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THE FREQUENCY OF ALIEN PLANT SPECIES IN ANTHROPOGENIC HABITATS OF THE FLATLAND PART OF UKRAINE ACCORDING TO THE LATITUDINAL GRADIENT*

Key words: alien plant species, habitat, field, pasture, forest, rural settlements, Ukraine

Abstract. This study presents a comparative analysis of alien vascular plant species distribution on six test areas covering about 30 km² each, which were located between 51°20′ N — 46°45′ N and 28°9′ E — 32°35′ E in Polissya (Ovruch), Forest — Steppe (Ruzhyn, Sharhorod, Teplyk), and Dry Steppe (Muzykivka, Krugloozerka). During the field surveys of 100 habitat plots, which were carried out according to the Whittaker's plant diversity sampling method, 185 alien species were found: Ovruch — 147, Ruzhyn — 156, Sharhorod — 157, Teplyk — 154, Muzykivka — 110, and Kruhlloozerka — 108. The share of alien plant species increased from 34 % (Ruzhyn, Shargorod) to 49 % (Muzykivka), i.e., from north to south. Additionally, the share of alien species was positively influenced by degradation of the herbaceous layer, initiated by its anthropogenic transformation. However, among the 185 non-native species 80, or 43 % were present at all locations. According to the coefficient of similarity-dissimilarity of species composition of the alien fraction, the study areas form two pleads at the level C_j = = 0. 49: Polissya-Forest-Steppe with internal similarity of C_j = 0. 89 — C_j = 0. 74, and Dry-Steppe with internal similarity of C_j = 0. 90. The results indicate the need for monitoring and control of non-native plant species, both for scientific purposes and for implementation of efficient measures at the state level as well as at the level of natural spatial and administrative units.

Introduction

Invasions of alien plant species have become a global phenomenon. The intensification of these processes in recent decades is caused by globalization of human activities and other factors, both global and local in their scale. In Ukraine, the spread of alien plant species is certainly related to agricultural lands, which comprise up to 72 % of the total area of the country, including 58—62 % of tillage [11]. It is known that degrees of constancy, frequency, and abundance of alien plant species change in accordance with geographical latitude. Dynamics of these changes depends on the natural zones, which are also determined by their geographical location [1, 8]. This article presents an attempt to show the extent to which the peculiarities of distribution of non-native plant species determined by physiographic zone conditions are either preserved or have a tendency to become neglected in anthropogenic habitats of the flatland part of Ukraine.

Material and Methods

The subject of the present study is the part of phytobiota, which consists of non-indigenous (alien, adventive, non-native) species of vascular plant, spontaneously occurring in agricultural landscapes of the flatland part of Ukraine.

Our study covers various aspects of the non-native flora of the region, in particular the species composition, taxonomical and typological structures, and dynamics of alien species in agricultural landscapes of three physiographic zones.

The main field inventories were carried out in June-July 2004 as a part of the joint project of UNEP GEF Biodiversity Indicator for National Use (BINU) and the Ukrainian Land and Resource Management Centre (ULRMC), and supplemented by additional studies in subsequent years. Data from Landsat 7 ETM+ was handed by ULRMC.

The natural-anthropogenic phenomenon of distribution of alien plants within the pilot regions of flatland Ukraine was studied in six test areas. According to the longitude gradient, they are located in the following physiographic regions: Ovruch — Polissya (the forest zone in the northern part of Ukraine); Ruzhyn, Teplyk, and Shargorod — Forest-Steppe zone; and Muzykivka and Krugloozerka — the Dry Steppe zone, a part of the Steppe zone in the southern part of Ukraine (Table 1).

The area of each test site was about 30 km². Each of them represented specific modes of agricultural nature and land use.

The following habitat types were defined within the test areas: fields and other cultural phytocoenoses, native steppe and meadows, intensive pasture and hay-

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making areas, natural forests (except for the two dry-steppe areas) and artificial forest plantations, rural settlements and roadside communities. Within these areas 100 habitat plots of different types were selected and inventoried according to Whittaker's plant diversity sampling method. This method gave us a possibility to get data on parameters of species composition and frequency at 1 m^2, 10 m^2, 100 m^2, 1000 m^2 spatial scales and for the whole area in each habitat [10, 6]. Habitat plots were selected according to the types of habitats, so each type was represented at each study site. As a whole, there were described and inventoried: pasture and haymaking areas — 33 plots, fields — 26 plots, artificial tree plantations and rural ornamental stands of trees and shrubs — 26 plots, natural forests with some artificial (planted) components — 7, and synanthropic communities of rural settlements - 8 (Table 2).

The land use structure of Ovruch was shaped by tillage (2986 ha), orchards — (12 ha), haymaking areas — (242 ha), pastures — (133 ha), roads and forest shelter belts. To the south there is the Noryn River (a left tributary of the Uzh River), which belongs to the catchment area of the Prypyat (Pripet) River. Descriptions were carried out in the main crop fields, along field margins and roadsides; biota of adjacent forest belts (oak, birch, and mixed oak-maple ones), fallows along old reclamation canals, artificially improved haymaking areas, pastures on water meadows, as well as riverside and aquatic vegetation of the Noryn River were studied; ruderal communities and cultural phytocoenoses including ornamental plant communities of Velyka Chernihivka and Mala Chernihivka villages, were inventoried as well (Table 2).

The land use structure of the Ruzhyn test area was shaped to a large extent by pastures, in addition to crop lands. Pastures were located on slopes of several ravines, where the Horihova (Gorikhova) River (the Ros' River basin) takes its source, and represented different stages of pasture digression of bunchgrass grassy meadow steppe. Forest belts and small hornbeam-oak erosion-preventive tree plantations of the age of about 60 years with a herbaceous layer of forest weeds and coarse ruderal herbs were inventoried. On the west side there was a railway section between Pogrebyshche and Kozyatyn stations, which was thought to be a «hotspot» of alien plant species (Table 2).

Coniferous (pine), ash-oak erosion-preventive tree plantations (60 years old) and oak-hornbeam forest belts, bunchgrass grassy meadow steppe at the late stages of pasture digression, riverside and aquatic vegetation, ruderal vegetation of the former narrow-gauge railway fill, ruderal communities and ornamental plantings of Klekotyna were observed together with agricultural lands on the test area of Shargorod (Table 2).

The test area of Teplyk was represented by agrophytocoenoses, abandoned fallow lands in orchards, hornbeam-oak plantations, ruderal communities and ornamental tree stands of Velyka Mochulka village (Table 2).

Semi-natural vegetation of the test area of Muzykivka was represented by pastures on slopes of Rusova and Virovchana ravines, and ruderal communities along these ravines, as they were almost totally ploughed (Table 2).

The coenotic background for preservation of vascular plants within the study area of Krugloozerka was shaped by remnants of bunchgrass steppes on chestnut soils and saline steppe meadows, saline meadows, solonchaks, and riverside vegetation along lakes. This habitat type composition is a natural analogue of the Potyyvska part of the Black Sea Biosphere Reserve of the National Academy of

Table 1. **Location of the test areas**

Name	Geographical coordinates: latitude (N) and longitude (E)	Administrative location
Ovruch	51°20′2″; 51°17′34″; 51°16′31″; 51°19′13″; 28°50′53″; 28°50′8″; 28°21′; 28°58′2″	Zhytomyr Region, Ovruch District, Velyka Chernihivka village
Ruzhyn	49°37′52″; 49°36′15″; 49°39′38″; 49°40′51″; 29°12′18″; 29°16′24″; 29°16′56″; 29°12′48″	Zhytomyr Region, Ruzhyn District, Zoryane village
Shargorod	48°47′54″; 48°47′38″; 48°49′47″; 48°49′58″; 28°9′25″; 28°15′42″; 28°15′41″; 28°9′23″	Vinnytsya Region, Shargorod District, Klekotyna village
Teplyk	48°36′1″; 48°37′2″; 48°40′24″; 48°39′17″; 29°31′41″; 29°34′45″; 29°33′16″; 29°29′10″	Vinnytsya Region, Teplyk District, Velyka Mochulka village
Muzykivka	46°45′16″; 46°45′26″; 46°48′27″; 46°48′21″; 32°29′55″; 32°35′54″; 32°35′48″; 32°30′7″	Kherson Region, Bilozerka District, Muzykivka village
Krugloozerka	46°07′51″; 32°23′17″	Kherson Region, Hola Prystan' District, Krugloozerka village

Table 2. **Diversity of inventoried habitat plots**

Habitat	Test area, number of descriptions						
	Ovruch	Ruzhyn	Shargorod	Teplyk	Muzykivka	Krugloozerka	Total
SEMI-NATURAL HABITATS							
Natural forests with artificial components	1	2	2	2	—	—	7
Broad-leaved forests	—	1	1	1	—	—	3
Flood plain forest	1	1	1	1	—	—	4
Steppe (pasture and haymaking areas)	—	2	3	2	1	5	13
Bunchgrass grassy meadow true steppe at podzolized on chernozem soils	—	1	2	1	—	—	4
Bunchgrass steppe on chestnut soils			—	—	1	3	4
Fallow lands		1	1	1	—	2	5
Meadow (pasture and haymaking areas)	2	1	1			7	11
Floodplain meadows	2	1	1			—	4
Saline meadows	—	—	—			5	5
Solonchaks	—	—	—	—	—	2	2
Riverside and aquatic vegetation (pasture and haymaking areas)	1	1	1		1	1	5
Synanthropic communities	2	2	1	1	1	1	8
Ruderal communities	1	1	1	1	1	1	6
Railway side communities	1	1	—	—	—	—	2
TOTAL	*6*	*8*	*8*	*5*	*3*	*14*	*44*
Anthropogenic habitats							
Cereal crops fields	2	2	1	1	3	3	12
Barley	—	—	1	1	1	1	4
Oats	1	1	—	—	—	—	2
Rye	1	—	—	—	1	1	3
Wheat	—	1	—	—	1	1	3
Intertilled crops fields	2	1	4	2	—	2	11
Buckwheat	1	1	—	1	—	—	3
Flax	1	—	—	—	—	—	1
Maize	—	—	1	1	—	—	2
Mustard	—	—	—	—	—	1	1
Potato	—	—	—	—	—	1	1
Sugar beet	—	—	2	—	—	—	2
Sunflower seed	—	—	1	—	—	—	1
Perennial herbs fields	—	1	1	1	—	—	3
Clover	—	1	1	—	—	—	2
Alfalfa	—	—	—	1	—	—	1
Cultivated pasture and hay areas	2	1	—	—	—	1	4
Tree plantations	3	3	6	3	—	5	20
Conifers	—	—	1	—	—	—	1
Broadleaves	—	1	3	1	—	—	5
Forest belts	3	1	2	1	—	4	11
Orchards	—	1	—	1	—	1	3
Rural ornamental tree plantings	1	1	1	1	1	1	6
TOTAL	*10*	*9*	*13*	*8*	*4*	*12*	*56*
GRAND TOTAL	**16**	**17**	**21**	**13**	**7**	**26**	**100**

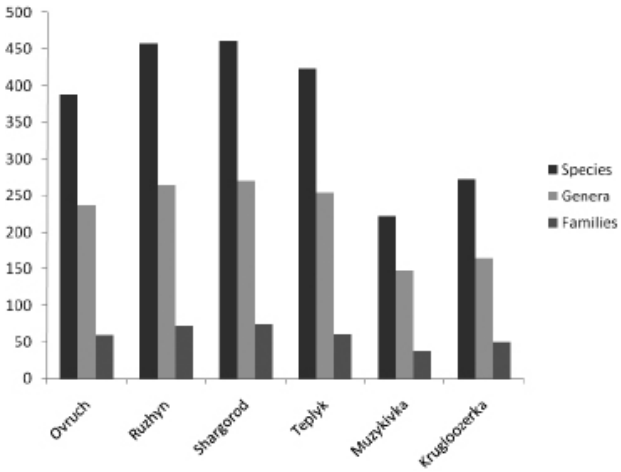

Fig. 1. Taxonomic diversity of vascular plants on the test areas

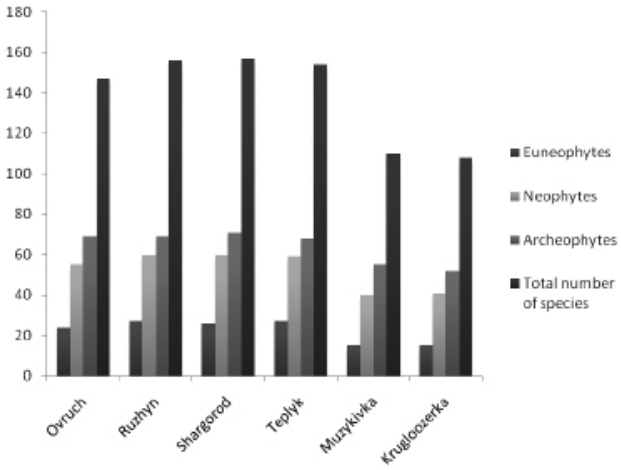

Fig. 2. The diversity of anthropophytes according to their time of introduction

Sciences of Ukraine, which is situated to the west of the test site. All these lands have been used as pastures and came under pasture digression. Cultural phytocoenoses of Krugloozerka are represented by cereal crops, intertilled crops, forest belts, and ornamental tree and shrub plantings in Krugloozerka and Bilshovyk villages (Table 2).

The comparative analysis of the alien plant species composition on the test areas was carried out using computer methods and relevant software (MS Excel, MS Access) on the basis of the database of field inventories.

Results and Discussion

The detailed analysis of inventories of taxonomic and typological diversity of vascular plant species in the test areas was presented earlier [1, 3, 5]. We revealed several tendencies of the current anthropogenic transformation of the phytobiota in the agricultural landscape, and three of them are strongly pronounced. Those are decreasing of species richness, impoverishment of typological spectra and synanthropization. Specific species richness of the test areas was lower than the overall natural zonal species richness. According to L.I. Malyshev's estimates [7], species richness values for an area of 100 km^2 should number 550 species for Polissya, 652 to 700 species for the Forest-Steppe, and 600—650 species for the Steppe.

The total number of anthropophytes in six test areas was 185 species. Vascular plant species richness and taxonomic diversity within each test area are shown on Fig. 1.

The index of adventization (a share of alien species in the total number of species) has a tendency to increase from north to south, i.e., from Polissya to Dry Steppe areas. However, this index greatly depends on the presence of semi-natural fragments in the land use structure of a test area.

The mean value of the index of adventization for Ukraine is 13 % [9]. Anthropophytes make up to 8—10 % of vascular plant species diversity in Steppe areas of Luganskiy Nature Reserve and Ukrainian Steppe Nature Reserve, excluding Khomutovskiy Steppe, where the share of alien species is 14 %; in Black Sea Biosphere Reserve — 15 %, and in the buffer zone of Askania-Nova Biosphere Reserve — 36 % [4]. On the test areas the value of the index varied between 34 and 49 %: Ovruch — 38 %, Ruzhyn — 34 %, Shargorod — 34 %, Teplyk — 36 %, Muzykivka — 49 %, and Krugloozerka — 40 %.

According to the time of introduction, kenophytes (euneophytes and neophytes) prevail on the test areas located in the Polissya and Forest-Steppe zones; this component comprises 55 % of the total number of alien plant species. On the Dry-Steppe test areas, the distribution of species is opposite; archeophytes — (55 %) clearly prevail there (Fig. 2).

The share of anthropophytes, occuring on all test areas is 43 %. It has been found that such a level of share of weeds occurring across all natural zones is peculiar for the synanthropic flora of the flatland part of Ukraine in general. The dynamics of segetal species in different natural zones of Ukraine in the period between 1927 and 2003 was studied earlier [2, 8]. It was shown that the share of anthropophytes increased in all zones almost evenly, and the share of overall spread segetal weeds increased from 15 % to 44 %.

There were 80 alien plant species that occurred in all test areas: *Anisantha tectorum* (L.) Nevski, *Apera spica-venti* (L.) P. Beauv., *Artemisia absinthium* L., *Bassia scoparia* (L.)

A. J. Scott, *Bromus arvensis* L., *B. scoparius* L., *B. squarrosus* L., *Cannabis ruderalis* Janisch., *C. sativa* L., *Capsella bursa-pastoris* (L.) Medik., *Carduus acanthoides* L., *Centaurea cyanus* L., *Chenopodium opulifolium* Schrad. ex DC., *Cichorium intybus* L., *Conium maculatum* L., *Consolida ajacis* (L.) Schur, *C. divaricata* (Ledeb.) Schroedinger, *Conyza canadensis* (L.) Cronq., *Coriandrum sativum* L., *Crepis capillaris* L., *Cyclachaena xanthiifolia* (Nutt.) Fresen., *Cynoglossum officinale* L., *Datura stramonium* L., *Daucus sativum* (Hoffm.) Roehl., *Descurainia sophia* (L.) Webb. ex Prantl, *Echinochloa crusgalli* (L.) P. Beauv., *Elaeagnus angustifolia* L., *Euclidium syriacum* (L.) R. Br., *Fallopia convolvulus* (L.) A. Löve, *Fumaria schleicheri* Soy.-Willem., *Galinsoga parviflora* Cav., *Geranium pusillum* L., *Hordeum murinum* L., *Helianthus annuus* L., *H. subcanescens* (A. Gray) E. E. Watson, *H. tuberosus* L., *Hyoscyamus niger* L., *Lactuca serriola* L., *Lamium amplexicaule* L., *Lappula squarrosa* (Retz.) Dumort., *Lepidotheca suaveolens* (Pursh) Nutt., *Lepidium draba* L., *L. ruderale* L., *Lipandra polysperma* (L.) Moq., *Lycopsis arvensis* L., *Lycium barbarum* L., *Medicago sativa* L., *Morus alba* L., *Myosotis arvensis* L., *Oenothera biennis* L. aggr., *Onopordum acanthium* L., *Papaver rhoeas* L., *Petroselinum crispum* (Mill.) A.W. Hill, *Poa annua* L., *Raphanus raphanistrum* L., *Sambucus ebulus* L., *S. racemosa* L., *Saponaria officinalis* L., *Sinapis dissecta* Lag., *Sisymbrium loeselii* L., *Syringa vulgaris* L., *Secale cereale* L., *Sclerochloa dura* (L.) P. Beauv., *Sonchus arvensis* L., *S. asper* (L.) Hill, *S. oleraceus* L., *Setaria pumila* (Poir.) Roem. et Schult. (*S. glauca* auct. non (L.) P. Beauv.), *S. viridis* (L.) P. Beauv., *Thlaspi arvense* L., *Tripleurospermum inodorum* (L.) Sch. Bip., *Urtica urens* L., *Veronica agrestis* L., *Vicia angustifolia* Reichard, *V. hirsuta* (L.) S.F. Gray, *Viola arvensis* Murray, *Xanthoxalis corniculata* (L.) Small, *X. stricta* (L.) Small, *Xanthium albinum* (Widder) H. Scholz, *X. rupicola* Holub, and *X. strumarium* L.

The fractions of anthropophytes of the test areas of Muzykivka and Krugloozerka were almost the same, except for two species — *Hibiscus trionum* L. and *Solanum cornutum* Lam. Four alien species were registered only in Ruzhyn, near a railway, demonstrating their migration pathway via railroads. They were *Anchusa azurea* Mill., *Impatiens parviflora* DC., *Mirabilis nyctagyneus* Michx., and *Senecio viscosus* L. It is worth to notice that in the natural broad-leaved forest located within 400—500 m from the railway, *I. parviflora* was absent, while indigenous *I. nolitangere* L. occurred there. *Rhinanthus apterus* (Fr.) Ostenf. occurred only in the Shargorod study area.

The Jacquard's coefficient demonstrated high similarity of compositions of anthropophytes. Two pleiades are clearly expressed: Dry Steppe — Muzykivka and Krugloozerka — $C_j = 0.90$, in contrast to their clustering with others $C_j = 0.49$. Forest-steppe and Polissya areas form separate pleads with the similarity level $C_j = 0.89 - C_j = 0.74$ [5].

Conclusions

The comparative analysis of distribution patterns of alien vascular plant species in six test areas, located between 51°20′ N — 46°45′ N and 28°9′ E — 32°35′ E, has confirmed the known thesis concerning the increase of anthropophytes' share in spontaneous floras in the North-to-South direction. Though, the difference between anthropophytes' shares in floras of the test areas located in the Polissya, Forest-Steppe and Dry Steppe natural zones was insignificant, and 80 species or 43 % were found in all test areas.

During the field surveys of 100 habitat plots, which were carried out according to Whittaker's plant diversity sampling method, we recorded 185 non-native plant species: Ovruch — 147, Ruzhyn — 156, Shargorod — 157, Teplyk — 154, Muzykivka — 110, Krugloozerka — 108.

The share of alien plant species increased from 34 % (Ruzhyn, Shargorod) to 49 % (Muzykivka), i.e., from north to south. The share of non-indigenous species was positively correlated with the level of degradation of the herbaceous layer, initiated by its anthropogenic transformation. Stable intensification of adventization processes in the direction from north to south was confirmed by a 10 % — higher share of archeophytes in the species composition of floras of the southern test areas.

According to the coefficient of similarity-difference of species composition of the alien fraction, the study areas form two pleads at the level $C_j = 0\ 49$: Polissya-Forest-Steppe with internal similarity of $C_j = 0.89 — C_j = 0.74$ and Dry-Steppe with internal similarity of $C_j = 0.90$.

The results indicate the need for monitoring and control of non-native plant species, both for scientific purposes and for implementation of efficient measures at the state level as well as at level of natural spatial units (natural zones, historical-floristic regions, etc.) and administrative units.

The discussed phenomenon of development of the fraction of anthropophytes confirms the critical condition of the agricultural ecosystems of the flatland part of Ukraine.

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REFERENCES

1. *[Burda R.I.] Бурда Р.І.* Порівняльний аналіз локальних фітобіот в оцінці агробіорізноманітності // Агробіорізноманіття України: теорія, методологія, індикатори, приклади. Кн. 2. — К.: Нічлава, 2005. — С. 165—193.
2. *[Burda R.I., Prydatko V.I.] Бурда Р.І., Придатко В.І.* Стан видів: чужорідні й інвазійні види (рослини) // Агробіорізноманіття України: теорія, методологія, індикатори, приклади. Кн.1. — К.: Нічлава, 2005. — С. 271—276.
3. *[Burda R.I.] Бурда Р.І.* Тенденції змін різноманітності фітобіоти в сільськогосподарських ландшафтах рівнинної України // Наук. вісн. Нац. аграр. ун-ту. — 2006. — **93**. — С. 242 —256.
4. *[Burda R.I.] Бурда Р.І.* Резистентність природно-заповідного фонду до фітоінвазій. Промышленная ботаника: Сб. науч. тр. — Донецк, 2007. — **7**. — С. 11—21.
5. *[Burda R.I.] Бурда Р.І.* Роль бур'янів-антропофітів у польових сівозмінах рівнинної України // Рослини-бур'яни: особливості біології та раціональні системи їх контролювання в посівах сільськогосподарських культур. 7-ма наук.-теор. конф. Укр. наук. т-ва гербологів. — К.: Колобіг, 2010. — С. 38—43.
6. *[Burda R.I., Ignatyuk O.A.] Бурда Р.І., Ігнатюк О.А.* Методика дослідження адаптивної стратегії чужорідних видів рослин в урбанізованому середовищі. — К.: НЦЕБМ НАН України, Віпол, 2011. — 112 с.
7. *[Malyshev L.I.] Малышев Л.И.* Экология флористического богатства Северной Евразии // Ботан. журн. — 2003. — **88**, № 8. — С. 28—36.
8. *[Neichenko G.] Неіченко Г.* Матеріали до районування польових бур'янів // Тр. сільськогосподар. ботаніки. — 1927. — **1**, вип. 2. — С. 147—175.
9. *[Protopopova V.V.] Протопопова В.В.* Синантропная флора Украины и пути ее развития. — Киев: Наук. думка, 1991. — 204 с.
10. *Shmida A.* Whittaker's plant diversity sampling method // Israel. J. Bot. — 1984. — **33**(1). — P. 44—46.
11. *[Sozinov A.A., Prydatko V.I., Shtepa Y.N.] Созінов А.А., Придатко В.И., Штепа Ю.Н.* Агросфера: визуализация с помощью ДЗЗ и ГИС для индикации состояния и оценки агробиоразнообразия // Агробіорізноманіття України: теорія, методологія, індикатори, приклади. Кн. 1. — К.: Нічлава, 2005. — С. 15—30.

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ТРАПЛЯННЯ ІНВАЗІЙНИХ РОСЛИН В АНТРОПОГЕННИХ ЕКОСИСТЕМАХ РІВНИННОЇ УКРАЇНИ ЗА ШИРОТНИМ ГРАДІЄНТОМ

Наведено порівняльний аналіз трапляння чужорідних видів судинних рослин на шести тестових ділянках площею близько 30 км^2 кожна. Вони розташовані в межах 51°20′ пн. ш. — 46°45′ пн. ш. та 28°9′ сх. д. — 32°35′ сх. д. у Поліссі (Овруч), Лісостепу (Ружин, Шаргород, Теплик) та Сухому Степу (Музиківка, Круглоозерка). Польовими обліками, проведеними за методом Уіттекера, виявлено 185 видів-антропофітів: Овруч — 147, Ружин — 156, Шаргород — 157, Теплик — 154, Музиківка — 110, Круглоозерка — 108. Частка чужорідних видів зростала з півночі на південь із 34 % (Ружин, Шаргород) до 49 % (Музиківка) та залежала також від ступеня деградації рослинного покриву, спричиненої його антропогенною трансформацією. Втім, серед 185-ти чужорідних видів 80, або 43 %, поширені на усіх ділянках. За подібністю—відмінністю видового складу цієї фракції тестові ділянки чітко розпадаються на рівні $C_j = 0, 49$ на дві плеяди: поліcько-лісостепову з внутрішньою подібністю $C_j = 0, 89 — C_j = 0, 74$ та сухо-степову з внутрішньою подібністю $C_j = 0, 90$. Посилення адвентизації флори з півночі на південь підтверджується більшою на 10 % часткою археофітів у спонтанних флорах південних тестових ділянок. Зроблено висновок про необхідність організації контролю за видами-антропофітами для наукових цілей та вжиття оперативних заходів не лише на загальнодержавному рівні, а й також на рівні одиниць природного та адміністративного поділів.

К л ю ч о в і с л о в а: чужорідний вид рослин, оселище, поле, пасовище, сіножать, лісове насадження, сільське поселення, Україна.

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ВСТРЕЧАЕМОСТЬ ИНВАЗИОННЫХ РАСТЕНИЙ В АНТРОПОГЕННЫХ ЭКОСИСТЕМАХ РАВНИННОЙ УКРАИНЫ ПО ШИРОТНОМУ ГРАДИЕНТУ

Приведен сравнительный анализ встречаемости чужеродных видов сосудистых растений на шести тестовых участках площадью около 30 км^2 каждый. Они расположены между 51°20′ с. ш. — 46°45′ с. ш. и 28°9′ в. д. — 32°35′ в. д. в Полесье (Овруч), Лесостепи (Ружин, Шаргород, Теплик) и Сухой Степи (Музыковка, Круглоозерка). Полевыми учетами, проведенными по методу Уиттекера, в составе спонтанной флоры тест-участков обнаружено 185 видов-антропофитов: Овруч — 147, Ружин — 156, Шаргород — 157, Теплик — 154, Музыковка — 110, Круглоозерка — 108 видов. Доля чужеродных видов возрастала в направлении с севера на юг от 34 % (Ружин, Шаргород) до 49% (Музыковка) и в значительной степени зависела от уровня деградации растительного покрова, вызванной его антропогенной трансформацией. Из 185-ти чужеродных видов 80, или 43 %, встречались на всех участках. По сходству—различию видового состава этой фракции тестовые участки по коэффициенту Жаккара четко распадаются на уровне $C_j = 0, 49$ на две плеяды: полесско-лесостепную с внутренним сходством $C_j = 0, 89 — C_j = 0, 74$ и сухостепную с внутренним сходством $C_j = 0, 90$. Увеличение степени адвентизации флоры с севера на юг подтверждается большей на 10 % долей археофитов в составе спонтанной флоры на южных тестовых участках. Сделан вывод о необходимости организации контроля видов-антропофитов для научных целей и оперативных мер не только на общегосударственном уровне, но также на уровне природных выделов и административных единиц.

К л ю ч е в ы е с л о в а: чужеродный вид растений, местообитание, поле, пастбище, сенокос, лесное насаждение, сельское поселение, Украина.