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Authors: Zoltán Kenyeres, Norbert Bauer, Lajos Nagy, Szilárd Szabó

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Enhancement of a declining European ground squirrel (*Spermophilus citellus*) population with habitat restoration

Zoltán Kenyeres[a], Norbert Bauer [b], Lajos Nagy [c] & Szilárd Szabó [d]

[a] Acrida Conservational Research L.P., Tapolca, Hungary
[b] Hungarian Natural History Museum, Department of Botany, Budapest, Hungary
[c] Balaton Uplands National Park Directorate, Csopak, Hungary
[d] University of Debrecen, Department of Physical Geography and Geoinformatics, Debrecen, Hungary

Corresponding author at: Acrida Conservational Research L.P., Tapolca, Hungary.
E-mail address: kenyeres@acridabt.hu (Z. Kenyeres)

ABSTRACT

The European ground squirrel is a vulnerable species in Europe, and a critically endangered species in the north-western part of its range. In Hungary, although there are several robust populations on a European scale, we are also witnessing a process of decline. Local individual numbers of the focal species decreased quickly until 2011, caused by the drastic reduction in the grazing and mowing of its habitat. In response to the decline of the focal species' population, a habitat restoration project was started in 2012 in order to stop and reverse this process. We studied the interventions for habitat restoration (elimination of scrubs and *Elaeagnus angustifolia* trees, grazing and mechanical mowing) between 2012 and 2015. In the monitoring program the number of European ground squirrel specimens was estimated by the quadrat-method and a small-scale transect survey. Potentially the most effective parameters of vegetation, soil and macroclimate were used as predictor variables. The results of our monitoring study showed that the most significant factors in the differences in the individual numbers were the height of the vegetation, and the depth and percentage of the sand and silt fractions of the soil. The density of *Spermophilus citellus* was positively affected by the cover of xeric grasses and therophyta plant species, soil depth, the percentage of sand and silt fractions of the soil, and was negatively affected by height of vegetation, cover of scrub, tall-herb plant species, and the percentage of the gravel fraction of the soil. Accordingly, the soil conditions of the target areas should be assessed in advance in order to achieve success in supplying the European ground squirrel population. This could help in the successful planning of interventions and relocation attempts in order to repatriate European ground squirrel populations.