

PROTECTION OF DIVERSITY OF CITY AVIFAUNA FOR THE PROVISION OF KYIV URBAN ECOSYSTEM STABILITY

Horobtsov I., Radomska M.
National Aviation University, Kyiv

In the light of ever expanding urbanization and increasing world human population, more and more natural areas become irreversibly converted, leaving virtually no free and undisturbed space for wildlife. Meanwhile, each person in every city wants to live in favorable and healthy environment, with high quality of infrastructure and transport. The safety of the environment even at urban territory is defined by the condition of all its components – abiotic and biotic, including flora and fauna of the city.

In this regard, the city of Kyiv is often considered to be almost equilibrium of natural and man-made. The capital includes the solid and diverse vegetation cover, represented by thick circle of forests around the city, numerous parks and forest parks, as well as with the most comfortable ratio of wildlife, which is able to sustain all the vital ecosystem functions, while staying hidden and not interfering much into human lives. Still, the signs of decline are quite self-evident, taking into account the unregulated and unwise construction, growing transport sector and ultimately pushing natural component to periphery, creating "more urban" areas ("city" inside the city).

Consequently, even the environment, earlier considered to be favorable, is obviously out of the "normal" range and there is a need for more detailed study of the situation and development of management solutions for its improvement. However, as the scope of all life and nature in the city is too diverse, we have decided to concentrate on birds, as they are the most numerous functionally similar neighbors of humans in the city, as well as good indicators of change and overall wildlife situation due to their lifespan and size.

Although the study of urban birds has a fairly long history (knowledge of the patterns of urban bird populations and communities started emerging in the 1970s), urban ecosystems have been largely ignored throughout many decades of environmental research. Since the early 1990s, a different view has emerged, accepting urban settings as ecosystems that are structured and function like other natural ecosystems. In the light of continuous expansion of artificial domain and conversion of natural lands, urban environments can no longer be viewed as a lost habitat for wildlife, but rather as a new habitat that, which has the potential to support diverse communities (including avian ones) with proper management. During the last two decades urban ecosystems have therefore become a new environmental challenge section in conservation, restoration, and reconciliation ecology, especially since designing sustainable urban ecosystems that support species-rich communities also includes maintaining key ecosystem services, such as clean air and water, waste decomposition, pest control, etc.

By now, the relevant researches have been performed on multiple cities and in multiple countries all over the world, involving at least three continents (e.g. Vancouver and Quebec, Canada; Valdivia, Chile; Jerusalem and Tel Aviv, Israel; Pakistan, Poland, Slovakia and Czech Republic researches and other). In Ukraine this topic is also emerging and fresh, and popular among zoology and biology experts. Similar studies with various generalization and specification ratio have

been undertaken for Western part of the country (Uzhhorod, Lviv, Khmelnytskyi) mostly, with some exceptions for Kharkiv and Kyiv, although the last two researches are mainly concerned with semi-natural or completely wild areas around the cities under investigation.

Thorough literature review on the topic and the study of patterns of Kyiv avifauna showed numerous similarities and the overall alignment of the situation with other big cities of the world. Thus, most of the world urban ecosystems are characterized with the globalization and alignment of sets of species present in cities around the world. As urban settlements generally have similar structures and manifest similar features, the wildlife presence also becomes similar. In general, those are the species, that are more adapted and tolerable to changes imposed by cities upon their natural habitats, the synanthropic species that live in close interrelations or even direct dependence on human activity and mode of city lifecycle, and also the invasive alien species, which are not likely to inhabit areas around cities in certain parts of the world, yet they were introduced to cities everywhere and now are becoming more and more inseparable from those systems.

Overall trends show, that urban wildlife is usually represented by the minority of species that would normally inhabit the area. Certain studies performed on urban avifauna also proved the tendency of city birds having bigger brain size, perhaps allowing them to be more adaptable to the changeable urban environment.

Yet, despite the general trends, different types of urban areas still support different kinds of wildlife. That is partially due to climatic and natural habitat ranges differences, distinction of development and urbanization levels, well-being and other socio-economic variables, level of people consciousness and awareness as well as political vectors.

Consideration of two most basic population characteristics of avifauna – abundance and diversity in Kyiv, – reveals quite promising overall numbers, yet more detailed look unveils trickier points: 114 species of 17 orders are registered, of which 86 species of 15 orders are documented to nest, however over a half (50.3%) of all birds are represented by only four species: house sparrow, common swift, rock dove and great tit.

The spatial distribution shows strong unevenness, which inversely depends on the share of built-up area: most of the city center is occupied by a small number of synanthropic species (including 4 above-mentioned) and their nesting densities are extremely high, with few exceptions mostly at relatively big preserved natural isles, such as Botanical gardens, big parks or forest parks and some lakes. At the same time, the rest of species is pushed out to the large forests around the capital and are represented by significantly smaller numbers of pairs. The processing of historical data showed the gradual decline in the numbers of rare, endangered and protected species: 10 species were listed in the Red Book and present in Kyiv in 1980s, and the number was reduced to 6 species in the last decade.

Naturally, most of those features are inherent signs of degrading ecosystem. And also logically, the question arises about reasons that cause this struggle. Among the most serious threats to avifauna in the city of Kyiv the following should be mentioned: reduction, fragmentation of habitats and

insufficiency of living space, excessive artificial structures worsened by huge number of disorienting reflective surfaces, increased competition and predation pressures due to introduction of alien and exotic species, morphological and genetic changes that reduces reproduction potential, environmental situation, poor quality of nutrition, traffic and transport collisions etc. Such a wide variety of risk factors proves the need for development and rapid implementation of solutions for the situation improvement.

To further study the level of Kyiv city comfort for birds and develop a suitable list of improvement recommendations, we also outlined and assessed the most adjusted for bird life objects and areas of the capital. The assessment was performed by the rating object according to a range of generalizing indicators, grouped into: general spatial, site vegetation, water and foraging situations, environmental quality, human and predation pressure and bird-supporting elements and factors. As a result we received two important new conclusions: (1) with the presence of relevant, big and clean water bodies many species are willing to tolerate spatial and human pressure and (2) efforts aimed at support and preservation of populations play a decisive role, and with proper human management even more transformed areas can become populated hot spots. We also defined the most favourable objects in relation to birds, which are: Darnytskyi, Sviatoshynskyi forests, Pushcha-Vodytsia, Koncha-Zaspa, Holosiivskyi NNP, Trukhaniv isle, Almazne Lake and Lisove cemetery, Sviatoshynsky ponds, Fomina and Hryshko Botanical Gardens, Bold Mountain and Pyrohiv and Feofania natural complexes. Universal advices, applicable to all objects are: the application of bird supporting structures, such as feeders or artificial nests, administration establishment, informational work at the sites, fencing, guarding, legal prosecution implementation etc.



ДО ПИТАННЯ ВИКОРИСТАННЯ СТАНДАРТНИХ ФОРМ ДАНИХ ЩОДО ОБ'ЄКТІВ СМАРАГДОВОЇ МЕРЕЖІ В УКРАЇНІ

Макарчук С.О., Карамушка В.І.

Національний Університет «Києво-Могилянська Академія», Київ, Україна

В роботі обговорюється використання стандартних форм даних територій особливого природоохоронного інтересу, що входять до Смарагдової мережі. Наводиться перелік обов'язкових параметрів, за яким здійснюється характеристика оселищного та видового різноманіття. Обговорюються переваги та недоліки застосування таких форм

Питання якості та доступності даних щодо об'єктів охорони природно-заповідного фонду є актуальним для України, зокрема, в контексті глобалізації природоохоронної діяльності. Втіленням таких підходів в європейському масштабі є мережа Natura 2000 для країн-членів ЄС та Смарагдова мережа для країн, підписантів Бернської конвенції, серед яких є Україна. Такий статус передбачає зобов'язання щодо дотримання умов та досягнення цілей, визначених Конвенцією на національному рівні. Умови щодо створення Смарагдової мережі також передбачені Угодою про