

Wild animal densities as predictors of cattle disease risks and breed types in southwestern Uganda

Authors:

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Abstract:

Background: This study investigated the spatial distribution of wild ungulates that pastoralist communities perceive as culprits in the transmission of cattle diseases outside protected areas in southwestern Uganda. Diseases are hypothesized as having influence on pastoralists' choice of cattle breed types. Until now, there have been no studies conducted on spatial patterns of wild animal species association with cattle breeds reared in Lake Mburo Conservation Area (LMCA), and how diseases transmitted therein potentially influence cattle breed herd sizes.

Methods: Animal population survey was carried out on cattle and wild ungulate species along transect lines laid perpendicular to the northern boundary of Lake Mburo National Park (LMNP). Data on the costs of cattle mortality and disease control were gathered using face-to-face interviews. We used SPSS version 17 for descriptive statistics to summarize unit cost of disease control at herd level, whereas chi-square (χ^2) tests of goodness-of-fit were used to analyze observations on frequency of wild animal sightings, whose association with spatial distribution patterns of cattle breeds was examined using Pearson correlation test.

Results: Our results show inverse association of distance away from LMNP with wild animal populations and the cost of cattle disease control. The mean population of exotic cattle significantly increased as that of indigenous cattle decreased with increasing distance from LMNP. In a similar way, the cost of disease control and cattle abortion incidences were much lower in rangelands far away from LMNP ($R^2 = 0.965$, $p < 0.001$).

Conclusion: Spatial distribution of wild ungulates was significantly associated with reported cattle mortality, disease, and cost of disease control. Diseases and their costs of control potentially influenced spatial patterns of cattle breeds and breed herd sizes in LMCA, which in turn could affect range resource use for conserving different species of wild animals outside protected area.

Keywords: Breed selection; Cattle production; Disease risks; Spatial pattern; Wildlife.

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