5. COMPETITION BETWEEN WILDLIFE AND LIVESTOCK IN AFRICA

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SUMMARY

Competition between wildlife and livestock is reviewed using published material on competition between wildlife and livestock and between different ungulate species in Africa and elsewhere. Different types of competition are discerned, and the effect of predators on livestock is reviewed too. Information on competition is scarce. Even though diet overlap between livestock and some African ungulates is considerable, there is too little evidence on food limitation of livestock populations; this makes the conclusion that livestock numbers are (potentially) reduced by the presence of wildlife untenable. Wildlife numbers, however, are negatively affected by livestock numbers. This is mainly due to human activities, including habitat modification, direct and indirect extermination, and denial of access to resources. Diffuse competition, that is, competition between livestock and guilds of wild herbivores within which specific species that are negatively affected cannot be indicated, appears important too.

The economic costs of livestock to the wildlife industry can be high, especially due to disease transfer; the economic costs of wildlife to the livestock industry appears to be negligible except when predation is considered.

Livestock and wildlife have about the same potential to produce products for human consumption from savanna vegetations; assemblages of wild ungulates are

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about equivalent to assemblages of different domestic species (cattle, sheep, goats, donkeys and camels). Livestock appears to be superior for the exploitation by local people if animal production is aimed at self-sufficiency. This is mainly caused by the decreased risk of insufficient production due to the livestock's capacity to produce reasonably high quantities of milk and, in some cultures, blood. The wildlife's potential to produce added value in the form of trophies or for the support of tourism and recreation makes wildlife exploitation economically more attractive than livestock exploitation in a market economy.

INTRODUCTION

The main livestock species of Africa are cattle, goat, sheep, donkey and one-humped camel. None of these domestic ungulates is indigenous to Africa south of the Sahara or south of the Sudd swamps of Sudan. In this chapter I will first discuss the expansion of these species into East Africa, then I will discuss what the advantages would have been for people to adopt the pastoral mode of production, and subsequently I will discuss the competitive interaction between the introduced species and the indigenous wild fauna. I focus on competition because it is a wide-spread assumption that wildlife and livestock compete for the same resources (see Heath, Chapter 3).

The assumption that competition takes place is of great importance, since it determines to a large extent the outcome of the discussion on whether local landholders face a cost due to the presence of wildlife on their lands, and it even may decide whether compensation has to be paid or not (see Child and Chitsike, Chapter 12). The invasion by a non-indigenous species into an assemblage of locally adapted species may cause strong competitive interactions, and since cattle, sheep and goats did not evolve in Africa to the south of the Sahara, there is a legitimate cause for concern that domestic stock and wild ungulates in Africa compete for scarce resources. Another reason to pay attention to (postulated) competition between livestock and wildlife is that protected area management is often faced with questions pertaining to the co-existence of domestic stock and wild ungulates.

THE SPREAD OF THE DOMESTICATED UNGULATES TO EAST AFRICA

About 10,000 thousand years ago, domestication of a number of ungulates began in the Levant and the Near East. Very early evidence for domestication of both sheep and goats comes from Abu Hureya in Syria, where remains of these domesticated forms date back to around 9,400 bp (before present). Around 9,000 bp goats were not yet domesticated in Turkey, but there is quite good evidence that they, but sheep not yet, were domesticated already by that time in Iraq and Iran. Both sheep and goats were domesticated in the Damascus region around 8,600 bp (Legge, 1996). Once these caprines were domesticated, dispersal was rapid (Legge, 1996). Simultaneous evidence for domestication of goat and sheep at approximately 9,400 bp comes from the Zagros Mountains in Iran; from this it is deduced that domestication began about 11,000 to 10,000 years ago (Hole, 1996).