

# Volunteers involvement to Hungarian Biodiversity Monitoring System

## Case study on three small mammals

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### Introduction

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Three legally protected, small mammal species that listed in Annexes of EU Habitat Directive too, are monitored by HBMS. The three species are differ from each other by its behaviour and ecology so possible involvement of volunteers are on different level. While red squirrel (*Sciurus vulgaris*) and european ground squirrel (*Spermophilus citellus*) are diurnal fat (or edible) dormouse (*Glis glis*) is nocturnal. Red squirrel and fat dormouse live in shrubs and forests ground squirrel lives on short grass steppes. Ground squirrel and fat dormouse are real hibernator red squirrel is non-hibernator. Individuals of all the three species are easy to recognize and quick to detect presence or to estimate relative density.

Our aim was to estimate the size of national populations of the three species, to follow the direction of population changes and to estimate the dimension of these changes.

### Materials and methods

**Red squirrel:** Totally volunteers based data collecting with the help of the Internet. Based on visual observation; occurrence estimation method.

**Ground squirrel:** Data collecting by pre-trained volunteers and zoologists. Based on synchronous hole counting along transects; relative density estimation method.

**Fat dormouse:** Data collecting by zoologists of national parks and rangers with the help of special trained volunteers. Based on checking nest boxes along transects at 12 fixed sites.



Fig 1. Monitored species

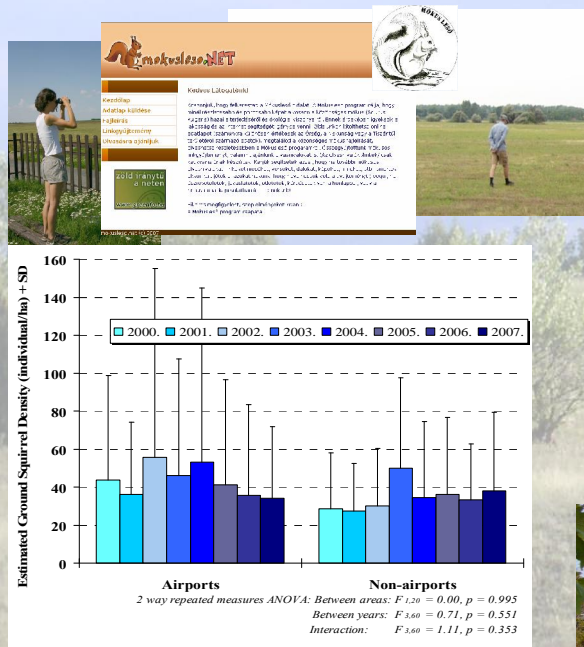


Fig 3. Density changes of Hungarian ground squirrel population

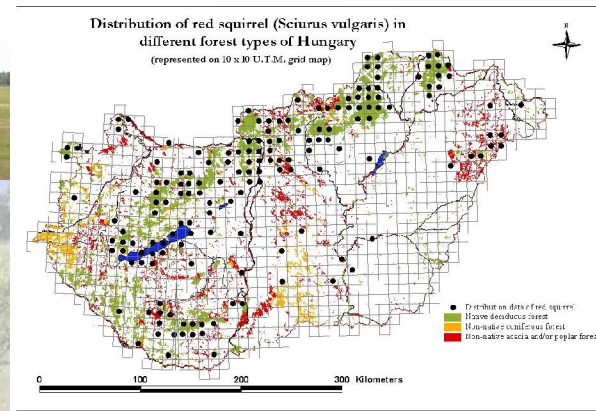


Fig 2. Distribution of red squirrel

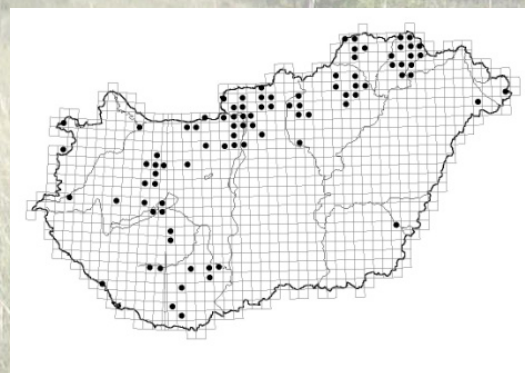


Fig 4. Distribution of fat dormouse

### Results and Discussion

Used methods are suitable for long term monitoring. Distribution maps are constructed based on registered occurrences. We did not find drastic changes of Hungarian populations in the case of the studied small mammals since monitoring programmes had been started. Long term monitoring is essential for decision making.

Feedback of results is extremely important for motivate volunteers. Involvement of volunteers are hardly depend on the biology of the monitored species and the used method of monitoring.



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