



Oregon State University
Department of Agricultural and Resource Economics

Seminar

“Do Roads Lead to Grassland Degradation or Restoration? A Case Study in Inner Mongolia, China”

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Abstract



The effect of roads on grasslands is controversial. Many studies conclude that building and upgrading roads increases pressure on grasslands but some find that new and better roads may reduce the rate of grassland degradation. Are these results contradictory or is it possible that the impact on roads depends on the nature of the resource that will either be degraded or protected? In this paper we use satellite remote sensing images of grassland cover in Inner Mongolia—the heartland of China’s grass land ecosystem—to test whether the existence of and the size of roads (ranging from expressways to tertiary roads) in 1995 affects the level of grassland cover in 2000 or the rate of change between 1995 and 2000. To account for road access for each of our one square kilometer (‘pixel’) units of grassland cover we measure whether or not and what type of roads penetrate the “watershed” in which each pixel lies. These watersheds allow more plausible measures of accessibility than do traditional “straightline” distance measures that ignore topography. To account for possible confounding (from endogeneity and other sources) we also include 21 additional covariates—geographical and climatic variables (e.g., elevation, slope, rainfall, temperature); demographic and economic variables (e.g., local population and GDP); and distance variables (e.g., distance to the nearest provincial capital and to the nearest pixel with cultivated land)—as well as use covariate matching techniques. The regression results show that the impact of roads on grassland cover depends on the nature of the resource. When grassland is composed of grass resources that are mostly dense canopy, roads leads to degradation. However, when grassland resources are relatively sparse, access to a road results in a restoration of the resource.

Date: FRIDAY, FEB 6, 2009

Time: 3:30p – 5:00p

Location: 200 C Ballard Extension Hall