

Abstract

The resilience of rangeland soils and vegetation to different levels of grazing is still poorly understood. A study was conducted to determine the recovery of a rangeland grazed at different intensities and allowed a two-year rest period. The following treatments were applied to 0.5 hectare plots: 0, 4, 8 and 16 heifers per hectare, hereafter referred to as CL, X, 2X and 4X respectively. At the end of the grazing period, the highest stocked treatments (2X and 4X) had lower herbage biomass, higher soil bulk density, lower soil moisture and lower herbaceous cover than the lower stocked treatments (CL and X). Drought in the rest period caused an increase in bulk density and decline in soil moisture in all the treatments. Even after the two-year rest period, the more heavily grazed treatments had higher bulk density and lower soil moisture than the more lightly grazed treatments. Similarly, the herbaceous biomass in the 2X and 4X treatments did not recover after the two-year rest period and was lower ($P < 0.05$) than the CL and X treatments. At the end of the recovery period a trend of declining herbaceous cover with stocking density was still evident. The relative cover of forbs in the 4X treatments increased more than in the other treatments, while the cover of perennial grasses did not recover in the 4X treatments after the rest period. Thus, stocking above 2X produced negative soil and vegetation responses which did not recover during the two-year rest period. This study also indicated that drought can cause vegetation and soil responses similar to those of overgrazing.