Animals as Factors Shaping Plant Communities

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In natural communities, plants coexist with many animal species. In addition to the obvious grazing interaction, animals influence the plant's environment in many subtle ways, including physical disturbance, nutrient concentration, seed dispersal, and pollination. Upon closer examination, even the character of the grazing impact may differ between herbivores. All of these complex interactions can act to determine the composition and structure of the plant community.

Students in general biology, ecology, and botany courses can readily investigate the results of such plant/animal interactions by sampling the vegetation in a series of pastures subjected to different grazing regimes. A larger pasture may be fenced into sections which will be grazed by cattle, sheep, and horses, for example. The key is to have at least two, and preferably three, grazing regimes at the site.

Upon arrival at the site, students are given a brief lesson in the mechanics of transects and quadrat sampling. A descriptive key to the plants most commonly found in the pasture is also provided. Teams of students record percent cover by species within quadrats at 10-meter intervals along straight-line transects in each pasture. Bare ground and other features are also noted. The time required for preliminary activities, data collection, and travel is about three hours.

Students calculate average species richness, species diversity, and a dominance-diversity curve for each pasture. Even first-year students seem to gain a greater understanding of how different animals affect the same plant community differently, and they appear to benefit from attempting to explain why the observed differences occur.