

SYNANTHROPIC VEGETATION OF ANTHROPOGENICALLY TRANSFORMED PHYTOCENOSES OF EASTERN PODILLYA

The adventive flora was evaluated on the time of entry, the naturalization degree, and the mean of distribution. It was found that archaeophytes predominate among anthropophytes according to the time of entry, epiphytes – to the naturalization degree, and akolytophytes – to the mean of distribution. Five indices – synanthropization (IS), apophytization (IAp), anthropophytization (IAN), archeophytization (IAR), and kenophytization (IKn) – have been determined. Moreover, it was established that apophytic processes prevail over the adventive ones at the areas studied.

Key words: ecological network, ecocorridors, synanthropic vegetation, apophytes, anthropophytes, phytocoenosis.

Eastern Podillya embraces the forest-steppe zone of the Right-bank Ukraine central part, where the antropogenically transformed agrolandscapes predominate [1].

Moreover, the vegetation in this area is highly fragmented with the pronounced synanthropization processes as well as in other regions of Ukraine. One of the outcomes of the anthropogenic pressure on the environment is the synanthropization of the vegetation, which triggers the changes of the native flora in general and the regional one in particular [2].

As a consequence, the ratio between the diversity of autochthonous and adventive plant species shifts towards the adventive ones, the dominant vegetation types are being replaced by the derivatives, and the isolation of some parts of the ranges of individual species is intensified [3].

Synanthropization of vegetation remains in the focus of the scientific community, what is reflected in the National Program for the Biodiversity Conservation in Ukraine for 2007–2025 [4].

This study is the part of the research work of the Laboratory of the Ecological assessment of agroecosystems in frames of projects “The development of the scientific and methodological approaches to balanced agroecosystems in Ukraine in changing climate conditions” (State registration number 0116U001382).

The main materials were obtained in field research during the vegetation season of 2013-2018 in Eastern Podillya. All plants mentioned in this study were identified with the help of “The Key of the Higher Plants of Ukraine” [5].

Latin names of plant species were referred according to “The Key of the Higher Plants of Ukraine” and “A nomenclature checklist” [6].

In the current study we used historical-geographical classification of synanthropic species by J. Kornas (1968) supplemented by V. Protopopova taking into account the time and means of distribution as well as the geographical origin of plants [7].

All synanthropic species were divided into two groups – apophytes (aboriginal species, which were completely or partially relocated to the antropogenically transformed areas) and anthropophytes (adventive species). For the quantitative analysis of synanthropic species five indices – synanthropization (IS), apophytization (IAp), anthropophytization (IAN), archeophytization (IAR), and kenophytization (IKn) – were used [8].

According to the literature, there are circa 1200 species of higher vascular plants in Eastern Podillya [9].

It was found that among 580 species of higher vascular plants (48.3% in total) 292 species represent of synanthropic flora. From the taxonomical point of view the synanthropic vegetation of the studied phytocoenoses belongs to Magnoliophyta, 24 families, 53 genera (I Division). The taxonomic analysis of synanthropic phytobiota revealed the predominant families: *Asteraceae* – 26 species, *Brassicaceae* – 21 species, *Poaceae* and *Fabaceae* – 19 species, *Lamiaceae* – 14, *Chenopodiaceae* and *Caryophyllaceae* – 11 species, *Polygonaceae* – 9 species.

The apophyte fraction of flora is represented by two groups: 68 species of hemiapophytes widespread in semi-natural or transformed ecosystems, but still keeping their positions in natural ecosystems, and 46 species of epiphytes completely or partially migrated to the antropogenic ecosystems. Among the anthropophytes, the dominant group by the time of entry is archeophytes, which spreaded to the new regions at late 15th century. The common representatives of 48 archaeophytic species are *Poa annua* L., *Consolida regalis* Gray., *Stachys annua* (L.) L., *Centaurea cyanus* L., *Urtica urens* L., *Veronica arvensis* L., etc. In turn, kenophytes are represented by 19 species such as *Poa trivialis* L., *Galinsoga parviflora* Cav., *Cuscuta campestris* Yunck, etc. It has to be noticed that the input of eukenofites is only 7 species: *Amaranthus deflexus* L., *Ambrosia artemisiifolia* L., *A. blitoides* S.Wats., etc.). In turn, by the mean of entry 59 akolytophytic species were the majority, what suggests the high degree of antropogenic disturbance and transformation of the studied phytocoenoses. Typical representatives of this group are *Cichorium intybus* L., *Malva sylvestris* L., *Apera spica-venti* (L.) P. Beauv., and *Reseda lutea* L. The input of so

called ergasiophytes, or the species introduced by humans intentionally, is considerably less significant and comprises 14 species. Common ergasiophytes are *Anagallis arvensis* L., *Capsella bursa-pastoris* (L.) Medik., *Bunias orientalis* L., etc. Furthermore, xenophytes are represented by 7 species (4%) such as *Xanthoxalis stricta* (L.) Smal., *Kochia laniflora* (S.G.Gmel) Borbas, *Lactuca serriola* L., etc. Epicophytes head the group of plants classified according to the degree of naturalization and include 43 species (24.4%). Typical representatives are *Bromus arvensis* L., *Lamium album* L., *Centaurea cyanus* L., *Solanum nigrum* L., and others. Agriophytes are considerably smaller in number – 21 species (12%) including *Sonchus arvensis* L., *Sisymbrium loeselii* L., *Lupinus albus* L., *Aesculus hippocastanum* L., etc. Ephemerophytes are represented by 8 species such as *Eragrostis pilosa* (L.) P. Beauv., *Adonis annua* L., *Amaranthus deflexus* L., etc.

The input of individual historical and geographical flora groups is used for the evaluation of parameters characterizing anthropogenic changes in the flora of a certain area. Five indices – synanthropization (IS – 30), apophytization (IAp – 19), anthropophytization (IAN – 12), archeophytization (IAR – 8,5), and kenophytization (IKn – 3,5) – were used to determine the degree of anthropogenic transformation of the flora.

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