APPENDIX A

Data set variable definition as used for analysis using the CATMOD procedure to determine the seasonal habitat use of the reintroduced Arabian oryxes in the 'Uruq Bani Ma'arid Protected Area of the Kingdom of Saudi Arabia, from March 1995 to February 1997.

VARIABLE	VARIABLE DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF VARIABLE CATEGORIES	CATEGORY AND / OR ABBREVIATION USED
VV6	General vegetation condition	Recorded	3	1. Overall grey-brown with tint of green 2. Green in colour with shade of brown 3. Fully green
		Recategorised for all seasons	2	1. Mostly brown in colour 2. Mostly green in colour
VV7	Tree density	Recorded	4	1. No trees (0) 2. <5 trees per hectare (5) 3. 6-15 trees per hectare (6-15) 4. >5 trees per hectare (>15)
		Recategorised for all seasons	2	1. No trees (0) 2. Trees present (1)
VV8	Green material on trees (%)	Recorded	5	1. No trees (0) 2. 1 to 25% green (25) 3. 26 to 50% green (50) 4. 51 to 75% green (75) 5. 76 to 100% green (100)
		Recategorised for spring and autumn	4	1. No trees (0) 2. 1 to 50% green (50) 3. 51 to 75% green (75) 4. 76 to 100% green (100)

VARIABLE	VARIABLE DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF VARIABLE CATEGORIES	CATEGORY AND / OR ABBREVIATION USED
VV8	Green material on trees (%)	Recategorised for winter	2	1. No trees (0) 2. 51 to 75% green (75)
VV9	Shrub density	Recorded	4	1. No shrubs (0) 2. <5 shrubs per hectare (<5) 3. 6 to 15 shrubs per hectare (6-15) 4. >15 shrubs per hectare (>15)
		Recategorised for all seasons	3	1. No shrubs (0) 2. <5 shrubs per hectare (1-5) 3. >5 shrubs per hectare (>5)
VV10	Green material on shrubs (%)	Recorded	5	1. No shrubs (0) 2. 1 to 25% green (25) 3. 26 to 50% green (50) 4. 51 to 75% green (75) 5. 76 to 100% green (100)
		Recategorised for spring	3	1. No shrubs (0) 2. 1 to 75% green (75) 3. 76 to 100% green (100)
		Recategorised for autumn	3	1. No shrubs (0) 2. 1 to 50% green (50) 3. 51-75% green (75)
		Recategorised for winter	2	1. No shrubs (0) 2. 1 to 75% green (75)

VARIABLE	VARIABLE DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF VARIABLE CATEGORIES	CATEGORY AND / OR ABBREVIATION USED
VV11	Grass green (%)	Recorded	4	1. 1 to 25% green (25) 2. 26 to 50% green (50) 3. 51 to 75% green (75)
		Recategorised for all seasons	3	1. 1 to 25% green (25) 2. 26 to 50% green (50) 3. 51 to 75% green (75)
VV12	Phenology of the grass layer	Recorded	5	1. No grass (0) 2. Sprouting (1) 3. Intermediate without flowers (2) 4. Mature with flowers (3) 5. Dormant (4)
		Recategorised for spring, summer and autumn	3	1. Sprouting to intermediate; no flowers (2) 2. Mature with flowers (3) 3. Dormant to absent (4)
		Recategorised for winter	2	1. Sprouting to mature with flowers (2) 2. Dormant to absent (4)
VV13	Grass height (cm)	Recorded	4	1. No grass (0) 2. 1 to 25cm tall (25) 3. 26 to 50cm tall (50) 4. 51 to 75cm tall (75)
		Recategorised for all seasons	2	1. 1 to 25cm tall (25) 2. >25cm tall (50)

VARIABLE	DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF VARIABLE CATEGORIES	CATEGORY AND / OR ABBREVIATION USED
VV14	Crown cover (%)	Recorded	4	1. No cover (0) 2. 1 to 5% cover (5) 3. 6 to 20% cover (20) 4 >20% cover (50)
		Recatogorised for all seasons	2	1. <5% cover (5) 2. >5% cover (20)
VV15	Cloud cover (%)	Recorded	5	1. No clouds (0) 2. 1 to 25% cloud cover (25) 3. 26 to 50% cloud cover (50) 4. 51 to 75% cloud cover (75) 5. 76 to 100% cloud cover (100)
		Recatogorised for autumn	2	1. No clouds (0) 2. Cloud cover (25)
VV16	Habitat type	Recorded	7	1. Dunes (1) 2. *Shiquat* sand sheets (21) 3. *Shiquat* gravel plains (22) 4. Pan at foot of dunes (23) 5. Wadi (3) 6. Escarpment sand sheets (41) 7. Escarpment gravel plains (42)
		Recatogorised for all seasons	4	1. Dunes (1) 2. *Shiquat* sand sheets (21) 3. *Shiqua*t gravel plains (22) 4. Escarpment (3)

VARIABLE	VARIABLE DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF VARIABLE CATEGORIES	CATEGORY AND / OR ABBREVIATION USED
VV17	Activity	Recorded	7	1. Feeding (1) 2. Walking (2) 3. Resting standing - in shade (31) 4. Resting standing - in sun (32) 5. Resting lying - in shade (41) 6. Resting lying - in sun (42) 7. Running away (5)
		Recatogorised for all seasons	4	1. Feeding (1) 2. Walking (2) 3. Resting standing (31) 4. Resting lying (41)
VV18	Time of day	Recorded	-	1. Actual time of day
		Recategorised for all seasons	3	1. Up to 09:59 (1) 2. 10:00 to 15:00 (2) 3. After 15:00 (3)
VV19	Wind strength	Recorded	4	1. No wind (0) 2. Light wind (1) 3. Medium wind (2) 4. Strong wind (3)
		Recatogorised for all seasons	3	1. No wind (0) 2. Light wind (1) 3. Medium to strong wind (2)

VARIABLE	DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF CATEGORIES IN GROUP	CATEGORY AND ABBREVIATIONS USED
VV20	Wind direction	Recorded	17	1. No wind (0) 2. Northern wind (1) 3. Southern wind (2) 4. Eastern wind (3) 5. Western wind (4) 6. North eastern wind (5) 7. North western wind (6) 8. South eastern wind (7) 9. South western wind (8) 10. North north-eastern wind (9) 11. East north-eastern wind (10) 12. East south-eastern wind (11) 13. South south-eastern wind (12) 14. West south-western wind (13) 15. South south-western wind (14) 16. North north-western wind (15) 17. West north-western wind (16)
		Recategorised for all seasons	5	1. No wind (0) 2. Northern wind (1) 3. Southern wind (2) 4. Eastern wind (3) 5. Western wind (4)
VV21	Ambient temperature (°C)	Recorded	-	1. Actual temperature was recorded
		Recategorised for spring, summer and autumn	3	1. Low (<30°) 2. Medium (30 to 35°C) 3. High (>35°C)

VARIABLE	DESCRIPTION	RECORDED AS / RECATEGORISED FOR	NUMBER OF CATEGORIES IN GROUP	CATEGORY AND / OR ABBREVIATION USED
VV21	Ambient temperature (°C)	Recategorised for winter	2	1. Low (<20°C) 2. Medium (>20°C)
VV22	Gender	Recorded as	2	1. Male 2. Female

APPENDIX B

Taxonomic list of the plants found in the 'Uruq Bani Ma'arid Protected Area of the Kingdom of Saudi Arabia during the study period from March 1995 to February 1997. Classification follows that of Collenette (1985). An asterisk (*) denotes plant species found in the course of this study that have not been recorded previously in the 'Uruq Bani Ma'arid Protected Area of the Kingdom of Saudi Arabia.

ACANTHACEAE

Blepharis ciliaris (L.) B. L. Burtt

AIZOACEAE

Limeum arabicum Friedrich

Limeum obovatum Vicary (= *Limeum humile*)

AMARANTHACEAE

Aerva javanica (Burm. f.) Schultes

APOCYNACEAE

Rhazya stricta Decne.

ASCLEPIADACEAE

Glossonema varians (Stocks) Benth. ex. Hook. f.

Leptadenia pyrotechnica (Forssk.) Decne.

Pergularia tomentosa L.

BORAGINACEAE

Arnebia hispidissima (Lehm.) DC.

Gastrocotyle hispida (Forssk.) Bunge

Heliotropium digynum (Forssk.) C. Chr.

Heliotropium ramosissimum (Lehm.) Sieb. ex A. DC.

Heliotropium rariflorum Stocks

Moltkiopsis ciliata (Forssk.) I. M. Johnst.

Trichodesma africanum (L.) R. Br. *

BURSERACEAE

Commiphora myrrha (Nees) Engl.

CAPPARACEAE

Capparis sinaica Veill. (=*Capparis cartilaginea* Decne.)

Cleome amblyocarpa Baratte & Murb.

Cleome brachycarpa Vahl ex DC. *

Cleome rupicola Vicary

Dipterygium glaucum Decne.

Maerua crassifolia Forssk.

CARYOPHYLLACEAE

Polycarpaea repens (Forssk.) Asch. et Schweinf.

CHENOPODIACEAE

Cornulaca monocantha Delile (= *Cornulaca arabica*)

Halothamnus bottae Jaub. et Spach

Haloxylon persicum Bunge

Haloxylon salicornicum (Moq.) Bunge ex Boiss.

Salsola spinescens Moq.

COMPOSITAE

Atractylis carduus (Forssk.) C. Chr.

Centaurea pseudosinaica Czerep.

Iphiona scabra DC.

Launaea mucronata (Forssk.) Muschl.

Pulicaria glutinosa Jaub. & Spach

Pulicaria incisa (Lam.) DC.

Pulicaria crispa (Forssk.) Oliver

Scorzonera tortuosissima Boiss.

CONVOLVULACEAE

Convolvulus asyrensis Kotschy (= *Convolvulus* sp aff. *cephalopodus*)

Convolvulus glomeratus Choisy

Convolvulus prostratus Forssk. (= *Convolvulus deserti* Hochst. ex Steud. s. l.)

Seddera sp.

CRUCIFERAE

Eremobium aegyptiacum (Sprengel) Asch. et Schweinf. ex Boiss.

Farsetia burtoniae Oliver

Farsetia longisiliqua Decne.
Farsetia stylosa R. Br.
Morettia parviflora Boiss.

CUCURBITACEAE
Citrullus colocynthis (L.) Schrad.

CYNOMORIACEAE
Cynomorium coccineum L.

CYPERACEAE
Cyperus aucheri Jaub. et Spach (= *Cyperus conglomeratus* Rottb. agg. according to Mandaville (1990))

EPHEDRACEAE
Ephedra foliata Boiss. ex C.A. Mey.

EUPHORBIACEAE
Chrozophora tinctoria (L.) Raf.
Euphorbia granulata Forssk.

GERANIACEAE
Monsonia nivea (Decne.) Webb

HYACINTHACEAE
Dipcadi unicolor (Stocks) Baker

LABIATAE
Leucas inflata Benth. *
Salvia aegyptiaca L.

LEGUMINOSAE
Acacia ehrenbergiana Hayne
Acacia hamulosa Benth.
Acacia oerfota (Forssk.) Schweinf.
Acacia tortilis (Forssk.) Hayne
Astragalus fatmensis Hochst. ex Choiv.

Crotalaria aegyptiaca Benth. *
Crotalaria sp. aff. *leptocarpa* Balf. f.
Indigofera argentea Burm. f.
Indigofera spinosa Forssk.
Psoralea plicata Delile
Rhyncosia schimperi Boiss.
Senna holosericea (Fresen) Greuter
Senna italica Mill.
Tephrosia purpurea (L.) Pers.
Tephrosia quartiniana Greuter & Burdet

MENISPERMACEAE
Cocculus pendulus (J. R. & G. Forst.) Diels

MORINGACEAE
Moringa peregrina (Forssk.) Fiori

NEURADACEAE
Neurada procumbens L.

NYCTAGINACEAE
Boerhavia elegans Choisy *

OROBANCHACEAE
Cistanche phelypaea L. Cout.

POACEAE
Aristida adscensionis L. *
Centropodia fragilis (Guinet & Sauvage) Pope
Centropodia forskalii (Vahl) Pope
Dicanthium foveolatum (Del.) Roberty
Lasiurus scindicus Henr.
Panicum turgidum Forssk.
Stipagrostis ciliata (Desf.) de Wint.
Stipagrostis drarii (Tackh.) de Wint.
Stipagrostis foexiana (Maire & Wilczek) de Wint.
Stripagrostis plumosa (L.) Munro ex T. Anders

Stipa capensis Thunb.
Cenchrus ciliaris L.
Pennisetum divisum (Gmel.) Henr.
Chrysopogon plumulosus Hochst. *
Echinocloa spp. *
Enneapogon desvauxii P. Beauv. *
Tragus recemosus (L.) All. *

POLYGALACEAE
Polygala irregularis

POLYGONACEAE
Calligonum crinitum ssp. *arabicum* (Sosk.) Sosk.

RESEDACEAE
Reseda muricata Presl
Ochradenus baccatus Del.

RHAMNACEAE
Ziziphus spina-christi (L.) Willd.

RUBIACEAE
Kohautia caespitosa Schnitzl.

RUTACEAE
Haplophyllum tuberculatum (Forssk.) A. Juss.

SOLANACEAE
Lycium shawii Roem. et Schult.

ZYGOPHYLLACEAE
Tribulus arabicus Hosni. s. l.
Tribulus pentandrus Forssk. agg.
Fagonia indica Burm. f.
Zygophyllum simplex L. *
Seetzania lanata (Willd.) Bullock *

APPENDIX C

The final output of the PROC CATMOD as done to determine the seasonal habitat use of the reintroduced Arabian oryx into the 'Uruq Bani Ma'arid Protected Area of the Kingdom of Saudi Arabia, from March 1995 to February 1997, indicating all the significant variables.

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS Lower	Upper
SPRING							
Green material on trees (%)	VV8=0	Dune	Escarpment	3:1	<0.0001	2.11	4.08
		Dune	*Shiquat* sand sheet	2:1	0.0017	1.2	2.21
		Dune	*Shiquat* gravel plain	2:1	0.0007	1.25	2.34
		Shiquat sand sheet	Escarpment	2:1	0.0012	1.26	2.58
		Shiquat gravel plain	Escarpment	2:1	0.0035	1.19	2.47
	VV8=50	Escarpment	Dune	6:1	0.0140	1.41	21.33
		Shiquat sand sheet	Dune	4:1	0.0318	1.12	12.96
		Shiquat gravel plain	Dune	4:1	0.0495	1.00	13.48
	VV8=75	Escarpment	Dune	3:1	0.0044	1.34	4.85
		Shiquat sand sheet	Dune	3:1	0.0019	1.47	5.51
	VV8=100	Escarpment	Dune	48:1	0.0004	5.54	416.00
		Escarpment	*Shiquat* sand sheet	7:1	0.0407	1.09	49.78
		Escarpment	*Shiquat* gravel plain	15:1	0.0127	1.79	130.50
Shrub density	VV9=0	Escarpment	Dune	5:1	0.0008	1.92	12.17
		Shiquat sand sheet	Dune	4:1	0.0044	1.51	9.23
		Shiquat gravel plain	Dune	4:1	0.0044	1.55	10.72
	VV9=1	Escarpment	Dune	3:1	0.0210	1.17	6.65
		Escarpment	*Shiquat* gravel plain	2:1	0.0411	1.04	5.71
	VV9=2	Escarpment	Dune	4:1	0.0004	1.92	9.91
		Escarpment	*Shiquat* gravel plain	3:1	0.0111	1.27	6.43
		Shiquat sand sheet	Dune	2:1	0.0483	1.01	5.20
Phenology	VV12=2	*Shiquat* sand sheet	Dune	2:1	0.0144	1.17	3.98
		Shiquat sand sheet	Escarpment	3:1	0.0002	1.73	5.95

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Phenology	VV12=3	*Shiquat* sand sheet	Dune	3:1	0.0002	1.57	4.31
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.71	4.40
		Shiquat gravel plain	Escarpment	2:1	0.0319	1.05	3.01
	VV12=4	Escarpment	Dune	92:1	0.0001	9.42	903.30
		Escarpment	*Shiquat* sand sheet	31:1	0.0011	3.95	236.50
		Escarpment	*Shiquat* gravel plain	26:1	0.0043	2.80	249.80
Grass height (cm)	VV13=25	Escarpment	Dune	3:1	0.0087	1.33	7.01
	VV13=50	Escarpment	Dune	5:1	0.0003	2.09	11.76
		Escarpment	*Shiquat* gravel plain	3:1	0.0340	1.07	5.86
		Shiquat sand sheet	Dune	4:1	0.0029	1.55	8.48
Crown cover (%)	VV14=5	Escarpment	Dune	4:1	0.0046	1.54	10.65
		Shiquat sand sheet	Dune	3:1	0.0106	1.33	8.48
		Shiquat gravel plain	Dune	3:1	0.0311	1.11	8.54
	VV14=20	Escarpment	Dune	4:1	0.0054	1.48	9.43
		Escarpment	*Shiquat* gravel plain	3:1	0.0173	1.22	7.87
Activity	VV17=1	Escarpment	Dune	3:1	0.0051	1.44	8.01
		Escarpment	*Shiquat* gravel plain	2:1	0.0409	1.04	5.55
		Shiquat sand sheet	Dune	3:1	0.0180	1.19	6.45
	VV17=2	Escarpment	Dune	4:1	0.0004	1.95	10.17
		Escarpment	*Shiquat* sand sheet	3:1	0.0101	1.27	5.74
	VV17=31	Escarpment	Dune	4:1	0.0045	1.52	9.63
		Shiquat sand sheet	Dune	3:1	0.0477	1.01	6.26
	VV17=41	Escarpment	Dune	4:1	0.0028	1.60	9.76
		Shiquat sand sheet	Dune	4:1	0.0028	1.58	9.06
Green material on trees (%) vs. Phenology	VV8=0 vs. VV12=2	Dune	Escarpment	3:1	<0.0001	2.18	4.76
		Dune	*Shiquat* sand sheet	2:1	0.0451	1.01	2.04
		Dune	*Shiquat* gravel plain	2:1	0.0037	1.19	2.47
		Shiquat sand sheet	Escarpment	2:1	<0.0001	1.50	3.36
		Shiquat gravel plain	Escarpment	2:1	0.0031	1.24	2.85

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on trees (%) vs. Phenology	VV8=0 vs. VV12=3	Dune	Escarpment	2:1	<0.0001	1.51	3.36
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.89	3.97
		Shiquat gravel plain	Escarpment	2:1	0.0001	1.47	3.27
	VV8=0 vs. VV12=4	Dune	Escarpment	3:1	0.0001	1.83	6.66
		Dune	*Shiquat* sand sheet	4:1	<0.0001	1.93	6.91
		Dune	*Shiquat* gravel plain	3:1	0.0010	1.52	5.30
	VV8=50 vs. VV12=2	*Shiquat* sand sheet	Escarpment	5:1	0.0160	1.32	15.35
	VV8=50 vs. VV12=3	*Shiquat* sand sheet	Dune	4:1	0.0081	1.42	10.52
		Shiquat sand sheet	Escarpment	3:1	0.0389	1.06	7.87
		Shiquat gravel plain	Dune	3:1	0.0281	1.13	9.20
	VV8=50 vs. VV12=4	Escarpment	Dune	164:1	0.0034	5.40	5002.50
		Escarpment	*Shiquat* sand sheet	39:1	0.0184	1.85	808.00
	VV8=75 vs. VV12=2	*Shiquat* sand sheet	Dune	2:1	0.0213	1.13	4.67
		Shiquat gravel plain	Dune	3:1	0.0002	1.78	6.65
	VV8=75 vs. VV12=3	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.79	4.65
		Shiquat sand sheet	Escarpment	5:1	<0.0001	2.78	7.71
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0447	1.01	2.58
		Shiquat gravel plain	Dune	2:1	0.0240	1.08	2.96
		Shiquat gravel plain	Escarpment	3:1	0.0001	1.67	4.93
	VV8=75 vs. VV12=4	Escarpment	Dune	14:1	0.0023	2.57	77.72
		Escarpment	*Shiquat* sand sheet	10:1	0.0073	1.88	56.75
	VV8=100 vs. VV12=2	*Shiquat* sand sheet	Escarpment	9:1	0.0298	1.24	60.26
	VV8=100 vs. VV12=4	Escarpment	Dune	109118:1	<0.0001	334.70	3.56E7
		Escarpment	*Shiquat* sand sheet	5305:1	0.0012	29.39	9.58E5
		Escarpment	*Shiquat* gravel plain	3902:1	0.0049	12.23	1.25E6
Green material on trees (%) vs. Crown cover(%)	VV8=0 vs. VV14=5	Dune	Escarpment	3:1	<0.0001	2.13	4.50
		Dune	*Shiquat* sand sheet	2:1	0.0006	1.31	2.64
		Shiquat sand sheet	Escarpment	2:1	0.0142	1.11	2.51
		Shiquat gravel plain	Escarpment	2:1	<0.0001	1.53	3.39

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on trees(%) vs. Crown cover(%)	VV8=0 vs. VV14=20	Dune	Escarpment	3:1	<0.0001	1.73	4.50
		Dune	*Shiquat* gravel plain	2:1	0.0011	1.36	3.42
		Shiquat sand sheet	Escarpment	2:1	0.0143	1.14	3.34
	VV8=50 vs.VV14=5	Escarpment	Dune	8:1	0.0055	1.84	33.84
		Shiquat gravel plain	Dune	13:1	<0.0001	3.61	45.87
		Shiquat gravel plain	*Shiquat* sand sheet	3:1	0.0437	1.04	11.73
	VV8=75 vs. VV14=5	Escarpment	Dune	3:1	0.0036	1.44	6.39
		Shiquat sand sheet	Dune	4:1	0.0002	2.02	9.93
		Shiquat gravel plain	Dune	3:1	0.0037	1.49	7.80
	VV8=100 vs. VV14=5	Escarpment	Dune	35:1	0.0140	2.05	593.10
		Shiquat sand sheet	Dune	14:1	0.0332	1.23	163.00
	VV8=100 vs. VV14=20	Escarpment	Dune	66:1	0.0003	6.76	645.50
		Escarpment	*Shiquat* sand sheet	22:1	0.0048	2.56	189.20
		Escarpment	*Shiquat* gravel plain	19:1	0.0115	1.93	179.10
Phenology vs. Crown cover(%)	VV12=2 vs. VV14=5	Dune	Escarpment	9:1	0.0077	1.79	45.63
		Shiquat sand sheet	Escarpment	21:1	<0.0001	5.07	85.28
		Shiquat gravel plain	Escarpment	7:1	0.0157	1.44	34.30
	VV12=2 vs. VV14=20	Escarpment	Dune	4:1	0.0012	1.74	9.49
	VV12=3 vs. VV14=5	Dune	Escarpment	7:1	0.0001	2.61	20.19
		Shiquat sand sheet	Escarpment	9:1	<0.0001	3.64	22.66
		Shiquat gravel plain	Escarpment	7:1	0.0001	2.61	19.78
	VV12=3 vs. VV14=20	Escarpment	Dune	7:1	0.0064	1.70	25.33
		Shiquat sand sheet	Dune	5:1	0.0118	1.45	20.17
	VV12=4 vs. VV14=5	Escarpment	Dune	20:1	<0.0001	4.73	82.97
		Escarpment	*Shiquat* sand sheet	6:1	0.0110	1.49	21.83
		Escarpment	*Shiquat* gravel plain	9:1	0.0028	2.10	35.86
	VV12=4 vs. VV14=20	Escarpment	Dune	430:1	0.0004	15.36	12020.60
		Escarpment	*Shiquat* sand sheet	163:1	0.0008	8.28	3229.90
		Escarpment	*Shiquat* gravel plain	80:1	0.0093	2.95	2196.40
SUMMER							
Green material on trees(%)	VV8=0	Dune	*Shiquat* sand sheet	2:1	0.0457	1.01	2.95
		Escarpment	*Shiquat* sand sheet	5:1	<0.0001	2.72	7.69
		Escarpment	*Shiquat* gravel plain	3:1	<0.0001	1.77	5.41

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on trees(%)	VV8=0	Escarpment	Dune	3:1	0.0002	1.59	4.41
Shrub density	VV9=2	Escarpment	Dune	6:1	0.0237	1.28	31.08
Grass green (%)	VV11=25	Escarpment	Dune	42:1	0.0045	3.19	563.00
		Escarpment	*Shiquat* sand sheet	90:1	0.0004	7.37	1103.40
		Escarpment	*Shiquat* gravel plain	16:1	0.0323	1.26	207.30
Wind strength	VV19=1	Escarpment	Dune	4:1	0.0073	1.46	11.49
Green material on trees(%) vs. Grass green(%)	VV8=0 vs. VV11=25	Escarpment	Dune	5:1	<0.0001	2.50	11.22
		Escarpment	*Shiquat* sand sheet	7:1	<0.0001	3.17	13.75
		Escarpment	*Shiquat* gravel plain	5:1	<0.0001	2.54	11.23
	VV8=0 vs. VV11=50	Dune	*Shiquat* sand sheet	4:1	0.0006	1.80	8.62
		Escarpment	*Shiquat* sand sheet	6:1	<0.0001	2.91	14.18
		Escarpment	*Shiquat* gravel plain	3:1	0.0069	1.35	6.48
	VV8=0 vs. VV11=75	Escarpment	Dune	2:1	0.0225	1.11	4.16
		Escarpment	*Shiquat* sand sheet	2:1	0.0130	1.19	4.29
	VV8=50 vs. VV11=25	Escarpment	Dune	3:1	0.0200	1.18	6.75
		Escarpment	*Shiquat* sand sheet	3:1	0.0405	1.04	6.11
		Escarpment	*Shiquat* gravel plain	4:1	0.0016	1.73	10.36
	VV8=50 vs. VV11=75	*Shiquat* sand sheet	Escarpment	11:1	0.0132	1.63	67.70
	VV8=100 vs. VV11=25	Escarpment	Dune	156636:1	0.0254	4.35	5.64E9
		Escarpment	*Shiquat* sand sheet	3476303	0.0036	139.10	8.69E10
	VV8=100 vs. VV11=50	*Shiquat* sand sheet	Escarpment	49574	0.0020	53.00	4.64E7
Green material on trees(%) vs. Crown cover(%)	VV8=0 vs. VV14=5	Dune	*Shiquat* sand sheet	2:1	0.0380	1.03	3.79
		Escarpment	*Shiquat* sand sheet	3:1	0.0003	1.71	6.14
		Escarpment	*Shiquat* gravel plain	2:1	0.0386	1.04	3.83
	VV8=0 vs. VV14=20	Escarpment	Dune	4:1	<0.0001	2.28	8.10
		Escarpment	*Shiquat* sand sheet	6:1	<0.0001	3.47	12.05
		Escarpment	*Shiquat* gravel plain	5:1	<0.0001	2.51	9.19
	VV8=50 vs. VV14=20	*Shiquat* sand sheet	Dune	3:1	0.0406	1.05	11.58
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	0.0191	1.27	14.01
	VV8=75 vs. VV14=5	*Shiquat* gravel plain	*Shiquat* sand sheet	4:1	0.0152	1.29	10.58
	VV8=75 vs. VV14=20	*Shiquat* sand sheet	Dune	3:1	0.0104	1.29	6.77
		Shiquat sand sheet	Escarpment	2:1	0.0417	1.03	5.77
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	0.0006	1.91	10.60
Green material on trees(%) vs. Wind strength	VV8=0 vs. VV19=1	Escarpment	Dune	3:1	<0.0001	2.13	4.98
		Shiquat gravel plain	Dune	2:1	0.0009	1.37	3.41

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on rees(%) vs. Wind strength	VV8=0 vs. VV19=1	Escarpment	*Shiquat* sand sheet	5:1	<0.0001	2.99	7.07
		Shiquat gravel plain	*Shiquat* sand sheet	3:1	<0.0001	1.93	4.82
		Escarpment	*Shiquat* gravel plain	2:1	0.0441	1.01	2.25
	VV8=0 vs. VV19=2	Escarpment	Dune	4:1	0.0024	1.58	8.44
		Dune	*Shiquat* sand sheet	4:1	0.0022	1.69	10.68
		Escarpment	*Shiquat* sand sheet	15:1	<0.0001	6.09	34.41
		Escarpment	*Shiquat* gravel plain	8:1	<0.0001	3.00	20.77
	VV8=75 vs. VV19=0	*Shiquat* sand sheet	*Shiquat* gravel plain	7:1	0.0418	1.08	52.05
	VV8=75 vs. VV19=1	Escarpment	Dune	3:1	0.0003	1.76	6.59
		Shiquat sand sheet	Dune	2:1	0.0350	1.05	3.98
		Shiquat gravel plain	Dune	3:1	0.0034	1.41	5.59
	VV8=75 vs. VV19=2	*Shiquat* gravel plain	*Shiquat* sand sheet	4:1	0.0121	1.36	12.15
Grass green(%) vs. Crown cover(%)	VV11=25 vs. VV14=5	Escarpment	Dune	78:1	0.0018	5.10	1206.60
		Escarpment	*Shiquat* sand sheet	241:1	<0.0001	17.16	3378.20
		Escarpment	*Shiquat* gravel plain	19:1	0.0319	1.29	276.40
	VV11=25 vs. VV14=20	Escarpment	Dune	23:1	0.0151	1.83	286.40
		Escarpment	*Shiquat* sand sheet	34:1	0.0048	2.92	391.10
		Escarpment	*Shiquat* gravel plain	14:1	0.0389	1.14	168.50
	VV11=50 vs. VV14=20	*Shiquat* sand sheet	Dune	10:1	0.0152	1.57	68.88
		Shiquat sand sheet	Escarpment	27:1	0.0001	5.12	142.50
		Shiquat sand sheet	*Shiquat* gravel plain	16:1	0.0034	2.50	103.00
AUTUMN							
Vegetation condition	VV6=1	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.79	4.28
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.00	4.98
		Shiquat gravel plain	Escarpment	2:1	0.0413	1.02	2.74
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0031	1.24	2.87
	VV6=2	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.23	4.50
		Shiquat gravel plain	Dune	2:1	0.0480	1.00	2.20
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.11	4.49
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	<0.0001	1.47	3.09
Green material on trees(%)	VV8=0	*Shiquat* sand sheet	Dune	2:1	0.0239	1.04	1.83
		Dune	Escarpment	2:1	<0.0001	1.74	3.35
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.47	4.52

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on trees(%)	VV8=0	*Shiquat* gravel plain	Escarpment	2:1	<0.0001	1.79	3.43
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0366	1.02	1.78
	VV8=50	*Shiquat* sand sheet	Dune	3:1	0.0008	1.50	4.67
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.38	7.64
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	0.0011	1.45	4.45
	VV8=75	*Shiquat* sand sheet	Dune	4:1	<0.0001	3.12	6.26
		Shiquat gravel plain	Dune	2:1	<0.0001	1.60	3.46
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.30	4.78
		Shiquat gravel plain	Escarpment	2:1	0.0056	1.18	2.64
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0003	1.33	2.65
	VV8=100	Escarpment	Dune	2:1	0.0247	1.12	5.10
		Shiquat sand sheet	Dune	5:1	<0.0001	2.48	9.13
		Shiquat sand sheet	Escarpment	2:1	0.0307	1.07	3.73
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	0.0050	1.32	4.81
Green material on shrubs(%)	VV10=0	*Shiquat* sand sheet	Dune	2:1	0.0001	1.51	3.62
		Shiquat sand sheet	Escarpment	2:1	0.0002	1.52	3.85
	VV10=50	*Shiquat* sand sheet	Dune	5:1	<0.0001	3.31	7.73
		Shiquat sand sheet	Escarpment	5:1	<0.0001	2.97	7.12
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.83	4.19
	VV10=75	*Shiquat* sand sheet	Dune	2:1	<0.0001	1.59	3.04
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.94	3.80
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	<0.0001	1.40	2.66
Grass green(%)	VV11=25	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.31	4.82
		Shiquat gravel plain	Dune	2:1	0.0005	1.37	3.12
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.00	4.37
		Shiquat gravel plain	Escarpment	2:1	0.0061	1.19	2.83
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0120	1.11	2.33
	VV11=50	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.30	4.69
		Shiquat gravel plain	Dune	2:1	0.0095	1.13	2.48
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.22	4.69
		Shiquat gravel plain	Escarpment	2:1	0.0150	1.10	2.47
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0002	1.38	2.78
	VV11=75	*Shiquat* sand sheet	Dune	2:1	<0.0001	1.61	3.51
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.10	4.79
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.74	3.79

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Phenology	VV12=2	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.40	4.14
		Shiquat gravel plain	Dune	2:1	0.0112	1.10	2.05
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.62	4.56
		Shiquat gravel plain	Escarpment	2:1	0.0022	1.20	2.26
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	<0.0001	1.61	2.75
	VV12=3	*Shiquat* sand sheet	Dune	6:1	<0.0001	3.49	9.09
		Shiquat gravel plain	Dune	3:1	0.0002	1.59	4.56
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.52	6.79
		Shiquat gravel plain	Escarpment	2:1	0.0142	1.15	3.40
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0015	1.32	3.31
	VV12=4	*Shiquat* sand sheet	Escarpment	2:1	0.0025	1.30	3.44
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0112	1.15	2.94
Crown cover(%)	VV14=5	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.99	3.85
		Shiquat gravel plain	Dune	2:1	<0.0001	1.48	3.05
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.92	3.82
		Shiquat gravel plain	Escarpment	2:1	0.0001	1.43	3.01
	VV14=20	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.29	4.38
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.56	5.03
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	2.23	4.26
Activity	VV17=1	*Shiquat* sand sheet	Dune	5:1	<0.0001	3.48	6.54
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.62	5.03
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	<0.0001	2.69	5.06
	VV17=2	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.67	3.88
		Shiquat gravel plain	Dune	2:1	0.0029	1.26	3.12
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.71	4.12
		Shiquat gravel plain	Escarpment	2:1	0.0022	1.30	3.31
	VV17=31	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.81	4.63
		Shiquat gravel plain	Dune	2:1	0.0012	1.39	3.82
		Shiquat sand sheet	Escarpment	3:1	0.0001	1.58	4.09
		Shiquat gravel plain	Escarpment	2:1	0.0063	1.22	3.37
	VV17=41	*Shiquat* sand sheet	Dune	2:1	0.0028	1.31	3.67
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.20	6.72
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	0.0002	1.60	4.66
Temperature (°C)	VV21=1	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.16	5.02
		Shiquat gravel plain	Dune	2:1	0.0002	1.51	3.75

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Temperature (°C)	VV21=1	*Shiquat* sand sheet	Escarpment	3:1	<0.0001	2.13	5.14
		Shiquat gravel plain	Escarpment	2:1	0.0003	1.49	3.83
	VV21=2	*Shiquat* sand sheet	Dune	3:1	<0.0001	2.12	3.96
		Shiquat gravel plain	Dune	2:1	0.0469	1.00	2.02
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.19	4.20
		Shiquat gravel plain	Escarpment	2:1	0.0279	1.04	2.13
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	<0.0001	1.49	2.77
	VV21=3	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.82	4.08
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.97	4.60
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.90	4.33
Vegetation condition vs. Phenology	VV6=1 vs. VV12=2	*Shiquat* sand sheet	Dune	2:1	<0.0001	1.58	3.63
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.00	4.85
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0016	1.29	2.95
	VV6=1 vs. VV12=3	*Shiquat* sand sheet	Dune	4:1	0.0026	1.56	8.22
		Shiquat gravel plain	Dune	3:1	0.0314	1.09	6.49
		Shiquat sand sheet	Escarpment	4:1	0.0042	1.49	8.46
		Shiquat gravel plain	Escarpment	3:1	0.0405	1.04	6.69
	VV6=1 vs. VV12=4	*Shiquat* sand sheet	Dune	2:1	0.0001	1.55	3.95
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.72	4.70
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.60	4.11
	VV6=2 vs. VV12=2	*Shiquat* sand sheet	Dune	4:1	<0.0001	3.04	5.71
		Shiquat gravel plain	Dune	2:1	0.0007	1.29	2.61
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.77	5.30
		Shiquat gravel plain	Escarpment	2:1	0.0041	1.18	2.42
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	<0.0001	1.67	3.08
	VV6=2 vs. VV12=3	Escarpment	Dune	2:1	0.0159	1.12	3.03
		Shiquat sand sheet	Dune	9:1	<0.0001	5.88	13.35
		Shiquat gravel plain	Dune	3:1	<0.0001	1.68	4.42
		Shiquat sand sheet	Escarpment	5:1	<0.0001	3.17	7.30
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	2.17	4.89
Vegetation condition vs. Crown cover(%)	VV6=1 vs. VV14=5	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.70	4.49
		Shiquat gravel plain	Dune	3:1	0.0001	1.63	4.49
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.75	4.84
		Shiquat gravel plain	Escarpment	3:1	0.0001	1.68	4.82
	VV6=1 vs. VV14=20	*Shiquat* sand sheet	Dune	3:1	<0.0001	1.74	4.41

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Vegetation condition vs. Crown cover(%)	VV6=1 vs. VV14=20	*Shiquat* sand sheet	Escarpment	3:1	<0.0001	2.10	5.57
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	2.20	5.50
	VV6=2 vs. VV14=5	*Shiquat* sand sheet	Dunes	3:1	<0.0001	1.91	4.04
		Shiquat gravel plain	Dunes	2:1	0.0165	1.10	2.53
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.68	3.76
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0107	1.13	2.47
	VV6=2 vs. VV14=20	*Shiquat* sand sheet	Dunes	4:1	<0.0001	2.43	5.39
		Shiquat sand sheet	Escarpment	4;1	<0.0001	2.44	5.81
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.79	4.17
Vegetation condition vs. Activity	VV6=1 vs. VV17=1	*Shiquat* sand sheet	Dunes	4:1	<0.0001	1.74	6.72
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.91	4.84
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	2.25	5.38
	VV6=1 vs. VV17=2	*Shiquat* sand sheet	Dunes	2:1	0.0042	1.33	4.54
		Shiquat gravel plain	Dunes	2:1	0.0098	1.22	4.22
		Shiquat sand sheet	Escarpment	2:1	0.0150	1.17	4.19
		Shiquat gravel plain	Escarpment	2:1	0.0295	1.07	3.89
	VV6=1 vs. VV17=31	*Shiquat* sand sheet	Dunes	4:1	<0.0001	2.27	7.11
		Shiquat gravel plain	Dunes	3:1	0.0010	1.50	5.04
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.06	6.62
		Shiquat gravel plain	Escarpment	3:1	0.0031	1.37	4.67
	VV6=1 vs. VV17=41	Dune	Escarpment	3:1	0.0187	1.19	6.95
		Shiquat sand sheet	Escarpment	4:1	0.0012	1.73	9.24
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0380	1.05	5.06
	VV6=2 vs. VV17=1	*Shiquat* sand sheet	Dunes	5:1	<0.0001	3.62	7.78
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.86	6.54
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	<0.0001	2.61	5.87
	VV6=2 vs. VV17=2	*Shiquat* sand sheet	Dunes	3:1	<0.0001	1.63	4.26
		Shiquat gravel plain	Dunes	2:1	0.0390	1.03	2.94
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.90	5.36
		Shiquat gravel plain	Escarpment	2:1	0.0091	1.20	3.69
	VV6=2 vs. VV17=31	*Shiquat* sand sheet	Dunes	2:1	0.0209	1.12	3.89
	VV6=2 vs. VV17=41	*Shiquat* sand sheet	Dunes	3:1	<0.0001	2.02	5.95
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.05	6.67
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.82	5.80
Vegetation condition vs. Temperature (°C)	VV6=1 vs. VV21=1	*Shiquat* sand sheet	Dunes	3:1	0.0014	1.46	4.87

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Vegetation condition vs. Temperature (°C)	VV6=1 vs. VV21=1	*Shiquat* sand sheet	Escarpment	4:1	<0.0001	2.10	7.47
		Shiquat gravel plain	Escarpment	2:1	0.0075	1.27	4.70
	VV6=1 vs. VV21=2	*Shiquat* sand sheet	Dunes	3:1	<0.0001	1.73	4.16
		Shiquat gravel plain	Dunes	2:1	0.0138	1.13	2.83
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.96	4.90
		Shiquat gravel plain	Escarpment	2:1	0.0033	1.27	3.33
	VV6=1 vs. VV21=3	*Shiquat* sand sheet	Dunes	3:1	0.0011	1.54	5.68
		Shiquat sand sheet	Escarpment	3:1	0.0068	1.30	5.06
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	0.0029	1.41	5.35
	VV6=2 vs. VV21=1	*Shiquat* sand sheet	Dunes	4:1	<0.0001	2.37	6.95
		Shiquat gravel plain	Dunes	3:1	<0.0001	1.91	6.18
		Shiquat sand sheet	Escarpment	3:1	0.0004	1.57	4.88
		Shiquat gravel plain	Escarpment	2:1	0.0067	1.27	4.33
	VV6=2 vs. VV21=2	*Shiquat* sand sheet	Dunes	3:1	<0.0001	2.17	4.51
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.01	4.40
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.86	4.05
	VV6=2 vs. VV21=3	*Shiquat* sand sheet	Dunes	3:1	<0.0001	1.63	3.88
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.21	5.64
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.89	4.73
Green material on shrubs(%) vs. Activity	VV10=0 vs. VV17=1	*Shiquat* sand sheet	Dunes	5:1	<0.0001	3.48	7.95
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.41	5.65
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	<0.0001	2.88	6.57
	VV10=0 vs. VV17=2	*Shiquat* sand sheet	Dunes	3:1	<0.0013	1.47	4.94
		Shiquat gravel plain	Dunes	4:1	<0.0001	2.02	6.44
		Shiquat sand sheet	Escarpment	2:1	0.0145	1.17	4.11
		Shiquat gravel plain	Escarpment	3:1	0.0005	1.61	5.34
	VV10=0 vs. VV17=31	*Shiquat* gravel plain	Dunes	3:1	0.0111	1.26	5.98
	VV10=0 vs. VV17=41	*Shiquat* sand sheet	Escarpment	3:1	0.0098	1.35	8.92
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	0.0274	1.12	7.28
	VV10=50 vs. VV17=1	*Shiquat* sand sheet	Dunes	7:1	<0.0001	4.28	12.66
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.22	6.65
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	<0.0001	2.56	7.24
	VV10=50 vs. VV17=2	*Shiquat* sand sheet	Dunes	4:1	0.0002	1.89	8.06
		Shiquat sand sheet	Escarpment	4:1	0.0004	1.84	8.38
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0193	1.15	4.63

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on shrubs(%) vs. Activity	VV10=50 vs. VV17=31	*Shiquat* sand sheet	Dunes	7:1	<0.0001	3.26	16.55
		Shiquat gravel plain	Dunes	4:1	0.0087	1.39	9.61
		Shiquat sand sheet	Escarpment	6:1	<0.0001	2.46	12.53
		Shiquat gravel plain	Escarpment	3:1	0.0398	1.05	7.26
	VV10=50 vs. VV17=41	*Shiquat* sand sheet	Dunes	3:1	0.0315	1.11	8.67
		Shiquat sand sheet	Escarpment	5:1	0.0016	1.88	15.25
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	0.0347	1.08	7.99
	VV0=75 vs. VV17=1	*Shiquat* sand sheet	Dunes	3:1	<0.0001	1.97	3.98
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.33	4.88
		Shiquat sand sheet	*Shiquat* gravel plain	3:1	<0.0001	1.89	3.82
	VV10=75 vs. VV17=2	*Shiquat* sand sheet	Escarpment	2:1	0.0030	1.30	3.66
		Shiquat gravel plain	Escarpment	2:1	0.0323	1.05	3.05
	VV10=75 vs. VV17=31	*Shiquat* sand sheet	Dunes	2:1	0.0006	1.38	3.31
		Shiquat sand sheet	Escarpment	2:1	0.0001	1.54	3.80
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0122	1.13	2.69
	VV10=75 vs. VV17=41	*Shiquat* sand sheet	Dunes	2:1	0.0003	1.52	4.03
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.79	5.18
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0007	1.46	4.05
WINTER							
Vegetation condition	VV6=1	*Shiquat* gravel plain	Dunes	2:1	0.0474	1.00	1.97
	VV6=2	*Shiquat* sand sheet	Dunes	3:1	0.0002	1.61	4.45
		Shiquat sand sheet	Escarpment	3:1	0.0002	1.62	4.78
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0240	1.08	3.10
Green material on trees(%)	VV8=0	Dune	Escarpment	2:1	<0.0001	1.73	3.48
		Shiquat sand sheet	Escarpment	2:1	<0.0001	1.58	3.15
		Shiquat gravel plain	Escarpment	2:1	0.0005	1.32	2.67
	VV8=75	Escarpment	Dunes	3:1	0.0014	1.43	4.39
		Shiquat sand sheet	Dunes	4:1	<0.0001	2.25	6.93
		Shiquat gravel plain	Dunes	3:1	0.0013	1.47	4.91
Shrub density	VV9=0	*Shiquat* sand sheet	Dunes	2:1	0.0338	1.06	4.32
	VV9=1	*Shiquat* sand sheet	Dunes	2:1	0.0126	1.11	2.46
		Dunes	Escarpment	2:1	0.0038	1.24	3.06
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.11	4.92

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Shrub density	VV9=1	*Shiquat* gravel plain	Escarpment	3:1	<0.0001	1.69	3.99
	VV9=2	*Shiquat* sand sheet	Dunes	2:1	0.0050	1.22	3.04
Phenology	VV12=4	*Shiquat* sand sheet	Dunes	2:1	<0.0001	1.57	3.75
		Shiquat gravel plain	Dunes	2:1	0.0113	1.14	2.85
		Shiquat sand sheet	Escarpment	2:1	0.0001	1.53	3.72
		Shiquat gravel plain	Escarpment	2:1	0.0157	1.11	2.83
Crown cover(%)	VV14=5	*Shiquat* gravel plain	Dunes	3:1	<0.0001	1.66	4.56
		Shiquat gravel plain	Escarpment	3:1	0.0004	1.52	4.25
		Shiquat gravel plain	*Shiquat* sand sheet	2:1	0.0058	1.23	3.35
	VV14=20	*Shiquat* sand sheet	Dunes	3:1	<0.0001	1.90	3.69
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.03	3.90
		Shiquat sand sheet	*Shiquat* gravel plain	4:1	<0.0001	2.52	4.99
Temperature (°C)	VV21=1	*Shiquat* sand sheet	Dunes	2:1	<0.0001	1.55	3.55
		Shiquat sand sheet	Escarpment	2:1	0.0002	1.45	3.39
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0391	1.02	2.33
	VV21=2	*Shiquat* sand sheet	Dunes	2:1	0.0385	1.02	2.30
		Shiquat sand sheet	Escarpment	2:1	0.0272	1.05	2.39
Green material on trees(%) vs. Shrub density	VV8=0 vs. VV9=0	*Shiquat* sand sheet	Dunes	2:1	0.0226	1.06	2.26
		Dunes	Escarpment	2:1	0.0006	1.37	3.18
		Shiquat sand sheet	Escarpment	3:1	<0.0001	2.14	4.92
		Shiquat gravel plain	Escarpment	2:1	0.0005	1.39	3.27
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0309	1.04	2.22
	VV8=0 vs. VV9=1	Dunes	Escarpment	3:1	<0.0001	2.33	5.13
		Shiquat sand sheet	Escarpment	2:1	<0.0001	1.59	3.52
		Shiquat gravel plain	Escarpment	2:1	0.0013	1.30	2.92
		Dunes	*Shiquat* sand sheet	2:1	0.0367	1.02	2.08
		Dunes	*Shiquat* gravel plain	2:1	0.0019	1.24	2.55
	VV8=0 vs. VV9=2	Dunes	Escarpment	2:1	0.0138	1.16	3.61
	VV8=75 vs. VV9=0	Escarpment	Dunes	5:1	0.0057	1.64	18.06
	VV8=75 vs. VV9=1	*Shiquat* sand sheet	Dunes	4:1	<0.0001	2.25	7.10
		Shiquat gravel plain	Dunes	3:1	0.0002	1.73	5.76
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.43	7.94
		Shiquat gravel plain	Escarpment	3:1	<0.0001	1.86	6.43
	VV8=75 vs. VV9=2	Escarpment	Dunes	3:1	0.0005	1.66	6.08
		Shiquat sand sheet	Dunes	5:1	<0.0001	2.81	9.72

VARIABLE	CATEGORY	HABITAT A	HABITAT B	A:B	P-VALUE	CONFIDENCE LIMITS	
						Lower	Upper
Green material on trees (%) vs. Shrub density	VV8=75 vs. VV9=0	*Shiquat* gravel plain	Dunes	3:1	0.0041	1.36	5.02
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0189	1.12	3.57
Shrub densiy vs. Phenology	VV9=0 vs. VV12=4	*Shiquat* sand sheet	Dunes	3:1	0.0027	1.51	7.06
		Shiquat gravel plain	Dunes	2:1	0.0329	1.08	5.77
	VV9=1 vs. VV12=1	*Shiquat* sand sheet	Dunes	2:1	0.0137	1.11	2.44
		Shiquat gravel plain	Dunes	2:1	0.0217	1.07	2.39
		Dunes	Escarpment	2:1	0.0160	1.11	2.74
		Shiquat sand sheet	Escarpment	3:1	<0.0001	1.88	4.35
		Shiquat gravel plain	Escarpment	3:1	<0.0001	1.82	4.27
	VV9=1 vs. VV12=4	*Shiquat* sand sheet	Dunes	2:1	0.0448	1.01	2.75
		Dunes	Escarpment	2:1	0.0069	1.24	3.83
		Shiquat sand sheet	Escarpment	4:1	<0.0001	2.08	6.36
		Shiquat gravel plain	Escarpment	2:1	0.0030	1.35	4.32
	VV9=2 vs. VV12=4	*Shiquat* sand sheet	Dunes	3:1	0.0064	1.31	5.29
		Shiquat gravel plain	Dunes	2:1	0.0312	1.07	4.26
Phenology vs. Temperature (°C)	VV12=1 vs. VV21=1	*Shiquat* sand sheet	Dunes	2:1	0.0001	1.53	3.77
		Shiquat sand sheet	Escarpment	2:1	0.0024	1.29	3.26
		Shiquat sand sheet	*Shiquat* gravel plain	2:1	0.0142	1.12	2.79
	VV12=4 vs. VV21=1	*Shiquat* sand sheet	Dunes	2:1	0.0032	1.32	3.97
		Shiquat sand sheet	Escarpment	2:1	0.0034	1.34	4.31
	VV12=4 vs. VV21=2	*Shiquat* sand sheet	Dunes	3:1	0.0001	1.59	4.18
		Shiquat gravel plain	Dunes	2:1	0.0093	1.18	3.15
		Shiquat sand sheet	Escarpment	2:1	0.0006	1.44	3.89
		Shiquat gravel plain	Escarpment	2:1	0.0269	1.07	2.93

APPENDIX D

Glossary of terms

The following terms are used in this study. An asterisk (*) denotes terms that are explained within this glossary.

Asymptotic: In the present study this term refers to the situation in the range calculations where a further addition of observations of any particular animal results in a minimal increase in the size of the range used by that animal.

Auto-correlation: A statistical measure of the strength of association between pairs of values of a time series as a function of the time interval that separates them (Lincoln, Boxshall & Clark 1998).

Bio-geographical regions (or realms): The major divisions of the terrestrial environment characterised by their overall flora and fauna (Lawrence 1995).

Cambrian: The geological period lasting from approximately 590 to 505 million years ago and during which many phyla of multi-cellular animals first arose (Lawrence 1995).

Circling ("Paarungskreisen"): In the present study this refers to the situation observed when a male and female stand side by side facing in different directions; the male subsequently attempts to move in behind the female in order to get into a position where the female can be mounted. The female prevents this by maintaining the side by side position, and consequently the animals move round in a circle. It is often observed when a female reaches oestrus *.

Contingency table: A table consisting of data in two or more rows and columns in which the observations or individuals are classified according to two variables *. The relationship between the variables can be measured using tests of independence, such as the chi-squared test (Lincoln *et. al.* 1998).

Cretaceous period: The last period of the Mesozoic Era from approximately 140 to 170 million years ago, during which time chalk was being laid down and occurring after the Jurassic and before the Tertiary* Periods (Lawrence 1995).

Endangered: in the proposed IUCN Criteria for threatened species, a taxon is considered as endangered when it is known to be at a very high risk of extinction* in the wild in the near future (Lincoln, *et al.* 1998).

Endothermic ability: The ability to maintain a body temperature that varies only within narrow limits, by means of internal mechanisms such as the dilation or expansion of blood vessels (Allaby 1991).

Eocene: An early era of the Tertiary* Period, between the Paleocene* and the Oligocene*, lasting from approximately 55 million to 40 million years ago (Lawrence 1995).

Ephemeral: A plant that completes its life cycle within a brief period (Lawrence 1995).

Evapo-transpiration: The loss of water from the soil by evaporation from the surface and by transpiration from the plants growing in it (Lawrence 1995).

Extinction: In the present study the term refers to the situation where a taxon disappears from the wild, even though some specimens could still be alive in captivity.

Flehmen: A behaviour of probable sexual significance which is exhibited by felids, ungulates and some other mammals when examining a scent mark (usually of urine). Having sniffed at the scent mark or urine the animal performing flehmen lifts its head with its mouth partly open and the upper lip drawn backwards (Lawrence 1995).

Goose-stepping ("Laufenschlag"): In the present study this refers to the lifting of and the subsequent downwards "kick" of the front hoof of a male oryx between the back legs of a female oryx. Often observed when a female is in oestrus.*

Hyperthermia: An increase in body temperature above normal levels, which is used by some animals that live in hot climates as a water conservation strategy (Lawrence 1995).

Lacustrine: Pertaining to lakes or ponds (Lawrence 1995; Lincoln *et al.* 1998)

Lag gravels: Gravels associated with and deposited through the movement of water.

Least squares method: In statistics this is a technique of curve-fitting and of estimating the parameters of the corresponding equation. It involves choosing the parameters to minimise the sum of the squared differences between the observed values and their respective expected values (Lincoln, *et al.* 1998)

Minimum area convex polygon: A polygon with all the internal angles smaller than 180°. It is called a minimum polygon because it is the smallest area convex polygon that contains all locational points (Worton 1987). It is used to describe range sizes of animals visually.

Miocene: A geological era of the Tertiary* Period between the Oligocene* and the Pliocene* lasting from approximately 25 million to 5 million years ago (Lawrence 1995).

Model: A simplified description of a system, which is used as an aid to understanding the system. Mathematical models are constructed from numerical values given to the components of the system and the relationships among components (Allaby 1988).

Odds ratio: The odds ratio represents the probability of a success compared with the probability of a failure. For example, if an event is five times more likely to occur than not to occur, the odds are five to one that it will occur (Freund & Simon 1991).

Oedema: The swelling of body tissues because of an accumulation of tissue fluids (Lawrence 1995). It is often associated with an injury.

Oestrus: The period of maximum sexual receptivity, or heat, in female mammals. It is usually also the time of release of the ova (Lincoln, *et al.* 1998)

Oligocene: A geological era in the Tertiary* between the Eocene* and the Miocene* lasting from approximately 38 to 25 million years ago (Lawrence 1995).

Ovulation: The shedding of an ovum or ova from the ovary (Lawrence 1995).

Paleocene: The earliest era of the Tertiary* period, before the Eocene* and lasting from approximately 65 to 55 million years ago (Lawrence 1995).

Phenology: The recording and the study of periodic biological events, such as flowering, breeding and migration in relation to climatic and other environmental factors (Lawrence 1995).

Physiognomic: The characteristic features or appearance of a plant community or vegetation (Lincoln, *et al.* 1998)

Physiographic regions: Pertaining to the geographical features of the surface of the Earth (Lincoln, *et al.* 1998)

Pliocene: The geological epoch that followed the Miocene* and preceded the Pleistocene, lasting from around 5 million years to 2 million years ago (Lawrence 1995).

Polyphasic activity pattern: In the present study this refers to an activity pattern characterised by more than one period of activity.

Population: Social aggregations of the same animal species occupying a particular space at a particular time. A group of individuals sharing some common features and living in a defined area that is considered without regard to the interrelationships among them (Allaby 1988).

Post-partum: Occurring after parturition (Lincoln, *et al.* 1998). The condition experienced post-partum is only associated with the female that gave birth.

Precambrian: The time before the Cambrian *. It is generally considered as the era lasting from the earliest formation of rocks until approximately 590 million years ago, and it is divided into two eons, the Proterozoic and the earlier Archaean Eons. The Precambrian saw the origin of life, the evolution of living cells and the evolution of the eucaryotic cell. The first multi-cellular animals arose towards the end of this era (Lawrence 1995).

Reintroduction: The intentional movement of an organism into a part of its native range from which it has disappeared or become extirpated in historic times as a result of human activities or natural catastrophes (IUCN 1987).

Tertiary Period: A geological period lasting from approximately 65 million years to 2 million years ago (Lawrence 1995).

Transect: In the present study this term refers to a line used for sampling. There are two examples in the present study. The first are the lines walked for sampling the presence or absence of plant species in the different habitat types; the second are the straight lines flown to assess the proportional distribution of the various habitat types and the distribution of plants that could provide shade to the oryx.

Translocation: The movement of living organisms from one area to end in their free release in another area. Three main classes of translocation can be distinguished. They are: introduction, reintroduction* and restocking (IUCN, 1987).

Variable: Any symbol or term to which a number of different numerical values may be assigned (Lincoln *et al.* 1998).

Wadi: The Arabic term referring to a watercourse or riverbed.