


Biodiversity centers of fauna in the urbanized landscape of Eastern Podillia: taxonomic richness and conservation prospects


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ABSTRACT

Statement of the problem and goal. Vinnytsia region now demonstrates one of the lowest indicators of provision of natural protected areas and objects (2.27% of the region's area). The regional figure for Vinnytsia is even lower, which is 1.65% of the city's area. The need of the day is to study the localities of rare species of biota, rare biotopes, and migration routes of animals in an urbanized environment as potential objects for the development of protected areas.

Materials and methods. Determination of the optimal methodology for identifying the taxonomic structure and ecological groups of the studied fauna based on the analysis of literary, cartographic, and stock materials. To assess the geocomponent representativeness of the fauna of the urban environment, expedition research methods were used. Systematization of terrestrial and terrestrial-aquatic taxonomic groups of fauna was carried out using empirical methods. Identification of characteristic traces and remains is used to record animals through visual observation. Audio Moth v.1.2.0 recording devices and an Echo Meter Touch 2 active bat detector were used to record owls (Strigiformes, Aves) and bats (Chiroptera, Mammalia). With the help of control catches, as well as through analysis of the catches of amateur fishermen, the species composition of fish was established.

Results and discussion. Under conditions of significant technogenic transformation of the biotopes of the tract and nearby aquatic landscapes, a relatively rich zoocenosis has formed. This zoocenosis unites synanthropic and local species of birds, reptiles, mammals, amphibians and fish. This is facilitated by the combination of a wide range of facies that provide the trophic and topical needs of animals. The territory of the tract, thanks to the rich species composition of animals and stable interspecies connections, can effectively serve as a center for the conservation of biodiversity and an educational, ecological and aesthetic mission in an urban landscape.

Scientific novelty. A specific faunal complex of the park, the mouth of the town of Tyazhilivka and the adjacent part of the Sabarovskoe reservoir has been identified. It includes 104 species of animals of the genus Chordata: class Mammals (Mammalia) - 14 species, class Birds (Aves) - 66 species, class Reptiles (Reptilia) - 4 species, class Amphibians (Amphibia) - 4 species, class Orthoptera (Actinopterygii) - 16 species. Research materials are the basis for the creation of a nature conservation area and the expansion and optimization of the existing natural reserve network of the urban environment.

Keywords: *protected area, reserve, urban core area, fauna, nature protection, Vinnytsia.*

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Introduction. Similar to the world trends [14], in Ukraine there is a constant increase in the share of the urban population. This is accompanied by an increase in the area of cities, the density of buildings, and a change in its style, often with a radical transformation of the landscape. Such processes directly affect species richness and quantitative parameters of zoocenoses of the territory [8, 16]. Species lose not only those stations with the necessary characteristics for them but also the required diet. The level of animal disturbance by humans is increasing [3]. Therefore, it is extremely important to develop programs for the preservation of flora and fauna in urban areas [2, 13]. The optimization of the ratio of natural and anthropogenic landscapes is one of the important ways to reconcile population settlement, industrial and economic activity in settlements with environmental requirements and restrictions. This is ensured by the formation of an ecological network and the creation of environmental protection facilities.

The territory of our study is a part of Vinnytsia, located on the banks of the Southern Bug River (or, more precisely, the Sabarivske Reservoir) in the Middle Pobuzhzhia, one of the most cultivated regions of the forest-steppe zone of Ukraine. Today, the Vinnytsia region has one of the lowest levels of nature-reserved areas and objects. As of 01.01.2024, there are 433 objects of the nature reserve fund in the region (43 objects of national importance, including 1 national nature park and 389 objects of local importance, including 4 regional landscape parks) with a total area of 60,197.3 hectares, which is 2.27% of the region's area. Until 2016, the number of objects and territories of the nature reserve fund in Vinnytsia amounted to 13 units. The protected area was 177.9 hectares, which was 2.59% of the total area of the city. Following the increase in the area of Vinnytsia to 113.2 km² (as of January 1, 2016), the number of nature protection objects and territories has also increased. This was due to their presence in the attached areas—9 objects with an area of 8.91 hectares. However, this did not significantly affect the change in the city's overall low environmental protection rate. Conversely. Today, it remains even lower than the regional average and amounts to 1.65% of the city's area. Therefore, it is extremely important to study the localities of rare species of biota, rare biotopes, and animal migration routes in the urban environment as potential sites for the development of nature conservation areas. The need for this step is reinforced by the vision of their use in the future as components of the ecological framework of the local and regional eco-network, conservation and protection of landscape and biotic diversity, stabilization of ecosystems, and ensuring the eco-evolution of the nature of the urban area.

The purpose of our research is to study the biodiversity centers of the urbanized landscape of Eastern Podillia (on the example of Vinnytsia) as a promising nature conservation area and one of the main structural elements of the local ecological network of Vinnytsia.

Achieving this goal involves solving the following tasks: 1) establishment of the geo-ecological features of the "«Brigantina»" tract as a basis for determining the taxonomic structure and ecological groups of the studied fauna; 2) determination of the role of natural and anthropogenic factors in the distribution of birds, as the taxonomically richest class in the zoocenosis of chordate animals, in both natural and anthropogenic biotopes of Eastern Podillia; 3) identification of rare and endangered species of wetland fauna, that included in various ecological conventions and protection lists.

Materials and methods. It is known that people's attitudes towards nature and its protection are formed in the urban environment [9, 14]. The opportunity to observe animals in the urban landscape, to act for their preservation and to see a positive result are important steps for ecological education of the population. Therefore, the necessity to preserve biodiversity in urbanized areas is generally recognized [17, 21].

Currently, there are many programs involving the partnership of zoologists with sociologists, landscape architects, urban planners, and economists [22]. They are aimed at creating comfortable conditions for the coexistence of humans and animals in the urban landscape. Thus, it is expedient to restore degraded green areas, and to design areas with new phytocenoses [7, 21]. To preserve biodiversity, undeveloped areas of the urban environment are turned into rain gardens, urban farms, etc. The components should be present that compensate for the loss of nesting microstations during the planning of modern cities [22].

In the central areas of European cities, individual researchers counted up to 26 species of birds, the status of which is close to threatened. This shows that even heavily urbanized areas are important and suitable for biodiversity conservation [14, 18].

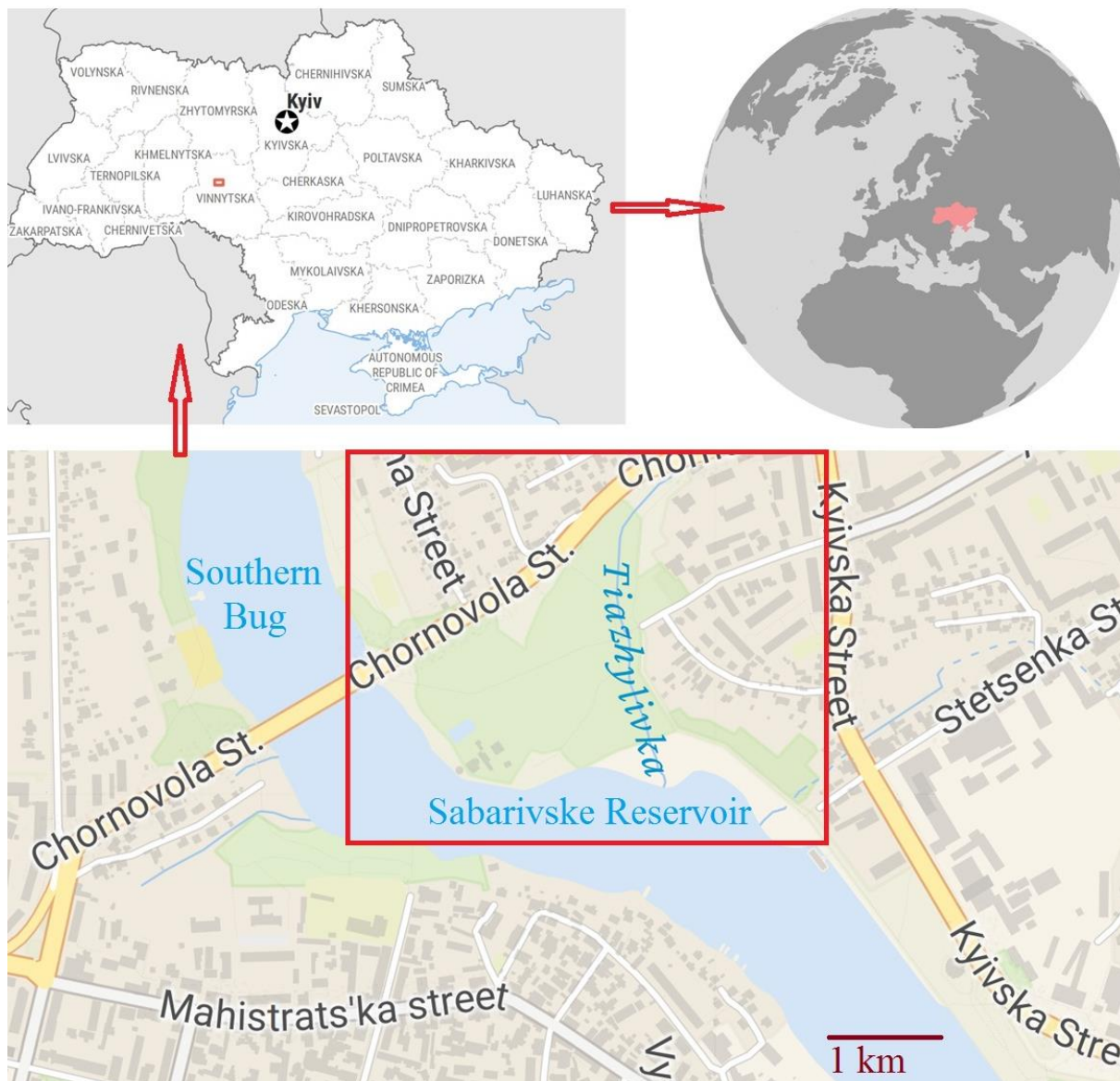
Noticeable anthropogenic pressure can also be traced in the urbanized landscapes of Eastern Podillia. The largest settlement in the region is the city of Vinnytsia with a population of over 370,000 people [1] and an area of 113.2 km². There is no doubt about the need to preserve the natural zoocenoses of this territory. One of the ways to realize this goal is the creation of protected areas, which has already proven its effectiveness in Podillia [3, 6, 10-12, 19, 20]. For this purpose, we carried out a cycle of monitoring works aimed at determining the species composition and number of animals in one of the

city tracts, promising the creation of a nature protection area. A wide range of methods was used, in particular: field (expeditionary research methods were used to assess the geocomponent representativeness of the fauna of the urban environment); empirical (systematization of terrestrial and terrestrial-aquatic taxonomic groups of fauna); cameral (analysis of literary, cartographic, and fund materials to select the optimal methodology for identifying the taxo-

nomie structure and ecological groups of the studied fauna).

Experimental procedures. The taxonomic structure and abundance of representatives of the phylum Chordata were studied in the «Brigantina» tract (Fig. 1) and on the adjacent part of the left bank of the «Sabarivske Reservoir» at the mouth of the Tyazhylivka River.

Animals were recorded by visual observation,



Legend: - "Brigantina" tract

Fig. 1. Location of the «Brigantina» tract in the urban landscape of Vinnytsia (by OCHA program Ukraine [23])

by finding characteristic traces and remains. Audio Moth v.1.2.0 recording devices and active bat detector Echo Meter Touch 2 were utilized to record owls (Strigiformes, Aves) and bats (Chiroptera, Mammalia). The species composition of fish was studied by means of control catches, and also due to the analysis of the catches of amateur fishermen.

Accounting was carried out during all seasons

of the year (2021-2023).

The study focused on the animals that inhabiting the park, the mouth of the Tyazhylivka River and part of the Sabarivske Reservoir.

Results. The complex of nature and anthropogenic factors (microrelief, type of water body, manifestations of anthropogenic pressure, and nature of the vegetation) determines the taxonomic structure

and ecological groups of the studied fauna. As a result, the zoocenoses in the tract are mainly composed by chordates that live both in and near the water). Birds and some small mammals that build their nests in tree crowns and hollows have a wide range of convenient microhabitats within the tract. The mosaic of biotopes that characterizes Brigantine Park also attracts a number of representatives of all classes of terrestrial chordates, mostly synanthropic, who nest in the surrounding areas.

For obvious reasons, animals associated with aquatic ecosystems predominate in the studied fauna: mammals, birds, reptiles, amphibians, ray-finned fish.

The existence of the shrub and tree areas of different species and ages in the floral structure of the tract conditions the presence of a number of dendrophilous, especially hollow nesting and tree nesting birds, some tree mammals.

The tract is located in the central part of the city, thus its fauna is formed mostly by synanthropic animals. Due to the peculiarities of the landscape of the surrounding areas, sclerophilic and campophilic

species form the basis of zoocenosis. From a taxonomic point of view, the zoocenosis of chordate animals is dominated by birds (Fig. 2). This class of animals is taxonomically the richest in both natural and anthropogenic biotopes of Eastern Podillia [4, 5].

In total, the presence of 104 species of vertebrates was observed during the year.

Class Actinopterygians (16 species): Monkey Goby *N. fluviatilis*, Round Goby *N. melanostomus*, Common Rudd *S. erythrophthalmus*, Common Roach *R. rutilus*, Sunbleak *L. delineatus*, Common Bleak *A. alburnus*, Common Bream *A. brama*, Silver Bream *B. bjoerkna*, Stone Moroko *P. parva*, Prussian Carp *C. gibelio*, Eurasian Carp *C. carpio*, Ruffe *G. cernuus*, European Perch *P. fluviatilis*, Zander *S. lucioperca*, Northern Pike *E. lucius*, Wels Catfish *S. glanis*.

Class Amphibians (4 species): Marsh Frog *P. ridibundus*, Pool Frog *P. lessonae*, Eastern Tree Frog *H. orientalis*, Smooth Newt *L. vulgaris*.

Class Reptiles (4 species): Dice Snake *N. tessellata*, Sand Lizard *L. agilis*, European Pond Turtle *E. orbicularis*, Grass Snake *N. natrix*.

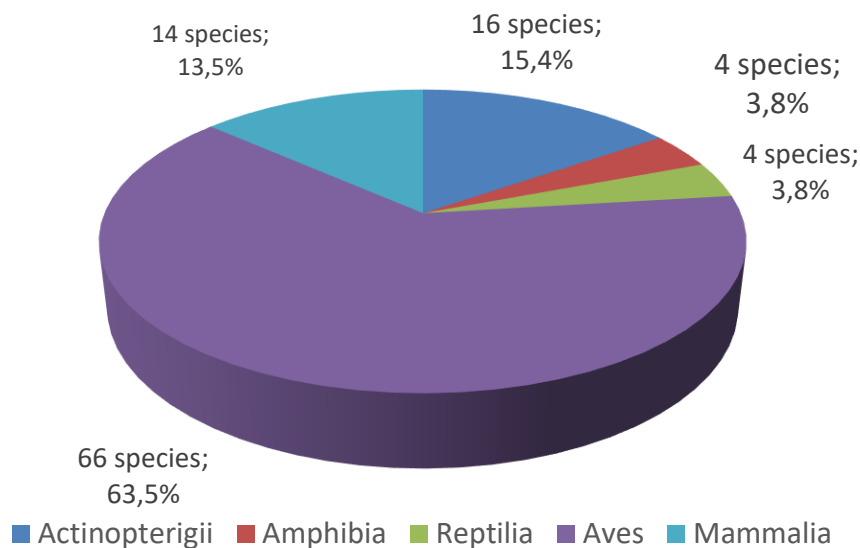


Fig. 2. The ratio of taxonomic groups of Chordata of the tract "Brigantyna"

Class Birds (66 species): Great Crested Grebe *P. cristatus*, Little Grebe *P. ruficollis*, Grey Heron *A. cinerea*, Great Egret *E. alba*, Little Bittern *I. minutus*, Eurasian Bittern *B. stellaris*, Mallard *A. platyrhynchos*, Common Kestrel *F. tinnunculus*, Eurasian Sparrowhawk *A. nisus*, Little Crane *P. parva*, Water Rail *R. aquaticus*, Eurasian Coot *F. atra*, Common Moorhen *G. chloropus*, Common Tern *S. hirundo*, Black Tern *Ch. niger*, Caspian Gull *L. cachinnans*, Black-headed Gull *L. ridibundus*, Domestic Pigeon *C. livia f. domestica*, Wood Pigeon *C. palumbus*, Eurasian Collared Dove *S. decaocto*, Common Swift *A. apus*, Common Cuckoo *C. canorus*, Common Kingfisher *A. atthis*, Lesser

Spotted Woodpecker *D. minor*, Great Spotted Woodpecker *D. major*, Grey-headed Woodpecker *P. canus*, Western House Martin *D. urbicum*, Eurasian Golden Oriole *O. oriolus*, White Wagtail *M. alba*, Common Starling *S. vulgaris*, Yellowhammer *E. citrinella*, European Goldfinch *C. carduelis*, European Serin *S. serinus*, Eurasian Chaffinch *F. coelebs*, Eurasian Siskin *S. spinus*, Eurasian Bullfinch *P. pyrrhula*, European Greenfinch *Ch. chloris*, Common Magpie *P. pica*, Eurasian Jay *G. glandarius*, Hooded Crow *C. cornix*, Rook *C. frugilegus*, Eurasian Wren *T. troglodytes*, Common Chiffchaff *Ph. collybita*, Eurasian Blackcap *S. atricapilla*, Lesser Whitethroat *S. curruca*, Com-

mon Whitethroat *S. communis*, Great Reed Warbler *A. arundinaceus*, Marsh Warbler *A. palustris*, Sedge Warbler *A. schoenobaenus*, River Warbler *L. fluviatilis*, Savi's Warbler *L. luscinoides*, Spotted Flycatcher *M. striata*, Black Redstart *Ph. ochruros*, Common Redstart *Ph. phoenicurus*, Goldcrest *R. regulus*, Fieldfare *T. pilaris*, Song Thrush *T. philomelos*, Common Blackbird *T. merula*, Thrush Nightingale *L. luscinia*, European Robin *E. rubecula*, Eurasian Tree Sparrow *P. montanus*, House Sparrow *P. domesticus*, Eurasian Nuthatch *S. europaea*, Great Tit *P. major*, Marsh Tit *P. palustris*, Eurasian Blue Tit *C. caeruleus*.

Class Mammal (14 species): Least Weasel *M. nivalis*, Nathusius' Pipistrelle *P. nathusii*, Kuhl's Pipistrelle *P. kuhlii*, Common Noctule *N. noctula*, Leisler's Bat *N. leisleri*, Serotine Bat *E. serotinus*, Red Squirrel *S. vulgaris*, Bank Vole *C. glareolus*, Brown Rat *R. norvegicus*, Wood Mouse *A. sylvaticus*, Yellow-necked Mouse *A. flavicollis*, House Mouse *M. musculus*, Muskrat *O. zibethicus*, Northern White-breasted Hedgehog *E. roumanicus*.

Results and discussion. There are only 16 species of obligate hydrophiles from the order Cypriniformes, Perciformes, Siluriformes, and Esociformes that belong to the class Actinopterygii on the investigated area of the reservoir.

Large shallow water areas in the mouth of the Tyazhylivka River and the adjacent reservoir area with thickets of *N. lutea* (L.) Smith (1809) and *N. alba* L., 1753 provide favorable temperature conditions for spawning of most fish species. Tyazhylivka's waters bring in a lot of organic substances, which, combined with rich aquatic vegetation, contribute to the active development of invertebrates, the traditional food for almost all fish species.

Invertebrates and plant food in the upper layers of water are consumed by Sunbleak, Common Bleak, Common Rudd and Stone Moroko. All of these species are common in the ichthyofauna of the region and are capable of forming numerous aggregations.

Also common in the waters of the reservoir are the inhabitants of deeper water depths and water thicknesses: Prussian Carp, Common Roach, Common Bream, European Perch, Eurasian Carp, Silver Bream, Zander, Northern Pike show a lower number.

Round Goby, Monkey Goby, Ruffe and Wels Catfish lead a benthic lifestyle. Wels Catfish appears irregularly in the researched water reservoir.

Among the detected species, Sunbleak and Wels Catfish are protected by Appx 2 of the Berne Convention (1979). Another 14 fish species, except Prussian Carp and Eurasian Carp, are included in The IUCN Red List of Threatened Species with LC (Least Concern) status.

Much less species diversity was found for am-

phibians. This class in the zoocenosis of the tract is represented by 4 species of the order Caudata and Anura (Fig. 2).

Tailless amphibians, in particular Marsh Frog and Pool Frog, occupy water landscapes throughout the year.

Another species of this order, namely the Eastern Tree Frog, was also found in the coastal thickets of cattails and sedges, as well as in the crowns of coastal trees and shrubs during all seasons of the year.

Single individuals of Smooth Newt were localized in the slow-flowing areas of the Tyazhylivka River and at its confluence with the reservoir. Animals were observed only during the spawning season. Probably they spend the winter in the same location.

Like other animals of the tract, amphibians are protected by international documents, in particular, the Berne Convention (1979). Eastern Tree Frog is included in its Appx 2, and the rest of the species are included in Appx 3.

In the reptile fauna within the studied tract, the presence of 4 species representing the orders Testudines and Squamata was also detected

The rich food base of shallow water areas of the reservoir, formed by small hydrophilic chordates (fish and amphibians), creates favorable conditions for the existence of Dice Snake and European Pond Turtle

Grass Snakes can be found in coastal areas, they hunt both aquatic vertebrates and land animals.

The concrete slabs that line the left bank of the Tyazhylivka River are overgrown with herbaceous and shrubby vegetation, which attracts a large number of arthropods. Such stations are convenient for hunting Sand Lizards, which are few in number. These animals use the cracks between the slabs as shelters.

International nature protection documents defend the aforementioned species of reptiles within the analyzed object. Among them, Grass Snake is included in Appx 3, the rest of the species - in Appx 2 of the Berne Convention, 1979). Moreover, 3 species of reptiles are in The IUCN Red List with the status of «Least Concern», and European Pond Turtle has the status of «Near Threatened».

The largest number of animal species among all taxonomic groups is represented by the class Aves (66 species). Taxonomically, they belong to the orders: Podicipediformes, Ciconiiformes, Anseriformes, Falconiformes, Gruiformes, Charadriiformes, Columbiformes, Cuculiformes, Apodiformes, Coraciiformes, Piciformes, Passeriformes (Fig. 2).

The low number of nesting birds is compensated by their species diversity. Thus, 42 species, or almost 63.6% of the entire avifauna of the tract, nest

directly on the park territory and water objects. More than half of these birds, namely breeding and migratory (31 species), make regular seasonal flights to their wintering grounds. Another 11 species are sedentary birds. They stay within the biotope or carry out migration over short distances at the end of the nesting period. (Fig. 3).

During the nesting period, another 21 species of

birds regularly visit the studied territory. Among these, 14 species are categorized as breeding in neighboring habitats, and other 7 species are sorted as sedentary in neighboring habitats (Fig. 3). The goal of such invasions is trophic migration.

Ultimately, the avifauna of the tract is replenished with 3 species of wintering birds in winter. (Fig. 3).

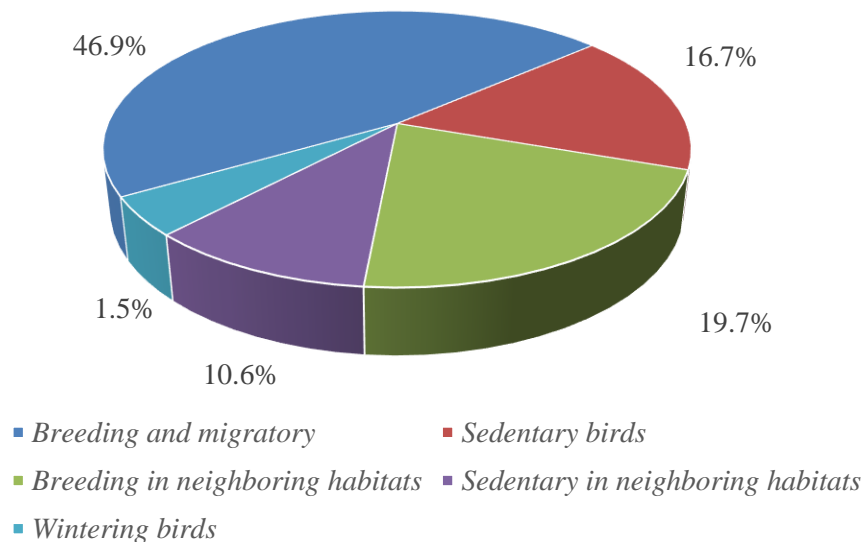


Fig. 3. Birds of the area by the nature of the stay

Nesting ornithocenoses are formed due to the action of a number of interrelated factors: peculiarities of the microrelief, the nature of the vegetation cover, the presence of trees with hollows, the presence of predatory animals, and the intensity of human visits. Therefore, during the organization of any works within each station of the tract, it is necessary to take into account the interests of one or a group of bird species that inhabit it.

Placing nests in trees allows birds to protect them from most land-based predatory mammals, as well as from human destruction. With this localization of the nest, the level of disturbance of the bird that incubates the clutch is also significantly reduced. That is why 25 species of birds use trees and bushes for nesting. Of these, 16 species nest in crowns, and 9 species nest in natural hollows or artificial nests (Fig. 4).

10 species (Fig. 4) are noted to nest on the ground. In an area with this level of anthropogenic pressure, this seems impossible. However, all these species successfully use the natural features of the tract to camouflage their nests. For example, Little Bittern, Eurasian Bittern, Little Crake, Water Rail, Eurasian Coot, Common Moorhen make their nests in the folds of coastal aquatic vegetation, which is partially submerged. It greatly limits access to them by predatory animals and humans. Mallard also nests near the edge of the water, but on dry mounds

of sedges. For camouflaging their nests, Thrush Nightingale and White Wagtail use the unevenness of the microrelief of the coastline of the Tyazhilivka River and coastal grassy vegetation.

Small aquatic birds that hang their nests between reed stems or other aquatic higher plants: River Warbler, Savi's Warbler, Great Reed Warbler, Marsh Warbler and Sedge Warbler (Fig. 4). are also associated with coastal vegetation. Such nests are usually built over water, which protects them from access by humans or predatory mammals. Thin reed stalks, on which the nest is suspended, do not allow birds of prey to get a foothold. This nesting strategy is quite successful.

Common Kingfisher uses burrows in the elevated walls of the coastline for nesting and Common Cuckoo is a nest parasite (Fig. 4).

Of the 66 species of birds living in the Brigantine tract, 16 species are protected by Appx 3, and 43 species are included in Appx 2 of the Berne Convention (1979).

Appendices 1 and 2 of the Convention CMS (1979) include 1 and 10 species of birds, respectively.

The lists of the AEW (1999) mention 6 representatives of the tract avifauna: Eurasian Bittern, Little Bittern, Great Egret, Mallard, Black Tern, Common Tern.

Finally, 65 species of birds recorded during the surveys are protected by The IUCN Red List with

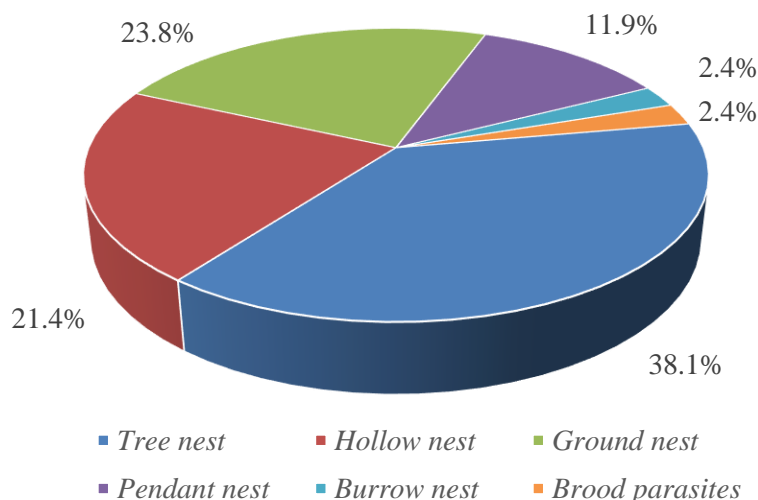


Fig. 4. The nesting places of birds of the area

LC status (Least Concern).

At different periods of the year, 14 mammal species were found, which are associated with the Tyazhylivka River mouth, Sabarivske Reservoir, and the «Brigantina» tract. The class includes: Rodentia, Soriciformes, Rodentia, Soriciformes, Vespertilioniformes, Caniformes (Fig. 2).

The structure of the terriofauna, as well as other researched species, depends on the landscape character that form the territory. These include, in particular, wetlands, thickets of trees and shrubs, and elements of the anthropogenic landscape.

As everywhere in Podillya [4], Muskrat chooses the water area without a pronounced current and with shallow banks. Even in conditions of a high level of anthropogenic pressure, which is characteristic of the reservoir banks, 1-2 families of rodents can be found here.

The presence of old trees with dense crowns and hollows within the tract, and fruit and berry trees in the adjacent territories, allow 2-3 Red Squirrels to live. Animals are active during all seasons of the year.

The largest is the rodent fauna: Yellow-necked Mouse, Wood Mouse, Bank Vole, synanthropic House Mouse and Brown Rat. The shelters of these species are represented by burrows dug on the raised banks and in the cavities under the concrete slabs that form the reservoir's water protection dam.

Microbats fauna is represented by 5 species. Due to their nocturnal lifestyle, their numbers have not been sufficiently studied. It is only known that representatives of all five species are closely related to the biotope. Thus, Leisler's Bat, Common Noctule and Nathusius' Pipistrelle use tree hollows within the tract as summer shelters. They fly away in winter. On the other hand, Kuhl's Pipistrelle and Serotine Bat are sedentary, in different seasons of the year they use various structures as shelters, and they

hunt over the territory of tracts.

Northern White-breasted Hedgehog and Least Weasel are quite small in number (2-3 individuals). The status of both species is not reliably determined. These animals can be either local or trophically invade from neighboring habitats.

All the mammal species we found during our research are included in different environmental conventions. All Microbats are included in Appx 2, and Red Squirrel, Northern White-breasted Hedgehog and Least Weasel are included in Appx 3 of the Berne Convention (1979). Like the other animals in the tract, all mammals are included in the protection lists of The IUCN Red List (Least Concern status). Finally, all 5 species of Microbats are included in the Red Book of Ukraine: Common Noctule, Kuhl's Pipistrelle and Serotine Bat have the status of vulnerable, Leisler's Bat – rare, Nathusius' Pipistrelle – unrated.

Conclusions. Despite the various manifestations of anthropogenic pressure and noticeable technogenic transformation of the tract's biotopes, a relatively rich zoocenosis has been formed, that it unites synanthropic and native species of birds, reptiles, mammals, amphibians and fish. This is achieved due to the combination of a wide range of facies that provide the trophic and topical needs of animals. Thanks to the rich species structure of animals and stable interspecies connections, the territory of the investigated tract will effectively serve as a center of biodiversity conservation in an urbanized landscape. It is also worth admitting the educational and aesthetic value of this tract.

Further research is necessary for the organization of monitoring the dynamics of the species composition and number of animals, and preparation of the necessary documentation for granting the tract protected status.

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Осередки біорізноманіття фауни урбанізованого ландшафту Східного Поділля: таксономічне багатство та перспективи збереження

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Стаття присвячена пізнанню осередків біорізноманіття урбанізованого ландшафту Східного Поділля (на прикладі м. Вінниці) як перспективної природоохоронної території та одного з основних структурних елементів локальної екомережі урбосередовища. Проведено цикл моніторингових робіт, спрямованих на визначення одного з найвразливіших компонентів ландшафту – фауни, зокрема видового складу та чисельності тварин у прибережному урочищі міста. Основну увагу приділено тваринам, що мешкають у парку, гирлі р. Тяжилівка та частині Сабарівського водосховища. Встановлено геоecологічні особливості урочища «Бригантина», як основи для визначення таксономічної структури та екологічних груп досліджуваної фауни. Оцінено геокомпонентну репрезентативність тваринного світу. Визначено роль природно-антропогенних факторів у поширенні птахів, як таксономічно найбагатшого класу в зооценозі хордових тварин, як у природних, так і в антропогенних біотопах Східного Поділля. Для досліджень тварин використовували звичайні та модифіковані методи. Обліки тварин типу Хордові проводили протягом усіх сезонів 2021–2023 років. Найбільшу групу хордових тварин складають птахи. Тому орнітофауна урочища вивчена найбільш ретельно. Також були враховані опубліковані дані попередніх наукових досліджень. Вони вивчили характер топічних зв'язків знайдених тварин і оцінили їх відносну чисельність в межах об'єкта. Також визначили охоронний статус усіх видів тварин згідно Червоної книги України та міжнародних охоронних конвенцій. Результати досліджень свідчать про те, що в урочищі «Бригантина» існує специфічний фауністичний комплекс, який включає 104 види тварин роду Хордові (Chordata): клас Ссавці (Mammalia) – 14 видів, клас Птахи (Aves) – 66 видів, клас плазуни (Reptilia) – 4 види, клас земноводні (Amphibia) – 4 види, клас прямокрилі (Actinopterygii) – 16 видів. Більшість із них охороняються національними та міжнародними конвенціями з охорони. Матеріали досліджень є підставою для створення природоохоронної території й розширення та оптимізації наявної природно-заповідної мережі урбосередовища. Необхідні подальші дослідження для організації моніторингу динаміки видового складу та чисельності тварин та підготовки необхідної документації з надання урочищу заповідного статусу.

Ключові слова: заповідна територія, заказник, міське ядро, фауна, охорона природи, Вінниця.

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