SUMMARY

The aim of this study was to investigate the movement patterns, habitat selection, feeding habits, activity patterns and population responses of the gemsbok and wildebeest, both grass and roughage feeders of similar body masses, to reveal the ways in which the two species partition resources in the semi-arid southern Kalahari.

Wildebeest were found to associate predominantly with the more productive, denser and shorter grasses of the river-beds and riversides, while the gemsbok were noted to extensively use the taller grass communities of the less productive, mineral deficient red sand dunes. Muzzle widths were suggested to be the mechanism maintaining this resource and habitat separation. Overlap in diets was found to be greatest in the hot-wet season, when resource availability and quality were abundant but, as the resources became more scarce and of poorer quality in the hot-dry season, greater partitioning became evident. In such situations wildebeest would previously migrate up the rainfall gradient to better quality food patches. However, with the provision of waterholes in the KGNP, the wildebeest walk a nutrient tight-rope, because of the constraints of a wide mouth in selecting for for good quality leaf in the limited riverside habitat within easy access to fresh drinking-water. This then potentially exposes the wildebeest to increased predation from the large lion and spotted hyaena populations in the KGNP. Although, water was provided, the species appeared attracted to the waterholes for different reasons. Owing to the higher metabolism and evaporation rates, larger unselective mouth and preference for the mineral-richer white riverine sand habitats, wildebeest were more attracted to the waterholes for the water than minerals. In comparison gemsbok with their better physiological adaptations smaller mouth, use of browse and greater use of the mineral deficient red sands, appeared attracted to the waterholes for the minerals and clay particles in the lick sites than for the water itself.

The smaller home range sizes of gemsbok than wildebeest in all seasons, and during drought years reflected the better adaptability by gemsbok to a permanent existence in the unpredictable environment.

The large proportion of time spent active and predominantly feeding by wildebeest in the southern Kalahari, in comparison to gemsbok and other wildebeest populations elsewhere, indicates that the resident wildebeest population was possibly under nutrient stress. This was further underlined in the poor response of the population since 1973. Only in above average rainfall years did the wildebeest show positive rates of increase, while through the drought years the gemsbok showed an overall increase in population size.

Thus, the differences in morphological, physiological and behavioural characteristics of the two species are reflected in their abilities to survive in the unpredictable semi-arid environment of the southern Kalahari.

OPSOMMING

Die doel van hierdie studie was om die bewegingspatrone, habitatsvoorkeure, voedingsgewoontes, aktiwiteitspatrone en bevolkingsreaksies van die gemsbokke en wildebeeste te ondersoek en om beide spesies as gras en ru-veselvoeders van soortgelyke liggaamsmassa se wyses van hul natuurlike bronskeiding in die semi-droee suidelike Kalahari te toon.

Dit is gevind dat wildebeeste hoofsaaklik met die meer produktiewe, digter kort grasse en die rivierbeddings en rivieroewers assosieer, terwyl gemsbokke die minder produktiewer langer grasgemeenskappe, wat op mineraal-arm rooi sand groei, verkies. Dit word voorgestel dat bekwydte die belangrikste meganisme is wat die hulpbron en habitatskeuse skeiding tussen die spesies veroorsaak. Oorvleueling van diete vind wel plaas, oorwegend gedurende die warm-nat seisoen wanneer 'n verskeidenheid natuurlike weiding beskikbaar is en wanneer die kwaliteit daarvan hoog is. Sodra hierdie bronne skaars raak en die kwaliteit daarvan in die warm-droee seisoen verswak, is die skeiding van bron verbruik duideliker. Onder sulke omstandighede sal wildebeeste normaalweg teen die reenval gradient op na gebiede met beter weiding migreer. Die oorlewingstempo van wildebeeste word bevoordeel deur die voorsiening van water in die KGNP. Verder het bek wydte en gepaardgaande beperkings vir skaars kwaliteit in die beperkte rivieroewer habitat, asook die bereikbare afstand en toegang tot vars drink water, die potensiaal van verhoogde predasie druk deur leeus en hienas op wildebeeste. Alhoewel water verskaf word, lyk dit of spesies deur die watergate nie net vir water aangetrek word nie, maar ook vir ander redes. Wildebeeste, vanwee hul hoe metabolisme en verdampingssnelhede, en bek anatomie, verkies die mineraalryke rivier-oewer wit sand habitatte en word aangelok na watergate vir die water self. Gemsbokke as blaarvreters met beter fisiologiese aanpassings, kleiner bekgrotes as die van wildebeeste, en groot verbruiker van mineraal-arm rooi sand areas, word eerder deur 'n mineraal-en kleibehoeftes aangetrek na watergate.

Die tuistgebiede van gembokke was gedurende die hele jaar en deur al die seisoene kleiner as die van wildebeeste. Dit was ook waar gedurende die droogte jare, en word gereflekteer deur die beter aanpassingsvermoeens van gemsbokke as die van wildebeeste en is verder die gevolg van verskille in voedingsdruk in onvoorspelbare omgewings. Dit word onderstreep deur die algemene swak reaksie deur wildebeesbevolkings wat bestudeer was vanaf 1973. Slegs gedurende bogemiddelde reenval jare het wildebeeste 'n positiewe verhoging in getalle getoon, terwyl gemsbokke gedurende beide goeie en swak reenval jare 'n algemene verhoging in hul bevolkingsgetalle bly toon het.

Dus word die morfologiese, fisiologiese en gedrags karaktereienskappe van beide spesies gereflekteer in hul vermoe om in die ongewone semi-droee omgewing van die suidelike Kalahari te oorleef.