

## Abstract\*

### Habitat characteristics of polydomous systems in *Formica exsecta* Nyl. (Hymenoptera: Formicidae) in Eastern Carpathians, Romania

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The development of polydomous systems, where colonies are made up of multiple related nests, is a rather general trait in ants (DEBOUT *et al.* 2007), and it is also known in the native, mound building territorial ant species *Formica exsecta*, as well (e.g. PISARSKI 1982, ERŐS *et al.* 2009). The largest European *F. exsecta* polydomous system can be found in the Eastern Carpathians, Romania (MARKÓ *et al.* 2012). In addition, there are several other polydomous systems in its vicinity. How could such large polydomous systems and population develop in a relatively restricted area? Which habitat characteristics could contribute to the formation and stability of polydomous systems in *F. exsecta*? Is there any specific land use strategy, which helps them survive and develop? Our primary scope was to analyze the habitat conditions of these *F. exsecta* supercolonies. Altogether six polydomous systems were studied (Table 1). Within the largest system a high (F1a, see Table 1) and a low (F1b, see Table 1) density site was selected for the purpose of the current study. Also in the case of the F2 system only a characteristic part of it could be studied. All supercolonies were located in *Molinietum caeruleae* fen meadows. The meadows were fairly intensely grazed by cows for most of the year. Habitat characteristics were assessed in variable number of sample units (circles of 4 m diameter) in the case of each study site between July and September 2011. The polydomous systems could be characterized by variable nest number (min 12, max 3347), and sometimes high nest density (Table 1). Study sites significantly differed from each other based on vegetation parameters, and the study sites could be divided in more (F2, F5, F7) and less (F1a, F1b, F3, F6) intensively grazed areas. The traditional low intensity grazing controls the height and cover of shrubs, thus prevents the development of forests, which are sub-optimal for *F. exsecta* (STOCKAN *et al.* 2009). The features (no. of nests, nest density, nest size) of the studied polydomous systems show that the habitat conditions are optimal for *F. exsecta*. The results of our study could further on be used for the elaboration of an appropriate conservation plan of the studied *F. exsecta* polydomous systems.

**Table 1.** Characteristics of the studied polydomous systems (\* partially studied systems).

Site code	Habitat type	No. of nests	density (nests/10 m <sup>2</sup> )
F1a*	semi-dry	42	520
F1b*	dry	20	95
F2*	wet	43	390
F3	dry	16	133
F4	semi-dry	12	789
F5	semi-dry	80	210
F6	semi-dry	22	110

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