

Ecography

ECOG-00317

Mannocci, L., Laran, S., Monestiez, P., Dorémus, G.,
Van Canneyt, O., Watremez, P. and Ridoux, V. 2013.
Predicting top predator habitats in the Southwest
Indian Ocean. – *Ecography* 36: xxx–xxx.

Supplementary material

Appendix 1: Main breeding colonies for each seabird guild

Tropicbirds	References
Europa (4500 RTT, 1000 WTT), Cosmoledo (2000 WTT, 2000 RTT), Reunion (2000-3000 WTT), Aldabra (2500 WTT, 1900 RTT), Mauritius (2600 RTT, 1500 WTT), Cousin (860-1540 WTT), Aride (276-972 WTT), Cousine (440-850 WTT), Cap Amber (?WTT), Mayotte (>100 WTT), Nosy Vé (YR, 250)	Le Corre 2001 ; Rocamora et al. 2003; Le Corre & Jaquemet 2005; Kojadinovic et al. 2008; Catry et al. 2009a ; Le Corre & Bemanaja 2009; Le Corre pers. com., BirdLife International 2012
Grey terns	References
Nosy Foty (10840 CT), Nosy Bé (4000 RT), Anorontary (3200 CT, 500 RT), Nosy Barren (1480 RT), St Brandon (400 RT)	Le Corre & Bemanaja 2009 ; Le Corre pers. com.
Noddies	References
Aride (110000 LN, 4000-11000 BN), Cousin (71900-90000 LN, ?BN), Cousine (47800-71200 LN), Mauritius (30000 LN, 30000 BN), St Brandon (15000 LN, 4500 BN), Bird (10000 BN), Amirantes (2000-5900 BN), Reunion (500 BN), Glorieuses (300 BN), Toamasina (100 BN), Cape Amber (?BN)	Le Corre & Jaquemet 2005 ; Kojadinovic et al. 2008 ; Catry et al. 2009a; Le Corre and Bemanaja 2009b; Le Corre pers. com.; BirdLife International 2012
Boobies	References
Cosmoledo (15000 RFB, 5000-6000 MB, ?BB), Aldabra (6000-7000 RFB), Europa (2800-3800 RFB), Tromelin (500 RFB, 300 MB), St Brandon (200 MB), Mitsio (250 MB), Farquhar (50-70 RFB), Mauritius (60 MB), Moheli (<50 MB), Nosy Bé (30 BB)	Le Corre 2001 ; Rocamora et al. 2003 ; Le Corre & Jaquemet 2005 ; Weimerskirch et al. 2005a; Le Corre and Bemanaja 2009b; Russell and Le Corre 2009; Le Corre pers. com., BirdLife International 2012
Petrels and shearwaters	References
Mauritius (80000 WTS), Reunion (4000-6500 BP, 3000-5000 AS, 250 MP, ?WTS), Aride (20000 WTS, 12000 AS), Cousin (24000 WTS, 5000 AS), Amirantes (20000 WTS, 100-1000 AS), Aldabra (100-1000 AS), Mauritius (200 HD), St Brandon (100 WTS)	Bretagnolle et al. 2000; Burger and Lawrence 2001; Le Corre et al. 2002; Catry et al. 2009b; Jaquemet et al. 2004; Le Corre pers. com.
Brown terns	References
Juan de Nova (2000000 ST), Glorieuses (270000 ST), Mauritius (200000-300000 ST), St Brandon (20000 ST)	Le Corre & Jaquemet 2005; Feare et al. 2007 ;Jaquemet et al. 2008
Frigatebirds	References
Europa (1100 GF, 1200 LF), Aldabra (6000 LF, 4000 GF), St Brandon (50 GF, 50 LF), roosting sites (Moheli, Mitsio, Amirantes, Seychelles, Farquhar, Coetivy)	Le Corre 2001; Le Corre & Jaquemet 2005; Weimerskirch et al. 2010; Le Corre pers. com.

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3 WTT: White tailed tropicbird, RTT: Red tailed tropicbird, RT: Roseate tern, CT: Crested tern,

4 BN: Brown noddy, LN: Lesser noddy, RFB: Red footed booby, MB: Masked booby, BB:

5 Brown booby, WTS: Wedge tailed shearwater, AS: Audubon's shearwater, BP: Barau's

6 petrel, MP: Mascarene petrel, HP: Herald petrel, ST: Sooty tern, GF: Great frigatebird, LS:
7 Lesser frigatebird.

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9 We describe the main breeding colonies for each seabird guild. For each colony, we provide
10 estimated numbers of breeding pairs of each species with associated references.

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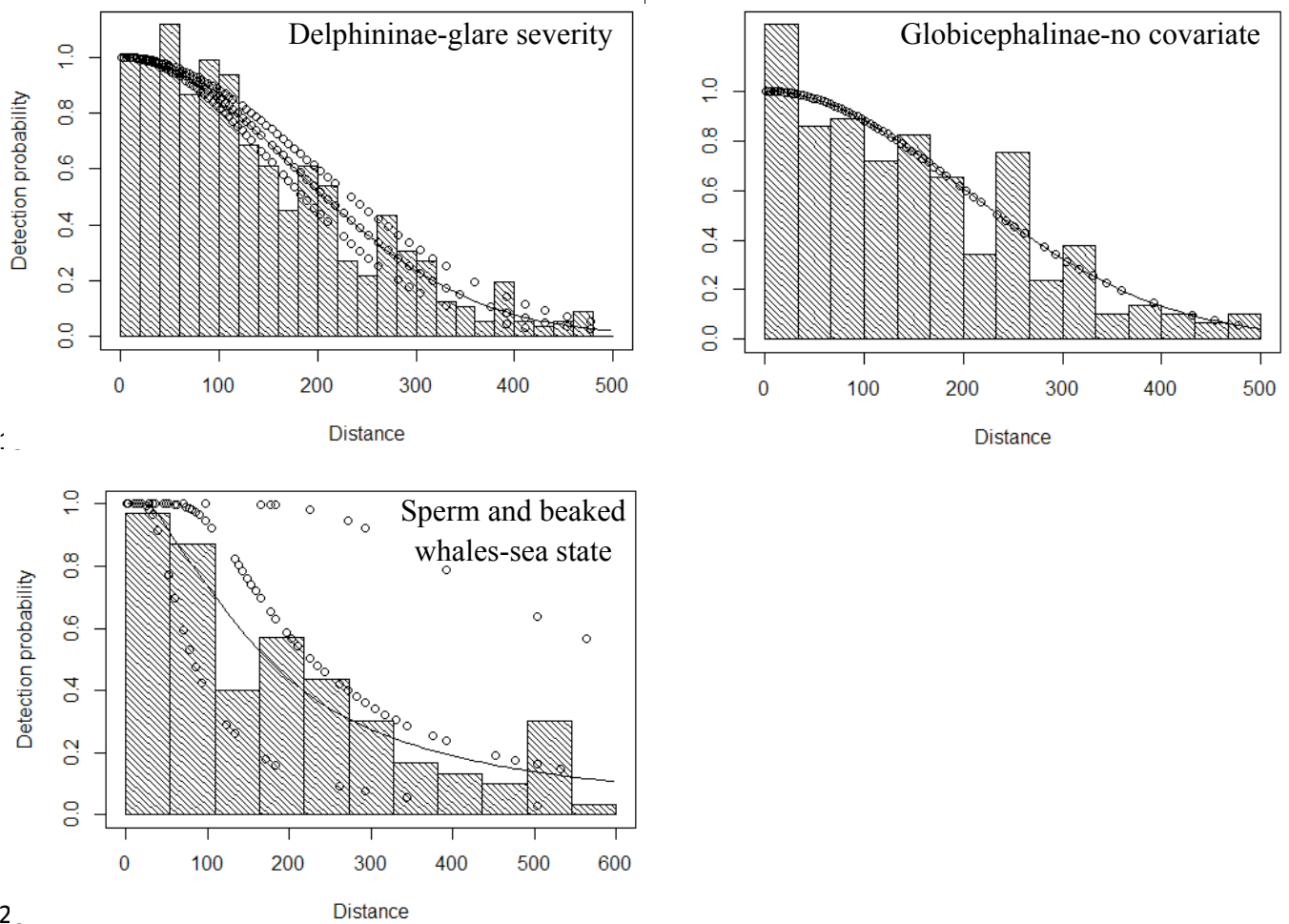
Appendix 2: Details of cetacean and seabird sightings

	Number of groups	Number of individuals	Encounter rate (groups / 100km)	Encounter rate (individuals / 100km)
CETACEANS				
Delphininae	643	9 846	0.768	11.760
Indo Pacific humpback dolphin <i>Sousa chinensis</i>	9	30		
Pantropical spotted dolphin <i>Stenella attenuata</i>	2	160		
Spinner dolphin <i>Stenella longirostris</i>	16	1 260		
<i>Stenella spp</i>	195	4 361		
Common bottlenose dolphin <i>Tursiops truncatus</i>	195	2 235		
Unidentified bottlenose dolphin	225	1 600		
Fraser's dolphin <i>Lagenodelphis hosei</i>	1	200		
Globicephalinae	232	7 559	0.277	9.028
Pygmy killer whale <i>Feresa attenuata</i> / Melon-headed whale <i>Peponocephala electra</i>	27	283		
Melon-headed whale <i>Peponocephala electra</i>	63	5 704		
Short finned pilot whale <i>Globicephala macrorynhus</i>	19	239		
False killer whale <i>Pseudorca crassidens</i> / Short finned pilot whale <i>Globicephala macrorynhus</i>	19	85		
False killer whale <i>Pseudorca crassidens</i>	51	495		
Risso's dolphin <i>Grampus griseus</i>	53	753		
Sperm and beaked whales	142	275	0.170	0.328
Blainville's beaked whale <i>Mesoplodon densirostris</i>	4	6		
Unidentified Mesoplodon	20	42		
Cuvier's beaked whale <i>Ziphius cavirostris</i>	26	61		
Longman's beaked whale <i>Indopacetus pacificus</i>	3	4		
Unidentified beaked whale	32	77		
Sperm whale <i>Physeter macrocephalus</i>	29	50		
Unidentified Kogia	28	35		
SEABIRDS				
Tropicbirds	1 112	1 253	1.328	1.497
White tailed tropicbird <i>Phaeton lepturus</i>	428	454		
Red tailed tropicbird <i>Phaeton rubricauda</i>	45	51		
Unidentified tropicbirds	639	748		
Grey terns	4 813	19 086	5.749	22.796
Noddies	1 661	9 323	1.984	11.136
Bobbies	300	535	0.358	0.639
Red footed booby <i>Sula sula</i>	91	171		
Masked booby <i>Sula dactylatra</i>	8	14		
Unidentified boobies	201	350		
Petrels and shearwaters	1 669	3 078	1.993	3.676
Brown terns	5 990	31 109	7.154	37.156
Frigatebirds	162	519	0.193	0.620

14 In this table we report the number of groups and individuals sighted during the aerial survey
15 and overall encounter rates of cetacean and seabird guilds.
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17 **Appendix 3: Detection models for cetaceans according to multiple covariate distance sampling**

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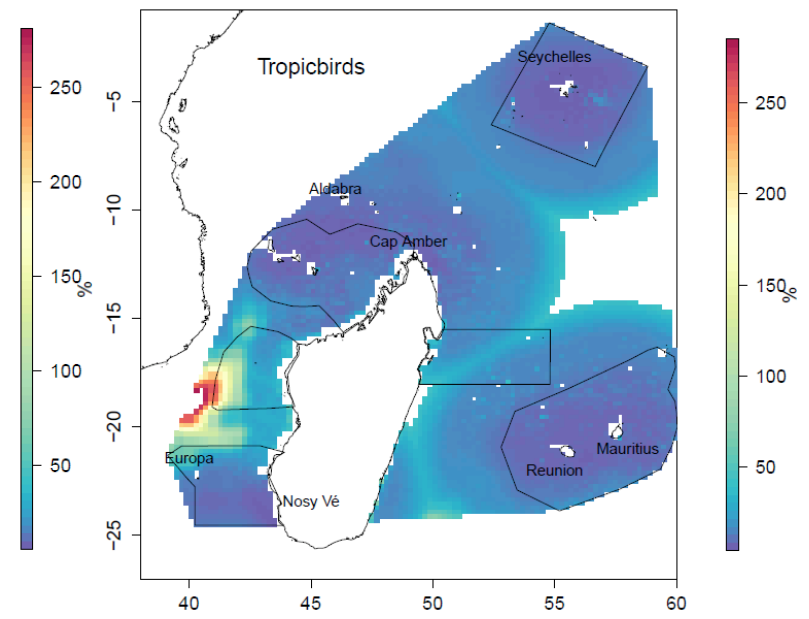
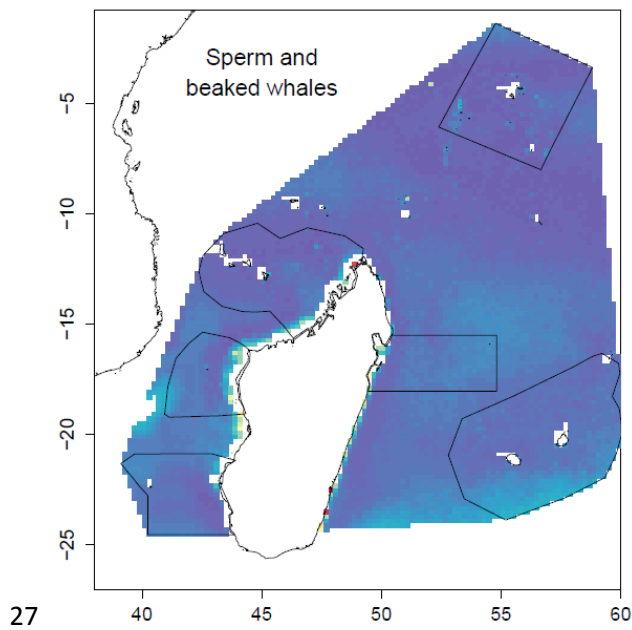
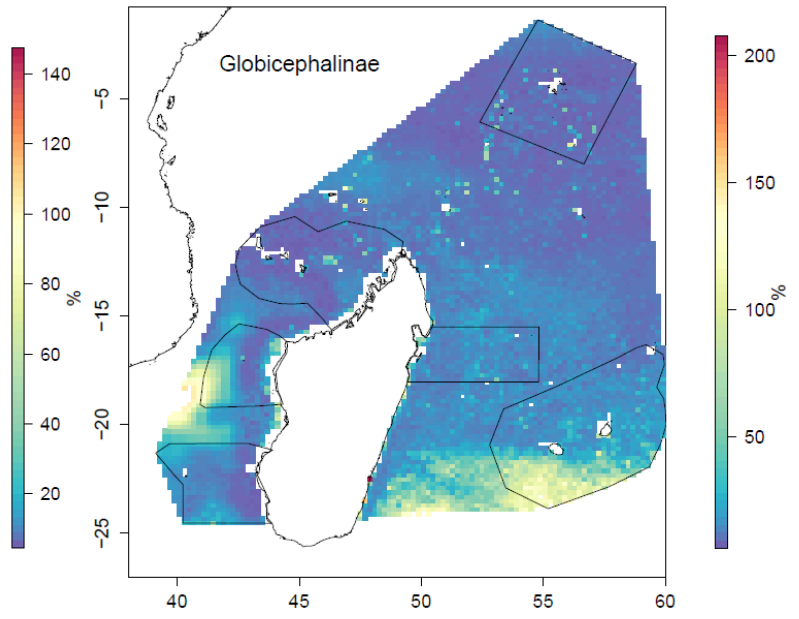
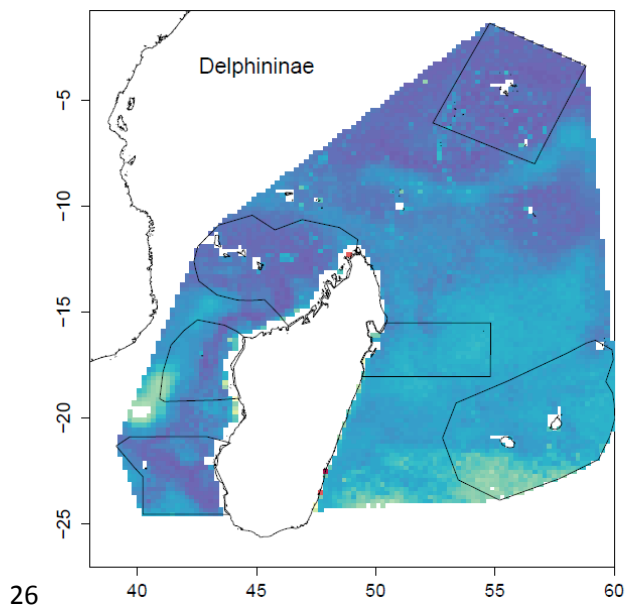


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21 Glare severity significantly affected the detection of Delphininae and sea state significantly
22 affected the detection of sperm and beaked whales (the detection model fitted for each level of
23 the covariate is shown). No covariate affected the detection of Globicephalinae.

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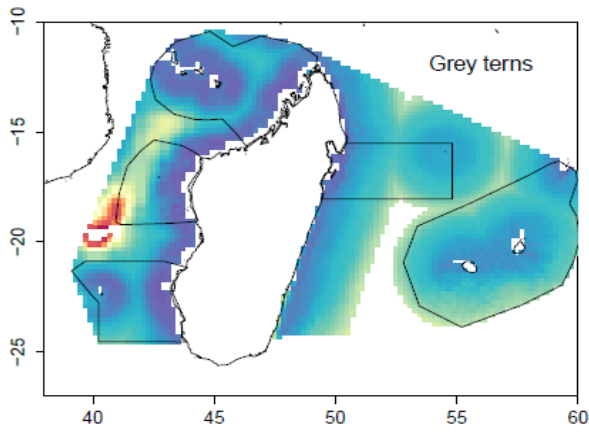
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Appendix 4: Uncertainty maps for each top predator guild

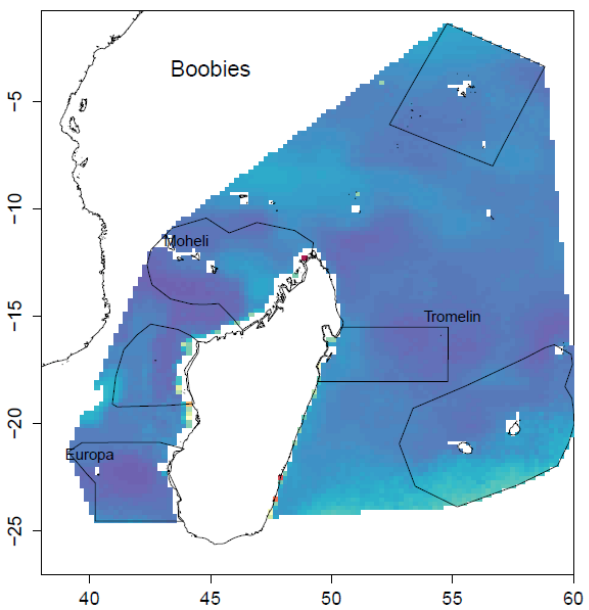


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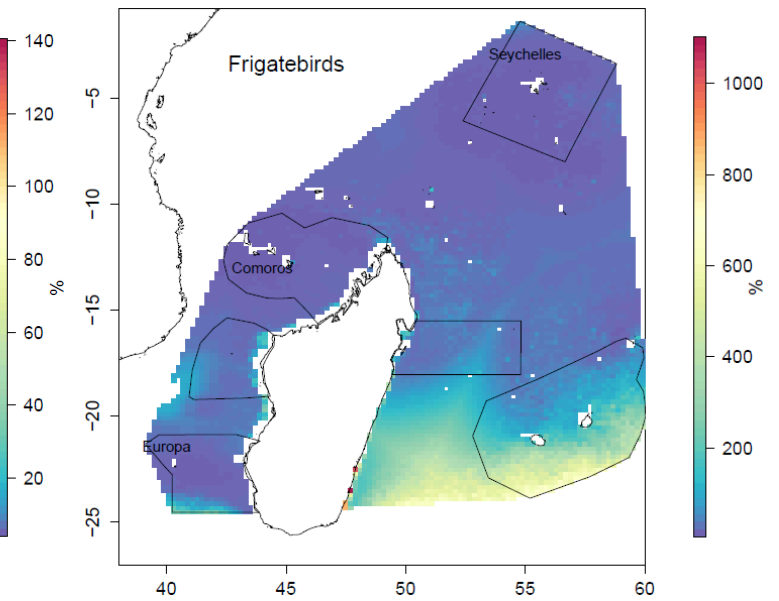
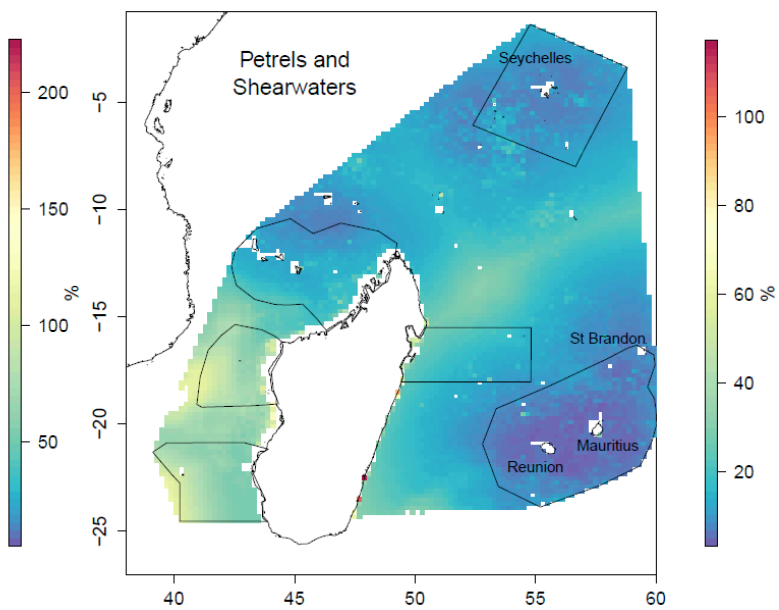
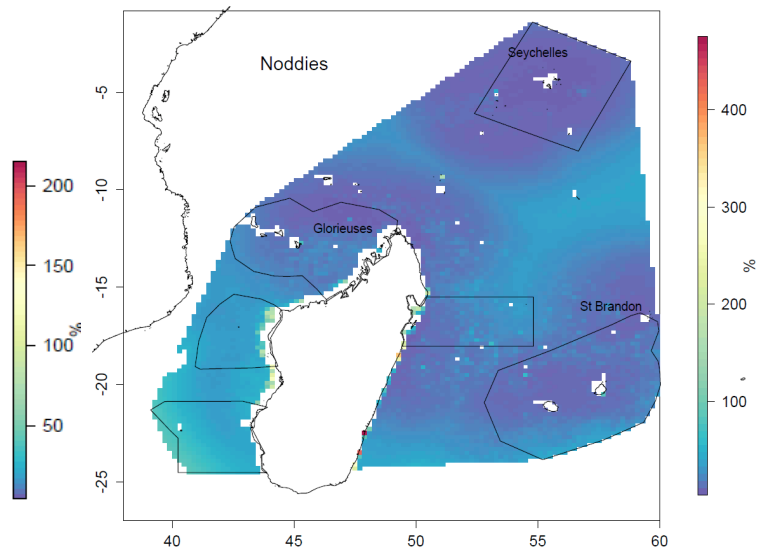
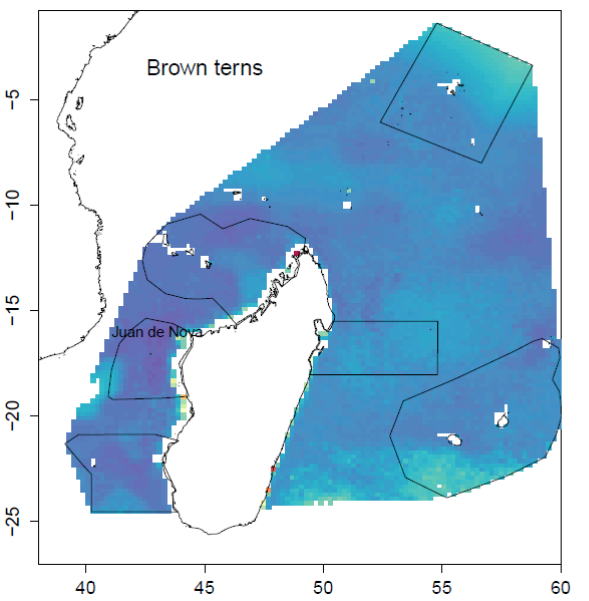
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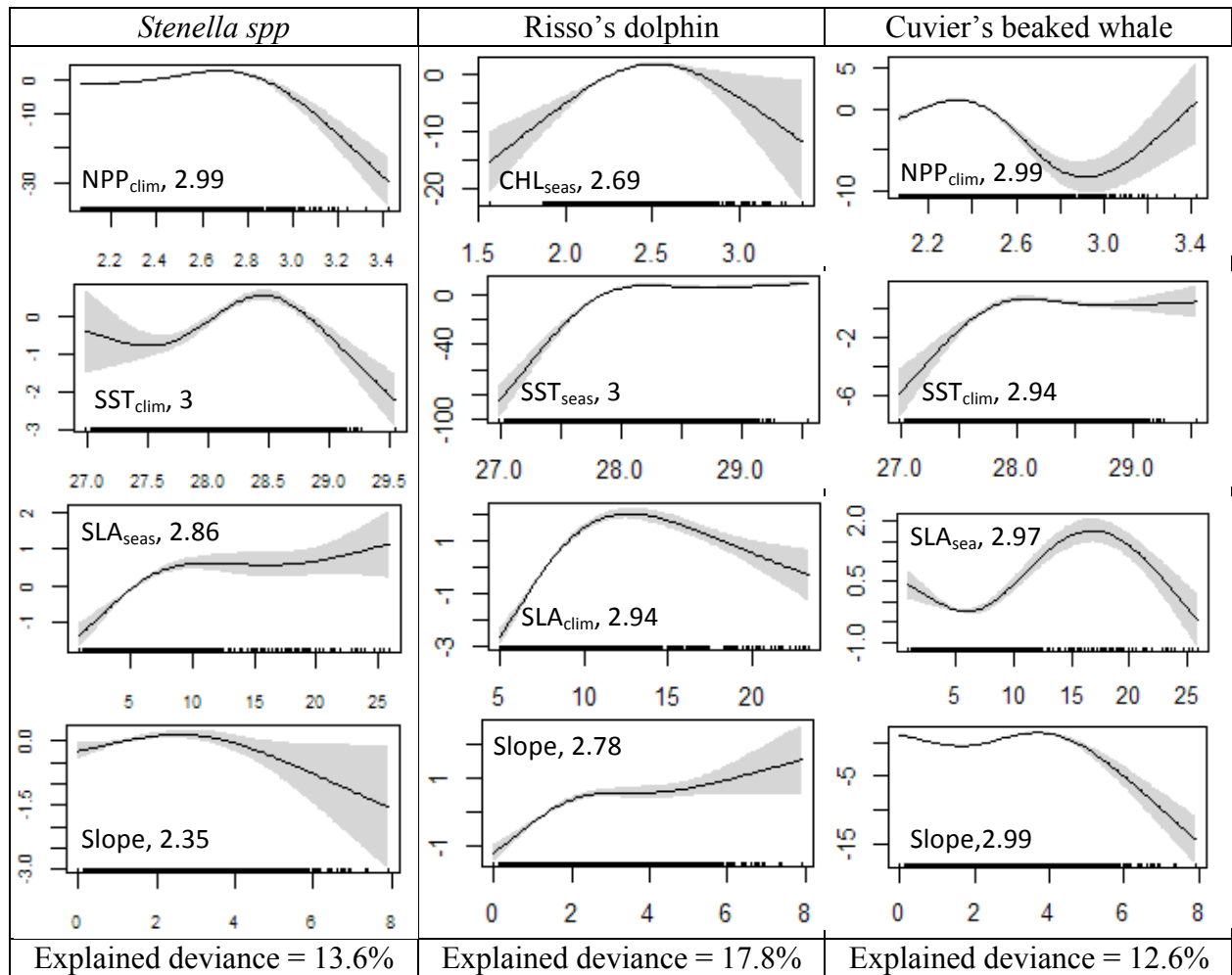


32 We provide uncertainty maps for each guild, as measured by the coefficient of variation
33 (expressed in %). High predicted densities are associated with a low uncertainty whereas low
34 predicted densities are associated with a higher uncertainty.

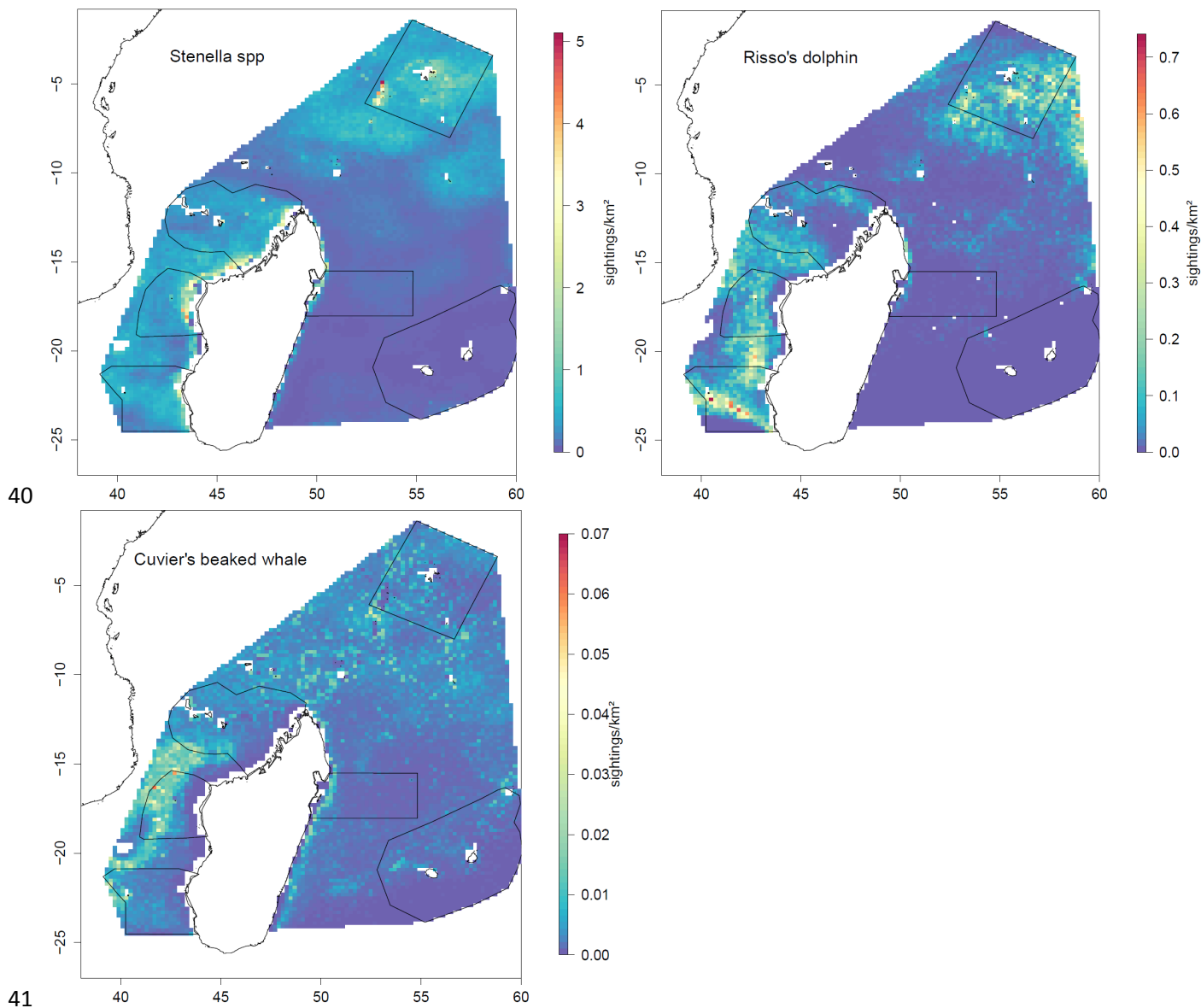
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Appendix 5: Habitat models for three cetaceans: *Stenella spp*, Risso’s dolphin and Cuvier’s beaked whale

Table A1: Forms of smooth functions for the selected covariates for each cetacean.

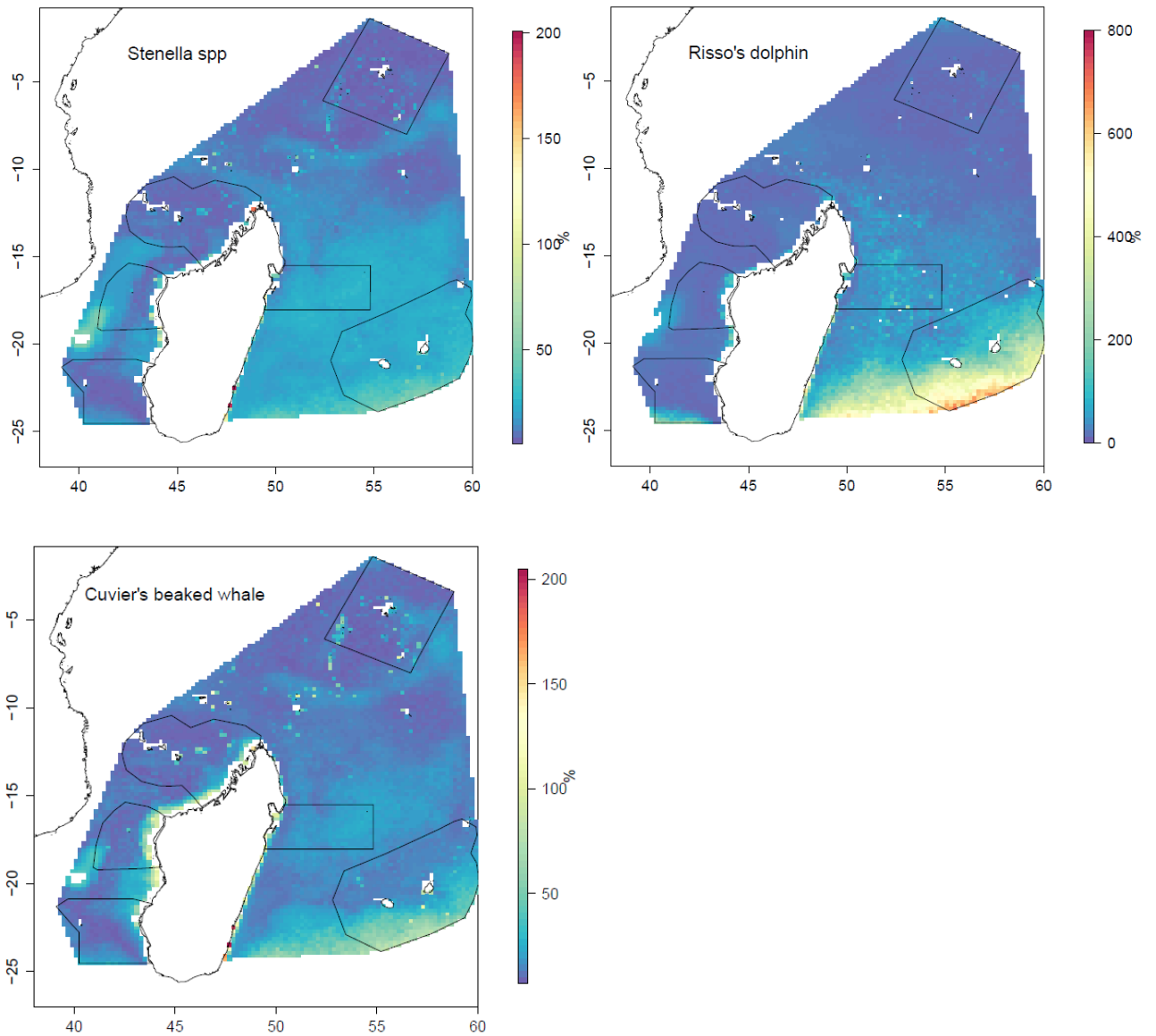


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42 **Figure A1:** Predicted relative density (individuals/km²) for each cetacean.

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47 **Figure A2:** Uncertainty map for each cetacean.

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49 Here we present habitat modeling results for three cetaceans (forms of smooth functions for
50 the selected covariates, prediction maps and uncertainty maps). Explained deviances are
51 higher for individual species compared to deviances obtained for the corresponding guild.

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