# The Impacts of Brandt's Voles (Lasiopodomys brandtii) on the Growth of Plantations Surrounding their Patched Burrow Units

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To study the functions of Brandt's voles in the grassland ecosystem, its impact on vegetations, and the optimal density, the author researched in a fenced pasture in Inner Mongolia with distance gradient sampling used in high density, low density, grazing, and blank control groups. The study found that nitrogen content is highest near the center of the burrow unit. Further from the center, soil hardness increases while moisture content decreases, yet plants' height, coverage, biomass, and density gradually elevate with distance. On the other hand, diversity showed a parabolic distribution, reaching its optimal value at four to six meters away. These indicate that the activity of the Brandt's Voles optimized the physical and chemical properties of the soil. However, vegetation growth did not reach its expected state due to frequent digging and other destructive activities of the Brandt's Voles. Additionally, observation suggests that the special palatability of the Brandt's Vole – Artemisia plants – also provides space for other plants: Chenopodium are naturally weaker than Artemisia, and typically, after cattle and sheep finish grazing Chenopodium, the land becomes a paradise for Artemisia. The intervention of the Brandt's Vole at this time would promote ecological cycling, allowing Chenopodium to refill the plot for further grazing. This study analyzed the "Optimal Voles Density" that should be maintained during biological regulation and management and provided data support for rodent control. To protect native species and the ecological population structure, an ecological balance should be maintained between animals and plants. Although being overrun with rodents is generally bad, a moderate mice population is beneficial to diversity and sustainability.

**Awards Won:**