

APPENDIX S1 – Additional tables and figures.

Table S1 – Loadings of the 19 climatic variables and altitude in the principal components analysis across the 406 0.5° cells in Egypt. The four components (PC1-4) with mean eigenvalues greater than 1 are shown. The five highest loadings for each principal component are displayed in bold.

Variable	PC1	PC2	PC3	PC4
Altitude	0.020	-0.037	0.472	0.143
Annual Mean Temperature	0.070	0.178	-0.108	0.087
Mean Diurnal Temperature Range	0.093	-0.093	-0.040	0.029
Isothermality	0.069	0.004	-0.071	-0.270
Temperature Seasonality	0.086	-0.122	-0.013	0.185
Max Temperature of Warmest Month	0.099	0.048	-0.078	0.113
Min Temperature of Coldest Month	-0.023	0.240	-0.066	-0.033
Annual Temperature Range	0.091	-0.112	-0.019	0.107
Mean Temperature of Wettest Quarter	0.034	0.196	0.158	0.137
Mean Temperature of Driest Quarter	-0.083	0.006	-0.032	-0.344
Mean Temperature of Warmest Quarter	0.088	0.119	-0.107	0.128
Mean Temperature of Coldest Quarter	0.028	0.238	-0.108	0.002
Annual Precipitation	-0.097	0.001	-0.055	0.257
Precipitation of Wettest Month	-0.096	0.019	-0.059	0.233
Precipitation Seasonality	-0.089	0.040	0.049	-0.228
Precipitation of Wettest Quarter	-0.096	0.005	-0.071	0.262
Precipitation of Driest Quarter	-0.008	0.070	0.281	-0.303
Precipitation of Warmest Quarter	0.002	0.089	0.399	0.205
Precipitation of Coldest Quarter	-0.094	-0.014	-0.084	0.277

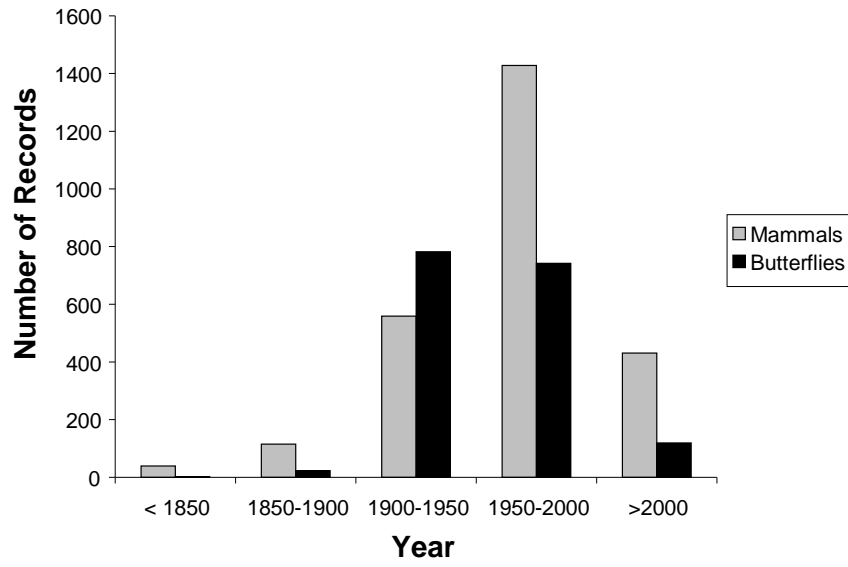


Figure S1 - Frequency distribution of butterfly and mammal records across the years during which the data were collected.

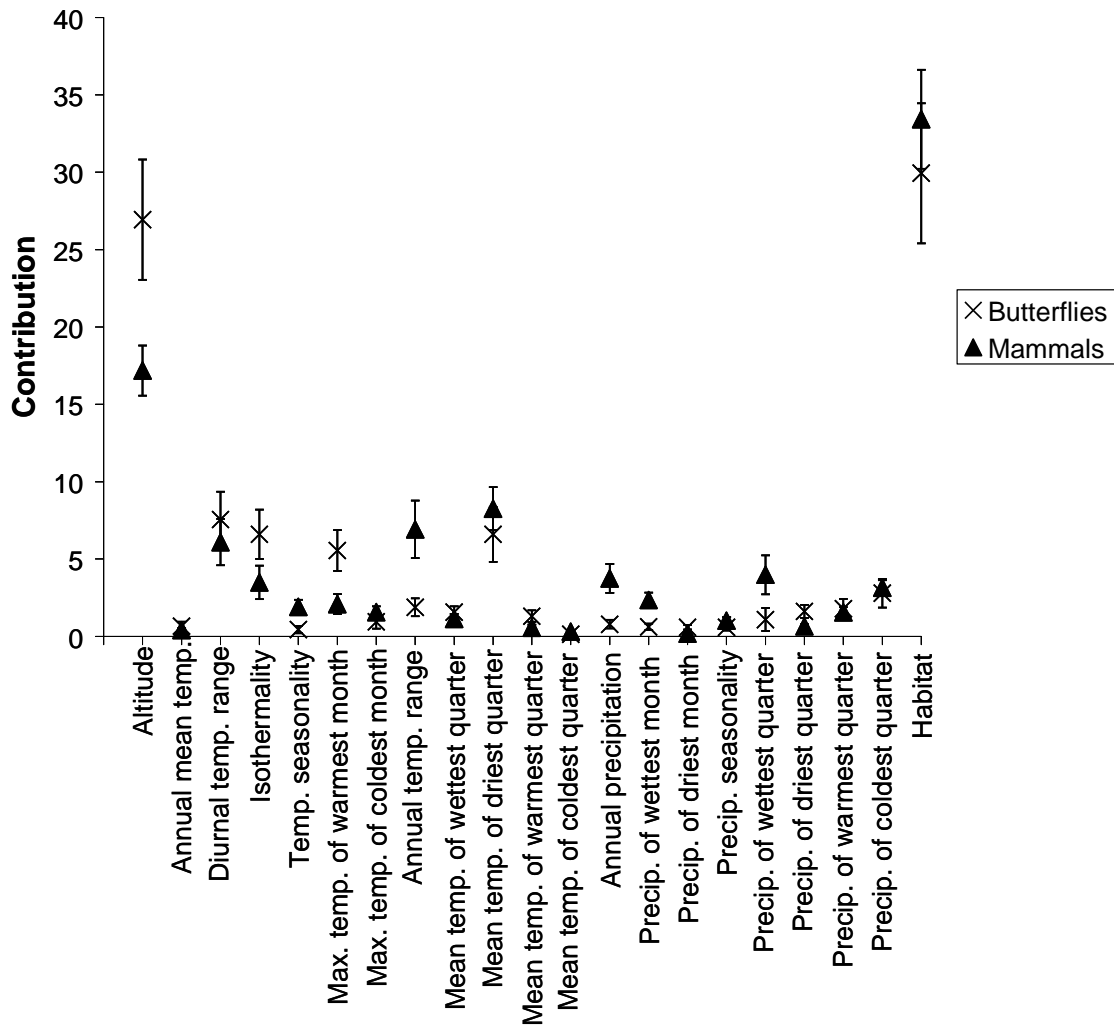


Figure S2 – Mean contribution (%) of each of the environmental variables to the species distribution models, averaged across all species. A complete breakdown of variable importance by species is given in Table 1 in Appendix S2 in the supporting information.

APPENDIX S2 – Contributions of each of the environmental variables to the species distribution models.

Table S1 – Number of presence records used to build the Maxent distribution models and contribution (%) of each of the 19 climatic variables, altitude and habitat to the models for each of the species. A key to the variables used is given at the bottom of the table.

Species	Number of Presence Records	Variable Contributions																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Butterflies:																						
<i>Agrodiaetus loewii</i>	28	46	0	26	1	0	0	0	2	3	1	2	0	0	5	0	0	0	0	0	5	8
<i>Apharitis acamas</i>	15	59	0	13	0	1	10	0	6	1	2	1	0	1	1	0	0	1	0	2	1	3
<i>Azanus jesous</i>	8	1	8	24	32	0	0	0	1	1	0	0	0	0	1	0	0	0	0	7	0	25
<i>Azanus ubaldus</i>	18	0	0	2	1	0	0	1	14	0	6	0	0	0	0	1	0	0	3	0	30	44
<i>Borbo borbonica</i>	19	1	0	0	0	0	0	3	0	0	5	0	0	0	0	0	0	24	6	0	6	56
<i>Carcharodus alceae</i>	14	55	0	1	13	0	13	0	3	1	0	3	0	0	0	0	0	0	0	0	0	10
<i>Carcharodus stauderi</i>	16	40	1	2	22	0	15	0	0	1	0	3	0	3	0	1	1	0	0	0	0	11
<i>Colias croceus</i>	60	30	0	6	0	0	5	0	13	2	3	2	0	0	0	0	0	0	1	0	2	35
<i>Colotis fausta</i>	23	53	1	26	5	0	0	0	4	0	0	0	0	0	0	1	0	0	0	1	6	3
<i>Danaus chrysippus</i>	51	18	0	0	0	0	1	0	0	0	6	0	0	0	4	1	1	0	3	0	0	66
<i>Deudorix livia</i>	51	3	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	2	0	4	84
<i>Euchloe aegyptiaca</i>	20	27	0	24	2	0	12	0	7	0	0	0	0	0	0	2	0	11	0	0	0	16
<i>Euchloe belemia</i>	6	14	0	0	0	0	0	13	0	0	24	0	0	0	0	0	4	0	0	18	0	27
<i>Euchloe falloui</i>	12	48	0	8	19	0	11	0	1	4	0	2	0	0	2	0	0	0	0	0	4	2
<i>Freyeria trochylus</i>	32	24	0	0	0	2	0	0	1	0	11	0	0	3	0	0	0	0	0	1	3	53
<i>Gegenes nostradamus</i>	37	3	0	0	0	0	1	0	0	0	35	0	0	1	1	0	0	0	2	0	1	54
<i>Hypolimnas misippus</i>	10	0	0	1	9	8	0	0	0	0	0	0	0	0	0	0	4	0	1	0	8	68
<i>Iolana alferii</i>	12	32	4	4	6	0	34	0	0	9	0	8	0	1	0	0	0	0	0	1	0	1
<i>Lampides boeticus</i>	50	11	0	0	1	0	0	0	0	2	12	0	0	0	0	2	0	0	5	0	0	65
<i>Lycaena phlaeas</i>	8	1	0	40	28	0	6	0	2	1	0	8	1	3	0	0	0	0	7	0	0	3
<i>Melitaea deserticola</i>	34	52	0	27	3	1	0	0	1	0	0	2	0	0	4	2	0	0	0	1	2	5
<i>Melitaea trivialis</i>	11	42	0	2	23	0	13	0	1	6	0	0	2	0	2	3	0	0	0	0	2	4
<i>Papilio saharae</i>	11	33	0	2	24	0	25	0	2	2	0	3	0	0	0	0	5	0	0	0	0	3

<i>Pelopidas thrax</i>	29	13	0	0	0	0	2	2	0	0	25	0	0	0	0	0	0	9	0	0	49	
<i>Pieris rapae</i>	43	4	0	0	0	0	3	0	0	0	5	0	0	0	0	1	1	0	1	9	3	73
<i>Plebejus philbyi</i>	14	55	0	4	19	0	13	0	1	2	0	1	0	0	1	0	0	0	0	0	0	4
<i>Pontia daplidice</i>	35	56	0	16	2	0	0	0	4	0	0	0	0	0	0	1	2	0	3	0	0	15
<i>Pontia glauconome</i>	49	39	0	15	2	0	1	5	0	3	8	0	0	2	0	0	0	0	0	10	2	14
<i>Pseudophilotes sinaicus</i>	9	79	1	1	3	0	9	1	0	1	0	4	0	0	0	0	0	0	0	0	0	3
<i>Pseudotergumia pisidice</i>	16	64	4	8	3	0	10	0	0	5	0	0	1	0	0	0	0	0	0	3	0	1
<i>Spialia doris</i>	23	0	0	8	2	3	0	7	4	3	41	0	0	0	0	2	0	0	7	0	4	19
<i>Tarucus rosaceus</i>	37	8	0	0	5	1	4	0	0	0	23	0	0	1	1	2	0	0	6	1	0	48
<i>Vanessa atalanta</i>	17	8	4	0	0	0	1	0	0	0	10	0	0	8	1	0	0	0	0	0	0	67
<i>Vanessa cardui</i>	63	18	0	1	0	0	0	0	0	7	2	0	0	0	0	2	2	0	0	1	3	64
<i>Zizeeria karsandra</i>	41	8	0	3	4	0	5	0	0	0	9	6	0	4	0	0	0	0	2	4	11	42
Mammals:																						
<i>Acinonyx jubatus</i>	35	23	3	0	0	3	7	3	4	0	22	0	1	7	3	0	3	0	0	0	14	7
<i>Acomys cahirinus</i>	106	9	5	1	0	1	3	21	0	0	6	0	2	1	5	1	2	0	2	0	0	42
<i>Acomys dimidiatus</i>	14	1	0	7	60	0	0	0	0	0	0	0	0	11	2	0	0	0	1	1	11	8
<i>Acomys russatus</i>	18	17	0	36	9	0	0	0	0	0	1	0	0	8	0	0	3	1	3	3	10	9
<i>Allactaga tetradactyla</i>	10	3	0	3	2	0	10	0	6	1	0	9	0	35	5	0	0	1	0	0	7	20
<i>Arvicanthis niloticus</i>	47	26	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	69
<i>Asellia tridens</i>	42	22	0	0	1	0	1	0	0	0	0	1	0	0	3	0	0	0	0	0	5	65
<i>Canis aureus</i>	17	9	0	0	0	0	3	0	0	0	5	0	0	1	0	0	0	0	0	3	0	77
<i>Canis lupaster</i>	58	30	0	0	0	0	2	0	1	0	9	4	0	0	0	0	0	0	2	0	0	51
<i>Capra nubiana</i>	105	20	0	30	6	0	2	1	4	2	2	4	0	0	1	0	1	0	1	0	11	15
<i>Crocidura olivieri</i>	26	11	0	0	1	1	0	0	1	4	15	0	0	0	5	0	2	0	0	0	3	58
<i>Crocidura religiosa</i>	9	22	0	0	0	0	0	2	0	1	0	0	0	0	3	0	0	0	0	1	0	71
<i>Dipodillus campestris</i>	19	9	0	0	0	0	0	5	0	0	20	0	0	7	23	0	1	4	0	6	0	25
<i>Dipodillus dasyurus</i>	25	26	0	41	8	0	0	1	1	0	6	0	0	2	4	0	0	0	0	0	0	10
<i>Dipodillus simoni</i>	13	5	0	9	2	2	2	1	5	0	0	2	0	0	3	0	0	19	0	0	8	43
<i>Eliomys melanurus</i>	15	30	3	8	19	0	28	0	4	0	0	0	2	0	1	0	0	0	0	0	0	6
<i>Eptesicus bottae</i>	8	0	0	0	0	0	27	0	7	13	0	0	4	10	3	0	0	3	2	6	3	23

<i>Felis chaus</i>	41	19	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	4	0	0	73
<i>Felis margarita</i>	7	0	0	49	0	0	0	0	45	0	0	0	0	0	0	0	0	0	5	0	0	0
<i>Felis silvestris</i>	32	7	0	29	19	0	1	2	0	0	0	0	0	6	0	0	2	0	0	10	3	19
<i>Gazella dorcas</i>	141	14	1	1	1	0	1	4	47	0	1	0	0	4	1	0	1	1	1	2	0	18
<i>Gerbillus amoenus</i>	33	38	0	0	0	1	0	0	1	0	19	0	0	0	0	3	0	0	0	0	0	38
<i>Gerbillus andersoni</i>	57	16	1	6	0	6	2	0	12	1	2	1	0	42	0	0	0	3	0	0	5	3
<i>Gerbillus floweri</i>	18	1	0	11	2	0	0	2	8	6	44	0	0	5	2	0	0	0	1	8	0	9
<i>Gerbillus gerbillus</i>	196	25	2	0	4	1	3	0	3	0	19	0	3	0	2	0	2	2	0	1	2	30
<i>Gerbillus henleyi</i>	44	3	0	7	1	7	0	3	56	2	8	0	0	0	1	0	1	0	0	0	2	9
<i>Gerbillus perpallidus</i>	20	29	0	0	3	1	2	3	0	1	21	0	0	0	1	0	11	16	0	0	2	10
<i>Gerbillus pyramidum</i>	101	40	1	0	4	0	6	4	0	2	3	0	0	4	1	0	0	1	0	0	1	32
<i>Hemiechinus auritus</i>	69	19	0	5	0	5	0	2	9	1	10	0	0	9	2	0	1	1	0	0	2	36
<i>Herpestes ichneumon</i>	29	11	0	0	1	5	0	1	1	3	8	0	1	4	0	0	1	0	0	1	1	63
<i>Ictonyx libyca</i>	22	14	0	1	4	8	0	7	4	0	35	0	0	0	0	2	2	1	1	9	12	
<i>Jaculus jaculus</i>	124	18	0	1	0	14	3	2	0	0	21	0	3	0	0	0	0	4	1	1	3	26
<i>Jaculus orientalis</i>	25	0	1	6	2	2	3	0	0	1	1	1	0	3	3	0	1	39	1	0	8	28
<i>Lepus capensis</i>	85	14	0	0	1	2	1	2	49	0	2	0	0	1	7	1	5	0	1	2	2	9
<i>Meriones crassus</i>	99	11	1	3	0	0	1	2	29	2	10	0	1	2	5	1	0	1	0	7	9	14
<i>Meriones libycus</i>	25	36	3	3	0	1	2	0	4	0	7	5	0	0	0	0	27	0	1	2	9	
<i>Meriones shawi</i>	22	11	0	10	5	3	2	0	5	0	0	3	0	0	8	0	0	38	0	0	3	12
<i>Mus musculus</i>	93	23	0	0	4	0	1	1	2	0	7	2	1	0	1	0	0	0	0	0	2	55
<i>Mustela nivalis</i>	21	13	0	0	3	0	0	0	0	0	30	0	0	1	0	0	0	0	0	1	0	52
<i>Nesokia indica</i>	21	27	0	0	0	4	0	0	0	0	12	0	0	0	0	0	3	0	0	1	0	53
<i>Nycteris thebaica</i>	28	4	1	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	88
<i>Otonycteris hemprichii</i>	16	45	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	30
<i>Pachyuromys duprasi</i>	24	9	0	0	11	8	0	1	1	12	39	0	0	0	0	0	0	0	0	1	1	17
<i>Panthera pardus</i>	22	22	0	27	13	0	2	0	0	1	2	0	0	6	0	0	3	0	1	2	4	17
<i>Paraechinus aethiopicus</i>	33	13	0	6	0	0	0	0	60	0	0	0	0	1	0	2	7	0	2	0	1	8
<i>Pipistrellus kuhlii</i>	30	24	0	0	0	3	0	0	0	0	31	0	0	0	0	0	0	4	0	1	0	36
<i>Plecotus christii</i>	31	42	0	0	6	0	0	0	0	0	1	0	0	0	7	0	0	0	0	3	3	36
<i>Procapra capensis</i>	37	11	0	6	1	0	0	2	23	2	0	0	0	3	0	2	0	0	3	0	6	41

<i>Psammomys obesus</i>	68	7	0	13	3	3	5	0	20	0	0	1	0	9	1	0	2	27	0	0	3	6
<i>Rattus norvegicus</i>	25	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	6	1	5	0	86
<i>Rattus rattus</i>	64	22	0	0	0	0	1	1	0	0	5	0	0	1	2	0	1	0	1	0	0	66
<i>Rhinopoma hardwickii</i>	26	8	0	0	0	2	0	7	0	0	0	1	0	9	0	0	0	0	0	9	10	52
<i>Rhinopoma microphyllum</i>	8	31	0	0	2	0	0	6	0	7	9	0	0	7	6	0	0	2	0	1	6	24
<i>Rousettus aegyptiacus</i>	35	0	0	5	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	91
<i>Sekeetamys calurus</i>	32	9	0	42	5	0	0	0	7	0	0	0	0	0	0	1	2	0	1	0	8	25
<i>Spalax ehrenbergi</i>	19	17	0	6	5	4	0	1	5	0	3	0	0	1	12	0	1	41	0	0	0	4
<i>Taphozous nudiventris</i>	13	41	0	0	0	0	0	2	0	1	9	0	0	0	7	0	0	0	0	0	4	36
<i>Taphozous perforatus</i>	19	1	0	0	0	1	0	2	0	0	1	0	0	6	0	0	0	0	0	12	3	74
<i>Vulpes rueppellii</i>	68	33	0	0	1	19	0	0	0	1	0	1	0	9	0	1	0	0	2	1	13	20
<i>Vulpes vulpes</i>	116	9	0	0	1	5	2	1	1	0	14	0	0	0	3	0	2	0	0	0	1	60
<i>Vulpes zerda</i>	36	48	0	0	0	0	0	2	1	0	12	0	0	10	8	0	1	0	0	3	0	15

Variable Key

- 1 Altitude
- 2 Annual mean temperature
- 3 Mean diurnal temperature range
- 4 Isothermality
- 5 Temperature seasonality
- 6 Maximum temperature of warmest month
- 7 Minimum temperature of coldest month
- 8 Annual temperature range
- 9 Mean temperature of wettest quarter
- 10 Mean temperature of driest quarter
- 11 Mean temperature of warmest quarter
- 12 Mean temperature of coldest quarter
- 13 Annual precipitation
- 14 Precipitation of wettest month
- 15 Precipitation of driest month
- 16 Precipitation seasonality

- 17 Precipitation of wettest quarter
- 18 Precipitation of driest quarter
- 19 Precipitation of warmest quarter
- 20 Precipitation of coldest quarter
- 21 Habitat