## **Abstract**

The sand quarries that are used occasionally and not subjected to rehabilitation, are important biodiversity banks in both anthropogenic and semi-natural landscapes. However, dynamic ecological succession takes place in these environments, which can significantly affect their value for biodiversity preservation. We determined responses of 3 groups of Aculeata to successional transformations in 32 sand quarries, spanning 15 years of spontaneous succession. We focused on groups representing diverse trophic behaviours of their larvae: herbivores (Apiformes), predators (Spheciformes), and kleptoparasites (Chrysididae). These groups differed in their response to successional changes in vegetation. Communities of herbivores and kleptoparasites changed in a similar way and reached the highest complexity at the middle stages of succession. For predators, generally, values of community indices remained stable. Not changes in dominance structure but appearance of new species significantly affected community structure of all the three groups of Aculeata. However, species turnover rate for predators increased at the later stages of succession. This was manifested by rapid accumulation of new and rare species. In contrast, β-diversity of kleptoparasites decreased, and in the case of herbivores remained constant throughout successional stages. Predators were also characterized by a high number of prevalent species, present at all stages of succession. This may suggest their important role in plant-arthropod interactions.Our results show the importance of varied processes of species exchange and provide information about preferences of predatory, herbivorous (pollinating), and parasitic Aculeata, including rare and threatened species, in respect of stages of ecological succession in sand quarries. The collected information will allow more deliberate selection of protective measures through implementation of suitable methods of management, to facilitate the preservation of these valuable habitats.