

SUMMARY

Irreversibly progressing urbanisation, as the most important transformation of the anthropogenic environment is one of the most important threats to the biological diversity of many ecosystems. It leads to the fragmentation of habitats and their isolation, and increases the effect of the "urban heat island". This results in the influx of alien species to the environment, including numerous phytophages, and their synurbization. For invasive organisms, the decisive factor limiting the colonisation of new areas may be, among others, a barrier in the form of natural environmental resistance, i.e. the presence of native, antagonistic entomofauna, for which the adjacent areas are the most important refuge.

The constant expansion of city borders, which takes place through the inclusion of neighbouring areas, i.e. forest, agricultural and wasteland, results in the transformation of these areas into a typical urban tissue. Therefore, it seems extremely right to look for solutions allowing for the sustainable use of mainly agricultural land and treating them as a multifaceted good for the public. It should be emphasized that the cultivation of agricultural and horticultural plants in cities brings many socio-economic as well as ecosystem benefits.

Therefore, an attempt to explore the potential urban agriculture in Rzeszów in terms of the conservation of biodiversity useful entomofauna, and as model organisms selected beetles from the family of beetles (Col., Carabidae).

Carabidae are very well described and recognised in national faunal publications, but most of the data comes from farmland, meadows, mid-field trees, forests and national parks. In terms of urban areas, these data mainly concern wooded areas, such as forests and city parks. Despite the long history of research on the urban Entomofauna information regarding Carabidae remain fragmented, due to the fact that work on the valorisation urbicenozy focused on other groups of insects, mainly phytophages and invasive organisms.

Therefore, the aim of the research conducted in Rzeszów in 2017-2019 was to identify the quantitative and qualitative structure of Carabidae occurring in areas with varying degrees of urbanization and exposure to the anthropopressure factor. The study included horticultural crops in three Family Allotment Gardens, conventional spring barley cultivation for forage purposes on a farm and marginal habitats, i.e. the edge of the field

and mid-field trees. The next group of sites was the transect located in one of the most vulnerable parts of the city to anthropopressure, including the site in the Family Allotment Gardens, on the green belt and in the city park, designed to determine the impact of the traffic route barrier on ground beetles.

In order to complete the faunal research, an analysis of the naturalness of biocenoses was also carried out based on the ecological significance index (WZE) in terms of both quantity and quality. The aim of this analysis was to characterise the degree of disturbance of habitats in an urbanized area based on the occurrence of typical species.

Despite the differences in terms of trophic, the large majority are of prey organisms, either at the stage of larvae and excellent form. By colonising the top layer of soil, they actively search the ground for food, which are mainly other insects at various stages of development and small invertebrates. Among Carabidae dominate by non-specialised zoophages, which significantly contribute to reducing the population of pests in different types of crops. On the other hand, species belonging to the group of hemizooophages eat animal food in the larvae stage, and choose plant food as imago. Only a few, such as *Zabrus tenebrioides*, consume only plant food. The remaining herbivorous hemizophages feed on plants or seeds from wild plants and do not pose a serious threat to crops. Moreover, Carabidae, as particularly sensitive to changes in the environment, are considered to be model indicator organisms.

As a result of three-year faunistic research on the communities of ground beetles occurring in urbanized areas, a total of 1,522 individuals belonging to 22 genera and 36 species were collected. The research showed that the highest number of Carabidae was found in the site located in the green belt, where 418 individuals belonging to only 6 species were caught, which proves the important role of islands and ecological corridors located in cities. Carabidae also inhabited the mid-field forestation (395 individuals), which among the examined sites turned out to be one of the most diverse in terms of species (17 species).

Further analysis of the development of natural biocoenoses revealed that most species typical of the habitat occurred on the green belt and on the edge of the field, where the taxa eurytopic dominated by species typical of this type of habitat. It is noteworthy that the most unusual fauna dominated the spring barley cultivation and in the field plantings.

The research results presented in this paper not only supplement the knowledge on Carabidae of urbanized areas, but also present an analysis of the potential of urbanized areas as areas where the concept of urban agriculture can be successfully implemented. Such

a multifaceted study of the issue also emphasizes the importance of agricultural land in urbicenos in the context of the protection of beneficial ground beetles.