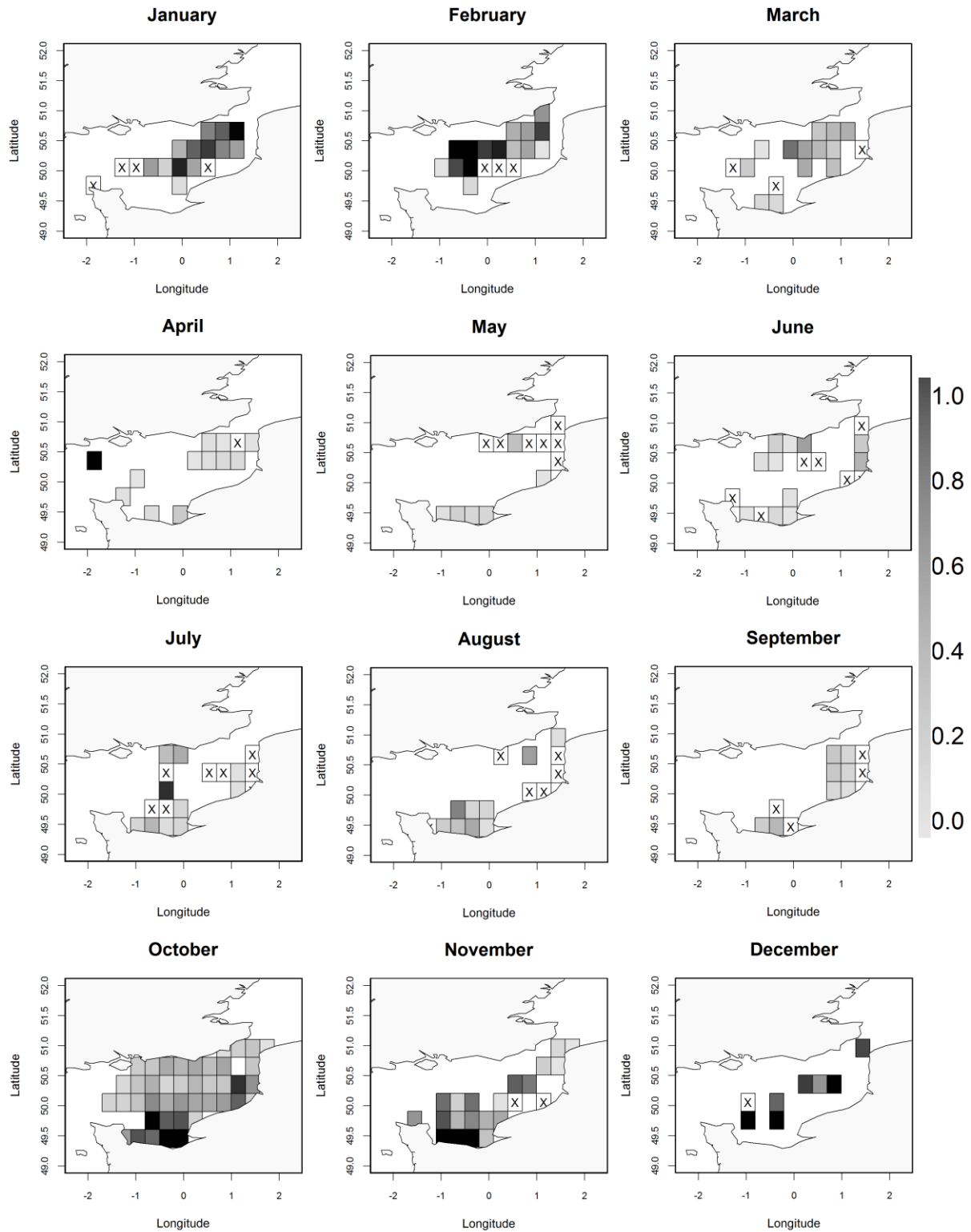
101



102

103 **Figure S14.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for
 104 seabass. 'X' represents areas where no individual of a species was ever fished during a month
 105 in the database.

106



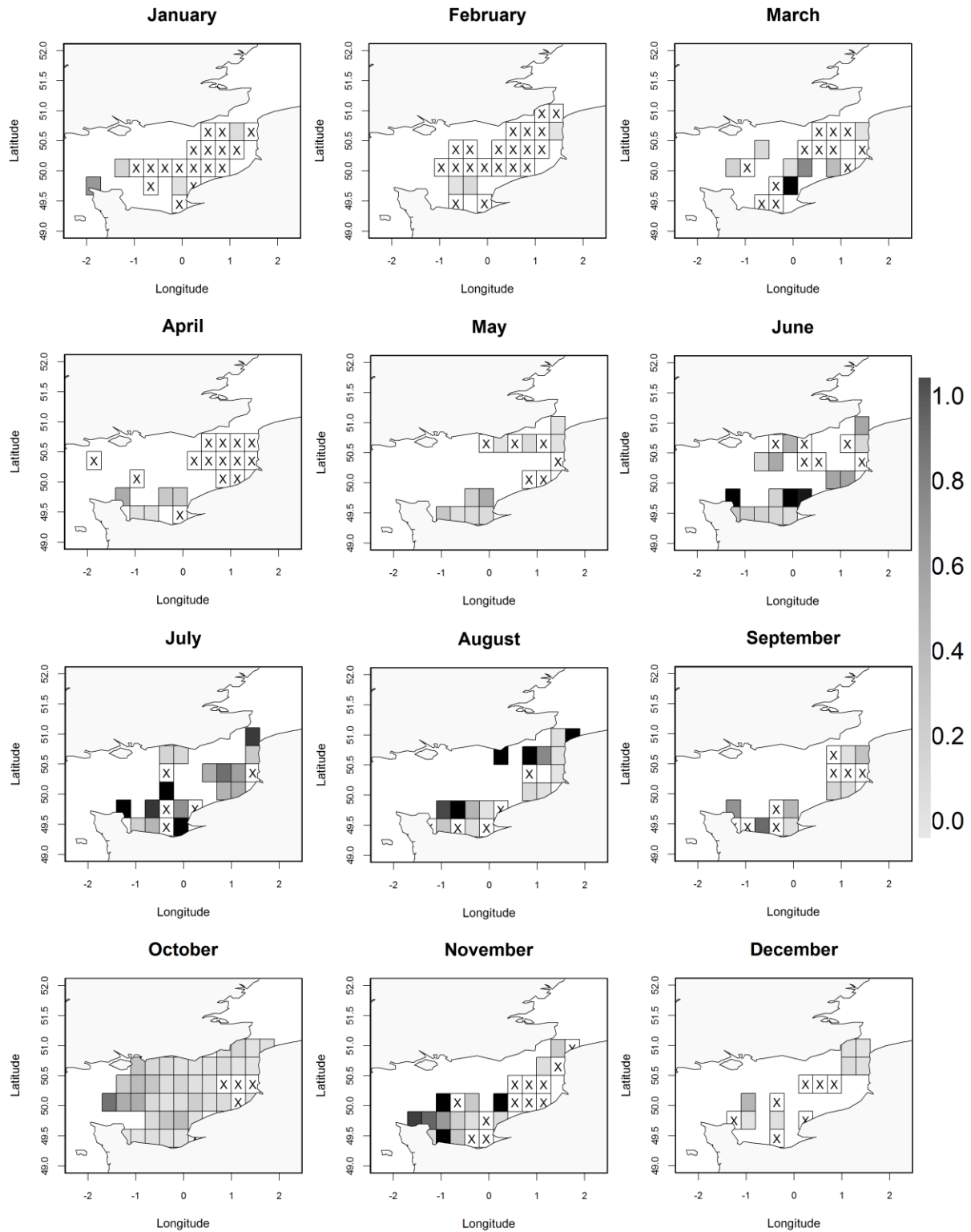
107

108 **Figure S15.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

109 squids. 'X' represents areas where no individual of a species was ever fished during a month

110 in the database.

111



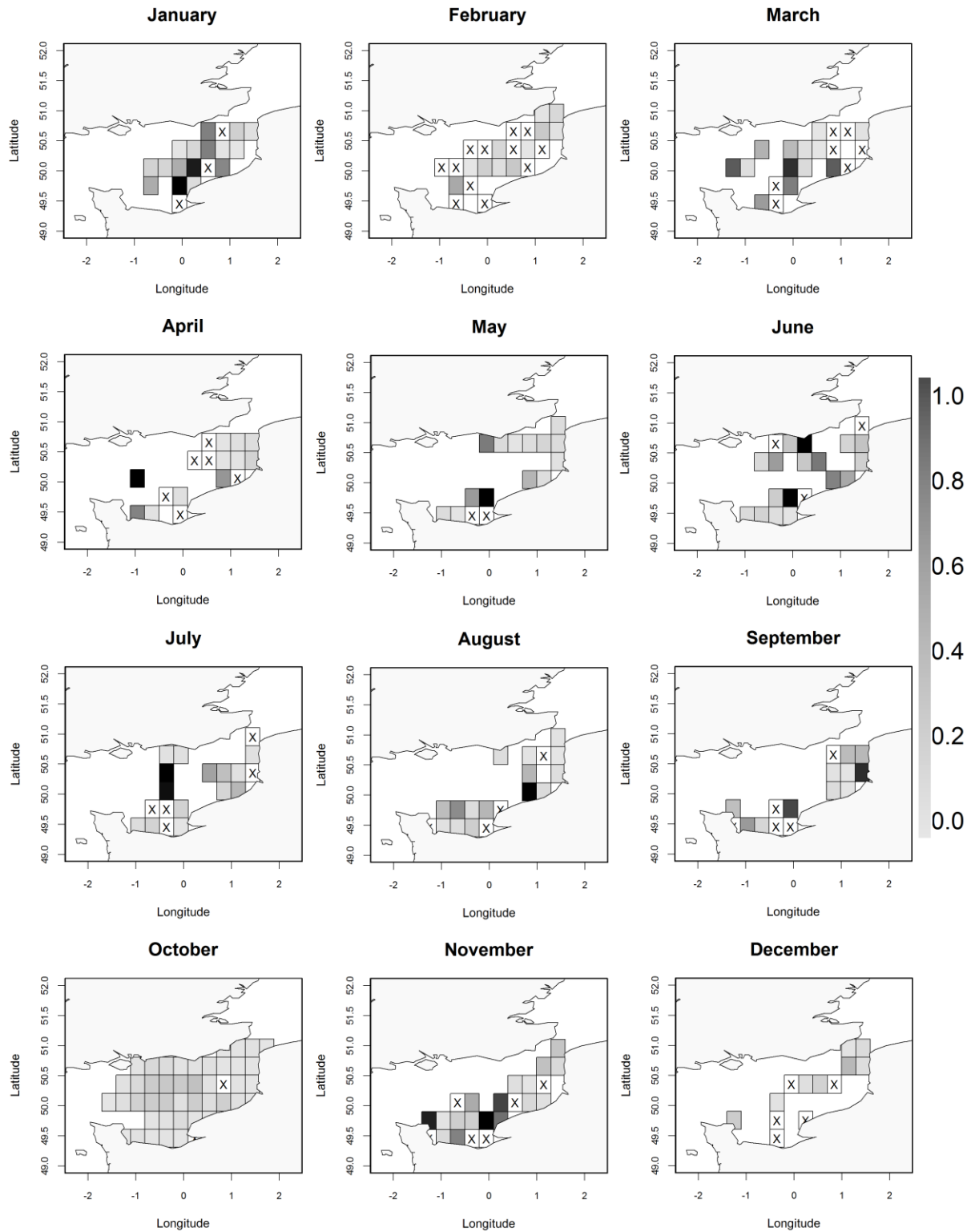
112

113 **Figure S16.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

114 starry smooth-hound. 'X' represents areas where no individual of a species was ever fished

115 during a month in the database.

116



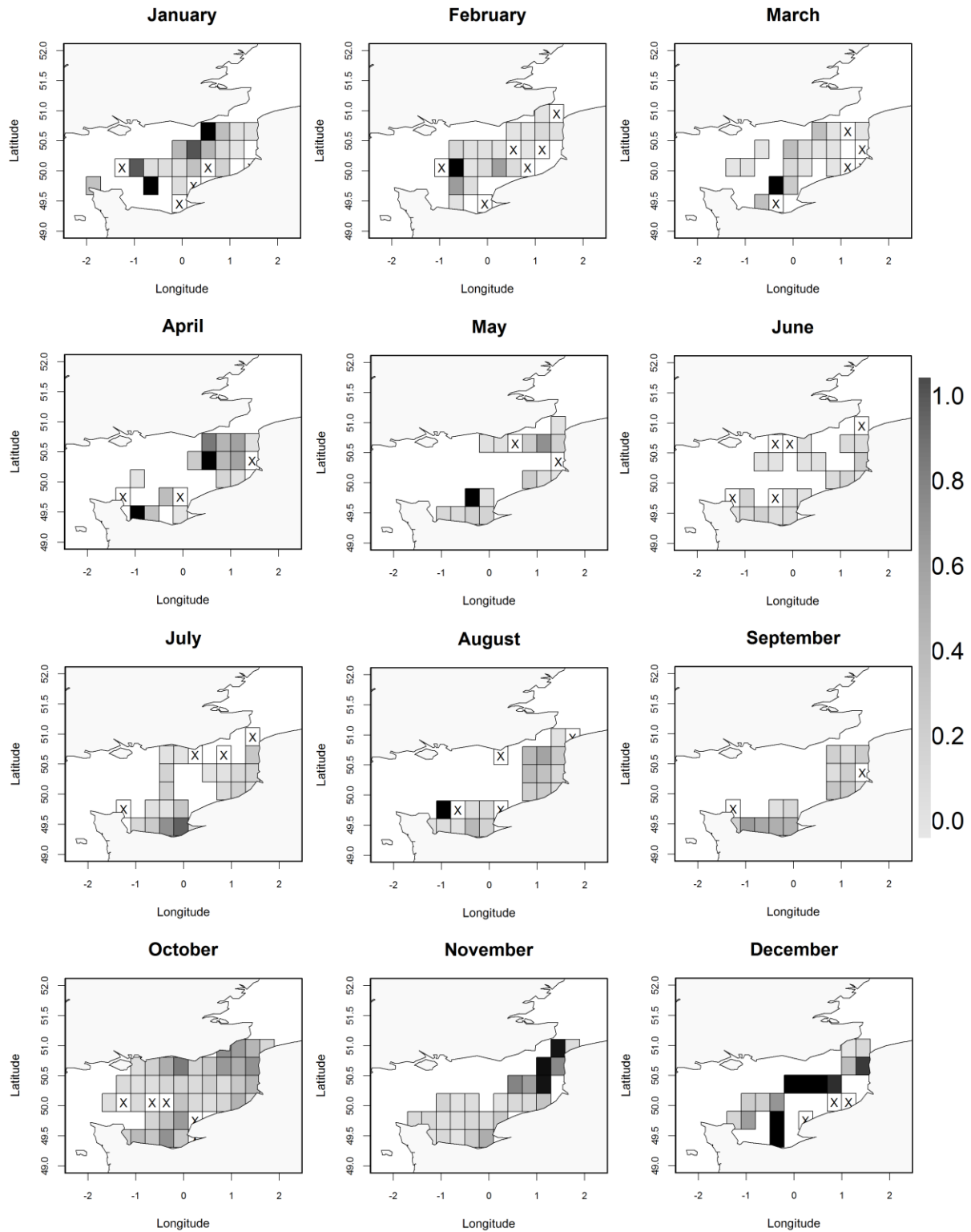
117

118 **Figure S17.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

119 thornback ray. 'X' represents areas where no individual of a species was ever fished during a

120 month in the database.

121



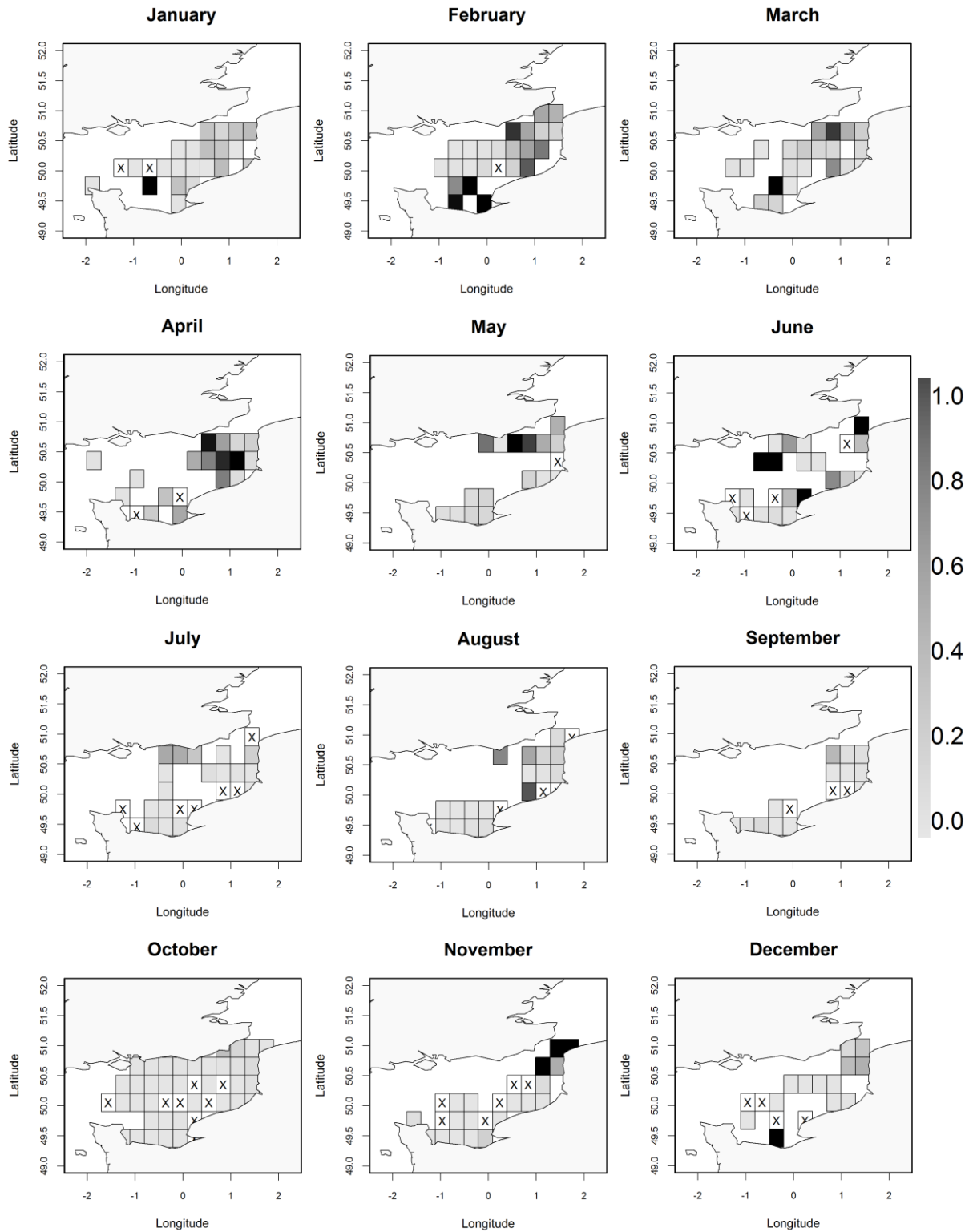
122

123 **Figure S18.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

124 tub gurnard. 'X' represents areas where no individual of a species was ever fished during a

125 month in the database.

126



127

128 **Figure S19.** Monthly spatial abundance distribution estimated from OBSMER and CGFS for

129 whiting. 'X' represents areas where no individual of a species was ever fished during a month

130 in the database.