



Effect of the disturbance of plateau pika (*Ochotona curzonae*) on soil water and soil temperature characteristics at Alpine Meadows in Qinghai-Tibet Plateau, China

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The plateau pika (*Ochotona curzonae*) is one of main small rodents at Alpine Meadows in Qinghai-Tibet Plateau, and has a positive effect on the maintenance of regional soil biodiversity. But, its excessive disturbance was also known as an important factor that leads to the vegetation degradation. Based on the field experiment, sampling analysis and continuous observation, this study compared the difference of soil water and soil temperature characteristics at different disturbance stages, which included native grassland, new mound, old mound and bare land formed by old mound. The findings of this study revealed that, after the disturbance of plateau pika, the soil bulk density at the shallow layer (0-20 cm) increased with the time-lapse. At the 20-30 cm depth, the soil bulk density of old mound, bare land and native grassland were similar, and were all higher than that of new mound. At the deep layer (under 30 cm), the soil bulk density had no significant difference between four stages, which showed that the disturbance of plateau pika mainly distributed within the shallow 30 cm depth. The unsaturated hydraulic conductivity of new mound was higher than old mound, bare soil and native grassland, with the multiple of 3.08-8.71, 4.63-16.27 and 3.70-15.25, respectively, and led to the obvious variance of soil water change for different types of land surface. After the precipitation, the soil water content change of new mound and old mound were more significant than that of bare land and native grassland. Because of the disturbance of plateau pika, the soil temperature characteristics changed, too. The heat conductivity rate of new mound and old mound decreased, significantly, and their daily temperature difference were obvious higher than bare land and native grassland. These results were essential for the study of vegetation recovery after the disturbance of plateau pika.