Sustaining the Allideghi Grassland of Ethiopia: Influences of Pastoralism and Vegetation Change

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Date of Award:
5-2009

Document Type:
Dissertation

Degree Name:
Doctor of Philosophy (PhD)

Department:
Wildland Resources

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Abstract
The Allideghi Wildlife Reserve in the Amibara District of Afar Regional State, Ethiopia, has international significance for harboring endangered Grevy's Zebra and other wildlife dependent on grasslands. The reserve is increasingly used by pastoral people and their herds. Impacts of livestock on native vegetation include direct effects of grazing and indirect effects from livestock-facilitated dispersal of an invasive plant, Prosopis juliflora. The main research objective was to determine effects of pastoralism and vegetation change on prospects for sustaining the Allideghi Wildlife Reserve as grassland habitat for Grevy's Zebra. Methods included use of driving surveys to quantify resource use by herbivores, vegetation analysis, and engagement with local people. Resource-use patterns of livestock across the Allideghi grassland were often positively affected by proximity of water, while that for wild ungulates was often negatively affected by proximity of people. Livestock concentration at a major borehole has created a large piosphere with concomitant reductions in herbaceous standing-crop, productivity, and species richness; plant species have shifted from grasses to forbs in severely grazed sites. Vegetation further from the borehole was resilient in response to moderate grazing pressure in terms of species composition and productivity. Since being introduced at a nearby commercial plantation in the 1970s, P. juliflora has been dispersed to the Allideghi Wildlife Reserve via livestock; cattle, sheep, and goats eat the pods and deposit seeds in manure at settlements and favored foraging areas. Prosopis juliflora greatly reduced species richness and basal cover of native herbaceous vegetation in the Allideghi grassland. Analysis of remotely sensed images from the past 30 years indicated major land-use change in the district due to agricultural expansion as well as land-cover change due to Prosopis encroachment and heavy grazing. Recent efforts have been undertaken by various agencies to control P. juliflora, via harvest in the district, but this has yielded variable and often negative results. Without a concerted effort to limit livestock grazing and control spread of P. juliflora, the future for the grassland and wildlife at the Allideghi Wildlife Reserve is grim. Agencies and policy makers need to promote science- and community-based approaches to help rectify the situation. (311 pages)

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