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NICHE ANALYSIS AND COMPETITIVE STRATEGIES OF GRASSLAND ANTS (PRELIMINARY GOMMUNICATION)

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Abstract

Using the possibilities and methods of niche analysis in six niche components — macrohabitat, size, parasitism, vertical and horizontal microhabitat and daily activity rhythms — two competitive strategies were revealed on grassland ants: 1. strategy of interspecifically aggressive species having higher intraspecific aggressivity thresholds and only scramble-type competition as a rule; 2. interspecifically subordinated, opportunistic species that have strong intraspecific competition, aggressivity and territoriality.

In the course of an ecological analysis of the niches of ants in the grasslands situated mostly on Hungarian Great Plain, the following niche components were studied: 1. macrohabitat: the grasslands meaning biotopes for ants; 2. size of foragers; 3. parasitism: here the presence of socialparasitism and the identity of host sp. were the basis of analysis; 4. vertical microhabitat, i.e. the levels where foragers gather food; 5. horizontal microhabitat: the identity and segregation of foraging areas and 6. activity that means the daily rhythms of foraging. As it can be seen, these niche components do differ from Hutchinson's niche axes (GALLÉ, in preaparation).

Levins' niche breadth (COLLWELL—FUTUYMA, 1971; FEKETE et al., 1976), Whittaker's and Schoener's niche overlap (ABBOTT et al., 1977; FEKETE et al. 1976 etc.), Pielou's average niche overlap (PIELOU, 1972) and Collwell's and Futuyma's (1971) relative weighting factor were used to analyse the niches of ants.

In the course of macrohabitat analysis the populations of 31 ant species were investigated on 40 grasslands representing 15 associations and 28 lower phytocenological categories. For detailed investigation of the two microhabitats and activity, 3 grasslands were chosen *(Festucetum vaginatae-Molinio-Salicetum* komplex, *Salvio-Festucetum* and *Cynodonti-Poetum)*.

The most important results are: 1. The species having otherwise identical niches are segregated in macrohabitat dimension, this fact supports the validity of Gause's law on grassland ants. 2. There are two competitive strategies among grassland ants: (a) the strategy of interspecifically aggressive species having relatively high intraspecific aggressivity thresholds and scramble competition within population; (b) the strategy of species generally subordinated and opportunisitic in the interspecific competition, but they are aggressive intraspecifically and as a rule build monocalic colonies. Belonging to one of the competitive strategies: it is also an important element of the niche of a given species.

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