

MIXED DOMESTIC AND WILD UNGULATE SYSTEMS IN SOUTH AFRICA

MT Mentis

Consultant, PostNet Suite 10102, Private Bag X1005, 3650 Hillcrest, Republic of South Africa

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Summary

Mixes of domestic and wild ungulates are common on private land in South Africa and their appeal concerns aesthetics, sport and recreation, possible income and the low capital and running costs. The reasons why these mixed systems succeed in South Africa, and fail in most other places, are less biophysical than legal and economic and relate to rights of access to ownership of the animals, control over wild animal exploitation, and freedom (under control) to trade. In the jargon of Peruvian economist Hernando de Soto, wildlife on private land in South Africa is a relatively fungible asset – it can be possessed, the landowner can take decisions about how to use or dispose of it, he can trade it, he can use it as collateral, he can sell his land at a premium if it is present in abundance. By contrast, on communal land in South Africa, in neighboring Botswana, Lesotho, Swaziland and probably any communal area in the world, and on private land in the USA, this fungibility does not exist and there is limited motivation for land-users or land-occupiers to propagate wild ungulates.

The wildlife management techniques, while important, are secondary to the institutional framework, and just about any enterprising landowner or budding wildlife ecologist is

quickly going to work out appropriate management techniques for any suitable ungulate in any promising situation. However, arriving at and implementing the appropriate institutional framework is evidently a stubborn issue where even among the supposedly most advanced nations, like the USA.

1. Introduction

This chapter deals with mixed domestic and wild ungulate systems. Broadly, the chapter is about *why* and *how*. *Why* does the mixture flourish in some cases and others not? What are the circumstances that determine success or failure? And where the mix is desired *how* does the operator make it work? What specific management techniques are appropriate?

My insight into the issues of mixed and wild ungulate systems was gained largely during my employ in the erstwhile Natal Parks Board in South Africa during the 1970s when my job was to develop and run a wildlife advisory service to landowners in the province of Natal. These were exciting times. The idea of ranching with game in Africa, instead of domestic livestock, had been propounded in the 1960s by well known biologists and commentators such as Fraser Darling and Dassman and Mossman. The idea had been tried for example by Ian Henderson at Doddieburn in what was then Southern Rhodesia, and was promoted by such eminent persons as Sir Julian Huxley. Though in South Africa game had been decimated by human occupation and settlement of the formerly wild interior, by expansion of conventional farming and ranching practice, and by disease epidemics such as the rinderpest in the 1890s, nucleus populations remained even on private land where in cases the efforts of a few far-sighted individuals had saved species from extinction (*e.g.* the black wildebeest (*Connochaetes gnou*)), and now the Natal Parks Board was selling surplus live game to landowners in Natal. People were trying out these ideas in various forms in various places. I was fortunate to witness many of the trials and errors, over the years meet many of the intrepid pioneers and colorful researchers, and have cause to read up on many erudite scientific papers and books. My interests took me across southern Africa and across the world to the United Kingdom, the United States, Australia, Canada and South America. There were few hard facts, fewer tried and tested ideas, and much experimentation. Controversy and debate were rife. For me it was a lesson in learning. Knowledge advances less by proving things right than by a process of error elimination. A certain amount of theorizing is invaluable but beyond that you need to try it.

The account that follows is very much a history of growth of ideas and refinement of practice. It is colored by my personal experiences. Science is less a body of fact than a method that reasons how and why. This chapter is also focused on what I know best, that is the local situation in South Africa. Though I have contrasted it with situations in other places around the world, for explanatory and illustrative purposes, I claim no authoritative knowledge of foreign lands and I must leave it to the reader to apply, and maybe improve, the principles that I try to set out here.

2. Domestic and Wild Ungulate Mixes

Whence comes this practice of mixing domestic and wild ungulates?

In South Africa it certainly long predates the learned writings of Darling, Dassman and Mossman, and Huxley of the mid 20th century. Following the Great Trek by the Dutch settlers from the Cape to the interior of South Africa in the 1830s, land was settled and in due course farm boundaries were fenced. A few farmers fenced in the wild herds that roamed their farms. Among the wild ungulates commonly enclosed were blesbok (*Damaliscus dorcas*), and springbok (*Antidorcas marsupialis*). From time to time one encounters farms where it is claimed that the current animals are direct descendants of wild previously free-roaming animals that great-grandfather enclosed. These few herds were nuclei that supplied the initially purely market-driven re-stocking of much other land.

Trade in live game started surprisingly long ago. I recall, when organizing a game ranching conference in the early 1970s, talking to a Free State trader in live game. He said their trade dated back to after the war – he meant not World War II of 1939-1945 but the Boer War of 1899-1902. In the 1970s I visited Alex Macdonald's farm near Tarkastad in the Eastern Cape and enquired after the origin of the blesbok herd there. The story I was told went like this. In about 1911 a few animals were captured on Sir Percy FitzPatrick's farm in the Free State, put on an ox-wagon and taken 50 km to the railway at Harrismith, railed to Queenstown, and loaded on another ox-wagon for another 50 km ride to the Macdonald farm. This first attempted introduction failed because individuals of only one sex survived. At second attempt of the same tedious procedure grandfather Macdonald succeeded in establishing the nucleus of a blesbok herd that has thrived, I understand, to this day.

Why did farmers fence in these wild animals? And why has this practice proliferated? There are aesthetic, recreational and economic reasons. Some landowners want wildlife on their land simply to enjoy seeing it and to be proud of being its custodian. In addition, the presence of game permits participation in what was once a means of existence and has since developed into a sport rich in traditions and etiquette – hunting. Being able to offer hunting opportunity to family and friends is also a form of hospitality. Not entirely distinct from this recreation-hunting motivation are the economic attractions.

Harvesting game on the farm can supplement the home larder. Hunters may pay high prices for the opportunities to hunt, and the hunted animals themselves may be valuable as trophies, curios, venison and biltong. The relative importance of these factors is variable. Some farmers are keen hunters or commercial exploiters while others have purely aesthetic reasons. Possibly the most universal reason is the aesthetic one, and the other reasons are additional. Values have also changed over time. In the days of my youth children, especially farm boys, grew up with rifles and shotguns. They hunted on a daily basis, even if only doves and sparrows. Today firearms are shunned, and the idea that a hunter might be called a sportsman is regarded as a contradiction. The hunting mindset has been overtaken by environmentalism that ranges from pragmatic preservation of biosphere function to the belief that wild animals and plants have rights to existence. In truth, rights are man-ordained things. Our constitution gives everyone (not every wild animal and plant) the right to have the environment protected. Increasingly, landowners want their environment protected, with its wildlife.

The multiplicity of motivations to have wildlife on farmland assures its continued

existence. If there were but one or a few reasons there is a risk that changing market conditions, economic incentives and social mores could undo the motivation. But an evolving complex of motivations makes for a robust case. What ground might have been lost because hunting has declined in popularity has been more than made up for by rising environmentalism and eco-based tourism. In the past 50 years in South Africa, literally millions of live wild ungulates have changed hands in the market place. From the few relic herds that existed at the start of the 20th century, wild ungulates have been populated on virtually every far corner of South Africa since the beginning of the 20th century.

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Bibliography

Caughley G 1977 *Analysis of Vertebrate Populations* John Wiley and Sons, Chichester [A thorough analysis of population ecology, based on work in Africa and Australia]

Cole LC 1954 The population consequences of life history phenomena *Quarterly Review of Biology* **29**, 103-137 [An inspiring and thoroughly readable account of this important subject]

Cornwallis Harris W 1940 *Portraits of Game and Wild Animals of Southern Africa* Reproduced in 1969 from the original edition by Balkema, Cape Town {A beautiful and useful guide to the key species}

Darling FF 1960a *Wild Life in an African Territory* Oxford University Press, London [A thought provoking account that advocated game ranching as a way to conserve wildlife]

Darling FF 1960b *An Ecological Reconnaissance of the Mara Plains in Kenya Colony* Conservation Foundation, New York (Based on the field experiences in Kenya and the opportunity to theorise about what he saw there and make some predictions]

Dassman RC and Mossman AS 1960 The economic value of Rhodesian game *Wild Life* (Nairobi) **2**, 8 [A classic study based on first hand knowledge and keen scholarship]

De Soto H 2001 *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else* Black Swan, Reading [A book in which an alternative economic strategy was expounded that was conceived as being better for South American countries but which proved to have relevance to the Developing World generally. The concept of *fungible asset* was coined and elaborated here]

Ellery WN and Mentis MT 1992 How old are South African grasslands? **In** *Nature and Dynamics of Forest-Savanna Boundaries* ed PA Furley, J Proctor and JA Ratter. Chapman and Hall, London, pp 283-292 [A thorough examination of the key issues that face South African grasslands now as seen against the impact of thousands of years of use and co-evolution with grazing and browsing animals]

Errington P 1967 *Of Predation and Life* Iowa State University Press, Ames [A classic work on the predator-prey relationship that expounds many principles]

Hardin G 1968 The tragedy of the commons *Science* **162**, 1243-1248 [One the most read and oft-quoted publications of the past 40 years and, in places, the most bitterly contested thesis on the real relationship between communal use and sustainability]

Hofmann RR 1973 The ruminant stomach *Monographs in Biology* **2**, 1-354 [The author has explored

(literally) the digestive physiology of a wide range of ruminants to elucidate their different energy gaining strategies and to classify them by means of their rumen anatomy and digestive functioning]

Huxley J 1961 *The Conservation of Wild Life and Natural Habitats in Central and East Africa* UNESCO, Paris [A book that influenced thinking and set the foundation for the development of practical biodiversity conservation on a global basis]

Jones RJ and Sandland RL 1974 The relation between animal gain and stocking rate: Derivation of the relation from the results of grazing trials *Journal of Agricultural Research* **83**, 335-342 [A result of a collaboration between an economist and an agronomist who jointly analyzed a number of grazing trials with cattle in both Australia and Africa and came up with some important principles about stocking intensity, carrying capacity, and economic returns from grazing animals]

Kleiber M 1975 *The Fire of Life: An Introduction to Animal Energetics* RE Krieger, New York [A classic work by this Swiss born American who revolutionized thinking about animal metabolism. His work explains the basis of comparing the metabolic activity of mammals of different body mass – the classic mouse vs cat example]

Mentis MT 1970 Estimates of natural biomass of large herbivores in the Umfolozi Game Reserve area *Mammalia* **34**, 363-393 [The kill figures from a hunting campaign to control nagana (trypanosomiasis) are used to try to reconstruct the spectrum of wild herbivores in a previously little impacted system.]]

Mentis MT 1972 A review of some life history features of the large herbivores of Africa *Lammergeyer* **16**, 1-89 [Age at first birth, gestation period, litter size, litter frequency, sex ratio at birth and longevity are reviewed for the extant wild herbivores of Africa]

Mentis MT 1977 Stocking rates and carrying capacities for ungulates on African rangelands *South African Journal of Wildlife Research* **7**, 89-96 [The article is a consideration of the principles in determining stocking rates and carrying capacities of multi herbivore species systems]

Mentis MT and Duke RR 1976 Carrying capacities of natural veld in Natal for large wild herbivores *South African Journal of Wildlife Research* **6**, 65-74 [A number of case histories of stocking multi herbivore species systems are examined using metabolic mass to calculate stocking rate and testing ideas on ecological carrying capacities for a variety of vegetation types.]

Njoka JT and Kinyua PID 2006 The logistic model-generated carrying capacities, maximum sustained offtake and optimal stocking rates for Kenya's commercial ranches *African Journal of Range and Forage Science* **23**, 99-106 [This article is essential reading for any serious student of multi herbivore species systems.]

Porter ME 1980 *Competitive Strategy: Techniques for Analyzing Industries and Competitors* Free Press, New York [Porter's books and articles in the Harvard Business Review are as fundamental to business competition and strategy as Darwin to evolution and Einstein to relativity.]

Rowe-Rowe DT 1983 Black-backed jackal diet in relation to food availability in the Natal Drakensberg *South African Journal of Wildlife Research* **13**, 17-23 [An elegant study of predator prey relationships and the critical factors affecting the outcomes for both.]

Rowe-Rowe DT 1994 *The Ungulates of Natal* Natal Parks Board, Pietermaritzburg [The authoritative account of the distribution, general characteristics, status and conservation of the large herbivores occurring in Kwazulu-Natal, South Africa.]

Von Hayek FA 1944 *The Road to Serfdom* Routledge, London [Among the classic and most readable accounts of the limits of socialism and central planning.]

Biographical Sketch

Michael (Mike) Theodore Mentis (BSc, BScHons, MSc, PhD, MBA, MIEMA, CEnv) was born at Harrismith in South Africa in 1945 and spent early life on a farm where he was introduced to dairy cows, horses, dongas, veld fire, farming conservation practice and wildlife. After graduating from Natal University in the life sciences he joined the Natal Parks Board where for 10 years he developed and ran a wildlife management advisory service to landowners. Over the next decade he taught at the Universities of Natal and the Witwatersrand and earned a PhD in agriculture and MBA from the Wits Business School.

He has since been self-employed consulting on the rehabilitation of mining disturbed land and on biophysical and social issues of big infrastructure projects including the Lesotho Highlands Water Project, pipelines, powerlines, pumped storage schemes, roads and railways. He is a Principal Environmental Auditor and Full Member of the Institute of Environmental Management of the United Kingdom and Chartered Environmentalist with the Society for the Environment, United Kingdom.