Soil change induced by prairie dogs across three ecological sites

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Soil-specific responses to prairie dog activity can contribute to increased variability of rangeland landscapes. Unfortunately, few studies have addressed soil responses caused by prairie dog activity across a range of soil types and landscapes. In this study, we sought to quantify prairie dog effects on soil properties and infiltration rate within three ecological sites differing in soil and landscape attributes in north central South Dakota, USA. Prairie dog effects on soil properties were found to differ across ecological sites, with sites on footslope and backslope landscape positions exhibiting more pronounced soil responses than sites higher on the landscape.

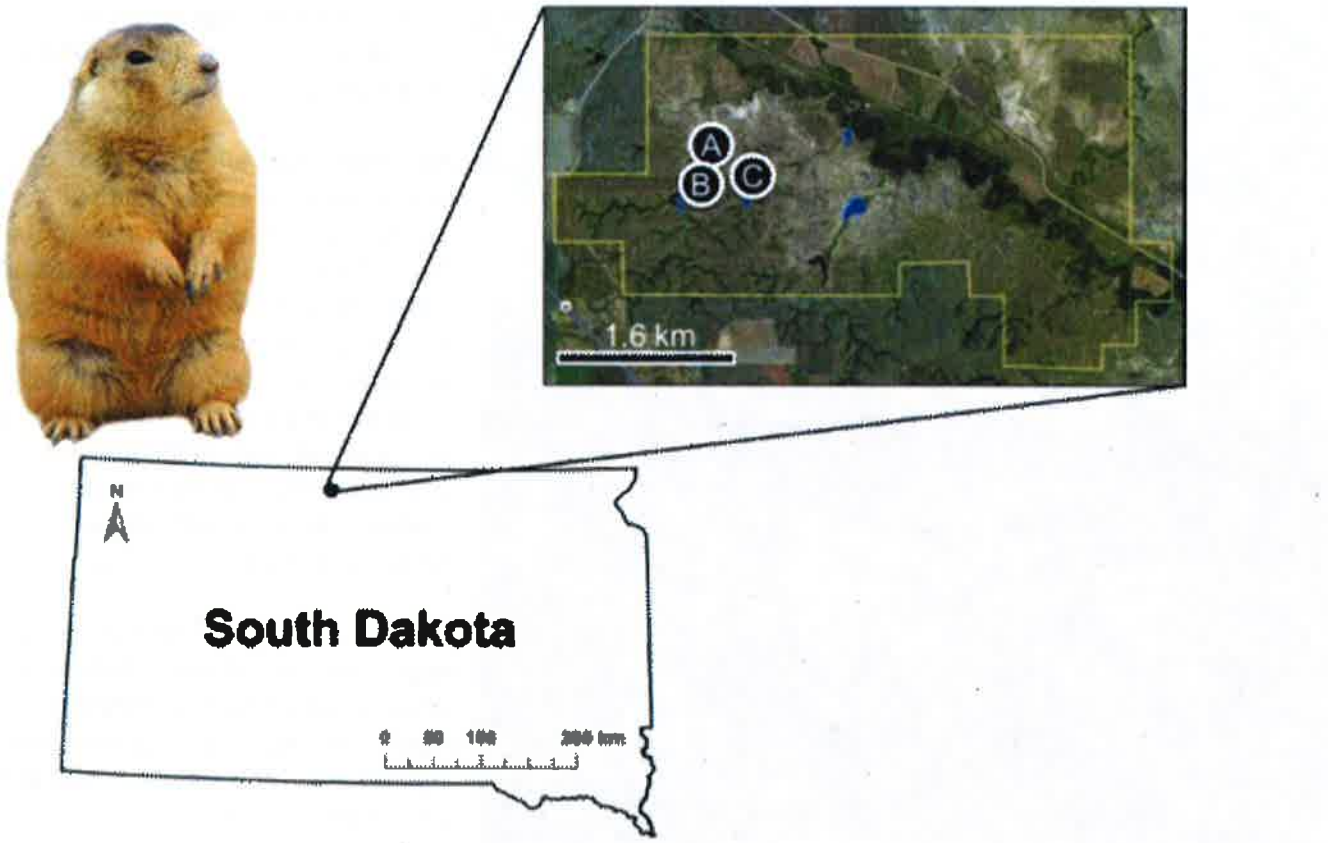

Figure 1. Location of study near McLaughlin, South Dakota. Mapped expansion of points A, B, and C correspond to claypan, loamy, and shallow loamy ecological sites, respectively.

Prairie dog activity contributed to considerable variability in soil properties within ecological sites, with mound areas being acidified and high in areas near the mound or areas without prairie dogs.

Mound areas also possessed faster infiltration rates than areas near the mound and areas without prairie dogs for sites on backslope and shoulder/summit landscape positions. Prairie dog-induced changes in soil variability should be considered when implementing management recommendations to improve rangeland health.

Barth, C.J., Liebig, M.A., Hendrickson, J.R., Sedivec, K.K., Halvorson, G. 2014. Soil change induced by prairie dogs across three ecological sites. Soil Science Society of America Journal. 78:2054-2060.

https://www.soils.org/publications/sssaj/articles/78/6/2054