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## Changes in plant communities by grazing in northern Mongolian grassland and assessment of nomads

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**Key words :** grazing intensity, grazing management, livestock, pastoralists, vegetation change

**Introduction** Due to a regime change in 1992, the Mongolian economic system experienced a drastic shift, which resulted in the changes in the life style of nomads. The nomads were concentrated to particular places and became less mobile (Fernandez-Gimenez, 2004). This resulted in vegetation degradation (Okayasu, 2007). Despite warnings of scientists, this is not resolved but is being intensified. One of the reasons is that Mongolian nomads do not recognize imminent threats to the resources or to their future livelihood (Fernandez-Gimenez, 2000). If so, studies on only vegetation are not enough, but need to include evaluations by nomads. We, therefore, studied both grazing effects on vegetation and nomads' assessment of plant communities.

**Study area and methods** The study area is, Bulgan Aimag (Prefecture), located in the forest-steppe zone in the north-central part of Mongolia. We divided the area into three levels of grazing intensities according to ger locations and number of livestock. We examined 6 light grazing sites, 5 moderate grazing sites, and 5 heavy grazing sites. Each site contained five 1m × 1m quadrats. In each quadrat, we recorded the coverage (%) and the height (cm) of all plant species, and clipped the plants to obtain the standing biomass (g). For nomads' assessment, we visited the sites with them and interviewed their assessments of the grassland conditions.

**Results** Total number of species, height of plants, and total standing biomass decreased as grazing pressure increased. Perennial forbs such as *Geranium* spp. and *Galium verum* in heavy grazed sites greatly decreased in cover and in biomass. Graminoids such as *Carex* and *Elymus* kept fairly constant levels of coverage and biomass regardless of grazing pressure. According to interviews, nomads seemed to consider heavy grazing sites were relatively good. They called graminoids "thin plants" and regarded them as good forage for livestock. These plants had greatest coverage in heavily grazed sites. These results imply that nomads do not consider heavily grazed sites problematic and this recognition does not stop heavy grazing.

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