APPENDIX

TABLE A1
Relative contribution of each beached species to the similarity index (SIMPER analysis) between beach levels (controlling for the temporal scale)[a]

Scientific name	Av. Abund.	Av. Sim.	Sim/SD	Contrib.%	Cum.%
	Lower forebeach				
Spheniscus magellanicus	0.76	6.76	0.38	**53.18**	53.18
Larus dominicanus	0.43	3.66	0.29	**28.82**	81.99
Larus sp.	0.14	1.19	0.12	9.34	91.33
Average similarity = 12.71%					
	Upper forebeach				
Spheniscus magellanicus	2.36	11.80	0.72	**46.89**	46.89
Larus dominicanus	1.11	7.34	0.56	**29.16**	76.05
Nannopterum brasilianum	0.60	2.57	0.30	**10.21**	86.25
Larus sp.	0.49	1.74	0.27	6.90	93.15
Average similarity = 25.17%					

[a] Av. Prom. = average abundance. Species in bold highlight those species contributing the most to dissimilarities. Av. Sim. = average similarity. Sim/SD = quotient between similarity and standard deviation. Contrib. % = percentage of contribution. Cum. % = cumulative similarity percentage. In bold, those species that contributed more than 10% similarity.

TABLE A2
SIMPER analysis results to identify the species that contributed to the dissimilarity between beach levels[a]

Scientific name	Lower forebeach Av. Abund.	Upper forebeach Av. Abund.	Av. Diss.	Diss/SD	Contrib. %	Cum.%
Spheniscus magellanicus	0.76	2.36	25.19	1.06	**30.04**	30.04
Larus dominicanus	0.43	1.11	17.12	0.85	**20.42**	50.46
Nannopterum brasilianum	0.14	0.60	9.47	0.51	**11.30**	61.76
Larus sp.	0.16	0.49	8.34	0.57	9.95	71.71
Podiceps major	0.08	0.15	3.34	0.30	3.98	75.69
Sterna sp.	0.04	0.14	2.43	0.37	2.90	78.59
Leucocarbo atriceps	0.00	0.15	1.98	0.34	2.36	80.96
Puffinus puffinus	0.04	0.30	1.89	0.29	2.25	83.21
Ardenna gravis	0.05	0.15	1.71	0.26	2.04	85.24
Puffinus sp.	0.00	0.11	1.66	0.26	1.98	87.22
Thalassarche sp.	0.04	0.11	1.30	0.25	1.56	88.77
Ardenna sp.	0.04	0.10	1.14	0.30	1.36	90.13
Average dissimilarity = 83.85%						

[a] Av. Abund. = average abundance. Av. Diss. = average dissimilarity. Diss/SD = quotient between the dissimilarity and the standard deviation. Contrib.% = percentage of contribution. Cum.% = cumulative dissimilarity percentage. In bold, those species that contributed more than 10% average dissimilarity.

TABLE A3
Spatial variation in beached birds abundance[a]

Scientific name	Lower forebeach			Upper forebeach		
	N	AF	RF	N	AF	RF
Sphenisciformes	61	27	33.75	189	52	65.00
Spheniscus magellanicus	61	27	33.75	189	52	65.00
Charadriiformes	55	31	38.75	151	61	76.25
Larus dominicanus	34	25	31.25	89	45	56.25
Larus sp.	13	11	13.75	39	26	32.50
Chroicocephalus maculipennis	1	1	1.25	2	2	2.50
Sterna hirundinacea	0	0	0.00	5	5	6.25
Sterna sp.	3	3	3.75	11	10	12.50
Thalasseus sandvicensis	0	0	0.00	1	1	1.25
Stercorarius sp.	0	0	0.00	1	1	1.25
Haematopus palliatus	2	2	2.50	1	1	1.25
Haematopus leucopodus	0	0	0.00	1	1	1.25
Anarhynchus falklandicus	1	1	1.25	1	1	1.25
Calidris fuscicollis	1	1	1.25	0	0	0.00
Procellariiformes	16	10	12.50	71	28	35.00
Fulmarus glacialoides	2	1	1.25	6	3	3.75
Puffinus puffinus	3	3	3.75	24	10	12.50
Puffinus sp.	0	0	0.00	9	8	10.00
Ardenna gravis	4	3	3.75	12	8	10.00
Ardenna sp.	3	2	2.50	8	8	10.00
Procellaria aequinoctialis	1	1	1.25	0	0	0.00
Macronectes giganteus	0	0	0.00	1	1	1.25
Macronectes sp.	0	0	0.00	2	2	2.50
Thalassarche sp.	3	3	3.75	9	5	6.25
Suliformes	12	11	13.75	64	37	46.25
Nannopterum brasilianum	11	10	12.50	48	26	32.50
Leucocarbo atriceps	0	0	0.00	12	11	13.75
Phalacrocorax sp.	1	1	1.25	4	3	3.75
Podicipediformes	8	6	7.50	13	9	11.25
Podiceps major	6	5	6.25	12	9	11.25
Podiceps occipitalis	1	1	1.25	1	1	1.25
Rollandia rolland	1	1	1.25	0	0	0.00
Anseriformes	1	1	1.25	5	4	5.00
Coscoroba coscoroba	0	0	0.00	2	1	1.25
Cygnus melancoryphus	1	1	1.25	1	1	1.25
Spatula platalea	0	0	0.00	1	1	1.25
Anas sp.	0	0	0.00	1	1	1.25
Phoenicopteriformes	1	1	1.25	3	3	3.75
Phoenicopterus chilensis	1	1	1.25	3	3	3.75
Pelecaniformes	1	1	1.25	1	1	1.25
Nycticorax nycticorax	1	1	1.25	0	0	0.00
Heron no ID	0	0	0.00	1	1	1.25

Fuliformes	1	1	1.25	0	0	0.00
Fulica sp.	1	1	1.25	0	0	0.00
Falconiformes	0	0	0.00	3	3	3.75
Falco peregrinus	0	0	0.00	1	1	1.25
Milvago chimango	0	0	0.00	2	2	2.50
Strigiformes	0	0	0.00	1	1	1.25
Athene cunicularia	0	0	0.00	1	1	1.25
No ID	7	6	7.50	8	8	10.00
Total beached birds	163			509		

[a] Number of beached individuals (N), frequency of occurrence (presence/absence), absolute frecuency (AF = number of events where the presence of the species was recorded at each level of the beach per transect) and relative frequency (RF = percentage of stranding records from each sampling site and beach level per transect). No ID = unidentified.

TABLE A4
Relative contribution of each beached species to the similarity index (SIMPER analysis) between seasons of the year ofeach sampled year adjusted to the spatial scale[a]

Scientific name	Av. Abund.	Av. Abund.	Av. Diss.	Diss/SD	Contrib.%	Cum.%
	Autumn*	**Autumn****				
Spheniscus magellanicus	1.15	1.71	28.81	1.18	**34.53**	34.53
Larus dominicanus	1.04	0.63	16.05	0.95	**19.24**	53.77
Nannopterum brasilianum	0.42	0.00	6.61	0.57	7.93	61.69
Larus sp.	0.15	0.29	6.38	0.49	7.65	69.34
Leucocarbo atriceps	0.08	0.21	3.35	0.46	4.01	73.36
Sterna sp.	0.15	0.13	3.22	0.44	3.85	77.21
Ardenna gravis	0.23	0.04	2.74	0.35	3.29	80.50
Puffinus puffinus.	0.12	0.08	2.74	0.28	3.29	83.79
Ardenna sp.	0.23	0.00	2.50	0.45	3.00	86.79
Puffinus sp.	0.04	0.04	1.69	0.26	2.03	88.82
Phoenicopterus chilensis	0.08	0.00	1.66	0.18	1.99	90.81
Average dissimilarity = 83.42%						
	Winter*	**Winter****				
Spheniscus magellanicus	2.09	0.70	27.80	1.09	**31.15**	31.15
***Larus* sp.**	0.27	0.60	12.94	0.64	**14.51**	45.65
Larus dominicanus	0.77	0.35	12.14	0.65	**13.60**	59.26
Podiceps major	0.36	0.10	9.12	0.43	**10.22**	69.48
Nannopterum brasilianum	0.32	0.10	5.43	0.38	6.09	75.56
Thalassarche sp.	0.45	0.00	4.50	0.52	5.04	80.61
Fulmarus glacialoides	0.36	0.00	3.45	0.42	3.86	84.47
Haematopus palliatus	0.05	0.10	2.34	0.31	2.62	87.09
Phalacrocorax sp.	0.00	0.10	1.43	0.28	1.61	88.70
Leucocarbo atriceps	0.09	0.00	1.20	0.31	1.35	90.05
Average dissimilarity = 89.23%						

	Spring*	**Spring****				
Larus dominicanus	0.70	0.86	23.80	0.86	**28.19**	28.19
Spheniscus magellanicus	0.95	0.36	19.96	0.82	**23.64**	51.83
Nannopterum brasilianum	0.65	0.50	19.33	0.71	**22.90**	74.73
Larus sp.	0.20	0.23	5.57	0.52	6.60	81.33
Podiceps major	0.20	0.05	3.63	0.42	4.31	85.64
Sterna sp.	0.10	0.05	2.51	0.36	2.98	88.62
Podiceps occipitalis	0.10	0.00	2.36	0.30	2.850	91.41
Average dissimilarity = 84.42%						
	Summer*	**Summer****				
Spheniscus magellanicus	3.25	3.79	28.92	1.26	**39.54**	39.54
Larus dominicanus	1.08	0.79	8.75	0.73	**11.96**	51.49
Puffinus puffinus	1.58	0.14	7.53	0.82	**10.29**	61.79
***Larus* sp.**	0.83	0.29	7.51	0.79	**10.26**	72.05
Nannopterum brasilianum	1.08	0.14	5.53	0.76	7.57	79.62
Ardenna gravis	0.58	0.07	3.69	0.60	5.05	84.66
Sterna sp.	0.08	0.14	2.13	0.41	2.91	87.58
Coscoroba coscoroba	0.17	0.00	2.13	0.28	2.91	90.48
Average dissimilarity = 83.42%						

[a] Av. Abund. = average abundance. Av. Diss. = average dissimilarity. Diss/SD = quotient between the dissimilarity and the standard deviation. Contrib.% = percentage of contribution. Cum.% = cumulative dissimilarity percentage. *season corresponding to the period 2020-2021. ** season corresponding to the period 2021-2022. In bold, those species that contributed more than 10% average dissimilarity.

TABLE A5

Seasonal variation in beached birds specific richness values (number of species) during the study period.

Periods	Richness			
	Autumn	**Winter**	**Spring**	**Summer**
Period 2020/21	17	21	12	14
Period 2021/22	15	10	9	11

TABLE A6
Temporal variation in the abundance and occurrence of beached birds for the study period 2020-21[a]

	Autumn			Winter			Spring			Summer			Annual		
Scientific name	**N**	**AF**	**RF**	**N**	**AF**	**RF**	**N**	**AF**	**RF**	**N**	**AF**	**RF**	**N**	**AF**	**RF**
Sphenisciformes	30	9	34.62	37	10	45.45	28	10	50.00	39	9	75.00	134	38	47.50
Spheniscus magellanicus	30	9	34.62	37	10	45.45	28	10	50.00	39	9	75.00	134	38	47.50
Charadriiformes	39	17	65.38	27	10	45.45	22	11	55.00	25	8	66.67	113	46	57.50
Larus dominicanus	27	13	50.00	15	6	27.27	16	9	45.00	13	8	66.67	71	36	45.00
Larus sp.	4	4	15.38	6	6	27.27	4	3	15.00	10	5	41.67	24	18	22.50
Chroicocephalus maculipennis	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Sterna hirundinacea	1	1	3.85	3	3	13.64	0	0	0.00	0	0	0.00	4	4	5.00
Sterna sp.	4	4	15.38	1	1	4.55	2	2	10.00	1	1	8.33	8	8	10.00
Thalasseus sandvicensis	0	0	0.00	0	0	0.00	0	0	0.00	1	1	8.33	1	1	1.25
Catharacta sp.	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Haematopus palliatus	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Haematopus leucopodus	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Anarhynchus falklandicus	2	2	7.69	0	0	0.00	0	0	0.00	0	0	0.00	2	2	2.50
Calidris fuscicollis	1	1	3.85	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Procellariiformes	16	9	34.62	21	6	27.27	5	4	20.00	32	8	66.67	74	27	33.75
Fulmarus glacialoides	0	0	0.00	8	4	18.18	0	0	0.00	0	0	0.00	8	4	5.00
Puffinus puffinus	3	3	11.54	0	0	0.00	0	0	0.00	19	6	50.00	22	9	11.25
Puffinus sp.	1	1	3.85	0	0	0.00	1	1	5.00	2	2	16.67	4	4	5.00
Ardenna gravis	6	3	11.54	1	1	4.55	0	0	0.00	7	5	41.67	14	9	11.25
Ardenna sp.	6	5	19.23	0	0	0.00	1	1	5.00	4	4	33.33	11	10	12.50
Procellaria aequinoctialis	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Macronectes giganteus	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Macronectes sp.	0	0	0.00	2	2	9.09	0	0	0.00	0	0	0.00	2	2	2.50
Thalassarche sp.	0	0	0.00	9	5	22.73	3	3	15.00	0	0	0.00	12	8	10.00
Suliformes	15	10	38.46	7	6	27.27	15	8	40.00	14	5	41.67	51	29	36.25

Nannopterum brasilianus	11	9	34.62	5	4	18.18	15	8	40.00	13	5	41.67	44	26	32.50
Leucocarbo atriceps	2	2	7.69	2	2	9.09	0	0	0.00	1	1	8.33	5	5	6.25
Phalacrocorax sp.	2	1	3.85	0	0	0.00	0	0	0.00	0	0	0.00	2	1	1.25
Podicipediformes	0	0	0.00	10	5	22.73	5	4	20.00	1	1	8.33	16	10	12.50
Podiceps major	0	0	0.00	8	5	22.73	4	3	15.00	1	1	8.33	13	9	11.25
Podiceps occipitalis	0	0	0.00	1	1	4.55	1	1	5.00	0	0	0.00	2	2	2.50
Rollandia rolland	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Anseriformes	1	1	3.85	0	0	0.00	0	0	0.00	3	2	16.67	4	3	3.75
Coscoroba coscoroba	0	0	0.00	0	0	0.00	0	0	0.00	2	1	8.33	2	1	1.25
Cygnus melancoryphus	1	1	3.85	0	0	0.00	0	0	0.00	1	1	8.33	2	2	2.50
Spatula platalea	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Anas sp.	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Phoenicopteriformes	2	2	7.69	1	1	4.55	0	0	0.00	0	0	0.00	3	3	3.75
Phoenicopterus chilensis	2	2	7.69	1	1	4.55	0	0	0.00	0	0	0.00	3	3	3.75
Pelecaniformes	0	0	0.00	2	2	9.09	0	0	0.00	0	0	0.00	2	2	2.50
Nycticorax nycticorax	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Heron no ID	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Gruiformes	1	1	3.85	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Fulica sp.	1	1	3.85	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Falconiformes	0	0	0.00	1	1	4.55	1	1	5.00	0	0	0.00	2	2	2.50
Falco peregrinus	0	0	0.00	0	0	0.00	1	1	5.00	0	0	0.00	1	1	1.25
Milvago chimango	0	0	0.00	1	1	4.55	0	0	0.00	0	0	0.00	1	1	1.25
Strigiformes	0	0	0.00	0	0	0.00	1	1	5.00	0	0	0.00	1	1	1.25
Athene cunicularia	0	0	0.00	0	0	0.00	1	1	5.00	0	0	0.00	1	1	1.25
No ID	2	2	7.69	1	1	4.55	1	1	5.00	3	3	25.00	7	7	8.75
Total beached birds	106			107			78			117			408		

[a] N = abundance of beached birds, frequency of occurrence (presence/absence), absolute frequency of occurrence (AF = number of events where the presence of the species at each station per transect) and relative frequency of occurrence (RF = percentage of stranding records at each station per transect). No ID = unidentified.

TABLE A7
Temporal variation in the abundance and occurrence of beached birds for the study period 2021-2022[a]

	Autumn			Winter			Spring			Summer			Annual		
Scientific name	**N**	**AF**	**RF**	**N**	**AF**	**RF**	**N**	**AF**	**RF**	**N**	**AF**	**RF**	**N**	**AF**	**RF**
Sphenisciformes	41	18	75.00	14	8	40.00	8	5	22.73	53	10	71.43	116	41	51.25
Spheniscus magellanicus	41	18	75.00	14	8	40.00	8	5	22.73	53	10	71.43	116	41	51.25
Charadriiformes	28	15	62.50	22	11	55.00	26	10	45.45	17	10	71.43	93	46	57.50
Larus dominicanus	15	11	45.83	7	4	20.00	19	10	45.45	11	9	64.29	52	34	42.50
Larus sp.	7	5	20.83	12	7	35.00	5	3	13.64	4	4	28.57	28	19	23.75
Chroicocephalus maculipennis	2	2	8.33	1	1	5.00	0	0	0.00	0	0	0.00	3	3	3.75
Sterna hirundinacea	0	0	0.00	0	0	0.00	1	1	4.55	0	0	0.00	1	1	1.25
Sterna sp.	3	2	8.33	0	0	0.00	1	1	4.55	2	2	14.29	6	5	6.25
Thalasseus sandvicensis	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Stercorarius sp.	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Haematopus palliatus	0	0	0.00	2	2	10.00	0	0	0.00	0	0	0.00	2	2	2.50
Haematopus leucopodus	1	1	4.17	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Anarhynchus falklandicus	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Calidris fuscicollis	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Procellariiformes	4	2	8.33	1	1	5.00	2	2	9.09	6	3	21.43	13	8	10.00
Fulmarus glacialoides	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Puffinus puffinus	2	1	4.17	0	0	0.00	1	1	4.55	2	2	14.29	5	4	5.00
Puffinus sp.	1	1	4.17	1	1	5.00	1	1	4.55	2	1	7.14	5	4	5.00
Ardenna gravis	1	1	4.17	0	0	0.00	0	0	0.00	1	1	7.14	2	2	2.50
Ardenna sp.	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Procellaria aequinoctialis	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Macronectes giganteus	0	0	0.00	0	0	0.00	0	0	0.00	1	1	7.14	1	1	1.25
Macronectes sp.	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Thalassarche sp.	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Suliformes	6	5	20.83	4	4	20.00	11	7	31.82	4	3	21.43	25	19	23.75

Nannopterum brasilianum	0	0	0.00	2	2	10.00	11	7	31.82	2	1	7.14	15	10	12.50
Leucocarbo atriceps	5	4	16.67	0	0	0.00	0	0	0.00	2	2	14.29	7	6	7.50
Phalacrocorax sp.	1	1	4.17	2	2	10.00	0	0	0.00	0	0	0.00	3	3	3.75
Podicipediformes	1	1	4.17	2	2	10.00	1	1	4.55	1	1	7.14	5	5	6.25
Podiceps major	1	1	4.17	2	2	10.00	1	1	4.55	1	1	7.14	5	5	6.25
Podiceps occipitalis	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Rollandia rolland	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Anseriformes	2	2	8.33	0	0	0.00	0	0	0.00	0	0	0.00	2	2	2.50
Coscoroba coscoroba	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Cygnus melancoryphus	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Spatula platalea	1	1	4.17	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Anas sp.	1	1	4.17	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Phoenicopteriformes	0	0	0.00	1	1	5.00	0	0	0.00	0	0	0.00	1	1	1.25
Phoenicopterus chilensis	0	0	0.00	1	1	5.00	0	0	0.00	0	0	0.00	1	1	1.25
Pelecaniformes	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Nycticorax nycticorax	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Heron no ID	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Gruiformes	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Fulica sp.	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Falconiformes	1	1	4.17	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Falco peregrinus	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Milvago chimango	1	1	4.17	0	0	0.00	0	0	0.00	0	0	0.00	1	1	1.25
Strigiformes	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
Athene cunicularia	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
No ID	3	3	12.50	4	3	15.00	0	0	0.00	1	1	7.14	8	7	8.75
Total beached birds	86			48			48			82			264		

[a] N = abundance of beached birds, frequency of occurrence (presence/absence), absolute frequency of occurrence (AF = number of events where the presence of the species at each station per transect) and relative frequency of occurrence (RF = percentage of stranding records at each station per transect). No ID = unidentified.

TABLE A8
Relative contribution of each beached to the dissimilarity index (SIMPER analysis) between beach levels associated with the seasons of the sampled year[a]

	Lower forebeach	Upper forebeach				
Scientific name	**Av. Abund.**	**Av. Abund.**	**Av. Diss.**	**Diss/SD**	**Contrib.%**	**Cum.%**
Spheniscus magellanicus	0.76	2.36	25.19	1.06	**30.04**	30.04
Larus dominicanus	0.43	1.11	17.12	0.85	**20.42**	50.46
Nannopterum brasilianum	0.14	0.60	9.47	0.51	**11.30**	61.76
Larus sp.	0.16	0.49	8.34	0.57	9.95	71.71
Podiceps major	0.08	0.15	3.34	0.30	3.98	75.69
Sterna sp.	0.04	0.14	2.43	0.37	2.90	78.59
Leucocarbo atriceps	0.00	0.15	1.98	0.34	2.36	80.96
Puffinus puffinus	0.04	0.30	1.89	0.29	2.25	83.21
Ardenna gravis	0.05	0.15	1.71	0.26	2.04	85.24
Puffinus sp.	0.00	0.11	1.66	0.26	1.98	87.22
Thalassarche sp.	0.04	0.11	1.30	0.25	1.56	88.77
Ardenna sp.	0.04	0.10	1.14	0.30	1.36	90.13
Average dissimilarity = 83.85%						

[a] Av. Abund. = average abundance. Av. Diss. = average dissimilarity. Diss/SD = quotient between the dissimilarity and the standard deviation. Contrib.% = percentage of contribution. Cum.% = cumulative dissimilarity percentage. In bold, those species that contributed more than 10% average dissimilarity.

TABLE A9

Wilcoxon rank sum test with correction for continuity results between seasons during the study period for Magellanic Penguin

	Autumn[a]	Autumn[b]	Winter[a]	Winter[b]	Spring[a]	Spring[b]	Summer[a]
Autumn[b]	0.170	-	-	-	-	-	-
Winter[a]	1.000	1.000	-	-	-	-	-
Winter[b]	1.000	0.697	1.000	-	-	-	-
Spring[a]	1.000	1.000	1.000	1.000	-	-	-
Spring[b]	1.000	**0.014**	1.000	1.000	1.000	-	-
Summer[a]	0.201	1.000	1.000	0.546	1.000	**0.027**	-
Summer[b]	0.316	1.000	1.000	0.704	1.000	**0.043**	1.000

[a] = season corresponding to the period 2020/21.

[b] = season corresponding to the period 2021/22. In bold, significant values.

TABLE A10

Wilcoxon rank sum test with correction for continuity results between seasons during the study period for Neotropic Cormorant

	Autumn[a]	Autumn[b]	Winter[a]	Winter[b]	Spring[a]	Spring[b]	Summer[a]
Autumn[b]	**0.075**	-	-	-	-	-	-
Winter[a]	1.000	0.910	-	-	-	-	-
Winter[b]	1.000	1.000	1.000	-	-	-	-
Spring[a]	1.000	**0.022**	1.000	1.000	-	-	-
Spring[b]	1.000	**0.092**	1.000	1.000	1.000	-	-
Summer[a]	1.000	**0.025**	1.000	1.000	1.000	1.000	-
Summer[b]	1.000	1.000	1.000	1.000	1.000	1.000	1.000

[a] = season corresponding to the period 2020/21.

[b] = season corresponding to the period 2021/22. In bold, significant values.

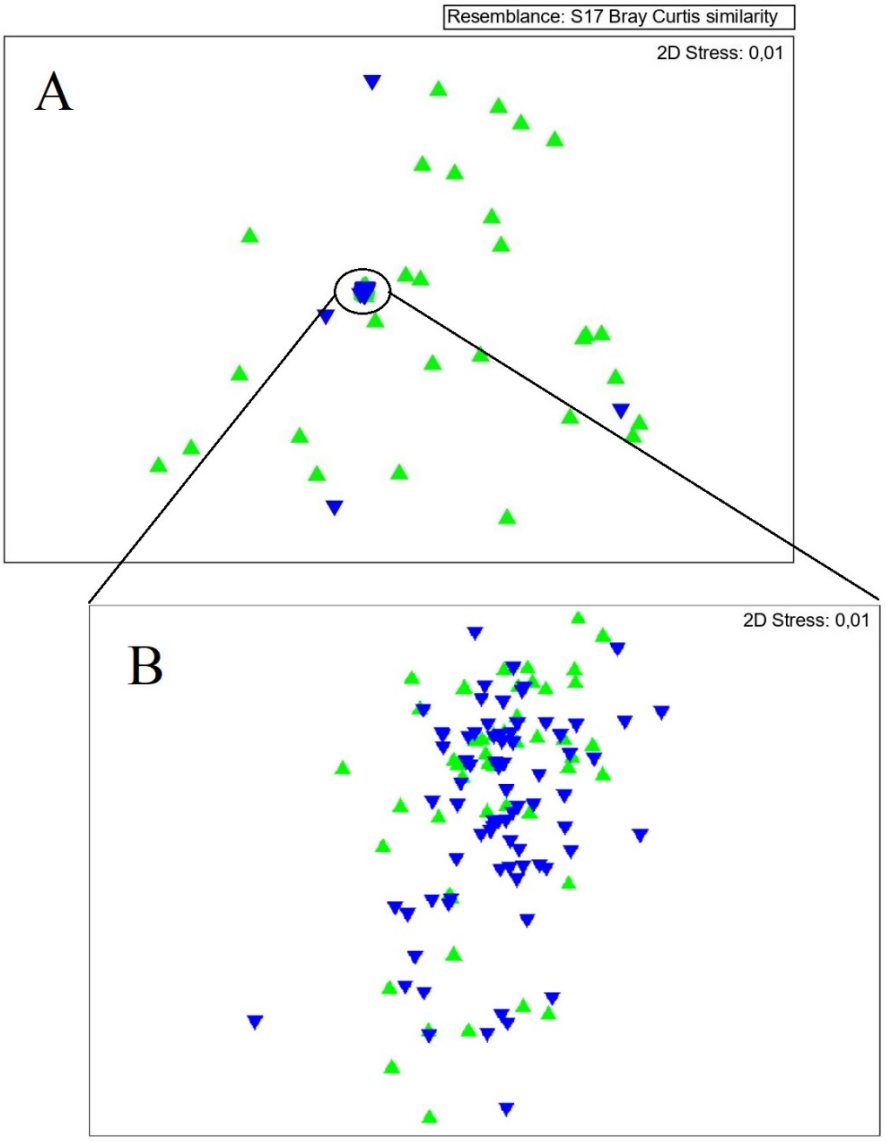

Fig. A1. A) nMDS analysis between levels of the beach. B) Detail of the selected area. Green triangle: lower forebeach, blue triangle: upper forebeach.

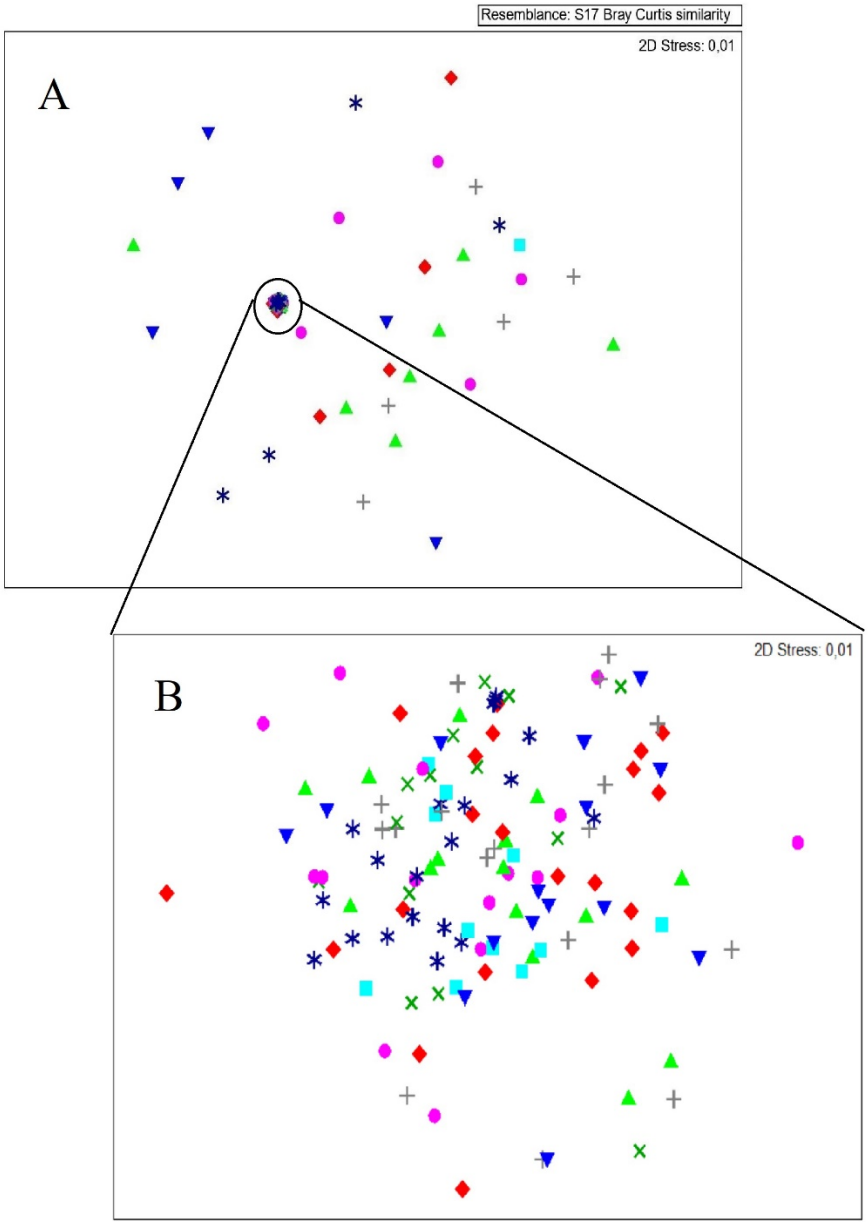

Fig. A2. A) nMDS analysis between seasons of the sampled period. B) Detail of the selected area. Season name followed by values 1 = seasons of 2020-2021 period, season name followed by values 2 = seasons of 2021-2022 period. Green triangle: winter 2020, blue triangle: spring 2020, light blue square: summer 2020/21, red diamond: autumn 2021, pink circle: winter 2021, gray addition symbol: spring 2021, green cross symbol: summer 2021/22, blue asterisk: autumn 2022.