

KUNENE REGIONAL ECOLOGICAL ASSESSMENT

VOLUME THREE: REFERENCES AND APPENDICES



PREPARED FOR THE **KUNENE PEOPLE'S PARK TECHNICAL COMMITTEE** BY ROUND RIVER CONSERVATION STUDIES



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BY ROUND RIVER CONSERVATION STUDIES

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2008

ACKNOWLEDGEMENTS



This assessment brings together and builds upon the work of many individuals and organizations conservation in the Kunene Region over the past half century. Many have contributed their valuable knowledge, data and time to this work.

We acknowledge the opportunity and support of the Ministry of Environment and Tourism (MET), the Kunene People's Park Technical Committee, the

Traditional Authorities and the Conservancy Committee members for Round River to participate in this ambitious conservation initiative.

Specifically, we thank: The Hon. Gov. Dudu Murotua and the Kunene Regional Council, the Kunene Regional Land Board, Hon. Justus Garoeb MP, Max J. Haraseb, Lucky Kasaona, Likius Tjijahura, Mutindi Muteze, Jeremias Gaobaeb, Petrus Ganuseb, Jeremiah Kaisuma, Daniel Karutjaiva, Japi Uaraavi,

Frans Tjawira, Hiandekete Kandjii, Langman Muzama, Jatuije Uarolig, Hiskia Mbaroro, Klemens /Awarab, Josef Kangombe, Ben Mbomboro, Stephenus Uakazapi, Sebetus Taniseb, Monica Uses, Gabriel Ganaseb, Lina Kaisuma, Sarah Awaras, Titus Kungondo, Ripanga Kasupi, Leon Kasupi, Kavisina Kasaona, Jauire Uaraavi, Gustaf Tjiundukamba, Alfons Uarijje, Herman Ruhumba, Asser Ujaha, Jackson Kavetu, N. Isaunotje, Godliep Mureka, Licus Tjijahura, Bennie Roman, Dawid /Gôgoseb, Monica and Daniel Uwiteb, Kassy Muhenje, Matiti, Tumbee Tjrora, Kahevee Kavari, Joseph H. Hijatjua, Rynald Mumbuu, Kaenda Herunga, Rakotoka Katjimbari, David Kangombe, Rynald Turitjo, Christof Tjikumisa, Wilnel Murumbua, Repiam Kapiringi, Simson !Uri-≠Khob, Uri Matundu, Siegfried D. /Gawiseb, Nahor Howoseb, Garson Somaeb, Gary Nekongo, Erwin K. Tjikuua, Dr. Kalumbi Shangula, Colgar Sikopo, Bonni Awarab, Basilia Shivute, Kapoi Kasaona, Vehihamma Kasupi, Obed Hambo, Leon Jooste, Ben Beytell, Malan Lindeque, Jennifer Lalley, Midori Paxton, Garth Owen-Smith, Rudi Loutit, Duncan Gilchrist, Chris Bakkes, Dave van Smeerdyk, Bruce Simpson, Steve Braine, John Paterson, Dennis Liebenberg, Mike Griffin, Holger Kolberg, Keith Leggett, Flip Stander, Rob Simmons, Pierre du Preez, Werner Killian, Betsy Fox.

Also thanks to all the Community Game Guards within Torra, ≠Khoadi //Hoas, Sesfontein, Anabeb, Omatendeka, Ehirovipuka, Purros, Okangundumba, Ozondundu, Orupupa, Otjambangu, and all the people interviewed.

We also acknowledge the Round River student research assistants for helping with data collection. The Ministry of Environment and Tourism, Wilderness Safaris, Ms. Jennifer Spears and The Nature Conservancy provided project logistical and financial support.

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APPENDIX 1: PROJECT AREA RARE AND ENDEMIC ANIMALS (NAMIBIA BIODIVERSITY ATLAS, MET-DSS)

**** Habitat Key:** GP = gravel plains, SR = sheet rock, GK = granite kopjies, RS = rocky slopes, S = sand, A = arboreal, USS = unconsolidated sand substrates, RO = rocky outcrops, SS = steep slopes or cliff, CDH = coastal dune hummocks, G = generalist, RV = riverine, W = woodland, A = general arid, C = canyon

Common Name	Latin Name	Habitat**	Status	Threats	Future Needs
Amphibians					
Dombe Dwarf Toad	<i>Poyntonophrynus dombensis</i>	GK, RO	Rare	None	None
Damara Dwarf Toad	<i>Poyntonophrynus hoeschi</i>	RO, SR	Secure	None	None
Damara Sand Frog	<i>Tomopterna damarensis</i>	S, R	Unknown	None	No natural history knowledge
Birds					
Hartlaub's Francolin	<i>Francolinus hartlaubi</i>	RS, GK, RO	Rare	Fragmentation	n/a
Damara Tern	<i>Sterna balaenarum</i>	GP	Rare	Heavy vehicle traffic, mining	n/a
Ruppell's Parrot	<i>Poicephalus rueppellii</i>	R, W	Rare	Deforestation	n/a
Violet Woodhoopoe	<i>Phoeniculus damarensis</i>	R, W	Rare	Deforestation	n/a
Ruppell's Korhaan	<i>Eupodotis rueppellii</i>	GP, RS	Secure	None	n/a
Rosy-faced Lovebird	<i>Agapornis roseicollis</i>	W, SS, C	Secure	None	n/a
Monteiro's Hornbill	<i>Tockus monteiri</i>	W, A	Secure	None	n/a
Bare-cheeked Babbler	<i>Turdoides gymnogenys</i>	R, GK, RO	Secure	None	n/a
Herero Chat	<i>Namibornis herero</i>	RS, W	Secure	None	n/a
Rockrunner	<i>Achaetops pycnopygius</i>	RS	Secure	None	n/a
Whitetailed Shrike	<i>Lanioturdus torquatus</i>	RS, W	Secure	None	n/a
Gray's Lark	<i>Ammomanes grayi</i>	GP, S	Secure	None	n/a
Carp's Tit	<i>Parus carpi</i>	A, W	Secure	None	n/a
Mammals					
Black-faced Impala	<i>Aepyceros melampus petersi</i>	RV, W	Intermediate	Poaching, interbreeding	None
Namibian Wing-gland Bat	<i>Cistugo seabrai</i>	A	Rare	None	No natural history knowledge
Mountain Zebra	<i>Equus zebra</i>	RS, escarpment zone	Secure	Overharvesting	Needs management plan
Namibian Pygmy Rock Mouse	<i>Petromyscus collinus</i>	RS, GK, RO	Secure	None	None
Rocky Point Gerbil	<i>Gerbillurus paeba infernus</i>	CDH	Secure	Heavy vehicle traffic, mining	Extent of range
Bushveld Sengi (elephant shrew)	<i>Elephantulus intufi</i>	G	Secure	None	No natural history knowledge
Black Mongoose	<i>Galarella negrita</i>	GK, RO	Secure	None	PVA
Dassie Rat	<i>Petromus typicus</i>	RS, GK, RO	Secure	Domestic Cats	None
Mountain Ground Squirrel	<i>Xerus princeps</i>	RS, GK, RO	Secure	None	None
Western Rock Doormouse	<i>Graphiurus rupicola</i>	RS, GK, RO	Secure	None	No natural history knowledge
Namib Brush-tailed Gerbil	<i>Gerbillurus setzeri</i>	GP, S, R	Secure	None	None
Reptiles					
Southwest African Flat Gecko	<i>Afroedura africana</i>	GK, RS	Insufficient data	Tourmaline mining	None
Namibian Dwarf Python	<i>Python anchietae</i>	RS, GK, RO	Intermediate	Pet trade	Trade monitoring
Zebra Racer	<i>Coluber zebrina</i>	RS, GK, RO	Rare	None	No natural history knowledge
Brandberg Gecko	<i>Pachydactylus gaiasensis</i>	GK, RO	Rare	Mining	No natural history knowledge
Kuidas Gecko	<i>Pachydactylus sansteyni</i>	GK, RO, USS	Rare	None	No natural history knowledge
Damara Tiger Snake	<i>Telescopus sp.</i>	GK, RO	Rare	None	No natural history knowledge
Coastal Namib Day Gecko	<i>Rhoptropus afer</i>	GP, SR	Secure	None	None

Barnard's Namib Day Gecko	<i>Rhoptropus barnardi</i>	RS, GP, GK	Secure	None	None
Velvety Gecko	<i>Pachydactylus bicolor</i>	RS, GK	Secure	None	No natural history knowledge
Kaokoveld Namib Day Gecko	<i>Rhoptropus biporosus</i>	RS, GK	Secure	None	No natural history knowledge
Namib Dune Adder	<i>Bitis peringueyi</i>	S	Secure	Pet trade	Populations fragmented
Namibian Dwarf Gecko	<i>Lygodactylus bradfieldi</i>	A, RS, RO	Secure	Deforestation	None
Slender Blind Legless Skink	<i>Typhlosaurus braini</i>	S	Secure	None	No natural history knowledge
Short-headed Sand Lizard	<i>Pedioplanis breviceps</i>	USS	Secure	None	No natural history knowledge
Short-legged Burrowing Skink	<i>Typhlacontias brevipes</i>	S	Secure	None	No natural history knowledge
Banded Barking Gecko	<i>Ptenopus carpi</i>	S, GP	Secure	None	No natural history knowledge
Dwarf Plated Lizard	<i>Cordylus subtaeniatus</i>	RS, GK, RO	Secure	None	None
Damara Namib Day Gecko	<i>Rhoptropus diporus</i>	RS, GK, RO	Secure	None	No natural history knowledge
Damara Banded Gecko	<i>Pachydactylus fasciatus</i>	RS, GK, RO	Secure	None	No natural history knowledge
Fitzsimons' Gecko	<i>Pachydactylus fitzsimonsi</i>	RS, GK, RO, SS	Secure	None	No natural history knowledge
Southwestern Shovel-snout	<i>Prosymna frontalis</i>	RS, GK, RO	Secure	None	No natural history knowledge
Damara Sand Lizard	<i>Pedioplanis gaerdesi</i>	RS, GK, RO	Secure	None	No natural history knowledge
Namib Ghost Gecko	<i>Pachydactylus kochii</i>	S, GP	Secure	None	No natural history knowledge
Kaokoveld Dwarf Gecko	<i>Lygodactylus lawrencei</i>	A	Secure	None	None
Namibian Worm Snake	<i>Leptotyphlops occidentalis</i>	G	Secure	None	No natural history knowledge
Namibian Wolf Snake	<i>Lycophidion namibianum</i>	RS, GK, RO, SS	Secure	Mining	No natural history knowledge
Koppie Plated Lizard	<i>Gerrhosaurus validus</i>	GK, RS, RO	Secure	Mining, pet trade	Taxonomy
Zebra Snake	<i>Naja nigricincta</i>	RS, GK, RO, SS	Secure	None	None
Palmato Gecko	<i>Palmatogecko rangei</i>	S, CDH	Secure	None	None
Namibian Snake-eyed Skink	<i>Panaspis sp.</i>	S	Secure	None	None
Sesfontein Gecko	<i>Pachydactylus parascutatus</i>	RS, GK, RO, SS	Secure	Mining	No natural history knowledge
Damara Rock Agama	<i>Agama planiceps</i>	RS, GK, RO	Secure	None	None
Namib Sand Snake	<i>Psammophis namibensis</i>	GP, RS, S	Secure	None	None
Western Keeled Snake	<i>Pythonodipsas carinata</i>	GK, RO, RS	Secure	Mining, pet trade	Trade monitoring
Reticulated Sand Lizard	<i>Meroles reticulatus</i>	S, GP	Secure	None	None
Bradfield's Namib Day Gecko	<i>Rhoptropus bradfieldii</i>	RS, GK, RO	Secure	None	None
Namibian Rough-scaled Gecko	<i>Pachydactylus rugosus</i>	USS, GP	Secure	None	No natural history knowledge
Namibian Dwarf Burrowing Skink	<i>Scelotes capensis</i>	RS, GK, RO	Secure	None	No natural history knowledge
Namib Variable Gecko	<i>Pachydactylus sherzi</i>	USS, GP	Secure	None	None
Beaked Blind Snake	<i>Rhinotyphlops schinzi</i>	RS	Secure	None	None
Large-scaled Gecko	<i>Pachydactylus scutatus</i>	GK, RO, SS	Secure	None	None
Kaokoveld Burrowing Skink	<i>Sepsina alberti</i>	RS, GK, RO	Secure	None	No natural history knowledge
Dune Plated Lizard	<i>Gerrhosaurus skoogi</i>	SD (slip faces)	Secure	None	None
Namibian Tree Skink	<i>Trachylepis spilogaster</i>	A	Secure	Deforestation	None
Western Rock Skink	<i>Trachylepis hoeschi</i>	RS, GK, RO	Secure	None	None
Western Whip Snake	<i>Psammophis trigrammus</i>	A	Secure	None	None
Western Sand Lizard	<i>Pedioplanis undata</i>	GP, SR	Secure	None	None
Kaoko Gecko	<i>Palmatogecko vanzyli</i>	GP, S	Secure	None	No natural history knowledge
Viperine Rock Snake	<i>Hemirhagerrhis viperina</i>	RS, GK, RO	Secure	Mining	No natural history knowledge
<i>Pachydactylus wernerii</i>	<i>Pachydactylus wernerii</i>	GK, RO, S, R	Secure	Mining	None
Black Spitting Cobra	<i>Naja woodi</i>	RS, GK, RO	Secure	None	No natural history knowledge
Kalahari Round-headed Worm Lizard	<i>Zygaspis quadrifrons</i>	S, A	Secure	None	None

APPENDIX 2: MESA-SPECIALIST PLANTS IN THE PROJECT AREA (BURKE, 2003)

Etendeka Specialist Plants	Endemic	Etendeka Specialist Plants	Endemic
Abutilon pycnodon		Hibiscus elliotiae	
Acacia erubescens		Hibiscus engleri	
Acacia mellifera		Hibiscus fleckii	x
Acacia robynsiana	x	Hibiscus palmatus	
Acalypha segetalis		Hoodia eurrorii	
Asparagus retrofractus		Hypoestes forskoolii	
Barleria lancifolia		Indigofera rautanenii	
Bidens biternata		Ipomoea bolusiana	
Blepharis leendertziae		Ipomoea verbascoidea	
Blepharis obmitrata		Justicia platysepala	x
Brachiaria grossa		Kirkia acuminata	
Cleome oxyphylla		Kleinia longiflora	
Commicarpus pentandrus		Ledebouria undulata	
Commicarpus squarrosos		Limnium dinteri	
Commiphora glaucescens		Lycium oxycarpum	
Commiphora mollis		Manuleopsis dinteri	x
Commiphora multijuga		Megalochlamys marlothii	
Commiphora pyracanthoides		Merremia palmata	
Commiphora tenuipetiolata		Monsonia glauca	
Croton gratissimus		Moringa ovalifolia	
Cucumis africanus		Neorautanenia mitis	
Cyphostemma currori		Obetia carruthersiana	
Cyphostemma omburensense		Pavonia burchellii	
Cyphostemma ruacanense		Pennisetum foermeranum	x
Cyphostemma uter		Petalidium variabile	x
Dalechampia scandens		Plectranthus hereroensis	
Danthoniopsis dinteri		Polygala guerichiana	
Dichrostachys cinerea africana		Sarcocaulon marlothii	x
Dicoma tomentosa		Senecio allariifolius	x
Dyerophytum africanum		Sericoma heterochiton	
Enneapogon scarber		Setaria verticillata	
Enneapogon scoparius		Solanum rigescentoides	x
Eriocephalus dinteri	x	Stapelia kwebensis	
Eriocephalus pinnatus	x	Steganotaenia araliacea	
Euphorbia gueruchiana		Sterculia africana	
Ficus cordata cordata		Thesium lineatum	
Grewia retinervis		Trianthena parvifolia	
Gymnosporia buxifolia		Triraphis ramosissima	
Hermannia glanduligera		Ursinia nana nana	
		Vernonia obionifolia	
		Xerophyta viscosa	

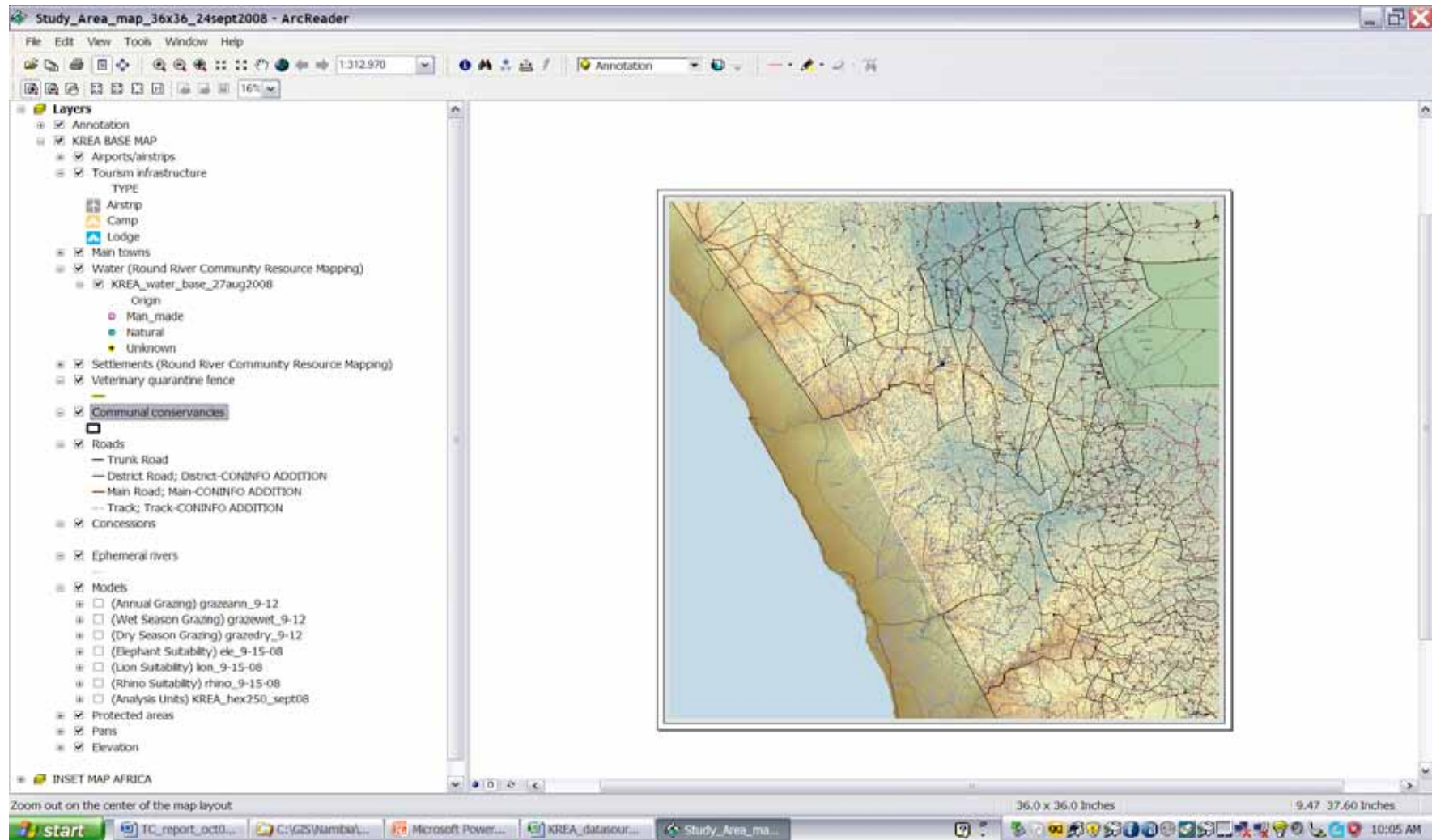
APPENDIX 3: KEY WATERS FOR CONNECTIVITY IDENTIFIED BY LOCAL INFORMANTS

NAME	LATITUDE	LONGITUDE	SOURCE FILE	TYPE	AVAILABILITY	SIZE	WILDLIFE USE	LIVESTOCK USE
Orowau	-19.402	13.608	SRT database	Spring	Permanent	Small	Almost Always	Rarely
Mudorib	-19.48812	13.4005	SRT database	Spring	Temporary	Small	Always	Never
Onjoka	-19.49619	13.64348	SRT database	Spring	Permanent	Large	Almost Always	Sometimes
Zebra	-19.53554	13.58595	SRT database	Spring	Permanent	Medium	Almost Always	Never
Omutati	-19.56141	13.62456	SRT database	Spring	Permanent	Large	Always	Very rarely
Gomaghorras	-19.65926	13.80604	SRT database	Spring	Permanent	Large	Always	Never
Otjijapa	-19.672	13.963	SRT database	Spring	Permanent	Large	Almost Always	Rarely
Barib Main	-19.67983	13.72545	SRT database	Spring	Permanent	Medium	Always	Very rarely
Kai-As	-19.75593	13.59768	SRT database	Spring	Permanent	Large	Always	Never
Awaxas	-19.76045	13.84763	SRT database	Spring	Permanent	Medium	Always	Never
Crowtheresquelle	-19.84769	13.51066	SRT database	Spring	Permanent	Small	Almost Always	Never
Urunendis	-19.87265	13.68345	SRT database	Spring	Permanent	Large	Always	Never
Palmwaq	-19.876	13.935	SRT database	Spring	Permanent	Large	Almost Always	Very rarely
Beacon River	-19.94	13.54	SRT database	Spring	Permanent	Medium	Almost Always	Never
Khoabes	-19.97416	13.79345	SRT database	Spring	Permanent	Medium	Always	Never
Mud Spring	-19.97647	13.91012	SRT database	Spring	Permanent	Medium	Almost Always	Very rarely
Swartmodder	-20.02855	13.64154	SRT database	Spring	Permanent	Medium	Almost Always	Never
Main Achab	-20.04656	13.76071	SRT database	Spring	Permanent	Medium	Almost Always	Never
Kaikams	-20.07598	13.81598	SRT database	Spring	Permanent	Medium	Almost Always	Never
Sink Fontein	-20.389	13.94	SRT database	Spring	Permanent	Medium	Almost Always	Very rarely
Omumborombongo	-19.70239	14.15798	SRT database	Spring	Permanent	Medium	Often	Sometimes
Karkappie	-19.82352	13.90349	SRT database	Spring	Permanent	Large	Almost Always	Never
Dubus	-19.22682	13.39134	SRT database	Spring	Permanent	Large	Almost Always	Sometimes
De-reit	-20.4682	14.1801	ConInfo	Spring	Permanent	Medium	Sometimes	Almost Always
Peters Pools	-20.57305	13.96298	ConInfo	Spring	Permanent	Medium	Almost Always	Sometimes
Poachers Camp	-20.07868	13.96765	ConInfo	Spring	Permanent	Large	Always	Never
Klip River Fontein	-19.987	14.20062	ConInfo	Spring	Permanent	Medium	Almost Always	Sometimes
Upper Achab	-20.09849	13.87002	Local Informant Interviews	Spring	Permanent	Medium	Almost Always	Never
Hunkab	-19.60081	13.39291	Local Informant Interviews	Spring	Permanent	Medium	Always	Never
Unknown	-19.70329	13.87869	Local Informant Interviews	Spring	Permanent	Medium	Almost Always	Sometimes
Aub Barib Junction	-19.83647	13.78254	Local Informant Interviews	Spring	Permanent	Medium	Almost Always	Never
Unknown	-19.40887	14.42348	Local Informant Interviews	Borehole	Temporary			
Otokotorua	-19.36996	14.21507	Local Informant Interviews	Borehole	Temporary	Large	Sometimes	Always
Zebra	-19.80722	14.03308	Local Informant Interviews	Spring	Permanent	Medium	Almost Always	Very rarely
Presidents Hole	-19.32362	13.22891	Local Informant Interviews	Borehole	Temporary	Medium	Always	Never
Presidents #2 Hole	-19.283	13.3175	Local Informant Interviews	Borehole	Temporary	Medium	Always	Never
Khaiross (D)	-19.29134	13.44426	Local Informant Interviews	Spring	Permanent	Medium	Always	Never
Unknown	-19.37858	14.40545	Local Informant Interviews	Spring	Temporary	Small	Always	Never
Unknown	-19.29764	14.37513	Local Informant Interviews	Borehole	Permanent	Large	Always	Never

Treehouse watrehole	-19.36068	14.34744	Local Informant Interviews	Borehole	Temporary	Large	Always	Never
Unknown	-19.31304	14.38422	Local Informant Interviews	Borehole	Temporary	Small	Often	Never
Unknown	-19.32752	14.41901	Local Informant Interviews	Borehole	Temporary			
Unknown	-19.33655	14.4232	Local Informant Interviews	Borehole	Temporary	Small		
Deville	-19.42892	14.37393	Local Informant Interviews	Borehole	Temporary	Medium	Often	Very rarely
Unknown	-19.4399	14.19536	Local Informant Interviews	Borehole	Temporary		Always	Sometimes
Omaowandjowira	-19.55169	14.19142	Local Informant Interviews	Spring	Permanent	Medium		
Orunguru	-19.30118	14.2838	Local Informant Interviews	Borehole	Permanent			
Eorakarire	-19.27717	14.33776	Local Informant Interviews	Spring	Permanent	Medium	?	Never
Unknown	-19.24148	14.41493	Local Informant Interviews	Borehole	Permanent		Almost Always	Very rarely
Onguta	-19.21363	14.28834	Local Informant Interviews	Borehole	Permanent			
Okongwe	-18.98914	13.17331	Local Informant Interviews	Well	Temporary	Small		
Okango	-18.9691	13.1808	Local Informant Interviews	Well	Temporary	Small		

Appendix 4: ArcReader Map Viewing Project

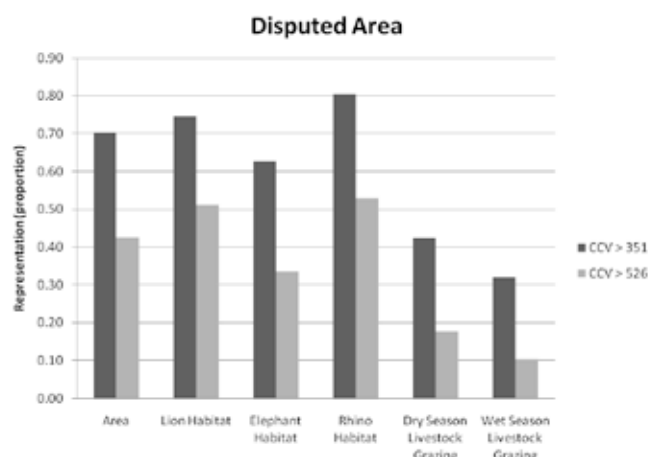
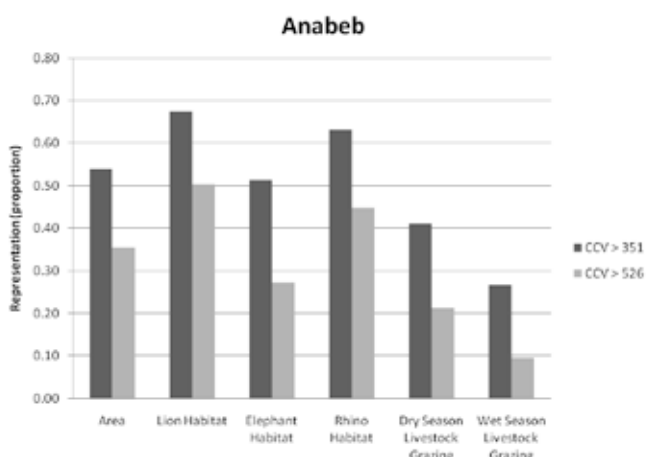
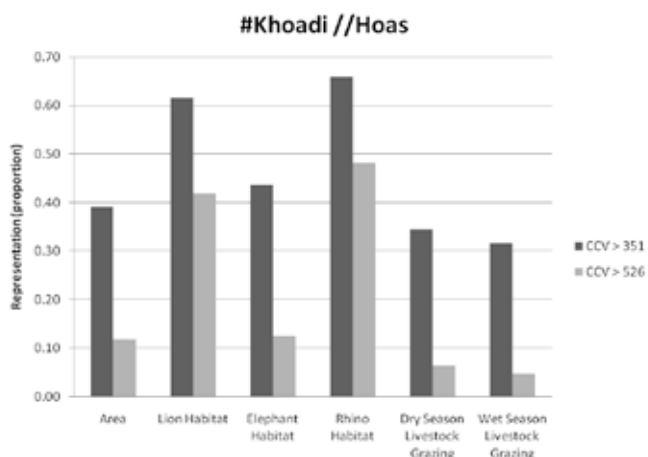
ArcReader is free software that allows users to open up mapping projects (i.e. KREA) and turn on/off all the incorporated data layers (such as water features, settlements, camps) as well as produced habitat maps from species (i.e. Black Rhino habitat). The user can then easily print large size maps of any combination of data layers displayed within the map viewer. This is one approach that KREA data can be readily shared with multiple users and could compliment other data sharing approaches such as books of static maps, directly incorporated into other databases such as ConInfo, or actual raw GIS data files to be used by more advanced GIS software users.

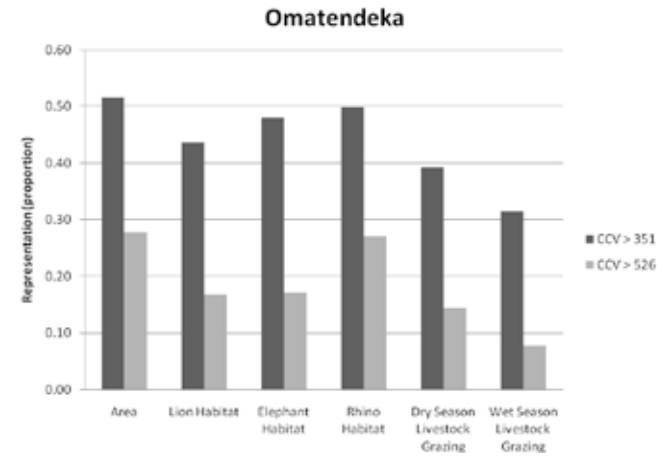
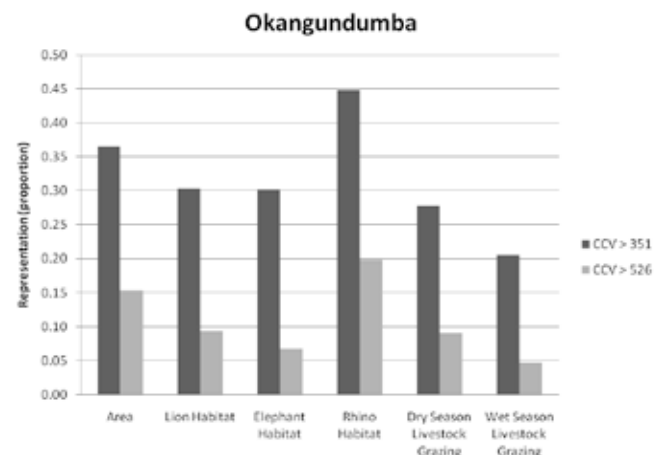
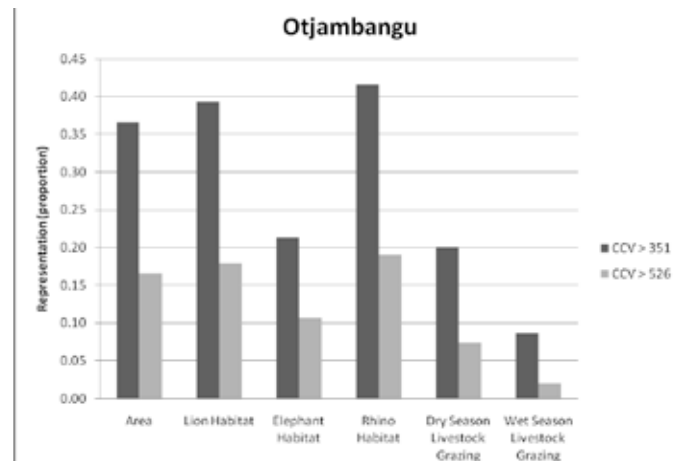
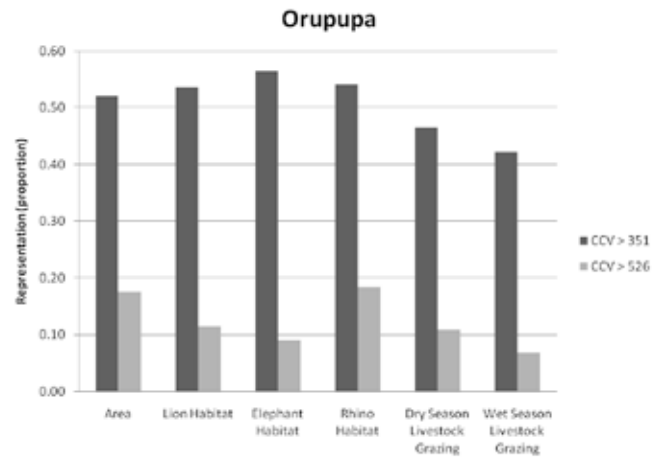
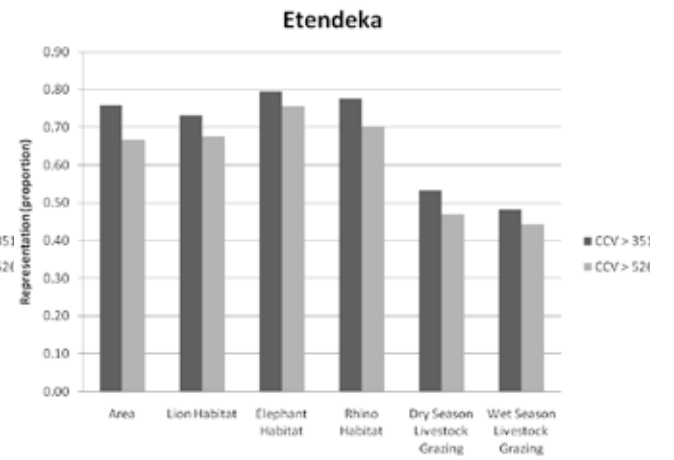
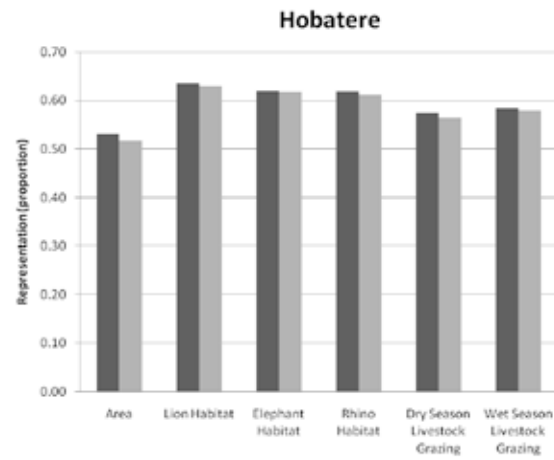
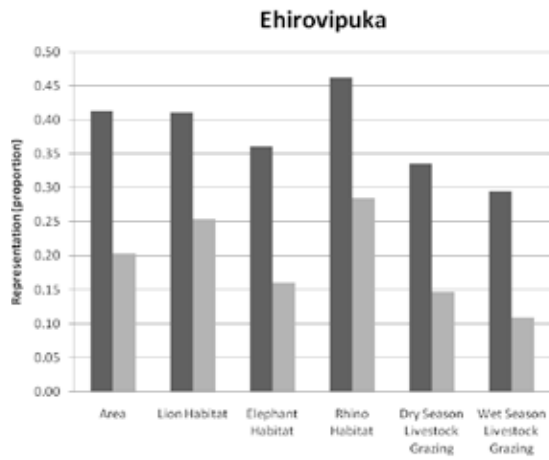


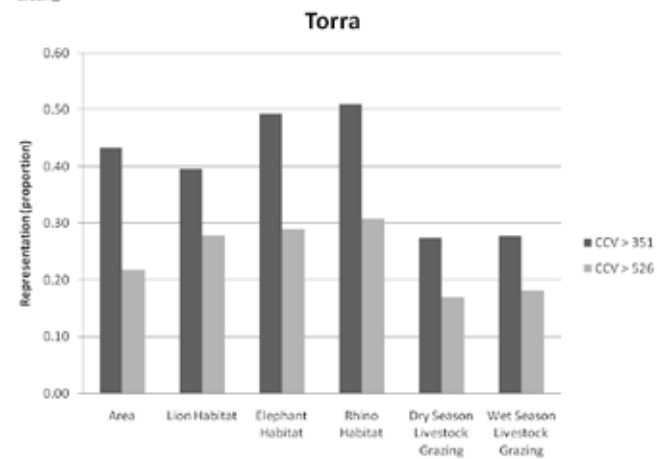
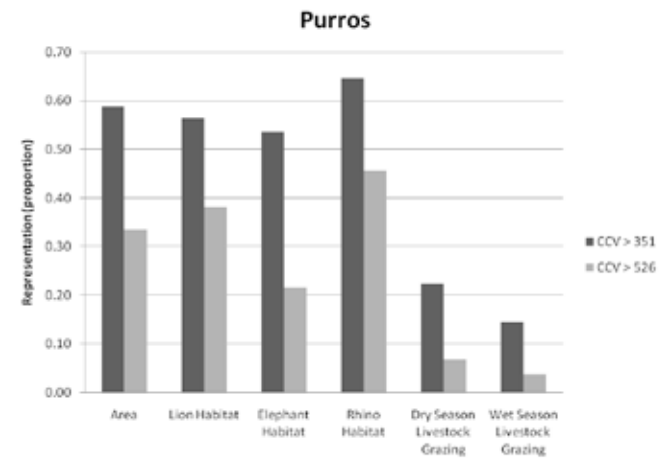
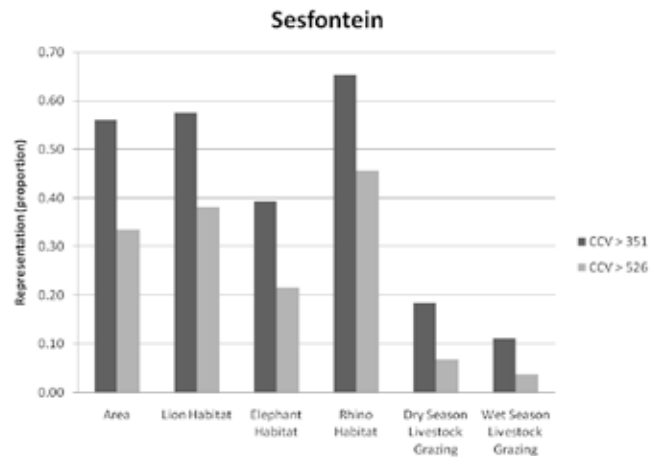
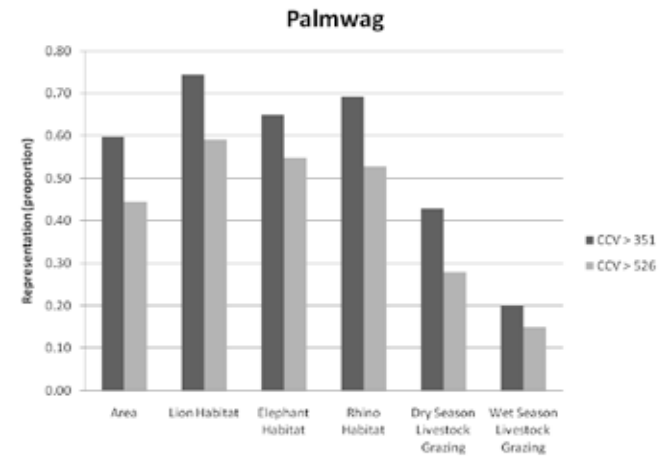
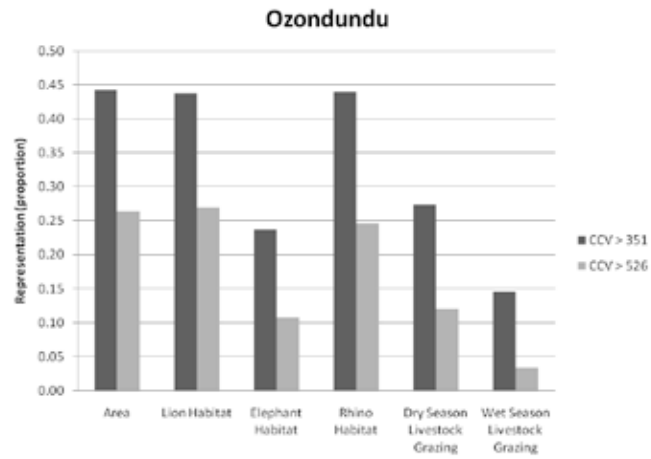
APPENDIX 5: REPRESENTATION ANALYSIS SUMMARY CHARTS FOR INDIVIDUAL PLANNING AREAS

Focal Species and Social Values relative to Area within the top 2 classes of Cumulative Conservation Value (CCV) across the Planning Region by Planning Area.

Planning Area	> 351 CCV Threshold						> 526 CCV Threshold					
	Area	Lion Habitat	Elephant Habitat	Rhino Habitat	Dry Season Livestock Grazing	Wet Season Livestock Grazing	Area	Lion Habitat	Elephant Habitat	Rhino Habitat	Dry Season Livestock Grazing	Wet Season Livestock Grazing
#Khoadi //Hoas	39%	62%	44%	66%	35%	32%	12%	42%	13%	48%	6%	5%
Anabeb	54%	68%	51%	63%	41%	27%	36%	50%	27%	45%	21%	10%
Disputed Area	70%	75%	63%	80%	42%	32%	43%	51%	34%	53%	18%	10%
Ehrovipuka	41%	41%	36%	46%	34%	30%	20%	25%	16%	29%	15%	11%
Etendeka	76%	73%	80%	78%	53%	48%	67%	68%	76%	70%	47%	44%
Hobatere	53%	64%	62%	62%	57%	58%	52%	63%	62%	61%	56%	58%
Okangundumba	37%	30%	30%	45%	28%	21%	15%	9%	7%	20%	9%	5%
Omatendeka	52%	44%	48%	50%	39%	31%	28%	17%	17%	27%	15%	8%
Orupupa	52%	54%	57%	54%	47%	42%	18%	12%	9%	18%	11%	7%
Otjambangu	37%	39%	21%	42%	20%	9%	17%	18%	11%	19%	7%	2%
Ozondundu	44%	44%	24%	44%	27%	15%	26%	27%	11%	25%	12%	3%
Palmwag	60%	74%	65%	69%	43%	20%	45%	59%	55%	53%	28%	15%
Puros	59%	56%	54%	65%	22%	15%	16%	24%	24%	24%	6%	4%
Sesfontein	56%	58%	39%	65%	18%	11%	34%	38%	22%	46%	7%	4%
Torra	43%	40%	49%	51%	27%	28%	22%	28%	29%	31%	17%	18%

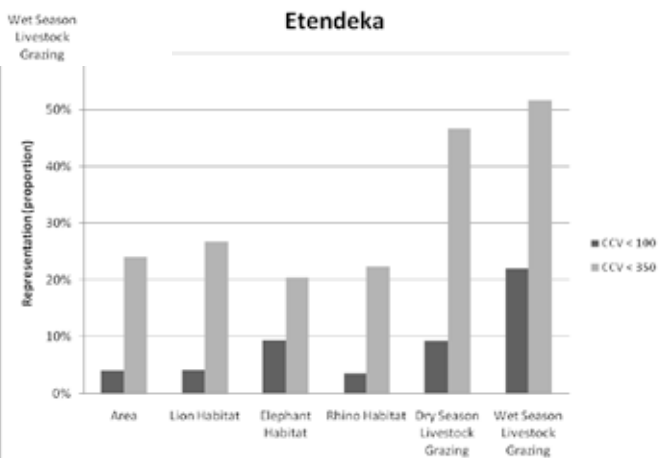
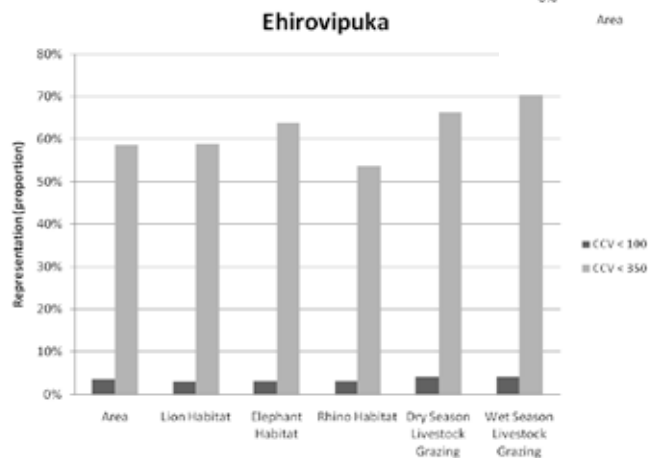
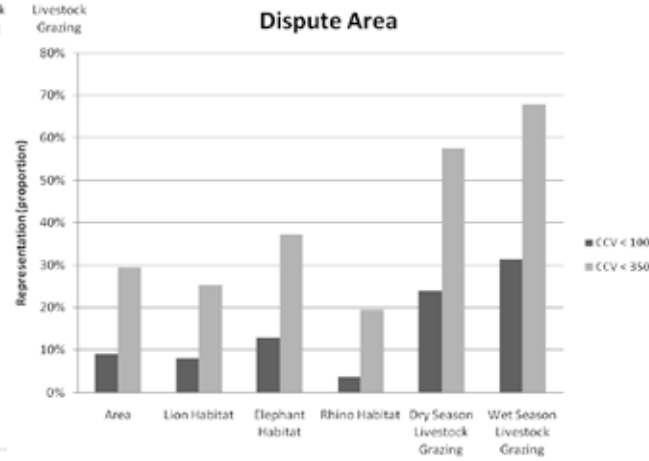
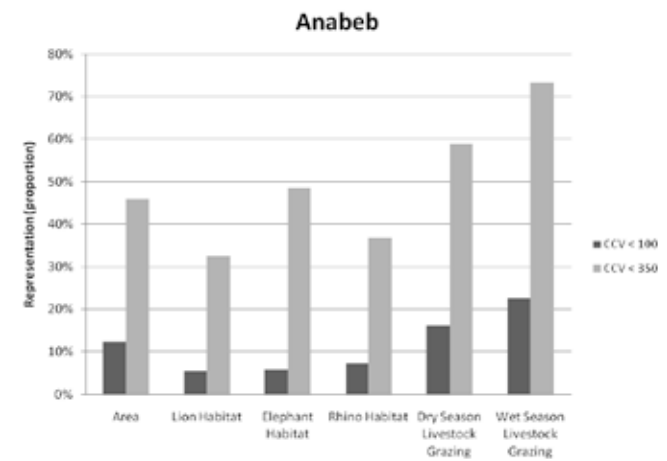
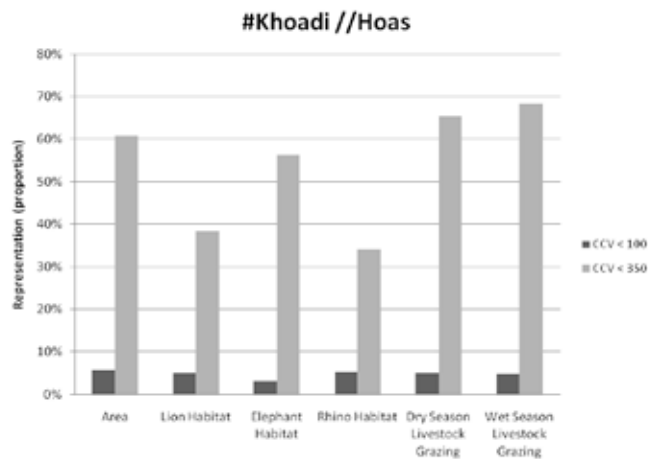


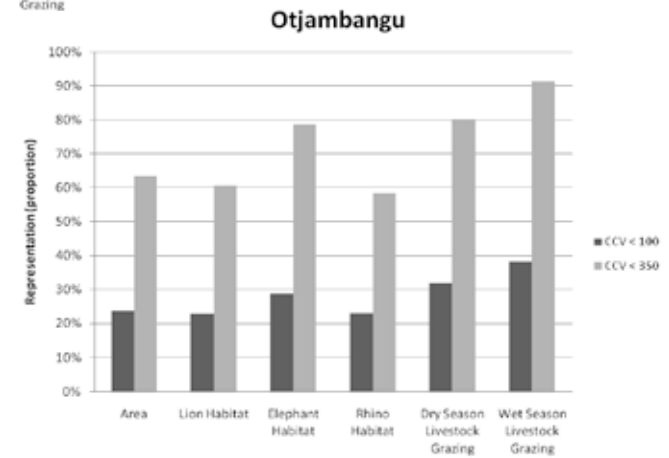
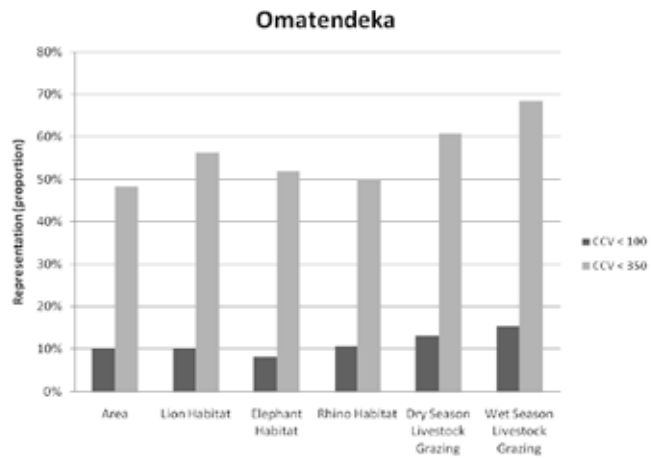
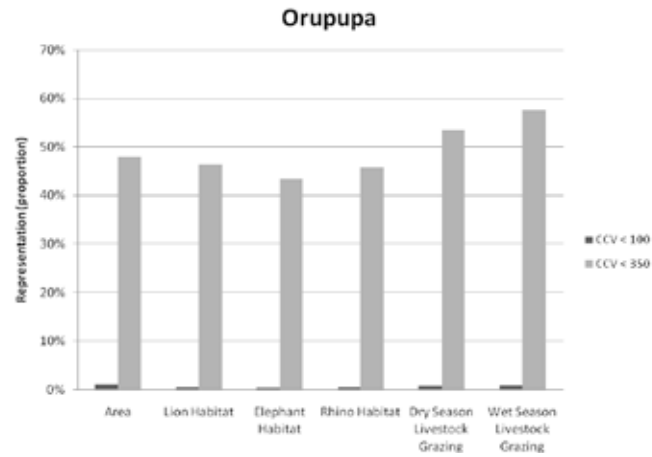
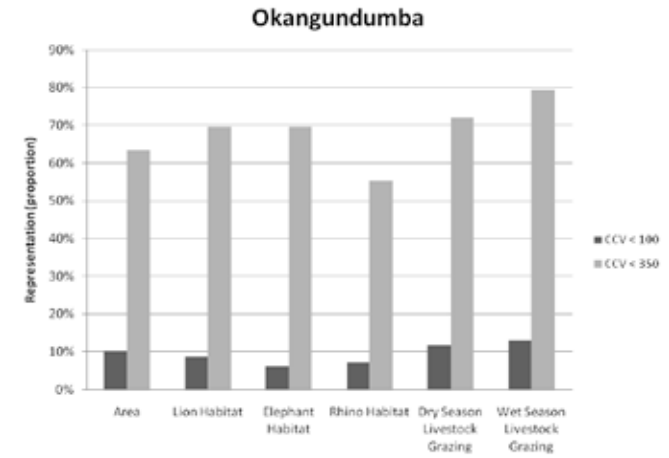
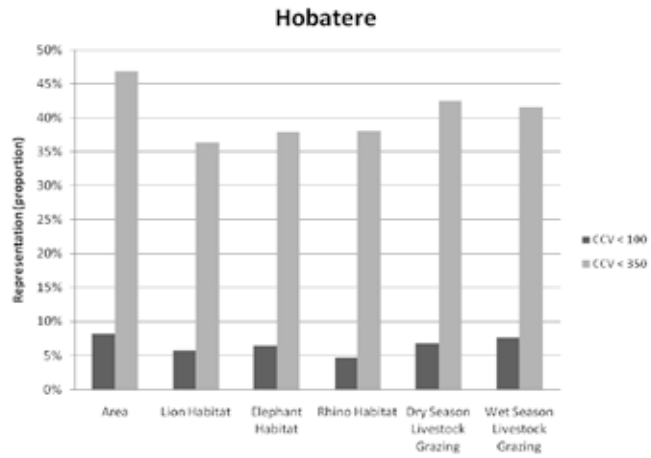


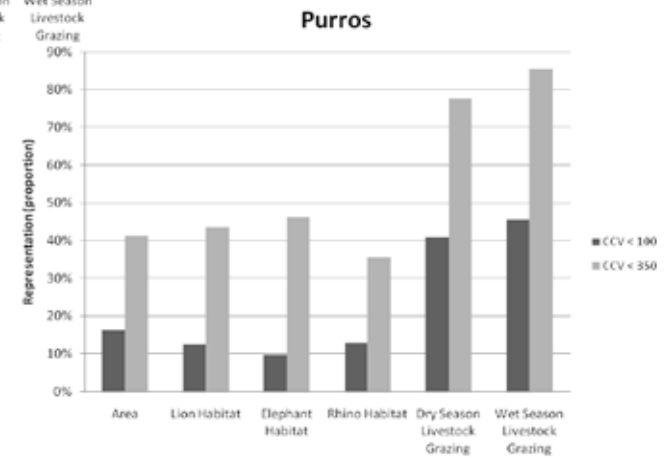
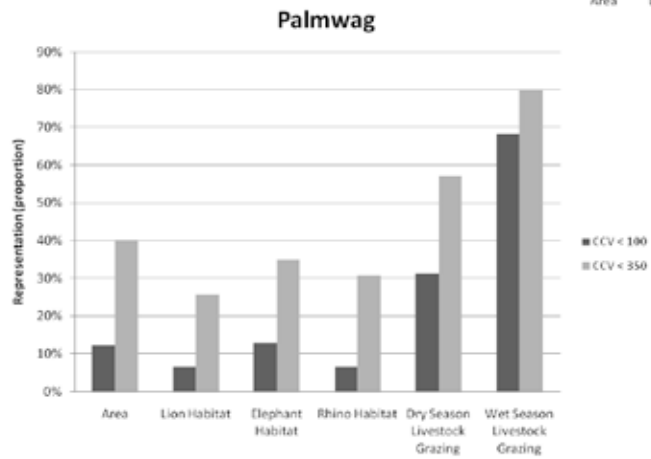
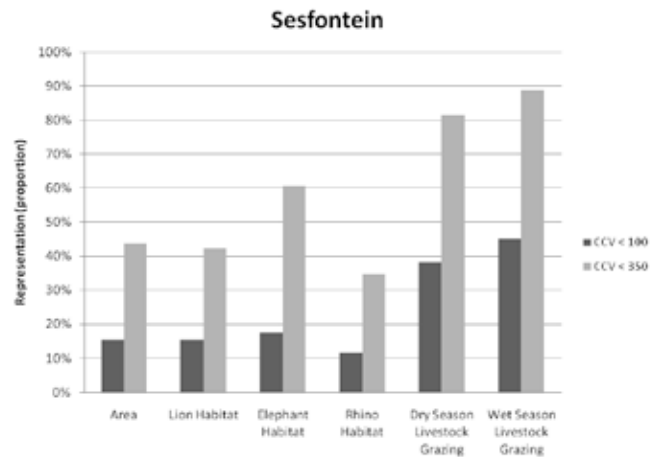
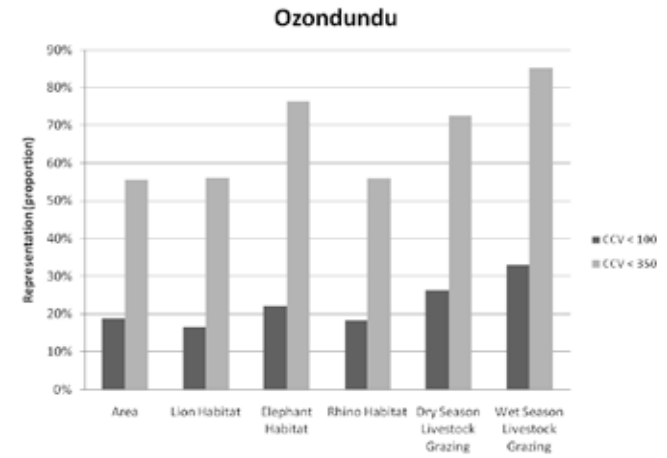
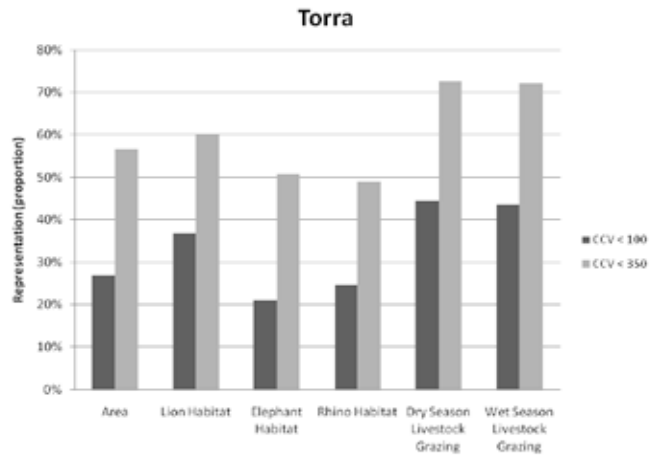


Focal Species and Social Values relative to Area within the Livestock-priority classes of Cummulative Conservation Value (CCV) across the Planning Region by Planning Area.

Planning Area	< 100 CCV Threshold						< 351 CCV Threshold					
	Area	Lion Habitat	Elephant Habitat	Rhino Habitat	Dry Season Livestock Grazing	Wet Season Livestock Grazing	Area	Lion Habitat	Elephant Habitat	Rhino Habitat	Dry Season Livestock Grazing	Wet Season Livestock Grazing
#Khoadi //Hoas	6%	5%	3%	5%	5%	5%	61%	38%	56%	34%	65%	68%
Anabeb	12%	5%	6%	7%	16%	23%	46%	32%	49%	37%	59%	73%
Disputed Area	9%	8%	13%	4%	24%	31%	30%	25%	37%	20%	58%	68%
Ehrovipuka	4%	3%	3%	3%	4%	4%	59%	59%	64%	54%	66%	70%
Etendeka	4%	4%	9%	4%	9%	22%	24%	27%	20%	22%	47%	52%
Hobatere	8%	6%	6%	5%	7%	8%	47%	36%	38%	38%	43%	42%
Okangundumba	10%	9%	6%	7%	12%	13%	63%	70%	70%	55%	72%	79%
Omatendeka	10%	10%	8%	10%	13%	15%	48%	56%	52%	50%	61%	69%
Orupupa	1%	0%	0%	0%	1%	1%	48%	46%	43%	46%	53%	58%
Otjambangu	24%	23%	29%	23%	32%	38%	63%	61%	79%	58%	80%	91%
Ozondundu	19%	16%	22%	18%	26%	33%	56%	56%	76%	56%	73%	85%
Palmwag	12%	6%	13%	6%	31%	68%	40%	26%	35%	31%	57%	80%
Puros	16%	12%	10%	13%	41%	46%	41%	44%	46%	35%	78%	85%
Sesfontein	15%	15%	17%	12%	38%	45%	44%	42%	61%	35%	82%	89%
Torra	27%	37%	21%	25%	44%	43%	57%	60%	51%	49%	73%	72%









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