Benefits and costs of illegal grazing and hunting in the Serengeti ecosystem

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Abstract

Two forms of natural resource use (meat hunting and livestock grazing) were investigated at three sites in the western region of the Serengeti ecosystem, Tanzania. Statutory management of natural resources in this region was designated as National Park, Game Reserve or village council. A quasi-experimental design examined factors likely to alter the cost and benefit of illegal use by ranking areas within sites in relation to these factors. Factors likely to alter costs were the chance of arrest, determined by the presence or absence of guard posts, and the distance travelled to the site of exploitation. As all sites experienced large fluctuations in the density of migratory herbivores, it was assumed that the benefit acquired from hunting increased with wild herbivore density. Marked seasonal changes in precipitation were considered likely to alter the value of forage and water to livestock owners. Hunting effort (density of snares) increased as the density of wild herbivores increased. The distribution of hunting effort across sites was more consistent with the prediction that high travel costs were more likely to curtail hunting than a high potential cost of arrest. Unlike hunters, livestock owners mostly avoided the use of resources in protected areas probably because of the high potential cost of arrest and confiscation of stock. Natural resources within protected areas were exploited when benefits outweighed likely costs.