

ASSOCIATION OF CITIZENS "ZELENO PLAVI KORIDORI" /GREEN-BLUE CORRIDORS/

MANAGEMENT PLAN FOR THE PROTECTED HABITAT "WINTER ROOST OF THE PYGMY CORMORANT (MICROCARBO PYGMEUS)" FOR THE PERIOD 2023–2033



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INTRODUCTION

The winter roost of the Pygmy Cormorant on the Sava River in Belgrade has been designated a protected area as the protected habitat “Winter Roost of the Pygmy Cormorant” and classified in Category III as a protected area of local importance.

The habitat “Winter Roost of the Pygmy Cormorant” was proclaimed a protected area as the only winter roost of the Pygmy Cormorant in Belgrade, with the aim of preserving the natural conditions and suitability of the site inhabited by a numerous population of Pygmy Cormorants. This fact places the habitat among the priorities for the protection of natural values in Europe, as well as ensuring a permanent prohibition of disturbance and endangerment of the Pygmy Cormorant as a rare and endangered bird species.

The Pygmy Cormorant *Microcarbo pygmaeus* (Pallas, 1773) is a strictly protected wild species in Serbia, pursuant to the Rulebook on Declaration and Protection of Strictly Protected and Protected Wild Species of Plants, Animals, and Fungi (“Official Journal of the Republic of Serbia” Nos. 5/2010, 47/2011, 32/2016, and 98/2016). This status excludes any form of use of this species and entails a permanent prohibition of its killing and disturbance. In relation to the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention), the Pygmy Cormorant is also a strictly protected wild species and is listed in Annex II of this Convention. The Pygmy Cormorant is included in Annex I of the Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council on the Conservation of Wild Birds). Every European country in which populations of the Pygmy Cormorant are present is obliged to designate protected areas for the conservation of this species, i.e., areas within the Natura 2000 ecological network. Sites I and III, which are under protection, are located within the scope of the proposed Special Protection Area (pSPA) entitled “Confluence of the Sava and the Danube,” and the proposed Site of Community Importance (pSCI) entitled “Confluence of the Sava and the Danube and Pančevački Rit,” both part of the NATURA 2000 ecological network, in accordance with European Union regulations – the Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council on the Conservation of Wild Birds) and the Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna And Flora). The same sites are situated within the Ecologically Important Area “Confluence of the Sava and the Danube” of the ecological network of the Republic of Serbia, as well as within the internationally significant Important Bird Area (IBA) “Confluence of the Sava and the Danube.” Site II is situated outside the aforementioned areas. The number of Pygmy Cormorants using the willow stands along the banks of the Sava River for wintering has reached up to 10% of the total European population of this species, while according to the most recent data, the share is around 5%. The winter roost of the Pygmy Cormorant in Belgrade is under considerable threat, given that it is located in the very center of the city. The most significant threat to the preservation of the wintering population of the Pygmy Cormorant in Belgrade is the potential destruction of the remaining riparian willow stands, which are crucial for the survival of this species. Considering that this is a species with a limited distribution, whose wintering population has declined by almost 50% since the beginning of the monitoring of the Pygmy Cormorant at the winter roost, it is evident that this is an exceptionally important habitat for the conservation of the species. The evaluation has concluded that the protected area supports between 5% and 10% of the European population of the Pygmy Cormorant and that it is of great importance for the preservation of the wintering population of the species in Belgrade and Serbia.

I OVERVIEW OF THE MAIN NATURAL AND CREATED (MAN-MADE) VALUES OF THE PROTECTED HABITAT “WINTER ROOST OF THE PYGMY CORMORANT (MICROCARBO PYGMEUS)”

1. LOCATION

The protected habitat is located on the banks of the Sava River in Belgrade, near the heating plant and the shipyard in Novi Beograd /New Belgrade/. The area consists of three physically separate units (sites).

Site I

The site is located within the cadastral municipality of New Belgrade, on parts of cadastral plots Nos. 6801, 6628/2, and 5410/2.

Site II

The site is located within the cadastral municipality of New Belgrade, on parts of cadastral plots Nos. 6628/2 and 5396.

Site III

The site is located within the cadastral municipality of New Belgrade, on parts of cadastral plots Nos. 6628/2, 5422, and 6873. All three sites are divided into protection levels II and III.

The altitude of the protected habitat is 85 m. The total area of the protected habitat amounts to 22 ha 54 a 10 m².

Sites	Area			%
	ha	a	m²	
Site I	12	38	69	54.95
Site II	2	29	18	10.17
Site III	7	86	23	34.88
Total	22	54	10	100

CARTOGRAPHIC (MAP) APPENDIX OF THE AREA BOUNDARIES WITH PROTECTION REGIMES

THE PROTECTED HABITAT “WINTER ROOST OF THE PYGMY CORMORANT (MICROCARBO PYGMEUS)”

1 : 20 000

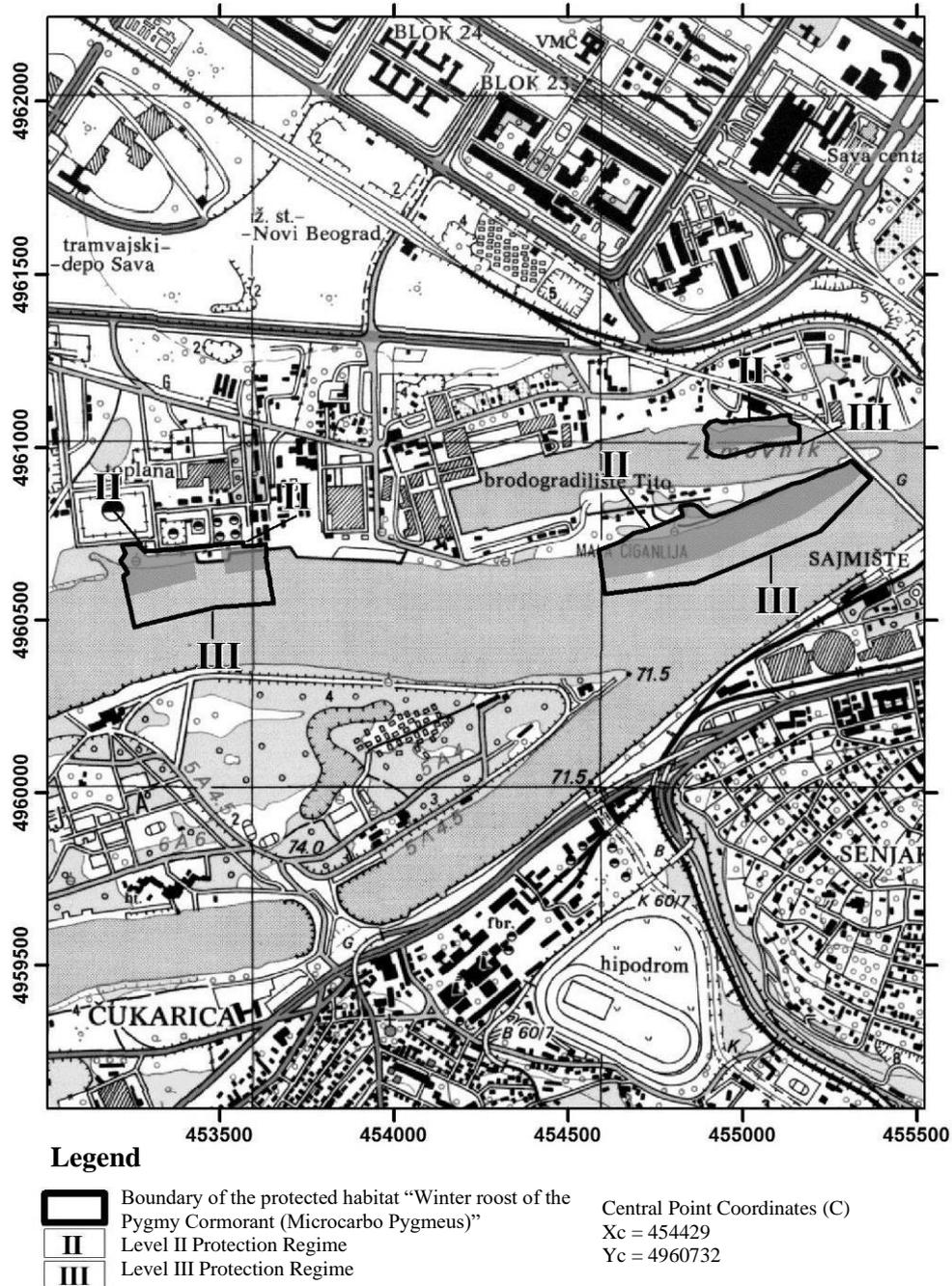


Figure 1. Taken from the Study “Winter Roost of the Pygmy Cormorant” prepared by the Institute for Nature Conservation of Serbia

2. SPECIES ABUNDANCE

In the mid-1990s, the wintering of the Pygmy Cormorant in Belgrade was recorded for the first time. Regular monitoring in recent years has shown that, within a relatively narrow stretch of the Sava River in Belgrade, this wetland bird species winters in large numbers. The number of birds using the willow stands along the Sava River banks for wintering reaches up to 10% of the total European population of this species. Given that this is a species with a limited distribution, it is clear that this area represents an exceptionally important site for the conservation of the species. The Pygmy Cormorant is a strictly protected wild species at both the national and international levels and is listed among the priority species for protection in Europe. According to European Union legislation, the Pygmy Cormorant is included in Annex I of the Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council on the Conservation of Wild Birds), and therefore, the habitats of this species constitute potential Natura 2000 sites. The most significant value of the habitat itself lies in the willow stands along the riverbanks of the Sava, which have been preserved in fragments due to the expansion of the city, urban facilities, and the regulation of the Sava River banks, or have developed secondarily in small areas where no major infrastructural interventions have yet occurred.

3. EXISTING PROTECTION ACT

The area has no existing protection act.

4. HISTORY OF AREA PROTECTION

Based on preliminary research and the identification of the most significant locations providing suitable habitat in terms of the species' ecological requirements, areas of importance were delineated and the Decision on Preliminary Protection of the "Habitat of the Pygmy Cormorant (*Phalacrocorax pygmaeus*) on the Sava River in Belgrade", No. 02-3059/1, dated 18 November 2008 ("Official Journal of the Republic of Serbia," No. 112/2008) was adopted. The decision was valid for one year from its adoption. The area under preliminary protection was defined by the following boundaries:

1. The Site "Willow Stand near the Fair" was located within cadastral plot No. 22610, C.M. Savski venac. It encompassed a white willow forest on the right bank of the Sava River, next to the cargo parking area of the Belgrade Fair. The area was positioned on the riverside and bounded by a concrete embankment, while in the water, it included a strip 50 m wide from the last existing white willow trees.
2. The Site "Lower Tip of Ada" was located within cadastral plot No. 13864/2, C.M. Čukarica. It encompassed a riparian forest belt of white willow and poplar from the upstream end of Ada, i.e., from the fence of the construction site of the bridge across the Sava River, and extended upstream to the first radial well. Toward the interior of Ada, the boundary followed the embankment, while toward the riverbed, the boundary followed a line 50 m away from the last riparian trees.
3. The Site "Mala Cigania" was located within cadastral plot No. 5412, C.M. New Belgrade. It encompassed a riparian belt of white willow trees on the southern bank of Mala Cigania. It was bounded by an earthen road, while in the water, it included a strip 50 m wide from the last riparian white willow trees.

5. NATURAL CHARACTERISTICS

The Pygmy Cormorant belongs to the family of cormorants (*Phalacrocoracidae*), which comprises about 40 species in total. Cormorants are birds associated with aquatic habitats and are widely distributed across all continents. They inhabit both marine and inland biotopes. Their diet consists mainly of fish, and they are highly adapted to diving and swimming. In Serbia, two species of cormorants live: the Great Cormorant *Phalacrocorax carbo* (L.) and the Pygmy Cormorant *Microcarbo pygmaeus*. The Great Cormorant is a bird measuring 70–120 cm, with black plumage. The Pygmy Cormorant is a medium-sized bird (50 cm),

predominantly black in color with brownish tones on the neck and head. Cormorants are colonial birds, nesting in groups ranging from several dozen to several hundred pairs. Colonies are mostly found in marshland areas, on low willows, and in reed beds. They are usually mixed colonies, where, alongside cormorants, different species of herons also nest. The Pygmy Cormorant is not a pronounced migratory bird, so it remains in Serbia during the winter, forming flocks and staying along major rivers and water bodies.

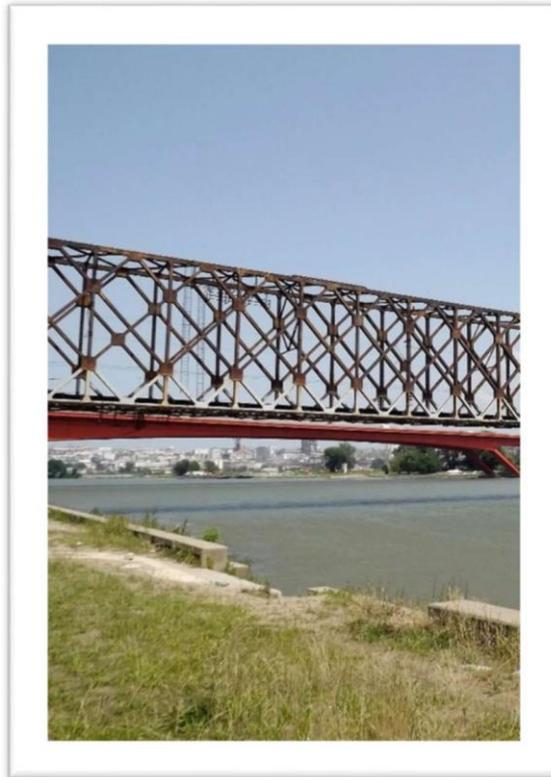


Figure 2. Proximity of the Pygmy Cormorant Habitat

6. POPULATION STATUS IN EUROPE AND SERBIA

It is estimated that today in Europe there are 37,600–50,400 breeding pairs of the Pygmy Cormorant (BirdLife, 2015). Its distribution is relatively limited, being present in Southeastern Europe and the western parts of Asia (Asia Minor, the Middle East). The most important breeding sites are located along the coasts of the Black and Caspian Seas, in the Danube Delta, and also at Lake Skadar in Montenegro. Puzović et al. (2003) estimated that about 500 pairs of Pygmy Cormorants were breeding in Serbia. After 2003, the number of breeding pairs increased significantly and is likely around 1,000 pairs, given that in recent years there has been a marked population growth in some colonies (Ham, 2007; Gergelj et al., 2007). The most recent estimates for Serbia indicate a population of 900–1,600 breeding pairs (Puzović et al., 2015). In Serbia, the Pygmy Cormorant breeds exclusively in Vojvodina, specifically at Obedska bara, Carska bara, Labudovo okno, Bečej Fishpond, Mala Vrbica near Kladovo (Puzović et al., 2009), and in smaller numbers at Baranda, the fishpond near Sutjeska, and in the vicinity of Sremska Mitrovica (Puzović et al., 2006) (Figure 4). In the 19th century, the Pygmy Cormorant was significantly more widespread and numerous across Southeastern Europe (Voskamp et al., 2005). According to some data (Cowles, 1981), in the Middle Ages, the Pygmy Cormorant was even distributed in Western Europe, including the British Isles. In Serbia, by the late 19th and early 20th centuries, the species bred on almost all major rivers, lakes, and marshes (Matvejev, 1950). Interestingly, at that time, it also bred in central parts of Serbia, in the Pomoravlje region.

The situation deteriorated sharply from the mid-20th century, when major interventions and regulatory works on rivers, drainage, and land reclamation of wetlands took place across Europe. Due to the destruction of natural habitats, the population of the Pygmy Cormorant declined dramatically, leading even to the cessation of breeding within the territory of Serbia. Obedska bara was one of the most important breeding sites for this species. The maximum recorded number reached about 800 pairs, but after 1960, the Pygmy Cormorant ceased breeding in this area, resuming only in 2004 (Puzović et al., 2006). A gradual recovery of populations at the European level began in the 1980s, accompanied by a slight expansion northward into central parts of Europe (Voskamp et al., 2005). Breeding populations in Serbia also began to recover in the 1980s, when the colony at Dubovački rit was re-established (Ham, 2007). Noticeable recovery of local breeding populations started in the early 21st century, with new breeding sites appearing at Baranda near Opovo and the fishpond near Sutjeska in Banat (Puzović et al., 2006). The most recent estimates for Serbia indicate a population of 900–1,600 breeding pairs (Puzović et al., 2015). The reasons for this recovery have not been clearly established, but it is assumed to be the result of multiple factors (Voskamp et al., 2005): 1. improved protection of the species itself and its habitats; 2. greater availability of food due to eutrophication of lakes and marshes and the expansion of various forms of aquaculture; 3. an increased number of artificial water bodies created by river sediment extraction and the construction of reservoirs for water supply and energy production; 4. reduced chemical pollution of waters, associated with the decline of heavy industry in Eastern and Central Europe.

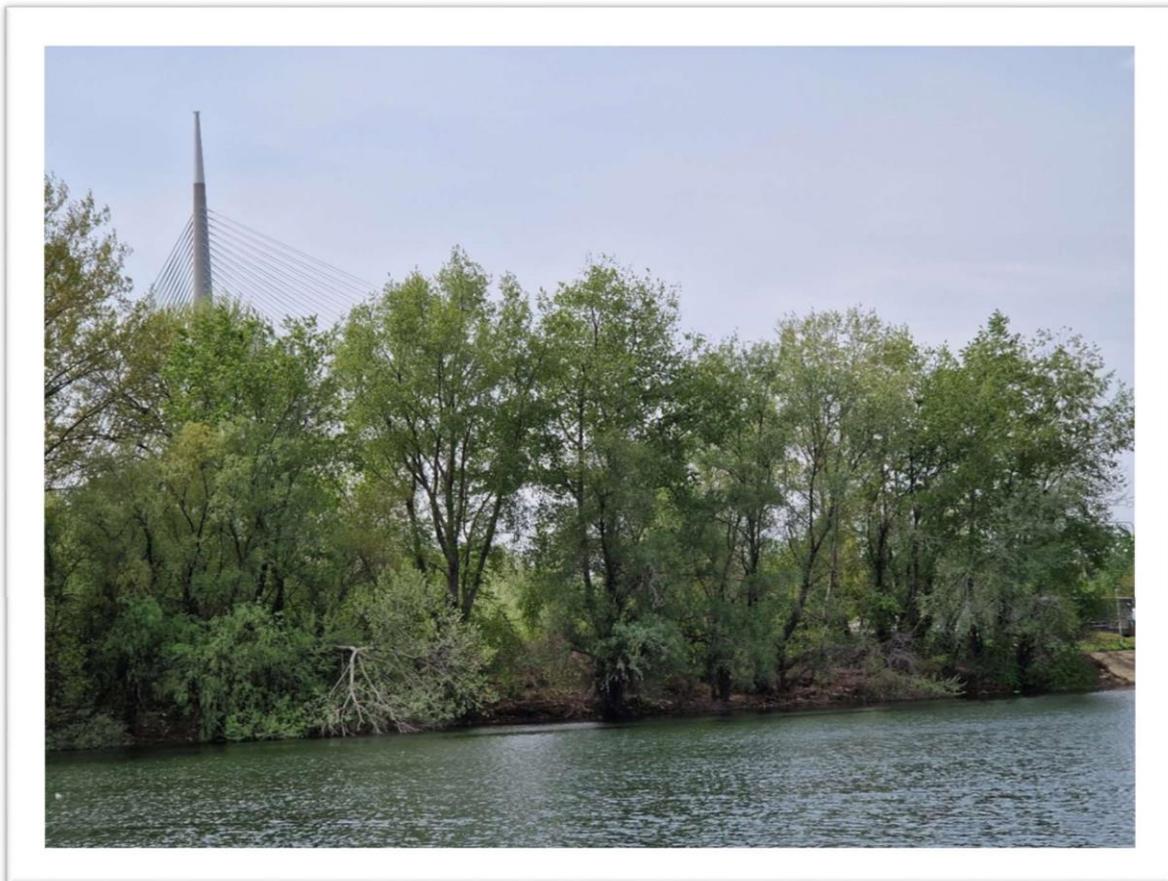


Figure 3. Willow Stand in the Bežanija Winter Port

7. PROTECTION STATUS OF THE PYGMY CORMORANT IN SERBIA AND EUROPE

The Pygmy Cormorant is a strictly protected wild species in Serbia, pursuant to the Rulebook on Declaration and Protection of Strictly Protected and Protected Wild Species of Plants, Animals, and Fungi (“Official Journal of the Republic of Serbia” Nos. 5/2010, 47/2011, 32/2016, and 98/2016). This status excludes any form of use of the species and entails a permanent prohibition of its killing and disturbance. Under the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention), the Pygmy Cormorant is likewise a strictly protected species and is listed in Annex II of this Convention. The Pygmy Cormorant is also included in Annex I of the Birds Directive (EEC 79/409). Every European country in which populations of the Pygmy Cormorant are present is obliged to designate protected areas for the conservation of this species, i.e., Natura 2000 ecological network sites, as of the date of the country’s accession to the EU.

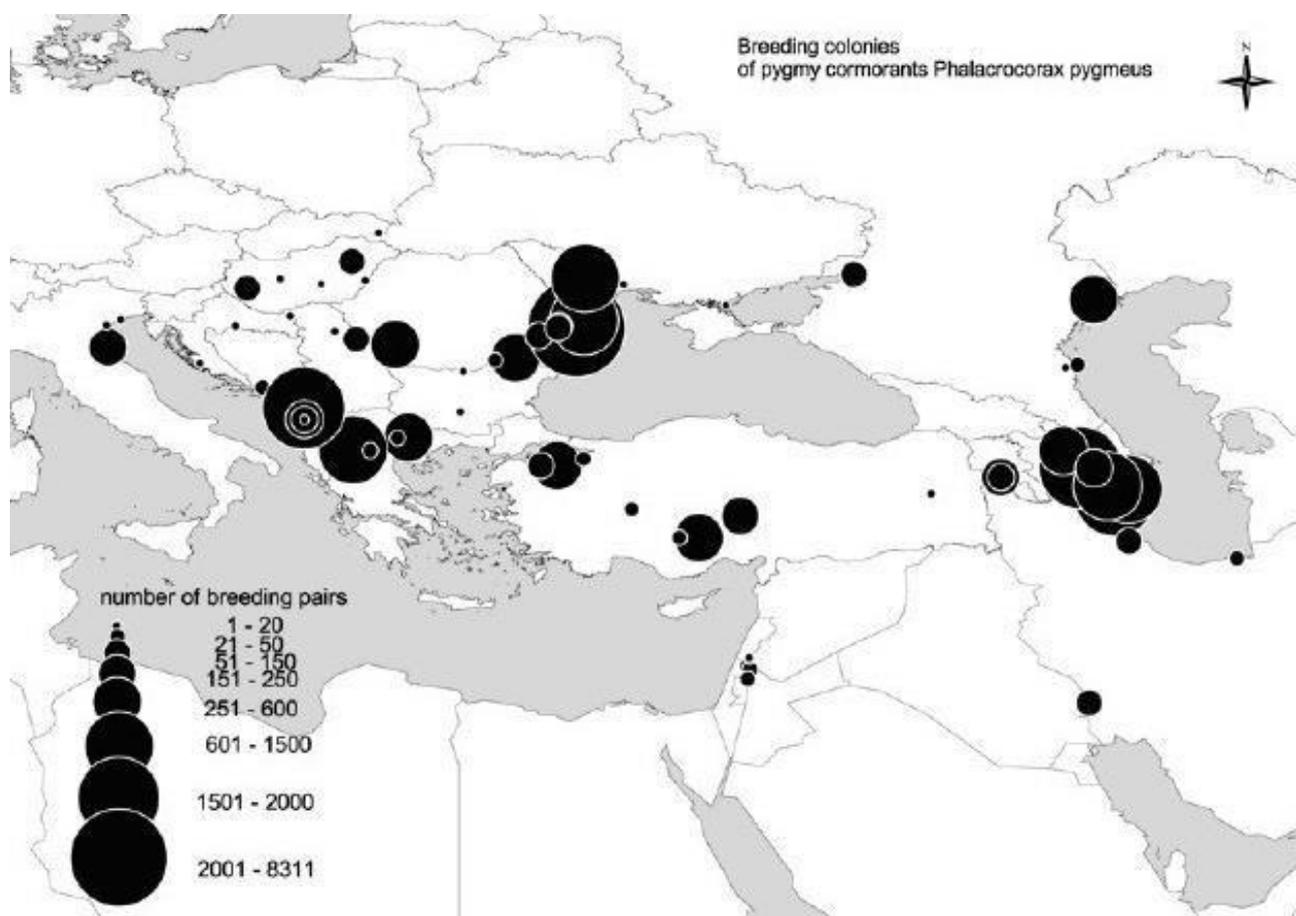


Figure 4. Global Distribution of the Pygmy Cormorant and Overview of the Most Important Breeding Colonies (Source: Voskamp et al., 2005)

7.1. STATUS OF WINTERING POPULATIONS ON THE SAVA RIVER IN BELGRADE

Overview of the Abundance of the Pygmy Cormorant at the Roost on the Sava River near Ada Ciganlija in the Period from 2007 to 2010.

The data refer to the maximum recorded abundance for the given month.

Data sourced from the reports of the League for Ornithological Action of Serbia.

	October	November	December	January	February	March
2007/2008	400	4900	6700	1100	4000	300
2008/2009	1300	3000	5000	1900	1200	1900
2009/2010	1400	5300	6300	2500	2500	2500
Average	1033.33	4400	6000	1833.33	2566.66	1566.66

Overview of the Abundance of the Pygmy Cormorant at the Roost on the Sava River near Ada Ciganlija for the Period from 2010 to 2015.

Data provided by the League for Ornithological Action of Serbia.

Date	Abundance
30/11/2010	5488
16/12/2011	6504
21/12/2012	1265
17/12/2013	2167
10/12/2014	5000
09/12/2015	3800

The results of monitoring show that the Pygmy Cormorant reaches its highest numbers in November and December. The highest abundance was recorded in December 2007, when 6,728 individuals were counted. When recalculated in relation to the total European population of the Pygmy Cormorant, it can be concluded that more than 10% of all European individuals of this species winter in a very small area in Belgrade. It is particularly significant that the number of Pygmy Cormorants did not decline drastically after the start of the bridge construction and that, for now, they have managed to adapt to the increased disturbance. It is also important to take into account the unfavorable extreme environmental conditions during January and February 2012, when a significant decrease in numbers was recorded in December 2012.

In 2007, the birds roosted in the willow stand at the lower tip of Ada Ciganlija. After the destruction of the willow stand for the construction of the bridge, the birds moved to the willow stand on the right bank of the Sava, near the Fair, downstream from the confluence of the Topčider River. Following an objection regarding the protection of the habitat at the Fair site submitted by the public utility company "Beogradovode," with the argument that the willow stand had grown on an embankment area that had become overgrown due to the lack of financial resources for its maintenance, and given that monitoring confirmed the site was not the only or most significant roost of the Pygmy Cormorant, in 2016 the Fair site was excluded from protection compared to its originally planned designation in 2013. In addition, during periods of higher bird numbers, or when disturbance occurs at other sites, the Pygmy Cormorants also roost in a narrow belt of willows on the left bank of the Sava near the Belgrade shipyard (Site I), as well as in the backwater behind Site I (Site II). During 2010 and 2011, and continuing to the present, roosting of Pygmy Cormorants has also been observed in the willow stands at Site III, within the area of the Belgrade heating plant.

The measurement of cormorant abundance in the previous period is valuable data that will be of great importance to the manager in the future, both for further monitoring of abundance and for determining management methods.



Figure 4. Willow Stands Used as Winter Roosts by the Pygmy Cormorant

8. GEOLOGICAL STRUCTURE OF THE TERRAIN

According to the current paleogeographic division, the protected natural asset belongs to the Šumadija region, within which it falls under the Belgrade Basin. The paleogeographic changes of the Šumadija region took place under the influence of the Cimmerian, Austrian, and Dinaric tectogenesis during the Lower Cretaceous, and the Mediterranean, Sub-Mercinian, and Laramian tectogenesis during the Upper Cretaceous. The consequences of these activities are reflected in changes in the distribution of terrestrial and marine environments, as well as in the bathymetric relationships within a single marine environment. For the protected natural asset, during the Cretaceous period, the existence of a marine environment during the Barremian and Aptian is significant, when reef Urganian limestones were formed, followed by a continental phase. With the Styrian phase movements during the Badenian, an ingression from the Pannonian Basin occurred, affecting the northern parts of the Šumadija region, to which the territory of Belgrade belongs. Marine sediments of the Badenian were deposited over older Mesozoic sediments. Within the protected natural asset, these are organogenic reef limestones that form the Tašmajdan–

Kalemegdan reef. A marine environment also existed during the Sarmatian, when gradual desalination occurred, leading to the formation of marine–brackish basins. After the Sarmatian, there was a considerable shallowing and the emergence of a series of islands, while by the end of the Pliocene, a lacustrine phase developed in the wider surroundings of Belgrade, and finally, by the end of the Pleistocene, a continental phase dominated by fluvial processes.

9. DESCRIPTION OF NATURAL VALUES

Vulnerability of the Hydrogeological Environment

The vulnerability of the hydrogeological environment represents a set of essential hydrogeological characteristics that determine the susceptibility to pollution caused by human activities, and at the same time constitute a limiting factor in land use.

The vulnerability of the hydrogeological environment depends on:

- the transit time of infiltrated water and pollutants;
- the relative amount of pollutants that may reach and enrich groundwater;
- the self-purification capacity of the geological medium through which the water with pollutants filters.

The vulnerability of the hydrogeological environment is expressed descriptively as extreme/exceptional (E), high (H), moderate (M), or low (L). This classification is based on the hydrogeological conditions of the environment, i.e., aquifer parameters.

For the wider territory of the natural asset, considering the exceptional exposure of sediments and the developed porosity, it is necessary to prepare a vulnerability map of the hydrogeological environment. This would enable unified management at the level of an integral system, as well as land-use planning in accordance with the capacities of the hydrogeological environment.

Based on the available data and the conducted analysis, the preliminary zoning in terms of hydrogeological environment protection has been defined as follows: extremely vulnerable – remnants of fossil river channels, groundwater springs; highly vulnerable – loess-like marsh sediments, river terrace deposits; low vulnerability – sediments of oxbow facies, deluvium, and proluvium.

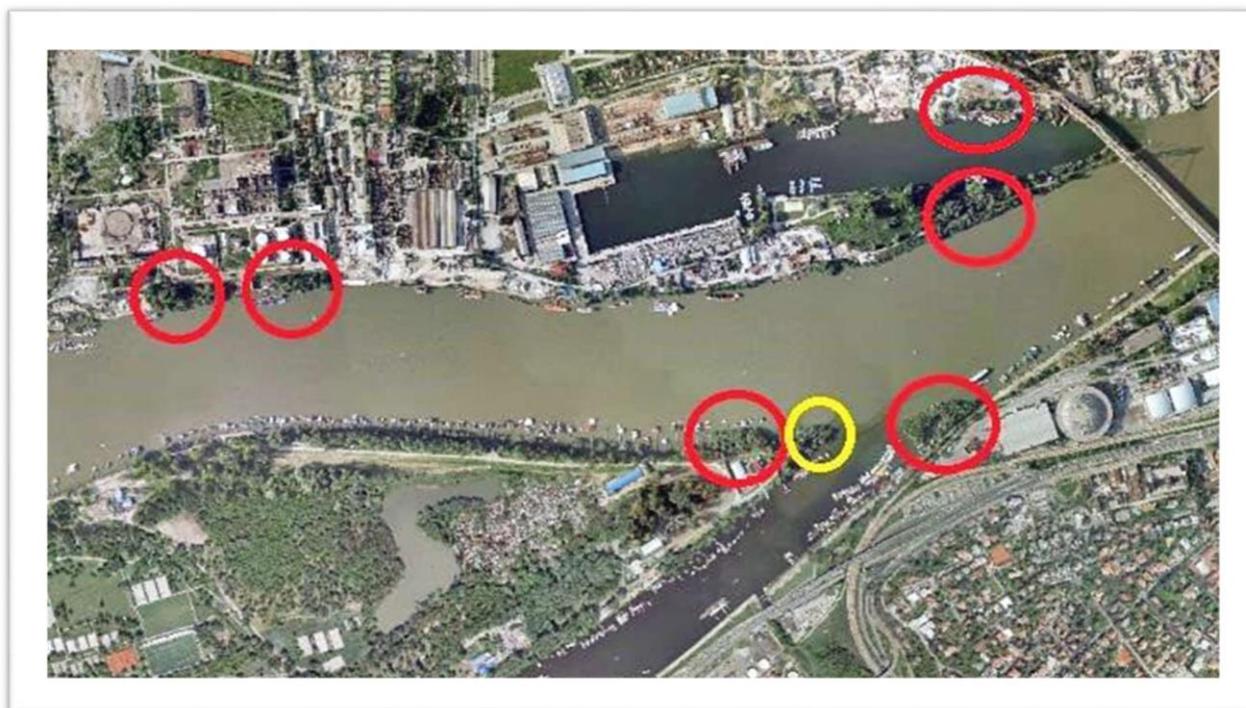


Figure 5. Location of Current and Former Roosts of the Pygmy Cormorant on the Sava River (yellow: tip of Ada Ciganlija destroyed by the construction of the Ada Bridge; red: current roosts)

10. VEGETATION CHARACTERISTICS

By its phytogeographical position, Belgrade lies on the border of two phytogeographical regions:

1. The Pontic–South Siberian region (in the north, in Vojvodina), and
2. The Central European region (Balkan subregion, Moesian province), in the hilly area south of the Sava and the Danube Rivers (Jovanović, 1994).

Considering its size, geographical position, climatic, geological, hydrological, pedological, and historical characteristics, and particularly the dynamics and unevenness of urbanization, the territory of Belgrade abounds in different habitat categories. Above all, the dominance of anthropogenically formed habitats (so-called ruderal habitats) is evident, while only a very small number of habitats represent remnants of the original (primary) communities of forests, wet meadows, marshes, etc. The same applies to the area inhabited by the Pygmy Cormorant. It consists of three separate locations, where, in addition to ruderal habitats, remnants of preserved forest communities are also found:

- I. the belt on the left bank of the Sava – shipyard
- II. the backwater behind the shipyard
- III. the willow stands near the New Belgrade heating plant.

Unlike the tip of Ada, where several fragments of different forests are located in a small area, on the narrow part of the riverbank on the left side of the Sava River, white willow forests have been recorded, with occasional “stray” specimens of white and black poplar. At the third location near the New Belgrade heating plant, in two separate forest fragments dominated in number and size by poplar trees, the lower strata are significantly represented not only by white willow but also by invasive species such as false indigo (*Amorpha fruticosa*), box elder (*Acer negundo*), and green ash (*Fraxinus pennsylvanica*). As two of the locations have been (and still are) exposed to strong and long-term anthropogenic impact (shipyard, boat winter port, tourism and hospitality, sports), the flora of this mini complex has been under both direct

and indirect influence, and has therefore undergone changes. Unlike the vegetation, where, due to negative factors, the diversity and extent of the original plant communities (forest and meadow) have decreased, the overall plant stock of the area has increased. The negative consequence, however, is the loss of many autochthonous and, in the flora of Serbia, rare plant species, to the benefit of an increased abundance of allochthonous representatives. The forest fragments of Populeto-Salicetum at the third location have remained spared from further anthropogenization, thanks to their inaccessible position (the heating plant on one side and the Sava River on the other).

11. LANDSCAPE FEATURES

11.1. Landscape Features of the Natural Asset

The protected area is located on the banks of the Sava River in a highly urbanized environment. It is a lowland space situated in the river's alluvium. The low hills rising on the right bank of the Sava towards Senjak and Topčider have practically no significant landscape value for the protected sites themselves, which are located directly along the riverbed. The bridge over the Sava at Ada Ciganlija already dominates this area. The bridge pylon completely changes the appearance of this space. What should be emphasized is that the Pygmy Cormorant habitats on the left bank of the Sava, although altered, represent the only remaining willow stands along the Sava River between Ada Ciganlija and the Great War Island. With the construction of embankments and riverbank fortifications, the appearance of the riparian area has been completely altered, and all forms of natural vegetation have been destroyed. Another characteristic of this area is the large number of temporary floating structures (rafts), which practically form a barrier between the shore and the river. The only exception is the habitat on the left bank of the Sava, where no floating structures exist. Although small in size, this protected area is of significance for the entire landscape, as it represents the only remaining forms of riparian vegetation in the stretch between Ada Ciganlija and the Great War Island.

11.2. Created (Man-Made) Features

The protected area and its surroundings have been completely altered by human activity, so that no original forms of natural habitats remain. The banks of the Sava River in Belgrade have been entirely fortified, leaving no floodplains. Exceptionally, as in the case of the site near the Belgrade Fair, smaller river deposits may occur within the riverbed, where vegetation characteristic of floodplain areas (willows, poplars) develops. The relief and appearance of the banks and river islands have also been significantly altered by human interventions. By connecting Ada Ciganlija with Čukarica and forming the Sava Lake (Savsko jezero), i.e., the Čukarica backwater, this area has been largely transformed. Likewise, on the left bank of the Sava, a marina, i.e., a boat winter port, was artificially created by connecting the former river island Mala Ciganlija with New Belgrade.

The area in the hinterland of the protected site has been significantly altered and urbanized. Adjacent to the Pygmy Cormorant habitat on the left bank is an industrial zone (shipyard). This type of infrastructure, to some extent, contributes to the preservation of these habitats, as they are, in a way, isolated, and human access is restricted and limited. Immediately next to one of the Pygmy Cormorant winter roost locations (Site I) lies a residential settlement with an area of about 5 ha. At present, the most significant change in this area is the construction of the bridge over the Sava River. For the purpose of constructing the bridge, one of the habitats used by the Pygmy Cormorants for roosting was destroyed. Along most of the Sava River banks in Belgrade, riparian vegetation is entirely absent, especially at the downstream tip of Ada. As a large-scale infrastructure project, the bridge has significantly altered the appearance of the landscape. On the habitats themselves – the willow stands – there are no significant forms of resource use or land exploitation. The willow stands are located in a relatively narrow floodplain strip along the river, which is not suitable for permanent settlement or use. The trees in the willow stands are mostly young and therefore have no significant value in terms of exploitation. Hunting is prohibited throughout the entire city area, including in the zone of the willow stands and the surrounding space. The area around the willow stands is not attractive for sport fishing, especially not in the winter months, when the Pygmy Cormorants are present.



Figure 6. Winter Roost Habitat of the Pygmy Cormorant near the Heating Plant (Site III), photo: M. Radaković

11.3. Analysis of Spatial Planning Documentation

The protected natural area – protected habitat (PH) under the name “Winter Roost of the Pygmy Cormorant” is located within the boundaries of the Spatial Plan of the Republic of Serbia 2010–2014–2020 (“Official Journal of the Republic of Serbia” No. 88/2010), the Regional Spatial Plan of the Administrative Area of Belgrade (“Official Journal of the City of Belgrade” Nos. 10/2004 and 38/2011), the Belgrade General Urban Plan (“Official Journal of the City of Belgrade” No. 11/2016, hereinafter: Belgrade GUP), the General Regulation Plan of the Construction Area of the Seat of the Local Self-Government Unit – the City of Belgrade, Units I–XIX (“Official Journal of the City of Belgrade” Nos. 20/2016, 97/2016, 69/2017, 97/2017, 72/2021 and 27/2022, hereinafter: Belgrade GRP), and the General Regulation Plan for Green Areas of Belgrade (“Official Journal of the City of Belgrade,” No. 11/2016). The PH “Winter Roost of the Pygmy Cormorant” is also included within the scope of the Belgrade General Urban Plan 2041, which is currently under development. For the purposes of this study, the Belgrade GUP and GRP were analyzed. From a spatial perspective, the Belgrade riverfront represents a specific, predominantly linear system within the city matrix, linking the central, middle, and peripheral zones of Belgrade. It incorporates nearly all activities and functions present within the territory of the Belgrade GUP. The Belgrade riverfront is divided into sectors, including the left and right banks of the Sava River. The PH “Winter Roost of the Pygmy Cormorant” is located within the Sava sector. In the context of achieving the strategic orientations for the development of the Belgrade riverfront, the main goals are:

- promotion of Belgrade’s unique geographical position

- defining the spatial elements that promote the unique character of the riverfront area;
- defining measures for the preservation, protection, and improvement of the natural values of ecosystems and environments;
- improving the existing and establishing rules for shaping the new urban matrix and morphology of the riverfront area;
- improving spatial–functional connections with the wider zone.

The basic principles of interventions, whose concrete application is determined by the existing site conditions — area, spatial position, natural characteristics, condition of physical structures, constraints, and similar factors — are:

- construction of new physical structures;
- reconstruction of existing units and facilities;
- ground-level landscaping with interventions in green areas;
- minimal permitted interventions (strict protection regime).

In accordance with the Belgrade General Urban Plan (GUP) and the Belgrade General Regulation Plan (GRP), parts of the Belgrade riverfront on the left bank of the Sava, in the zone of the New Belgrade shipyard, are designated for transformation and development.

The shipyard area in the Sava riverfront is designated for conversion to more ecologically and socially acceptable uses, appropriate to its position within the urban fabric. The new purpose of the New Belgrade shipyard should be defined after harmonizing the existing uses with special regulations. This requirement stems from the fact that a large part of the site lies within the inner sanitary protection zone of the water source, i.e., it belongs to an area for which a detailed analysis of existing uses and facilities within the inner water source protection zone is necessary.

For the shipyard zone, within which Sites I and II of the PH “Winter Roost of the Pygmy Cormorant” are located, the further planning process should determine possible sites for the development of sports and recreational facilities.

Based on the relevant urban planning documentation, the requirements and approvals of the competent institutions, and the completed and verified environmental impact assessments, the possibilities for developing water sports (rowing, kayaking, canoeing, windsurfing, etc.) will be considered in the water source protection zone.

The function of flood protection and water protection, implemented through defense measures and the construction of hydrotechnical structures, i.e., facilities for water use and water protection, is a priority in the riverfront zone, which in turn gives priority importance to the continuation and completion of the regulation of the immediate riparian belt. For this purpose, according to the Belgrade General Urban Plan (GUP), the completion of the full reconstruction of the Sava and Danube riverbanks is planned, following the principles of urban regulation, by combining riverbank fortifications and multi-level quays, in order to ensure continuous contact of users (primarily pedestrians and cyclists) with the water. One of these connections is along the Sava riverbank from its confluence with the Danube upstream to the end of Block 45. Within this stretch are located Sites I, II, and III of the PH “Winter Roost of the Pygmy Cormorant.” The Belgrade GUP also envisages the improvement of existing pedestrian routes and the construction of new pedestrian areas. The development of this type of transport in the Belgrade area is of particular importance in the riverfront zone. In addition to connecting the existing pedestrian paths along the rivers, the construction of new paths is planned, which would simultaneously serve as open pedestrian corridors and connections between the riverbanks and the streets in the hinterland. The principle of developing transversal pedestrian corridors and connections, with respect for all other constraints, should significantly contribute to the development of the riverfront area in terms of various activities and supporting facilities.

According to the Belgrade General Regulation Plan (GRP), by establishing an alternative connection with the pedestrian–cycling path through the block in the hinterland of the shipyard, continuity of public use of the left bank of the Sava will be ensured, from the athletic complex in Block 71 to Radecki in Zemun. Sites I, II, and III of the PH “Winter Roost of the Pygmy Cormorant” are located within the area designated for the construction of riverfront pedestrian and cycling paths on the left bank of the Sava.

The green areas of Belgrade have been recognized in the Belgrade General Urban Plan (GUP) as an asset of general interest, representing the city's climatic and ecological infrastructure, which as such, should be fully preserved and enhanced into a coherent system.

The benefits and general interest of green areas are reflected in their multifunctional role. The planning solution ensures adequate and balanced representation, integrity, and continuity of different types of green areas, as well as the achievement of higher standards for the territory of Belgrade. The planned system of green areas meets the requirements of improving the environment, providing an even distribution of green spaces that ensure rest and recreation for residents, protecting natural values, and enhancing the visual qualities of the city. According to the Belgrade General Regulation Plan (GRP), the core of Belgrade's green area system (which includes the Sava riverfront) represents its *Genius loci* (spirit of the place). Bearing this in mind, the main objective of green area planning is to preserve the existing green areas within their current boundaries and to enhance them with the aim of achieving their multifunctionality, as well as the functioning of the overall system.

The system of green areas of Belgrade is divided into specific types of greenery. Owing to its geographical position, the PH "Winter Roost of the Pygmy Cormorant" belongs to riverfront green areas, as a type of greenery within the unified green system of Belgrade. Riverfront green areas are arranged green spaces located directly along the regulation lines of the Sava and Danube rivers, within a width of up to 50 m measured from the inner toe of the embankment, intended for public use for the recreation of the population and for the preservation of the city's biodiversity. The development and enhancement of integrated riverfront green areas represent one of the primary goals in forming a protective green belt in the peripheral zone of the city and in linking it with the green areas of the city's inner territory. According to the Belgrade General Urban Plan (GUP), in the landscape–ecological context, the Belgrade riverfront represents an important element in the process of planning, biodiversity conservation of the territory and the wider aquatic area, improving environmental conditions, and preserving the cityscape and the overall landscape. The Belgrade GUP foresees the retention of the existing riverfront green areas along the Sava and the provision of conditions for their preservation, arrangement, and enhancement as a continuous green belt along the New Belgrade bank.

According to the Belgrade General Regulation Plan (GRP), during the reconstruction of green areas in the Belgrade riverfront, it is mandatory to:

- preserve the green area within its existing boundaries;
- remove temporary structures;
- ensure at least 60% of the surface is covered by vegetation (greenery) in direct contact with the soil (without underground facilities and/or basement levels), while the remaining maximum of 40% may be allocated to paths (pedestrian and cycling), plazas, children's playgrounds, and open sports grounds;
- primarily adapt the area for rest, play, and recreation of residents (public use);
- retain and rejuvenate the existing vegetation;
- use autochthonous species adapted to climatic and pedological conditions;
- use representative and cultivated saplings of tall woody vegetation (deciduous and coniferous), foliage ornamental and flowering forms of deciduous and evergreen shrubs, and seasonal flowers.

A specific aspect of the arrangement and use of the Sava and Danube water area is regulated through the Plan for the Placement of Vessels along the Banks and Water Area within the Territory of Belgrade – First Phase (hereinafter: Vessel Placement Plan), which defines the zones and the sites within those zones where vessels may be placed, as well as the appearance, type, and purpose of the vessels, and the rules for their placement in accordance with the requirements of the competent institutions. The Vessel Placement Plan covers the central area of Belgrade – the water area between the planned Zemun–Borča bridge, the planned bridge along the route of the Outer Main Tangent (Ada Huja), and the Ostružnica bridge over the Sava. According to the General Regulation Plan of Belgrade, the existing zones with the highest concentration of recreational floating objects (houseboats/barges) at Ada Ciganlija and Ada Medica should be formally defined and arranged in such a way as to ensure quality public access to the riverbanks, cluster floating structures into groups, and establish conditions for their placement, design, size, and communal infrastructure, bearing in mind that these areas belong to the inner sanitary protection zone of Belgrade's water source.

II ASSESSMENT OF THE STATE OF THE ENVIRONMENT OF THE AREA AND THREAT FACTORS

The location of the protected habitat is such that it is largely exposed to various environmental pressures. The urban environment entails significant loads on air, water, and soil from pollutants. In addition to chemical pollution, the protected sites are also considerably exposed to physical pollution (solid waste), noise, and light pollution. Immediately adjacent to the shipyard is the “Novi Beograd” Heating Plant, which is designated in Belgrade’s General Regulation Plan as a site of major ecological risk, and which also falls within the area requiring a detailed analysis of existing uses and facilities in the inner sanitary protection zone of the water source. According to the risk assessment of chemical accidents in the Plan area, the “Novi Beograd” Heating Plant may have a moderate impact on the environment, with a high risk of chemical accidents. Site III of the PH “Winter Roost of the Pygmy Cormorant” is located within the riparian greenery next to this city's heating plant. The primary parameter of the environmental status within this protected habitat is the condition and size of the wintering population of the Pygmy Cormorant. Since this protected habitat has been designated specifically for the protection of a single species, other natural values are not a priority. Moreover, as this is a significantly altered area, other natural values are not prominent. The current state of the Pygmy Cormorant populations is satisfactory, and despite numerous threatening factors, there has been no significant decline in numbers. However, considering the area in which these populations occur, there is a substantial risk of a marked deterioration in the condition of this species’ populations. For this reason, it is essential to establish appropriate protection measures for this area.

Further protection can also improve the condition of other natural values, primarily the riparian vegetation, which has been almost entirely eliminated from this part of Belgrade. The main threatening factors within and around the protected habitat are the following:

- destruction of habitats/riparian vegetation through infrastructural development;
- destruction of habitats through clearing of riparian areas for the purpose of maintaining the riverbank and waterways;
- destruction of habitats through illegal and unplanned activities (cutting and removal of vegetation);
- increased disturbance of birds due to human presence (floating objects, recreational paths, navigation in the immediate vicinity of willow stands);
- increased disturbance of birds due to construction activities in the surrounding area (roads, the bridge, river traffic);
- deliberate disturbance and scaring of birds by users of floating objects;
- bridges across the Sava River as mechanical barriers during daily and seasonal bird migrations.

III LONG-TERM OBJECTIVES OF PROTECTION, CONSERVATION, ENHANCEMENT, AND SUSTAINABLE DEVELOPMENT

The primary long-term objective relates to the conservation of the habitat of the Pygmy Cormorant at all locations where its wintering and roosting have been observed and confirmed, to the monitoring of population numbers, as well as to the protection, preservation, enhancement, and sustainable development and use of the protected habitat “Winter Roost of the Pygmy Cormorant” as a Natural Monument — a permanent asset of Belgrade.

The objective of protecting the winter roost is to conserve the habitat and enable education and scientific research, as well as to preserve the created biological diversity of the site. In this regard, the long-term objectives also include expanding activities aimed at improving the quality of the willow stands, with the purpose of increasing the species’ population within the protected natural asset. Sustainable use is, in the long term, linked to the functions of the site, whose significance was emphasized and recognized as early as 2013, when the first Protection Study was prepared, and later confirmed by the Decision on the Declaration of the Protected Habitat in 2022. It primarily relates to the ecological function (particularly the protection of the habitat and the species), as well as to educational (use) and scientific-research functions.

Within the framework of the concisely anticipated sustainable use, the currently limited scope would, under prescribed conditions, be expanded to allow access to all interested stakeholders, primarily for educational purposes at all levels of schooling and in all disciplines to which this issue is relevant. With respect to its biological function, in the long term, the site will ensure use by all segments of society, not only the population of Belgrade. In this regard, the Pygmy Cormorant habitat will serve as an outstanding promotional site, included in Belgrade's tourist offer and incorporated into the route Ada Ciganlija – Pygmy Cormorant Habitat – Košutnjak.

IV PRIORITY ACTIVITIES AND MEASURES FOR THE PROTECTION, MAINTENANCE, MONITORING, AND ENHANCEMENT OF NATURAL AND CREATED (MAN-MADE) VALUES

The Management Plan for the protected area is adopted by the managing authority for a period of ten years. The Management Plan is approved by the Secretariat for Environmental Protection of the City of Belgrade, following the prior opinion of the Institute for Nature Conservation of Serbia. The Management Plan is further elaborated and implemented through Annual Management Programs for the protected area, which are likewise approved by the Secretariat for Environmental Protection of the City of Belgrade. The Management Program, derived from the ten-year Management Plan, defines the measures and activities for the protection, maintenance, enhancement, and use of the protected area, together with the scope and schedule of their implementation, as well as the amount of financial resources required.

OBJECTIVE 1	Monitoring and Improvement of Natural and Created (Man-Made) Values
MEASURES	Habitat Conservation
ACTIVITIES	<ul style="list-style-type: none"> • Regular and permanent monitoring of the species and its population numbers • Presence of a ranger (warden) service • Regular reporting to the Secretariat and the competent inspection authority
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 2	Monitoring and Improvement of Natural and Created (Man-Made) Values
MEASURES	Preparation of Planning, Investment, and Technical Documentation
ACTIVITIES	Technical Preparation of All Documents: <ul style="list-style-type: none"> • Management Plan • Annual Management Program • Quarterly Reports • Annual Reports • Situational Reports
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 3	Monitoring and Improvement of Natural and Created (Man-Made) Values
MEASURES	Development of a Database (GIS) and Geodetic Basis (Reference Framework)
ACTIVITIES	<ul style="list-style-type: none"> Based on the completed geodetic basis, the preparation of a database (GIS) is planned to serve the purposes of management, monitoring, and use.
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 4	Use of the Protected Area
MEASURES	Implementation of Educational Programs and Projects
ACTIVITIES	<ul style="list-style-type: none"> Conducting practical training for students and pupils whose fields of study can benefit from the fundamental values of the habitat in an educational sense Organizing educational visits for primary, secondary, and vocational schools Organizing international expert visits
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 5	Activities and Measures for the Protection, Maintenance, Monitoring, and Improvement of Natural and Created (Man-Made) Values
MEASURES	<ul style="list-style-type: none"> Monitoring of the population size of the Pygmy Cormorant
ACTIVITIES	<ul style="list-style-type: none"> Monitoring of the population size of the species in the habitat Conducted during the winter period (November, December)
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 6	Activities and Measures for the Protection, Maintenance, Monitoring, and Improvement of Natural and Created (Man-Made) Values
MEASURES	<ul style="list-style-type: none"> Regular implementation of biological and technical protection and maintenance measures Removal of specimens that do not meet health, aesthetic, and functional criteria

ACTIVITIES	<ul style="list-style-type: none"> • Felling • Clearing • Pruning • Planting
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 7	Activities and Measures for Maintenance, Monitoring, and Improvement
MEASURES	Procurement, maintenance, and renewal of work machinery and tools, procurement of consumable materials, and procurement of a vessel for patrolling the protected habitat
ACTIVITIES	<ul style="list-style-type: none"> • Procurement of new machinery • Maintenance of machinery • Procurement of spare parts • Procurement of consumable materials • Procurement of a vessel
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 8	Improvement of Natural and Created (Man-Made) Values
MEASURES	Planning and construction of new paths to the extent that does not endanger the fundamental values of the habitat and its functions
ACTIVITIES	<ul style="list-style-type: none"> • Construction of new paths based on the completed project and the Opinion of the Institute for Nature Conservation of Serbia
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 9	Safeguarding the Fundamental Values of the Habitat from All Forms of Threats
MEASURES	The safeguarding and monitoring of the prescribed protection and development regimes of the “Winter Roost of the Pygmy Cormorant” will be carried out within the framework of an organized ranger service, based on the Rulebook on Internal Order and Operation of the Ranger Service, as defined by the Law on Nature Protection as a mandatory obligation of the Managing Authority.
ACTIVITIES	<ul style="list-style-type: none"> • Analysis of the status and activities of the ranger service • Provision of information to visitors • Ensuring the safety of visitors during their stay in the protected area
IMPLEMENTATION TIMEFRAME	2023-2033

OBJECTIVE 10	Improvement of Natural and Created (Man-Made) Values and the Use of the Protected Area
MEASURES	Creating Conditions for the Use of the Habitat for Tourism Purposes

ACTIVITIES	<ul style="list-style-type: none"> • Various forms of cooperation and partnerships with users of the protected area
IMPLEMENTATION TIMEFRAME	2023-2033

1. Priority tasks in scientific research and educational work

The objective of protecting the Pygmy Cormorant habitat is the preservation of the population of this species at the designated locations. It also includes the education of students of natural sciences and complementary disciplines across various educational levels and age groups, as well as scientific research, together with the conservation and enhancement of the existing biodiversity. The winter roost of the Pygmy Cormorants is also important from the perspective of monitoring this bird species in Belgrade, and more broadly, throughout our country. Moreover, it represents a specific bioindicator of the urban environment and a valuable area intended for education and scientific research. Scientific research and educational work are the core activities of the managing authority within the winter roost area, which in the future will implement the following activities:

- A more detailed assessment of the natural values of the complex, the coherence and interdependence of its constituent elements, as well as the measures for their improvement.

The summarized characteristics of the habitat, recognized as values also from the aspect of scientific research, are:

- Authenticity – reflected in the primary purpose of the natural asset. It represents a unique, dynamic, and particularly valuable complex serving the function of habitat conservation within the urban environment of the City of Belgrade.
- Rarity – a unique habitat of a highly important and endangered bird species, providing exceptional conditions for nesting and feeding of this species.
- Landscape Attractiveness – the unique spatial experience of the willow stands makes the habitat particularly attractive and contributes to the overall landscape value of this part of the city.
- Degree of Preservation of the Asset – even with the construction of the new Ada Bridge, individuals of this species have adapted to the newly created living conditions at the designated locations. They have relocated to the remaining willow stands in the vicinity.
- Educational Function – the habitat will serve as a teaching base for educational institutions. Its educational role also extends to the wider public, with the objective of raising awareness of the characteristics and values of the habitat.
- Scientific-Research Function – reflected in the monitoring and implementation of various scientific studies, such as phenological, phytocoenological, ecological, developmental, and natural process research, as well as studies in conservation biology and numerous other scientific disciplines. Monitoring and further research activities will take place within the framework of:
 - monitoring the state of nature and environmental elements,
 - monitoring the state of wildlife within the protected natural asset – biomonitoring,
 - further research into natural characteristics.
- Aesthetic Function – reflected both in the aesthetic-physiognomic values of individual species and of the habitat as a whole. The appearance of the habitat is variable, dynamic, and colorful due to different periods of flowering, leafing, and fruiting.

2. PLANNED ACTIVITIES FOR THE SUSTAINABLE USE OF NATURAL VALUES, DEVELOPMENT, AND SPATIAL PLANNING

In accordance with the established protection regime, which defines the use, arrangement, and improvement of the protected area, the planned activities are as follows:

The activities planned for the sustainable use of natural values, development, and spatial planning (arrangement) are as follows:

- Proper marking of the three locations on the land area of the protected site, with signs visible from the land, as well as signs visible from the water, i.e., from a vessel
- Maintaining accessibility and approach to the habitats from the river, i.e., from a vessel
- Maintenance of the willow stands, including the removal of driftwood and undesirable materials
- Maintenance of the habitat's tidiness, including the removal of undesirable vegetation

3. ACTIVITIES FOR THE PROMOTION OF THE VALUES OF THE PROTECTED AREA

Program activities for the promotion of the habitat are aimed at raising awareness among the professional public and institutions within the local self-government, as well as more broadly, about the importance and value of the protected area through the provision of specific information and the popularization of natural and cultural values. The implementation of promotional activities will be carried out through:

- Development of a website for the protected area
- Production of printed materials (flyers, brochures, leaflets, and other promotional materials)
- Participation in seminars and exhibitions
- Presentation of the protected asset in the Municipality of New Belgrade
- Cooperation with media outlets
- Organization of events to mark significant dates
- Organization of forums and round tables
- Organization of meetings of the managing authority
- Cooperation with other protected areas
- Preparation of a publication on the habitat
- Promotional film about the habitat
- Presentations for primary and secondary schools

4. STUDY AND RESEARCH, PROGRAM, PLANNING, AND PROJECT DOCUMENTATION REQUIRED FOR THE IMPLEMENTATION OF PLANNED ACTIVITIES

The Nature Protection Act defines the obligations of the managing authority in terms of preparing management documents for the protected area, which are:

- Management Plan for the Protected Area for a period of ten years
- Annual Management Program for the Protected Area, implementing the Management Plan for the given year
- Report on the Implementation of the Management Plan for the Protected Area
- Report on the Implementation of the Annual Management Program for the Protected Area
- Rulebook on Internal Order and the Ranger Service of the Protected Area

Within the framework of managing the protected area, and for the purpose of implementing conservation, enhancement, and utilization of the natural asset, it is necessary to conduct research whose results would increase the importance of this protected area and improve knowledge about it.

5. COOPERATION WITH THE LOCAL POPULATION AND OTHER AREA USERS IN THE PROTECTED HABITAT

Considering the functions of the habitat, the local self-government should support activities aimed at raising citizens' awareness of the values of this protected area and of general ecological culture. The improvement of the protected area entails establishing further cooperation with competent and interested institutions:

- City of Belgrade
- Municipality of New Belgrade and other city municipalities
- Relevant Ministries
- Program cooperation with other professional institutions in the country and abroad
- Program cooperation with other managing authorities in Serbia
- Cooperation with the local population and other interested stakeholders

6. ACTIVITIES AND MEASURES FOR THE IMPLEMENTATION OF THE PLAN, WITH THE TIMELINE, RESPONSIBLE STAKEHOLDERS, AND THE METHOD OF ASSESSING THE EFFECTIVENESS OF ITS APPLICATION

The main activities and measures for the implementation of the plan, largely defined in its previous content, can be broadly classified into:

- Activities related to the preparation of management documents (in accordance with the Nature Protection Act)
- Activities related to the marking of the habitat as a protected habitat (in accordance with the Rulebook on the Marking of Protected Natural Assets ("Official Journal of the Republic of Serbia" Nos. 30/92, 24/94, and 17/96))
- Activities related to the safeguarding, protection, and maintenance of the fundamental values of the habitat as a protected natural asset
- Activities related to the arrangement of the protected habitat, in accordance with the prepared planning documents (and in line with the relevant legislation)
- Activities related to the presentation and promotion of the habitat
- Activities related to the use of the winter roost as an educational and scientific research facility

Activities related to the preparation of management documents will be entrusted, for the most part, to the employees of the association, with possible consulting services provided by specialists from institutions dealing with similar issues.

In doing so, the procedure and process of preparing plans and programs must be respected, and compliance ensured with the laws governing the relevant areas.

Activities related to the marking of the winter roost will be carried out partly by engaging companies specialized in the production of signs, holders, stands, etc., while the installation itself will be performed directly by the employees.

Activities related to the safeguarding, protection, and maintenance of the fundamental values of the habitat as a protected natural asset will largely be performed through the direct engagement of the association's human resources, while the necessary material resources will be provided in accordance with the Public Procurement Act, following the established procedure.

Activities related to the arrangement of the protected habitat, in line with the prepared planning documents, will primarily concern the plan of rehabilitation, reconstruction, and revitalization of the habitat area, with the objective of bringing it closer to its functional optimum.

These measures should ensure:

1. Creation of a more pleasant and safer environment for users by ensuring accessibility to the habitat;
2. Conditions for multidisciplinary scientific work, through the involvement of experts from various fields conducting scientific research;

3. Creation of conditions for organizing educational visits for preschool children, primary and secondary schools, students of the University of Belgrade and other domestic and foreign faculties, as well as international expert visits, visits of interested citizens, and the inclusion of the habitat in the tourist offer;
4. Creation of conditions for the regular maintenance of the habitat to allow for normal and comfortable use throughout the year.

It is necessary to include all interested parties in these activities, primarily the media. Activities related to the use of the habitat as an educational and scientific, and research facility will be carried out in accordance with the annual teaching plans and programs of all interested parties. With regard to the scientific and research significance, it is necessary, within the usage plans and programs, to define priority research topics, among which monitoring remains permanently relevant.

The realization of the program activities defined in this Plan is possible under the fulfillment of the following prerequisites:

- Organization, equipping, staffing, and professional training for the care of the protected natural asset,
- Harmonization of the preparation of planning and project documentation for the execution of necessary works on improving the existing condition, in line with the designated purpose,
- Continuous monitoring of the state of vegetation as well as the overall state of the environment by experts,
- Infrastructure equipping to the extent that does not compromise the primary purpose of the habitat, but is necessary in order to optimize the existing condition.

7. CONCEPT OF PROTECTION

The primary value of the protected habitat is represented by the wintering populations of the Pygmy Cormorant. The protected area constitutes an important habitat for a significant number of individuals of this species (up to 10% of the European population). The general concept of protection, conservation, and enhancement of this protected habitat implies an active form of protection aimed at preserving and improving the conditions for the survival of the Pygmy Cormorant. The specific location of the habitat also necessitates the integration of other developmental needs with the objectives of nature conservation. Due to the dynamic character of the environment in which it is situated, as well as the dynamic nature of the species' populations themselves, it is necessary to develop a flexible protection concept that will enable quick and effective adaptation of protection measures in response to changes in field conditions.

8. GUIDELINES FOR ENHANCEMENT

For the purpose of placing the natural asset under a protection regime, it is necessary to implement the following documents:

- 1) Ten-Year Management Plan
- 2) Internal Order Act

Further guidelines also relate to the definition of specific programs for the protection and improvement of the Pygmy Cormorant populations, as well as to the definition of programs and projects for the presentation and promotion of the ecological status and importance of the area:

- continuation of monitoring of the wintering population of the Pygmy Cormorant on the Sava River in Belgrade;
- informing all relevant stakeholders and organizing meetings with them for the purpose of adequate habitat protection;
- development of a plan for the improvement of vegetation and floodplain areas of the protected sites.



Figure 7. Habitat photographed from the Sava River

9. ANALYSIS AND EVALUATION OF THE CONDITIONS FOR ACHIEVING THE OBJECTIVE

9.1. Stakeholder Analysis

The following stakeholders have been identified and consulted:

- Secretariat for Environmental Protection of the City of Belgrade
- Directorate for Construction Land and Development of Belgrade
- PVMC (Public Water Management Company) Beogradvode
- PUC (Public Utility Company) Zelenilo Beograd
- PUC (Public Utility Company) Beogradske elektrane
- League for Ornithological Action of Serbia.



Figure 8. Habitat photographed from the Sava River

10. ENVIRONMENTAL ASSESSMENT OF THE CURRENT STATE

The state of the environment is assessed on the basis of a number of parameters such as air, soil, groundwater and surface water quality, radioactivity, as well as noise levels in the environment and UV radiation. In the territory of Belgrade, the Secretariat for Environmental Protection of the City Administration of Belgrade permanently monitors the condition of environmental factors in the city.

The analysis of reports concluded that the environmental state of the location of the natural asset does not differ from the state in other parts of the city. In addition, the natural asset itself is significantly affected by air pollution, given that certain pollutants, in combination with atmospheric precipitation, influence changes in the rock (color, cracking, etc.).

V PROTECTION REGIMES

DESCRIPTION OF THE SITE – SECOND-DEGREE PROTECTION REGIME AND PROTECTION MEASURES

The second-degree protection regime. The area and percentage share under the second-degree protection regime by site are as follows:

Site I - the second-degree protection regime within the site - is located in the territory of Cadastral Municipality of Novi Beograd, on parts of cadastral plots Nos. 5410/2, 6801, and 6628/2.

Site II - the second-degree protection regime within the site - is located in the territory of Cadastral Municipality of Novi Beograd, on parts of cadastral plots Nos. 5396 and 6628/2.

Site III - the second-degree protection regime within the site - is located in two separate spatial units in the territory of Cadastral Municipality of Novi Beograd, on parts of cadastral plots Nos. 5422 and 6628/2 (eastern part) and 6628/2 (western part).

VI OBJECTIVES AND PRIORITY TASKS FOR THE CONSERVATION OF THE FAVORABLE STATUS OF THE PROTECTED AREA

1. Overview of specific activities, operations, and processes that pose a threat to the protected area
2. Long-term objectives for the protection, preservation, enhancement, and sustainable development
3. Analysis and assessment of conditions for achieving the objectives
4. Priority activities and measures for the protection, maintenance, monitoring, and improvement of natural and created (man-made) values
5. Priority tasks in scientific research and educational work
6. Planned activities for the sustainable use of natural values, spatial development, and arrangement
7. Spatial identification of planned land uses and protection regimes – cartographic definition of protection zones
8. Activities for the promotion of the values of the protected area
9. Study, program, planning, and project documentation required for the implementation of objectives and activities
10. Forms of cooperation and partnership with the local population and other owners and users of real estate
11. Activities and measures for implementing the plan, with timelines, implementing entities, and methods for evaluating the success of its application
12. Financial resources

The preparation of the following management documents for the protected habitat is planned:

- Annual management programs shall be prepared for each calendar year.
- Reports on the implementation and realization of the annual programs.
- Rulebook on internal operations and the ranger service.
- Demarcation of the boundaries of the protected area in accordance with the rulebook governing the marking of protected natural assets.
- Establishment of a database for the purposes of management, use, and monitoring of the condition.
- Maximum preservation of the existing condition of the protected area, with a prohibition of any reduction of its visible or constructed surface.
- Regulation of the manner of use of the associated parcels.

- Ensuring the protection and maintenance of the protected area in accordance with the protection regime and conservation measures prescribed by law and decision.
- Providing conditions for the development of educational, scientific and research, informational and promotional, and other activities aimed at promoting the protected area.
- Carrying out other tasks in accordance with the law or acting upon the request of the nature conservation organization/competent inspection authority.