

Summary

Conservation of Dry Grasslands in Central-Hungary LIFE12 NAT/HU/001028, HUGRASSLANDSLIFE project

A Study on Groundwelling Arthropods II. (Spiders (Araneae), Ants (Formicidae))

There are nine different project locations in Duna Ipoly National Park that are important for the conservation of three high priority endangered dry grassland habitats types: Sub-Pannonic steppic grasslands (6240), - Pannonic loess steppic grasslands (6250), - Pannonic sand steppes (6260). In 2017 (2017.04.22.- 05.20.) the collecting has been carried out on 17 study sites at 8 locations.

Survey methods

The pitfall trap is a widespread sampling method for the standardized collecting and monitoring of groundwelling arthropods (spiders, bugs, ants). In case of this study we used a modified, double-cup pitfall trap method for sampling. Please see appendix 2. for the exact location of the pitfall traps.

Spiders

In the samples that have been collected in 2017 1318 spider specimen (813 male, 505 female, 378 juvenile) from 101 species have been identified.

This combined with the results of the collecting in 2014 and 2016 sums up in 145 as the total number of identified spider species.

A few examples with outstanding faunistical meaning: *Ballus rufipes* (Simon, 1868), *Cyclosa oculata* (Walckenaer, 1802); *Pelecopsis loksai* Szinetár & Samu, 2003, *Eresus hermani* Kovács et al., 2015, *Nemesia pannonica* Herman, 1879, *Atypus muralis* Bertkau, 1890), *Geolycosa vultuosa* (C.L. Koch, 1838).

Each location (project area) is generally in a good environmental state. The fauna of the project locations consists of the characteristic species of the Central European dry grasslands and shrubs. Most species are common in various open and dry habitats.

Ants

During these three years of sampling (2014, 2016, 2017) 45323 specimen of 38 ant species were collected by pitfall traps (80-140-140 annually), in 9 geographical places (Fóti Somlyó hill; Budaörs - Farkas-mountain; Sződ - Debegió hill; Domony - Domonyvölgy; Pécel

- Küdöi hill; Máriahalom - Lőrincz-dűlő; Diósd - Tétényi plateau; former military shooting range of Szentmártonkáta; earth fort near Tápióság), on 26 study sites. Although the collecting was not particularly intensive, the total number of the detected species living in these - generally - closed natural habitats almost reached the third of Hungarian checklist. Diversity of studied communities is among the highest in Hungary, since one of the diversity highlights of myrmecofauna of Carpathian Basin is found in the mosaic encountering zones of dry grasslands, shrubs and open forests of warmer slopes of hill-lines and low mountains. Also two protected species were detected on study sites: *Formica pratensis* and *Formica polycтена*. Faunistical data to be mentioned were e.g. the occurrence of *Formica gagates* and *Myrmica deplanata*.

Most important results of this study regarding the nature conservation:

The eradiction of woody plants (expanding *Crataegus* shrubs, open pine plantations mixed with grassland patches), as habitat management aiming to protect rock grasslands and slope steppes or to enlarge their area to their former extent, has not disturbed ant and spider communities to a great degree. Their effects such as temporary decreasing of community diversity, species number and total abundance of populations could be observed, but not much after the intervention the types, the ecological characters of affected communities corresponded fairly well with those of contrroll communities occurring in nearby natural grassland habitat patches, and presumably it will not be difference between them in a few years. Thus habitat management without considerable soil disturbance do not result in strong destruction of community structures, and its moderate effect seemes to be not a bad price for the ecological and conservational advantages of the intervention, which emerge in a short time, on various levels of the whole biocoenosis.

- In a mosaic area consisting of grassland, shrub and forest patches, an intervention aiming at a certain patch type can not be implemented without some effects on the biocoenosis of other, adjacent habitat parts. For example, majority of ant populations use not only one type of habitat patches but the whole mosaic or the most of it. They collect food in habitat parts quite different from patches optimal for building nests, and especially species of big stature could extend the boundaries of their feeding area beyond 100 metres from the nest.

- Mosaics of grasslands, shrubs and forests rich in ecotone habitat patches has higher ant diversity than grasslands without woody plants. Protected *Formica pratensis* occurring some study sites also prefers such mosaic areas.

- On secondary grassland habitat near Tápiószág, the reconstruction of which were supported by hay spreading, the ant community has become seminatural in three years, and it can already be related with the frequent community type of xerotherm rock grasslands and slope steppes with lower vegetation height (dominated by eurytop, aggressive *Lasius* species, mainly *Lasius paralienus*). Probably the community structure will become close to natural within a decade. This succession is faster than generally in case of sand grassland reconstructions. This fast process can be facilitated by the technology of reconstruction (hay spread causing greater diversity of vegetation and more abundant food stocks), stronger neighbour effect (better chance of colonization) and bound soil with structure and microclimate more favourable for ants (surface soil dries less than on sandplains, it has a beneficial effect on underground nests). The effect of the habitat reconstruction is also indicated by the composition of the spider fauna, although at the current state of the succession the agrobiat species are the dominant in this area. The increasing occurrence of the *Alopecosa pulverulenta* suggest the closing of the grassland, and its increasing similarity to the adjacent areas. Significant change is the decreasing density of the agrobiot species as the *Pardosa palustris*. These changes are a clear indication of a promising tendency in terms of habitat reconstruction.