



Improving the Ornithological Diversity of the Rybalsky Quarry (Rybalsky Quarry, Ukraine)

Education and Raising Awareness

Final report

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HeidelbergCement Ukraine

Ukrainian society for the protection of birds

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1. Contestant profile.

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2. Project overview

Title:	Improving the Ornithological Diversity of the Rybalsky Quarry"
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Quarry name:	Rybalsky Quarry
Prize category: (select all appropriate)	<div><div>➤</div>Education and Raising Awareness</div> <div><div>➤</div>Habitat and Species Research</div> <div><div>➤</div>Biodiversity Management</div>

1. Abstract

Under natural conditions hole-nesting birds nest in hollows, in trees whether excavated by woodpeckers, or formed in other natural ways. In the Rybalsky quarry, as it is dominated by young forest stands there is an acute shortage suitable trees for hole-nesting birds. This leads to a fairly low diversity of the bird population of this territory, and also makes this population unstable, and as a result, vulnerable to the effects of external factors.

At the start of our project "Improving the Ornithological Diversity of the Rybalsky Quarry" we made an assessment of the current state of bird population of the site (species composition in spring and summer, abundance, territorial distribution, ecological features). With the aim of increasing the attractiveness of the quarry for birds two pools for drinking and bathing were created. For hole-nesting birds 65 artificial nests of 3 types have been made and set up. The data obtained in the survey of these nest boxes during the breeding period, show that a rather large (20 %) percent of the nest boxes were already occupied by Great Tits, Tree Sparrows and Starlings.

To raise the level of environmental awareness we have published and distributed a poster "Birds of Rybalsky Quarry". With the aim of disseminating information to school teachers and their pupils about birds and ways to improve their living conditions, we have carried out the campaign "Give birds a home," and published the colouring book "Birds of Rybalsky Quarry". To conduct educational tours we have laid out a comprehensive route "Rybalskiy Quarry Nature Trail".

We have recommended the inclusion of Rybalsky Quarry as a cluster unit in the composition of the planned National Park "Dnieper Rapids".

As a result of implementation of the project, in our opinion, the environmental potential of the quarry and its aesthetic appeal will be increased, conditions for birds will be improved throughout the quarry, and the positive image of the company "HeidelbergCement Ukraine" will be greatly enhanced.

2. Gratitude

We express our gratitude to the company "HeidelbergCement Ukraine" for providing financial support and full cooperation in the implementation of our project. I would also like to thank all the staff of Rybalsky Quarry and personally to Svetlana Rusanova, whose sincere support and understanding we have felt at all stages of the project.

3. Introduction

In conditions of growing anthropogenic pressure on nature the question of conservation and rational use of plant and animal resources are becoming increasingly urgent. As a result of human activity in the second half of the twentieth century almost everywhere there has been a decrease of biodiversity and accelerating adverse transformation of natural landscapes. Birds, which are an integral part of natural ecosystems, are no exception to this process. The composition of the avifauna and ecological characteristics of the birds of the quarry was formed under the strong influence of its economic exploitation. The problem of study and conservation of the unique bird fauna of the quarries of the South of Ukraine was already receiving attention in the 80-ies of the last century (Koshelev, 2009).

According to the results of many authors (Pankin, Dugintsov, 1991, Easter, Golovatin, 1998), the grouping of birds of quarries are characterized by predominantly low diversity. This is due to the weak development of vegetation, which provides the main habitat of the birds. Due to the impoverishment of plant formations and the young age of the trees, conditions are difficult for the settlement of birds of the tree and shrub complex, in particular hole-nesting species. In our view there is potential to improve the conditions of their nesting in the quarry, and as a consequence to increase bird diversity. This goal can be achieved by the installation of artificial nests and improvement of their living conditions (food supply, water, etc).

Artificial nests can be used to attract large numbers of hole-nesting birds, directionally adjusting their numbers in the breeding period, and even after nesting (Blagosklonov, 1991). By installing artificial nests, it is possible to increase the density of nesting birds 2-3 times. Protection of forests from harmful insects, is based mainly on attraction of hole-nesting birds. Artificial nests are used by birds not only for nesting, but also serve them for roosting at night and shelter from adverse weather.

4. Goal

- Assessment of the current state of the avifauna and environmental conditions regulating their existence within Rybalsky Quarry (mapping of vegetation cover, establishing survey routes, conducting surveys during the nesting, migration and wintering periods, the analysis of the obtained results);
- The development of an action plan to increase the diversity of birds and improve the sustainability of their communities;
- Campaign of making and hanging artificial nesting sites "Give birds a home" with participation of school children;
- Establishing a comprehensive tour route and the conducting of excursions with the involvement of the local population, especially school children and university students.
- Production and distribution of the poster "Birds of Rybalsky Quarry";
- To raise awareness of birds in children and the formation of skills of identifying birds in the field – publishing a colouring book "Birds of Rybalsky Quarry".

Implementation of the project took place on the territory of Rybalsky Quarry, which is located near the village Liubymivka, Dnipropetrovsk district, Dnipropetrovsk region, Ukraine. The lowest point of the quarry is at the level of 24 m lower than the Baltic system, that is 75 m below the surface level of the Dnieper river, which flows at a distance of 0.6 km from the pit. Precambrian crystalline rocks are mined at the quarry

and processed on site into crushed stone by crushing. The development of the territory began in 1932. The current area for the quarry is almost 90 hectares. Current production is about 500,000 tons per year.

In the course of the project the study area was divided into 3 zones (Appendix A).

- Red area (I) area of active development at the bottom of the quarry bed, where work is constantly carried out involving grinding stones and occasional blasting.
- Yellow zone (II) – waste land prepared for reclamation; here mining operations are not carried out.
- Green zone (III) land reserved as part of the quarry, where extraction of stone has not yet started and a belt adjacent to the quarry site 200 m in width, having a natural or close to natural state.

5. Methods

5.1. Study of the current status of the avifauna.

When choosing a method of research of birds of the quarry we have combined the two most common methods – fixed point survey and route. To conduct route surveys we have used the method of linear Finnish transects (Jarvinen, Vaisanen, 1977). The main feature of this method is that when the route is walked all birds are registered by the observer, but the main count itself is made only for birds within a delimited strip within a certain distance from the observer (limited belt count) and a separate count carried out for birds beyond this strip (additional belt count). For comparison, a different type of route count without a fixed belt of observation was also used for calculating the average population density by the average distances between the birds observed (Ravkin, 1967; Ravkin, Dobrohotov, 1963).

During point counts we used the methodology approved by the International Committee for Bird Populations, which is entitled "Method I. P. A." (Indice Ponctuel d'abondance) (Blondeb, Ferry, Bergere, 1977). The peculiarity of this method is that a count is made at one point for 20 minutes, each point is visited twice during the season.

5.2. Improving the conditions of existence.

Improvement of conditions of existence for birds was carried out in two directions.

1. Making and placing of three types of artificial nests: the small ("titmouse type"), medium ("starling type") and large ("owl type"). We used nest box type made of sawn boards 2.5 cm thick with a circular hole. They were placed at a distance of about 50 m from each other, with nests of different sizes being adjacent to each other rather than being segregated into different zones. Height 2.5-5.0 m. Each artificial nest was numbered, identified by its GPS coordinates and plotted on a map. This was done to facilitate the process of checking them in the future for preparation for reuse and the search for final utilization

2. The construction of a watering place for birds by clearing obstructions to the spring and excavating the pools.

5.3. Environmental education of the local population

To increase public awareness of biodiversity in quarries a poster and a colouring book have been printed, a series of articles is being published in the mass media, an excursion route is being developed on the territory of the quarry, which will be combined with the campaign "Give the birds a home", carried out in cooperation with members of the group Dnepropetrovsk Regional Ecological-Naturalist Centre.

6. Results

6.1. The current status of the avifauna

6.1.1. Habitat distribution of the birds of the quarry

. In its structure and current state Rybalsky Quarry combines elements of mountain, steppe and forest landscapes. The quarry is located in the centre of the steppe zone of Ukraine. In this regard, its avifauna has much in common with typical steppe bird communities.

The landscape zoning of the quarry can be divided into several habitats, which are characterized by certain types of birds.

The actual excavated area of the quarry, which is a rocky habitat, composed of heaps and different sized fragments of stones. The area is 38.0 ha. This is the poorest habitat for birds. 6-8 species of birds nest here: these include Pied Wheatear, Northern Wheatear, White Wagtail, Black Redstart.

Forest habitat is formed from natural succession in areas where rocks have crumbled and along drainage channels. The main wood and shrub species: locust, black poplar, field maple, common ash, elm, wild olive, sea buckthorn, cranberry, black elderberry. In this area of 42.0 ha the diversity of birds is greatest. 18 species breed in this area, with various passerine species dominant: the Great Tit, Chaffinch, Song Thrush and Blackbird. Subdominant species include Tree Pipit, Robin, Goldfinch.

Clay bluffs. The area of this habitat within the quarry is 13.3 ha. It is highly attractive to tunnel-nesting and hole-nesting birds. Here the overall density of nesting birds reaches its maximum. The overwhelmingly dominant species are Sand Martin and European Bee-Eater. The Roller, listed in the Red Book of Ukraine, also breeds here.

Steppe areas. This supports bird species which prefer open areas with sparse herbaceous cover and scattered trees and shrubs. The area of this habitat is 4.5 ha. It is comparatively sparsely populated with birds. 5 species nest here in scattered pairs (Yellowhammer, Woodlark, Nightjar, etc.).

Wetland, overgrown with reeds, which was formed around the permanent spring in the west side of the quarry. It occupies a very small area - 0.2 ha, but is an extremely important habitat in ecological terms, especially in the summer. The majority of the birds inhabiting the quarry rely on this site as a drinking and bathing site.

6.1.2. Species and taxonomic composition of birds

The species composition of the quarry was studied in the spring-summer period from April to August. 65 species were observed (Appendix B), which belong to 12 systematic groups (orders). Only the order passerines were well represented, with 43 species. 6 species of birds of prey were observed; other orders were represented by 1-3 species each (Fig. 1). The low number of representatives of non-passerines was due to the lack of or insufficient extent of the necessary habitats within the quarry.

6.1.3. Ecological complexes of the avifauna

We divided the birds into different ecological groups (complexes) according to preferred habitats, nesting sites and food preferences (Appendix B).

The 5 groups distinguished according to habitat preference are dominated by representatives of the group which occupies the ecotone on the border of forest and open landscape. This is the most common habitat type in the quarry. There are 34 species in this group, making 52.3% of the total number of species. The number of synanthropic species is much less (11, or 16.9 per cent of the total). Open country (field) and forest species were each represented by a small number of species, 8, or 12.3%. The wetland group was characterized by the lowest number of species (4 or 6.2%) due to the almost complete lack of wetland habitat.

Groups distinguished by nesting type were dominated by birds nesting in trees (23, or 35.4% of the total species composition of the avifauna) and ground nesting species (14 or 21.5%). Far fewer species nest in shrubs, tree hollows (10, or 15.4%), and in different structures (7, or 10.8 %). Tunnel nesting birds had the lowest number of species.

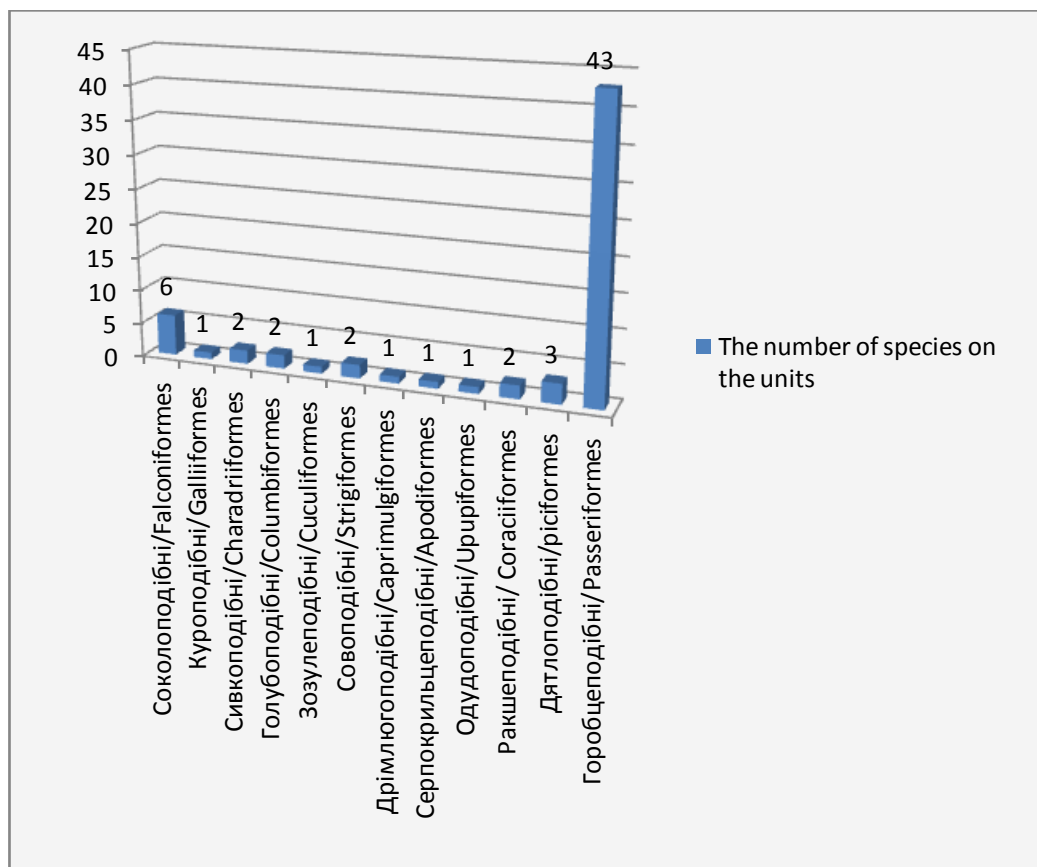


Figure 1. The overall composition of the avifauna of the quarry

(4, or 6.1%). It is impossible to draw a clear line of demarcation between the last three groups, due to the fact that hole-nesting species, birds nesting in buildings and tunnel-nesting species are closely interrelated in their nesting preferences.

Four species groups have been distinguished according to food preference. The insectivorous group is clearly dominant – 38 species (58.5% of the species total), the subdominant groups were the plant eating group (10 species or 15.5%), omnivorous (9 species, or 13.8%) and predatory group (8 species, or 12.2%).

6.1.4. How the birds use the quarry

Research into the birds of the quarry began rather late in the spring migration period, so the group of non-breeding passage migrant species in the obtained data is represented very poorly. In all areas of the quarry it is only a few species (Fig. 2). The summer period was studied much better. It is possible to determine the breeding group and mention species that fly to the quarry only for the purpose of feeding. The summering group was best represented in the yellow zone (II). This is due to a wider variety of habitats compared to the green area. For the same reason the number of nesting species in the yellow area was a little greater than in the green (III). No species breed in the zone of active industrial activity (I) because of the significant influence of the disturbance factor.

6.1.5. The numbers of birds

To determine the number of birds of the quarry, a survey in May-June was undertaken. Basic information about the population was collected during the route survey. Additionally, we used point counts.

The presence of large areas of clay bluffs and the proximity to the Dnieper, contributed to the formation and flourishing of an important colony of Sand Martins (*Riparia riparia*), the number of which we estimated only approximately. In numbers of breeding pairs they take the lion's share among the birds breeding in the quarry (Fig. 3). There were far fewer pairs of Bee-Eater (*Merops apiaster*) than Sand Martins. These two species together constitute more than 80% of all nesting birds in the quarry.

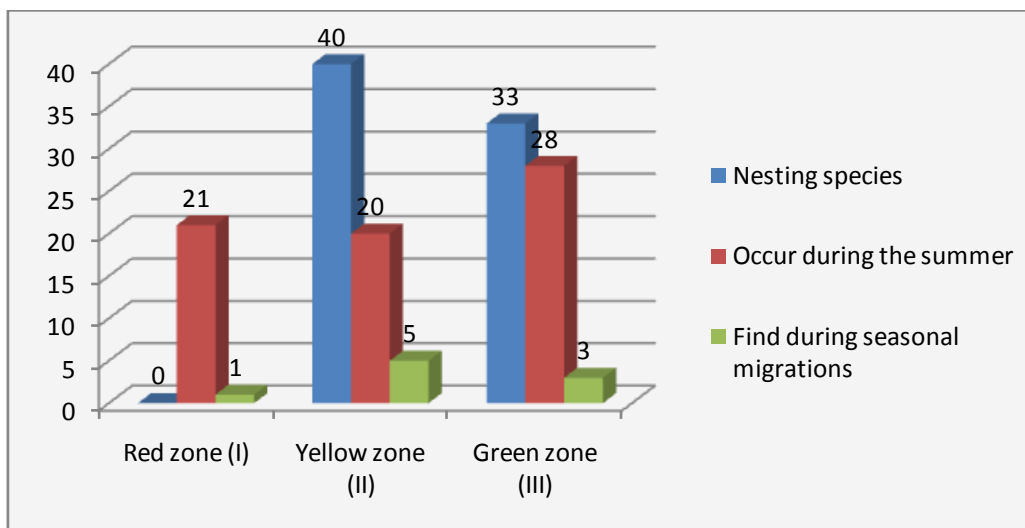


Figure 2. The character stays bird zones (spring-summer aspect)

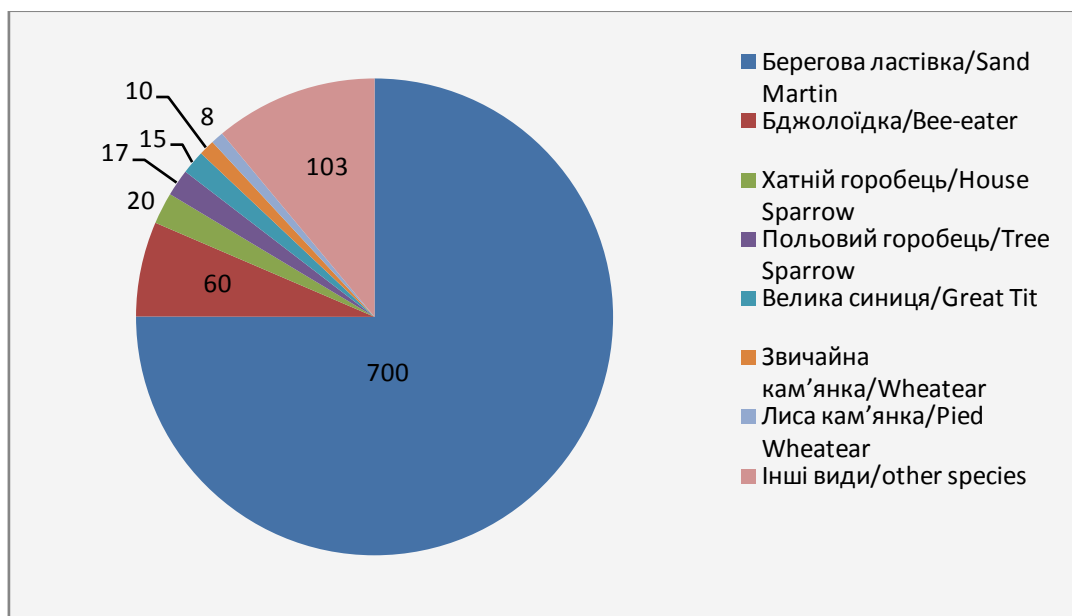


Figure 3. The absolute number of nesting bird species of Rybalsky quarry

6.1.6. The conservation of birds of Rybalsky Quarry

It should be noted that most of the bird species using the quarry are included in lists of protected birds at both international and domestic levels (Appendix C). The greatest numbers (86%) are included in the list of the Berne Convention. In the lists of the Bonn Convention 40%, and in the Washington list (CITES) – 12%. Under the purview of the European Society for Environmental Conservation (SPEC) almost 42% of the quarry's bird species are included. On the domestic level, 3 species included in the Red Book of Ukraine, and 6 in the Red Book of Dnipropetrovsk oblast occur in the quarry.

In general, the avifauna of the quarry is quite poor, but on account of the specialized types-tunnel-nesting species, which are an important component of the regional avifauna and enhance biodiversity, the site enjoys a rather special status. In addition, the clay bluffs provide additional nesting sites for birds from nearby habitats (secondary group of hole-nesting species).

To maintain optimal numbers, and improve the protection of tunnel-nesting birds, it is necessary to ensure the future preservation and maintenance in optimal conditions of the most important of the quarry's habitats for birds, the clay bluffs, taking them under protection, creating an on-site quarry reserve or nature monument. Currently, the territory of the quarry has no conservation status. These artificial cliffs have a

unique, extremely rugged terrain, mosaic and deserve attention and protection as an amazing element of the landscapes and habitats of rare and endangered species of plants and animals.

6.2. Improving the conditions for birds

6.2.1 Installation of artificial nests

Practical work on the establishment of artificial nests was initiated in mid-May. The first batch of 21 nest boxes (10 starling type and 11 titmouse boxes) were placed on 15 May, the second of 29 nest boxes (starling type) – 22 May the last 15 nest boxes on 2 June (10 titmouse type and 5 owl type) (Appendix D, E).

All artificial nests were placed in trees of 4 species: white poplar – 24 (37%), aspen – 21 (32%), acacia – 19(29%) and maple – 1 (2%)(Fig. 4). The height of the placement – 2.5-5.0 m. The vast majority of nests were installed at a height of 3-4 m. – 50 (77%).

The occupation by birds of the artificial nests was determined by the presence of droppings on the top cover and the presence of nesting material, and presence of birds at the nests. Overall, birds visited 29 of the 50 titmouse boxes (58%) and 4 out of 10 starling boxes (40%). None of the owl boxes were occupied in the course of the summer birds since these were erected long after the start of the breeding season for owls. Later, 13 nest boxes were occupied (20%). The main type of nest box occupied was the titmouse type – 12, or 24%, in the starling boxes 1 nest was found (10%). Regarding species composition, the unconditional leader was the Great Tit (*Parus major*) which nested in 10 nest boxes. One Tree Sparrow nest (*Passer montanus*) was found in a titmouse box and also one in a starling box and one pair of Starlings (*Sturnus vulgaris*) nested in a starling box.

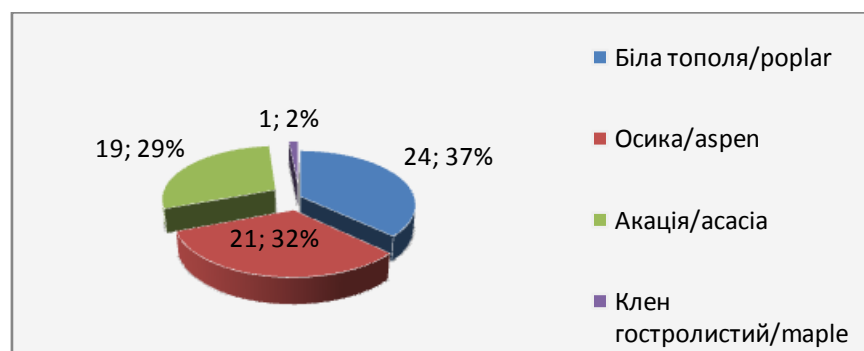


Figure 4. The distribution of the nest boxes in trees.

6.2.2. The creation of watering places for birds

Another activity was carried out with the aim of improving habitat conditions for birds, especially during the breeding period was the creation of two drinking pools for birds.. In the steppe zone with hot and dry summers the problem of finding moisture is particularly acute for many creatures that inhabit the quarry. In Rybalksy Quarry there was a total lack of permanent ponds with open water. Only in spring, immediately after the snow melt and after heavy rains, could one find small puddles, which disappeared within a few days.

During an inspection of the territory of the quarry in the spring in the North-Eastern part we noticed small streams that flowed over the granite wall and were quickly absorbed. After some discussion, our team decided to make this place a small artificial pond, which would serve as a source of moisture for birds and other residents of the quarry. With the help of entrenching tools 2 springs were opened up, which quickly filled with water, making them suitable for birds not only to drink in but also to bathe in (Appendix F). On the bottom of the mini-pond sited on a clay bed we stamped and posted flat stones, to exclude rapid absorption of water into the soil. I hope that the measures we have taken will contribute to improving the living conditions of birds of the quarry.

6.3. Environmental education of the local population

To disseminate information among school teachers and their pupils about biodiversity and the birds inhabiting the territory of Rybalsky Quarry, was published a poster of "Birds of Rybalsky Quarry". For teaching children the skills of identifying birds in the wild we published a colouring book "Birds of Rybalsky Quarry".(Fig. 4, Appendix G).



Figure 4. Poster "Birds of Rybalsky Quarry"

To help people explore the current state of the quarry we developed a comprehensive guided tour "Nature Trail in Rybalskiy Quarry" (Appendix H), which includes information on the geological structure of the quarry, the technological process of extraction and crushing of stone, and the site's paleontological "highlights". The ornithological part of the route includes at various times of the year a look at the of breeding colonies of tunnel-nesting birds , familiarization with the methods of birdwatching and methods of photographing birds in their natural environment, , checking and lessons in making artificial nests, bird watching near the waterhole. The itinerary was timed to the campaign "Give the birds a home" , involving making and hanging of artificial nesting sites by children – members of Dnepropetrovsk Regional Ecological-Naturalist centre.

With the aim of increasing environmental consciousness of the local population, we have involved the mass media , with the project team holding a press conference at the Information Agency "Dnipro-Bridge", an interview with the project manager was broadcast on Radio "Era" (<http://www.eramedia.com>). EN/article/243103 - kroskantr_ptahi_ribalskogo_karru_na_dnipropetrovschin/), an article was published in the newspaper "Evening Dnepr" - "Birds of Paradise of Dnipro", No. 65 of 8.09.2016, and the newspaper "Day" - " Quarry of Special Importance,"No. 196 of 16.09.2016 (Appendix I).

7. Discussion

Before project implementation, we had previously studied the composition of the avifauna and identified the nesting status of regional breeding groups of the species involved. For the success of biotechnical measures the correct choice of site and construction of the nest boxes are crucial. Among all types of birds, insectivorous species are the easiest to attract to nest boxes. The maximum effect can be obtained if artificial nests correspond to natural nesting structures. We used three types of nest box, most of which were designed for nesting by small passerine birds. Only the largest of them ("owl type boxes" may be used for nesting by Little Owls, Hoopoes, and several other species.

Most researchers believe that the best time for placing artificial nests for migratory bird species is prior to the beginning of the breeding period in March-April. For some sedentary species, such as owls, it is better to place the boxes even in the autumn. Therefore, our results for occupation of the boxes (20%) during the first year can be considered quite high. This figure, according to many researchers, is typically found on the second or third year after placing of nest boxes (Chichkova, 2009, Shchegolev, 1965).

There were no differences between tree species in occupancy of the nest boxes. The selection by birds of nest boxes was equally distributed among all three species of tree on which the boxes were fixed. The same can be said about the height at which the nest boxes were placed. However, there was some preference for nest boxes located in higher positions. The optimal height in places where there is no disturbance to the birds was at 3-5 m and for some species, such as owls, even higher.

Regarding competitors and enemies of hole-nesting birds. In one of titmouse box mason bees (*Anthidium* species) nested. It is worth noting that on the territory of Rybalsky Quarry we did not find the Forest Dormouse (*Dryomys nitedula*), which is quite widespread in forest plantations in Dnipropetrovsk oblast and can substantially harm both birds with open nests and hole-nesting birds (Blagosklonov, 1991). Similarly no evidence of predation by the Beech Marten (*Martes foina*) was noted in the quarry.

8. Conclusions

1. The avifauna observed in the Rybalsky Quarry in the spring-summer period consists of 65 species (22.1% of the total species composition of birds of Dnipropetrovsk region and about 30% of the region's regular species). The site is distinguished by its large colony of Sand Martins and Bee-Eaters, its stable micropopulation of Pied Wheatears and nesting Rollers, a Ukraine Red Book species.

2. The provision of nest boxes of different sizes is the most viable way to improve the avian diversity of Rybalsky Quarry. This can be applied to other quarries as well.

3. On account of the combined biological, geological, paleontological characteristics of Rybalskiy Quarry, this site deserves the status of geological monument and should be proposed for inclusion as a cluster unit in the composition of the planned "Dnieper Rapids National Park".

4. The achievements obtained by the project team, can be used in the educational process of schools, universities and extracurricular education institutions –such as young naturalists clubs,, while the quarry itself is to serve as a testing ground for excursions along the developed route, the implementation of course projects and research for dissertations on environmental issues.

5. As a promising direction of tourism in the territory of the quarry, nest boxes can be seen (attracting birds to nest in artificial nests, active management of the population – large scale implementation of biotechnical measures aimed at the protection of birds)

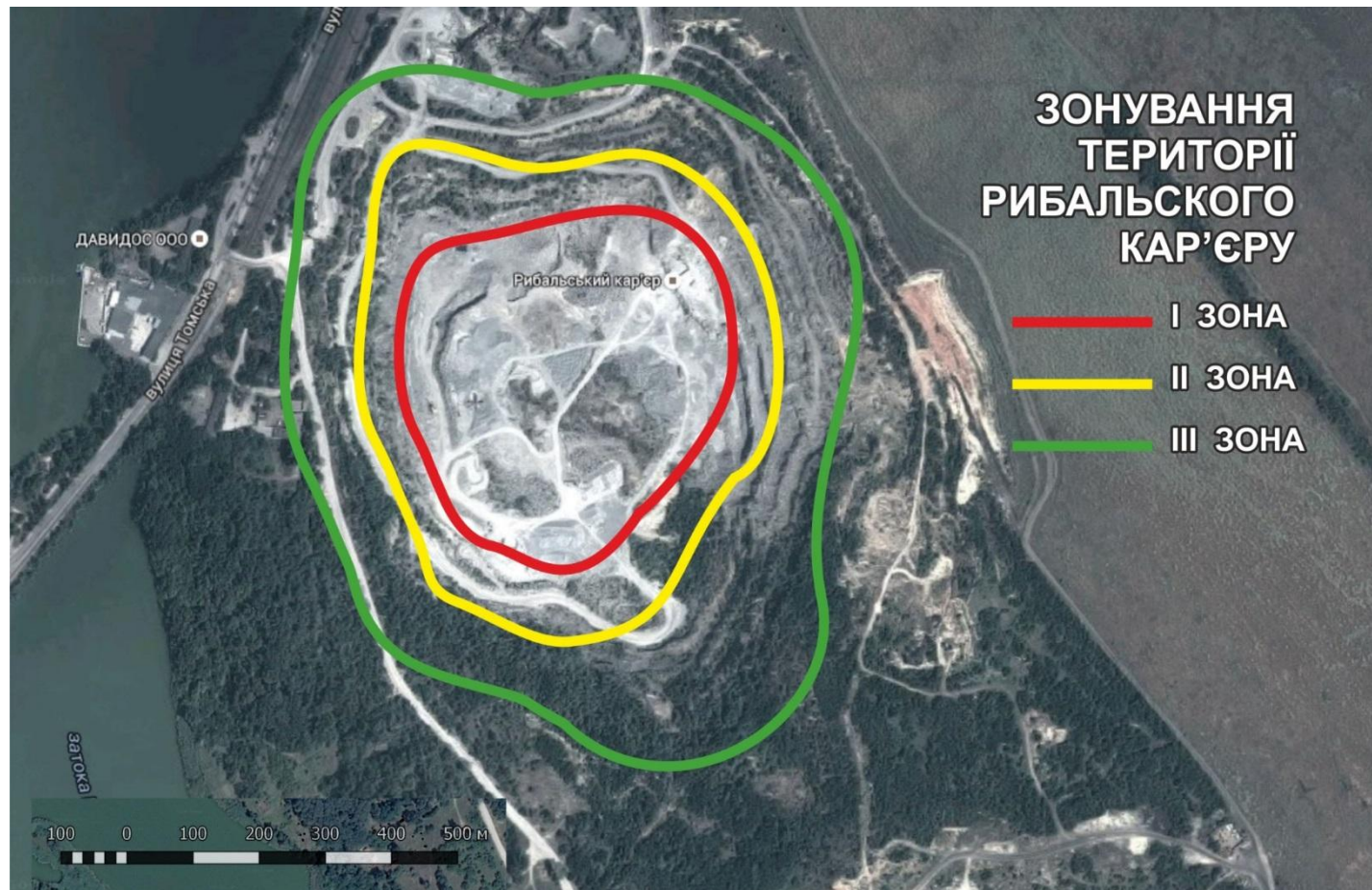
6. As a result of implementation of the project, the conditions of existence of birds have been improved; the environmental potential of the quarry and its aesthetic appeal greatly increased and the positive image of the company "HeidelbergCement Ukraine" has been enhanced.

7. We are developing plans to extend our research and conservation focus beyond the birds of the quarry to its mammals, reptiles, insects and plants, with the cooperation of other local specialists. The ultimate aim is to make the quarry a model local nature reserve.

<p>Project tags (select all appropriate):</p> <p>This will be use to classify your project in the project archive (that is also available online)</p>	
<p>Project focus:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Biodiversity management <input type="checkbox"/> Cooperation programmes <input checked="" type="checkbox"/> Education and Raising awareness <input type="checkbox"/> Endangered and protected species <input type="checkbox"/> Invasive species <input checked="" type="checkbox"/> Landscape management - rehabilitation <input type="checkbox"/> Rehabilitation <input checked="" type="checkbox"/> Scientific research <input type="checkbox"/> Soil management <input type="checkbox"/> Urban ecology <input type="checkbox"/> Water management <p>Flora:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Conifers and cycads <input type="checkbox"/> Ferns <input type="checkbox"/> Flowering plants <input type="checkbox"/> Fungi <input type="checkbox"/> Mosses and liverworts <p>Fauna:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Amphibians <input checked="" type="checkbox"/> Birds <input type="checkbox"/> Dragonflies & Butterflies <input type="checkbox"/> Fish <input type="checkbox"/> Mammals <input type="checkbox"/> Reptiles <input type="checkbox"/> Spiders <input type="checkbox"/> Other insects <input type="checkbox"/> Other species 	<p>Habitat:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cave <input checked="" type="checkbox"/> Cliffs <input type="checkbox"/> Fields - crops/culture <input checked="" type="checkbox"/> Forest <input checked="" type="checkbox"/> Grassland <input type="checkbox"/> Human settlement <input checked="" type="checkbox"/> Open areas of rocky grounds <input type="checkbox"/> Recreational areas <input checked="" type="checkbox"/> Screes <input type="checkbox"/> Shrubs & groves <input type="checkbox"/> Soil <input type="checkbox"/> Wander biotopes <input type="checkbox"/> Water bodies (flowing, standing) <input type="checkbox"/> Wetland <p>Stakeholders:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Authorities <input type="checkbox"/> Local community <input checked="" type="checkbox"/> NGOs <input checked="" type="checkbox"/> Schools <input type="checkbox"/> Universities

Appendix

Appendix A: Zoning of territory Rybalsky Quarry



Appendix B. General characteristics of the avifauna of Rybalsky Quarry.

General characteristics of birds of Rybalsky quarry

(the spring and summer period)

<i>Species</i>		<i>Environmental complex</i>			<i>the status of stay in the zones</i>		
<i>Scientific name</i>	<i>English name</i>	PS	NP	TF	<i>Red (I)</i>	<i>Yellow (II)</i>	<i>Green (III)</i>
ACCIPITRIFORMES							
<i>Milvus migrans</i> (Boddaert, 1783)	Black Kite	G	TR	CV		SM	SM
<i>Buteo rufinus</i> (Cretzschmar, 1827)	Long-legged Buzzard	FL	TR	CV		SM	SM
<i>Buteo buteo</i> (Linnaeus, 1758)	Buzzard	G	TR	CV		SM	SM
<i>Accipiter nisus</i> (Linnaeus, 1758)	Sparrowhawk	G	TR	CV		MG	MG
<i>Falco subbuteo</i> Linnaeus, 1758	Hobby	G	TR	CV		SM	SM
<i>Falco tinnunculus</i> Linnaeus, 1758	Kestrel	FL	TR	CV		NS	SM
GALLIFORMES							
<i>Phasianus colchicus</i> Linnaeus, 1758	Pheasant	FL	GR	HV		NS	NS
CHARADRIIFORMES							
<i>Larus ridibundus</i> Linnaeus, 1766	Black-headed Gull	W	GR	OV	SM	SM	SM
<i>Larus cachinnans</i> Pallas, 1811	Caspian Gull	W	GR	OV	SM	SM	SM
COLUMBIFORMES							
<i>Columba palumbus</i> Linnaeus, 1758	Woodpigeon	G	TR	HV		NS	NS
<i>Streptopelia decaocto</i> (Frivaldszky, 1838)	Collared Dove	S	TR	HV		SM	SM
CUCULIFORMES							
<i>Cuculus canorus</i> Linnaeus, 1758	Cuckoo	G	SH	IV		NS	NS
STRIGIFORMES							
<i>Asio otus</i> (Linnaeus, 1758)	Long-eared Owl	G	TR	CV		SM	SM
<i>Athene noctua</i> (Scopoli, 1769)	Little Owl	S	ST	CV		NS	SM
CAPRIMULGIFORMES							
<i>Caprimulgus europaeus</i> Linnaeus, 1758	Nightjar	G	GR	IV		NS	SM
APODIFORMES							
<i>Apus apus</i> (Linnaeus, 1758)	Swift	S	ST	IV		SM	SM

CORACIIFORMES							
<i>Coracias garrulus</i> Linnaeus, 1758	Roller	G	BR	IV		NS	SM
<i>Merops apiaster</i> Linnaeus, 1758	Bee-eater	FL	BR	IV		NS	SM
UPUPIFORMES							
<i>Upupa epops</i> Linnaeus, 1758	Hoopoe	G	HL	IV		NS	NS
PICIFORMES							
<i>Jynx torquilla</i> Linnaeus, 1758	Wryneck	G	HL	IV		NS	NS
<i>Picus canus</i> Gmelin, 1788	Grey-headed Woodpecker	FR	HL	IV		SM	SM
<i>Dendrocopos syriacus</i> (Hemprich et Ehrenberg, 1833)	Syrian Woodpecker	S	HL	IV		SM	NS
PASSERIFORMES							
<i>Riparia riparia</i> (Linnaeus, 1758)	Sand Martin	W	BR	IV	SM	NS	SM
<i>Hirundo rustica</i> Linnaeus, 1758	Swallow	S	ST	IV	SM	SM	SM
<i>Delichon urbica</i> (Linnaeus, 1758)	House Martin	S	ST	IV	SM	SM	SM
<i>Lullula arborea</i> (Linnaeus, 1758)	Woodlark	G	GR	HV		NS	NS
<i>Anthus trivialis</i> (Linnaeus, 1758)	Tree Pipit	G	GR	IV		NS	NS
<i>Motacilla flava</i> Linnaeus, 1758	Yellow Wagtail	FL	GR	IV	MG	MG	SM
<i>Motacilla alba</i> (Linnaeus, 1758)	Pied Wagtail	S	ST	IV	SM	NS	NS
<i>Lanius collurio</i> Linnaeus, 1758	Red-backed Shrike	G	SH	IV		NS	NS
<i>Oriolus oriolus</i> (Linnaeus, 1758)	Golden Oriole	G	TR	IV		NS	NS
<i>Sturnus vulgaris</i> Linnaeus, 1758	Starling	S	HL	IV	SM	NS	NS
<i>Garrulus glandarius</i> (Linnaeus, 1758)	Jay	G	TR	OV		NS	NS
<i>Pica pica</i> (Linnaeus, 1758)	Magpie	G	TR	OV	SM	NS	NS
<i>Corvus frugilegus</i> Linnaeus, 1758	Rook	G	TR	OV	SM	SM	SM
<i>Corvus cornix</i> Linnaeus, 1758	Hooded Crow	G	TR	OV	SM	SM	SM
<i>Corvus corax</i> Linnaeus, 1758	Raven	G	TR	OV	SM	SM	SM
<i>Troglodytes troglodytes</i> (Linnaeus, 1758)	Wren	G	GR	IV		MG	MG
<i>Acrocephalus palustris</i> (Bechstein, 1798)	Marsh Warbler	W	SH	IV		MG	
<i>Sylvia nisoria</i>	Barred Warbler	G	SH	IV		SM	SM

(Bechstein, 1795)							
<i>Sylvia communis</i> Latham, 1787	Whitethroat	G	SH	IV		NS	NS
<i>Sylvia atricapilla</i> (Linnaeus, 1758)	Blackcap	FR	SH	IV		NS	NS
<i>Sylvia curruca</i> (Linnaeus, 1758)	Lesser Whitethroat	G	SH	IV		NS	NS
<i>Phylloscopus trochilus</i> (Linnaeus, 1758)	Willow Warbler	FR	GR	IV		MG	MG
<i>Phylloscopus collybita</i> (Vieillot, 1817)	Chiffchaff	FR	GR	IV		NS	SM
<i>Ficedula albicollis</i> (Temminck, 1815)	Collared Flycatcher	G	HL	IV		SM	NS
<i>Muscicapa striata</i> (Pallas, 1764)	Spotted Flycatcher	G	TR	IV		NS	NS
<i>Erithacus rubecula</i> (Linnaeus, 1758)	Robin	FR	GR	IV		NS	NS
<i>Saxicola torquata</i> (Linnaeus, 1766)	Stonechat	FL	GR	IV		SM	SM
<i>Oenanthe oenanthe</i> (Linnaeus, 1758)	Wheatear	FL	HL	IV	SM	NS	NS
<i>Oenanthe pleschanka</i> (Lepechin, 1770)	Pied Wheatear	FL	BR	IV	SM	NS	SM
<i>Phoenicurus ochruros</i> (S. G. Gmelin, 1774)	Black Redstart	S	ST	IV	SM	NS	NS
<i>Luscinia luscinia</i> (Linnaeus, 1758)	Thrush Nightingale	FR	GR	IV		NS	NS
<i>Turdus philomelos</i> C. L. Brehm, 1831	Song Thrush	FR	TR	IV		NS	NS
<i>Turdus merula</i> Linnaeus, 1758	Blackbird	FR	TR	IV		NS	NS
<i>Parus caeruleus</i> Linnaeus, 1758	Blue Tit	G	HL	IV		SM	SM
<i>Parus major</i> Linnaeus, 1758	Great Tit	G	HL	IV	SM	NS	NS
<i>Passer domesticus</i> (Linnaeus, 1758)	House Sparrow	S	ST	OV	SM	NS	NS
<i>Passer montanus</i> (Linnaeus, 1758)	Tree Sparrow	S	HL	OV	SM	NS	NS
<i>Fringilla coelebs</i> Linnaeus, 1758	Chaffinch	G	TR	HV	SM	NS	NS
<i>Chloris chloris</i> (Linnaeus, 1758)	Greenfinch	G	TR	HV	SM	NS	NS
<i>Carduelis carduelis</i> (Linnaeus, 1758)	Goldfinch	G	TR	HV	SM	NS	NS
<i>Acanthis cannabina</i> (Linnaeus, 1758)	Linnet	G	TR	HV	SM	NS	NS
<i>Coccothraustes coccothraustes</i> (Linnaeus, 1758)	Hawfinch	G	TR	HV		NS	SM
<i>Emberiza citrinella</i> Linnaeus, 1758	Yellowhammer	G	GR	HV		NS	NS

legend:

❖ Ecological complexes of birds

- PS – place of stay
 - FR – forest
 - G – glade
 - W – wetland
 - FL – field
 - S – synanthropic
- NP – the nesting place
 - TR – tree nesting
 - SH – shrub type nesting
 - GR – ground nesting
 - HL – tree hole nesting
 - BR – tunnel nesting
 - ST – nesting in a variety of man-made structures
- TF – the type of food
 - IV – insectivorous
 - HV – herbivorous
 - CV – carnivorous
 - OV – omnivorous

Blue shading indicates the species that nest in colonies; the others, without filling breed in separate pairs.

❖ The status of stay

- NS – nesting species
- MG – a migratory species, found only during migration
- SM – found in summer feeding, but not nesting

Appendix C. Birds of Rybalsky Quarry in the protection lists of different levels.

Characteristic birds of Rybalsky Quarry

in relation to the protection lists of different levels

<i>Species</i>		<i>International level</i>					<i>Domestic level</i>
<i>Scientific name</i>	<i>English name</i>	<i>SPEC</i>	<i>CITES</i>	<i>BERNA</i>	<i>BONN</i>	<i>CEE</i>	<i>RBU/RBD</i>
FALCONIFORMES							
<i>Milvus migrans</i> (Boddaert, 1783)	Black Kite	3	B	II	II	I	V/V
<i>Buteo rufinus</i> (Cretzschmar, 1827)	Long-legged Buzzard		B	II	II		R/R
<i>Buteo buteo</i> (Linnaeus, 1758)	Buzzard		B	II	II		
<i>Accipiter nisus</i> (Linnaeus, 1758)	Sparrowhawk		B	II	II		
<i>Falco subbuteo</i> Linnaeus, 1758	Hobby		B	II	II		-/R
<i>Falco tinnunculus</i> Linnaeus, 1758	Kestrel	3	B	II	II		
GALLIFORMES							
<i>Phasianus colchicus</i> Linnaeus, 1758	Pheasant			III		II, III	
CHARADRIIFORMES							
<i>Larus ridibundus</i> Linnaeus, 1766	Black-headed Gull					II	
<i>Larus cachinnans</i> Pallas, 1811	Yellow-legged Gull						
COLUMBIFORMES							
<i>Columba palumbus</i> Linnaeus, 1758	Woodpigeon	4				II, III	
<i>Streptopelia decaocto</i> (Frisch, 1838)	Collared Dove			III			
CUCULIFORMES							
<i>Cuculus canorus</i> Linnaeus, 1758	Cuckoo			III			
STRIGIFORMES							
<i>Asio otus</i> (Linnaeus, 1758)	Long-eared Owl		B	II			
<i>Athene noctua</i> (Scopoli, 1769)	Little Owl	3	B	II			-/V
CAPRIMULGIFORMES							
<i>Caprimulgus europaeus</i> Linnaeus, 1758	Nightjar	2		II		I	
APODIFORMES							
<i>Apus apus</i> (Linnaeus, 1758)	Swift			III			
CORACIIFORMES							

<i>Coracias garrulus</i> Linnaeus, 1758	Roller	2		II	II	I	T/R
<i>Merops apiaster</i> Linnaeus, 1758	Bee-eater	3		II	II		
UPUIFORMES							
<i>Upupa epops</i> Linnaeus, 1758	Hoopoe			II			
PICIFORMES							
<i>Jynx torquilla</i> Linnaeus, 1758	Wryneck	3		II			
<i>Picus canus</i> Gmelin, 1788	Grey-headed Woodpecker	3		II		I	
<i>Dendrocopos syriacus</i> (Hemprich et Ehrenberg, 1833)	Syrian Woodpecker			II			
PASSERIFORMES							
<i>Riparia riparia</i> (Linnaeus, 1758)	Sand Martin	3		II			
<i>Hirundo rustica</i> Linnaeus, 1758	Swallow	3		II			
<i>Delichon urbica</i> (Linnaeus, 1758)	House Martin			II			
<i>Lullula arborea</i> (Linnaeus, 1758)	Woodlark	2		II	II		
<i>Anthus trivialis</i> (Linnaeus, 1758)	Tree Pipit			II			
<i>Motacilla flava</i> Linnaeus, 1758	Yellow Wagtail			II			
<i>Motacilla alba</i> (Linnaeus, 1758)	Pied Wagtail			II			
<i>Lanius collurio</i> Linnaeus, 1758	Red-backed Shrike	3		II		I	
<i>Oriolus oriolus</i> (Linnaeus, 1758)	Golden Oriole			II			
<i>Sturnus vulgaris</i> Linnaeus, 1758	Starling			III			
<i>Garrulus glandarius</i> (Linnaeus, 1758)	Jay						
<i>Pica pica</i> (Linnaeus, 1758)	Magpie						
<i>Corvus frugilegus</i> Linnaeus, 1758	Rook						
<i>Corvus cornix</i> Linnaeus, 1758	Hooded Crow						
<i>Corvus corax</i> Linnaeus, 1758	Raven			III			
<i>Troglodytes troglodytes</i> (Linnaeus, 1758)	Wren			III			
<i>Acrocephalus palustris</i> (Bechstein, 1798)	Marsh Warbler	4		II	II		
<i>Sylvia nisoria</i> (Bechstein, 1795)	Barred Warbler	4		II	II	I	

<i>Sylvia communis</i> Latham, 1787	Whitethroat	4		II	II		
<i>Sylvia atricapilla</i> (Linnaeus, 1758)	Blackcap	4		II	II		
<i>Sylvia curruca</i> (Linnaeus, 1758)	Lesser Whitethroat			II	II		
<i>Phylloscopus trochilus</i> (Linnaeus, 1758)	Willow Warbler			II	II		
<i>Phylloscopus collybita</i> (Vieillot, 1817)	Chiffchaff			II	II		
<i>Ficedula albicollis</i> (Temminck, 1815)	Collared Flycatcher			II	II		
<i>Muscicapa striata</i> (Pallas, 1764)	Spotted Flycatcher	3		II	II		
<i>Erithacus rubecula</i> (Linnaeus, 1758)	Robin	4		II	II		
<i>Saxicola torquata</i> (Linnaeus, 1766)	Stonechat	3		II	II		
<i>Oenanthe oenanthe</i> (Linnaeus, 1758)	Wheatear			II	II		
<i>Oenanthe pleschanka</i> (Lepechin, 1770)	Pied Wheatear			II	II		-/V
<i>Phoenicurus ochruros</i> (S. G. Gmelin, 1774)	Black Redstart			II	II		
<i>Luscinia luscinia</i> (Linnaeus, 1758)	Thrush Nightingale			II	II		
<i>Turdus philomelos</i> C. L. Brehm, 1831	Song Thrush	4		III	II	II	
<i>Turdus merula</i> Linnaeus, 1758	Blackbird	4		III	II	II	
<i>Parus caeruleus</i> Linnaeus, 1758	Blue Tit	4		II			
<i>Parus major</i> Linnaeus, 1758	Great Tit			II			
<i>Passer domesticus</i> (Linnaeus, 1758)	House Sparrow						
<i>Passer montanus</i> (Linnaeus, 1758)	Tree Sparrow						
<i>Fringilla coelebs</i> Linnaeus, 1758	Chaffinch	4		III			
<i>Chloris chloris</i> (Linnaeus, 1758)	Greenfinch	4		II			
<i>Carduelis carduelis</i> (Linnaeus, 1758)	Goldfinch			II			
<i>Acanthis cannabina</i> (Linnaeus, 1758)	Linnet	4		II			
<i>Coccothraustes coccothraustes</i> (Linnaeus, 1758)	Hawfinch			II			
<i>Emberiza citrinella</i> Linnaeus, 1758	Yellowhammer	4		II			

Legend:



International level:

- ✓ SPEC – Species of European Conservation Concern (2, 3, 4 – levels of protection of species)
- ✓ CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora (B – the species included in the second application)(1973)
- ✓ BERN – Convention on the Conservation of European Wildlife and natural habitats (II, III – the species included in the appropriate applications)(1979)
- ✓ BONN – Convention on the Conservation of Migratory Species of Wild Animals (II – the species included in the second application)(1979)
- ✓ CEE – Council Directive 79/409/EEC on the conservation of Wild Birds (I, II, III – the species included in the appropriate applications)(1979)



Domestic level:

- ✓ RBU – The national Red data book of Ukraine (2009)
- ✓ RBD – Regional Red book of Dnipropetrovsk region (2011)
 - T – threatened species,
 - V – vulnerable species,
 - R – rare species.

Appendix D. Results of occupation of artificial nests

Figura 1. Common table

<div>  <h1>The results of the installation of artificial bird nests in the Rybalskiy Quarry</h1> </div>						
The number of artificial nests	The type of nesting box	Date of hanging	Gps coordinates longitude/latitude	Wood species	Height of installation, m	The results of occupation in 2016
1	Starling house	15.05.2016	N48,45118 E035,14702	Poplar	5	Nt nest
2	Starling house	15.05.2016	N48,45555 E035,14296	Poplar	4,5	The presence of nesting material
3	Starling house	15.05.2016	N48,45354 E035,14289	Aspen	5	Hatched Starling Chicks
4	Starling house	15.05.2016	N48,45408 E035,14243	Aspen	3,5	No nest
5	Starling house	15.05.2016	N48,45296 E035,14513	Aspen	3,5	No nest
6	Starling house	15.05.2016	N48,44854 E035,14786	Poplar	3	The presence of nesting material
7	Starling house	15.05.2016	N48,45490 E035,14323	Poplar	4	The presence of nesting material
8	Starling house	15.05.2016	N48,45198 E035,14622	Poplar	2,5	No nest
9	Starling house	15.05.2016	N48,45393 E035,14337	Aspen	3,5	No nest
10	Starling house	15.05.2016	N48,45747 E035,14322	Aspen	4,5	No nest
11	Tit house	15.05.2016	N48,45320 E035,14357	Poplar	3,5	The presence of nesting material
12	Tit house	15.05.2016	N48,45703 E035,14317	Acacia	3,5	The presence of nesting material
13	Tit house	15.05.2016	N48,45258 E035,14580	Poplar	4	Tree Sparrow nest attempt
14	Tit house	15.05.2016	N48,45387 E035,14270	Aspen	3,5	No nest
15	Tit house	15.05.2016	N48,45152 E035,14681	Poplar	4	Wasps settled
16	Tit house	15.05.2016	N48,45009 E035,14759	Poplar	3	No nest
17	Tit house	15.05.2016	N48,45450 E035,14298	Maple	2,5	No nest
18	Tit house	15.05.2016	N48,45320 E035,14471	Aspen	4,5	Great Tit nest a
19	Tit house	15.05.2016	N48,45407 E035,14216	Poplar	5	Clutch of 5 eggs Great Tit
20	Tit house	15.05.2016	N48,44900 E035,14793	Acacia	4	The presence of nesting material
21	Tit house	15.05.2016	N48,45607 E035,14317	Poplar	4	The presence of nesting material

22	Tit house	22.05.2016	N48,44945 E035,14828	Aspen	4	Nest Building Great Tit
23	Tit house	22.05.2016	N48,44611 E035,15010	Acacia	3,5	Great Tit nest attempt
24	Tit house	22.05.2016	N48,44696 E035,14895	Poplar	4	The presence of nesting material
25	Tit house	22.05.2016	N48,44635 E035,14948	Acacia	3,5	No nest
26	Tit house	22.05.2016	N48,44850 E035,14835	Aspen	3	No nest
27	Tit house	22.05.2016	N48,44705 E035,14988	Acacia	3,5	No nest
28	Tit house	22.05.2016	N48,44755 E035,14740	Acacia	3,5	The presence of nesting material
29	Tit house	22.05.2016	N48,44772 E035,14663	Poplar	4	The presence of nesting material
30	Tit house	22.05.2016	N48,44799 E035,14772	Acacia	3,5	Great Tit nest attemptt
31	Tit house	22.05.2016	N48,44655 E035,14981	Acacia	3	No nest
32	Tit house	22.05.2016	N48,44699 E035,14759	Acacia	3	No nest
33	Tit house	22.05.2016	N48,44686 E035,14781	Poplar	3	The presence of nesting material
34	Tit house	22.05.2016	N48,44771 E035,14772	Acacia	2,5	No nest
35	Tit house	22.05.2016	N48,44748 E035,14728	Acacia	3,5	The presence of nesting material
36	Tit house	22.05.2016	N48,44713 E035,14692	Aspen	4	The presence of nesting material
37	Tit house	22.05.2016	N48,44715 E035,14646	Poplar	3,5	No nest
38	Tit house	22.05.2016	N48,44745 E035,14722	Aspen	3,5	Great Tit nest attempt
39	Tit house	22.05.2016	N48,44975 E035,14840	Aspen	3	No nest
40	Tit house	22.05.2016	N48,44715 E035,14784	Acacia	3	The presence of nesting material
41	Tit house	22.05.2016	N48,44766 E035,14645	Aspen	3,5	The presence of nesting material
42	Tit house	22.05.2016	N48,44732 E035,14656	Poplar	4	No nest
43	Tit house	22.05.2016	N48,44997 E035,14836	Acacia	3,5	8 Chicks Great Tit
44	Tit house	22.05.2016	N48,44730 E035,14932	Acacia	3,5	No nest
45	Tit house	22.05.2016	N48,44689 E035,14622	Acacia	3	Great Tit nest attempt
46	Tit house	22.05.2016	N48,44952 E035,14825	Poplar	2,5	The presence of nesting material
47	Tit house	22.05.2016	N48,44695 E035,14684	Poplar	3	The presence of nesting material
48	Tit house	22.05.2016	N48,44666 E035,14617	Aspen	4	Great Tit nest attempt
49	Tit house	22.05.2016	N48,44724 E035,14606	Aspen	3,5	No nest
50	Tit house	22.05.2016	N48,44756 E035,14606	Poplar	4	Great Tit nest attempt
51	Tit house	2.06.2016	N48,44757 E035,14587	Aspen	3,5	No nest
52	Tit house	2.06.2016	N48,44827	Aspen	4	The presence of

53	Tit house	2.06.2016	E035,14666	Aspen	4,5	nesting material
			N48,44722 E035,14598			Tree Sparrow nest
54	Tit house	2.06.2016	N48,45316 E035,14417	Poplar	4	No nest
55	Tit house	2.06.2016	N48,45259 E035,14508	Aspen	4	No nest
56	Tit house	2.06.2016	N48,44947 E035,14781	Acacia	3,5	The presence of nesting material
57	Tit house	2.06.2016	N48,45284 E035,14494	Acacia	4	No nest
58	Tit house	2.06.2016	N48,45007 E035,14719	Acacia	4	No nest
59	Tit house	2.06.2016	N48,44792 E035,14801	Aspen	5	The presence of nesting material
60	Tit house	2.06.2016	N48,44812 E035,14618	Aspen	4,5	No nest
61	Owl house	2.06.2016	N48,45037 E035,14703	Poplar	4	No nest
62	Owl house	2.06.2016	N48,44752 E035,14774	Acacia	4,5	No nest
63	Owl house	2.06.2016	N48,44803 E035,14612	Poplar	4	No nest
64	Owl house	2.06.2016	N48,44842 E035,14693	Poplar	4	No nest
65	Owl house	2.06.2016	N48,45295 E035,14457	Poplar	5	No nest

Figura 2. Our team at work



Figura 3. Artificial nests ready!



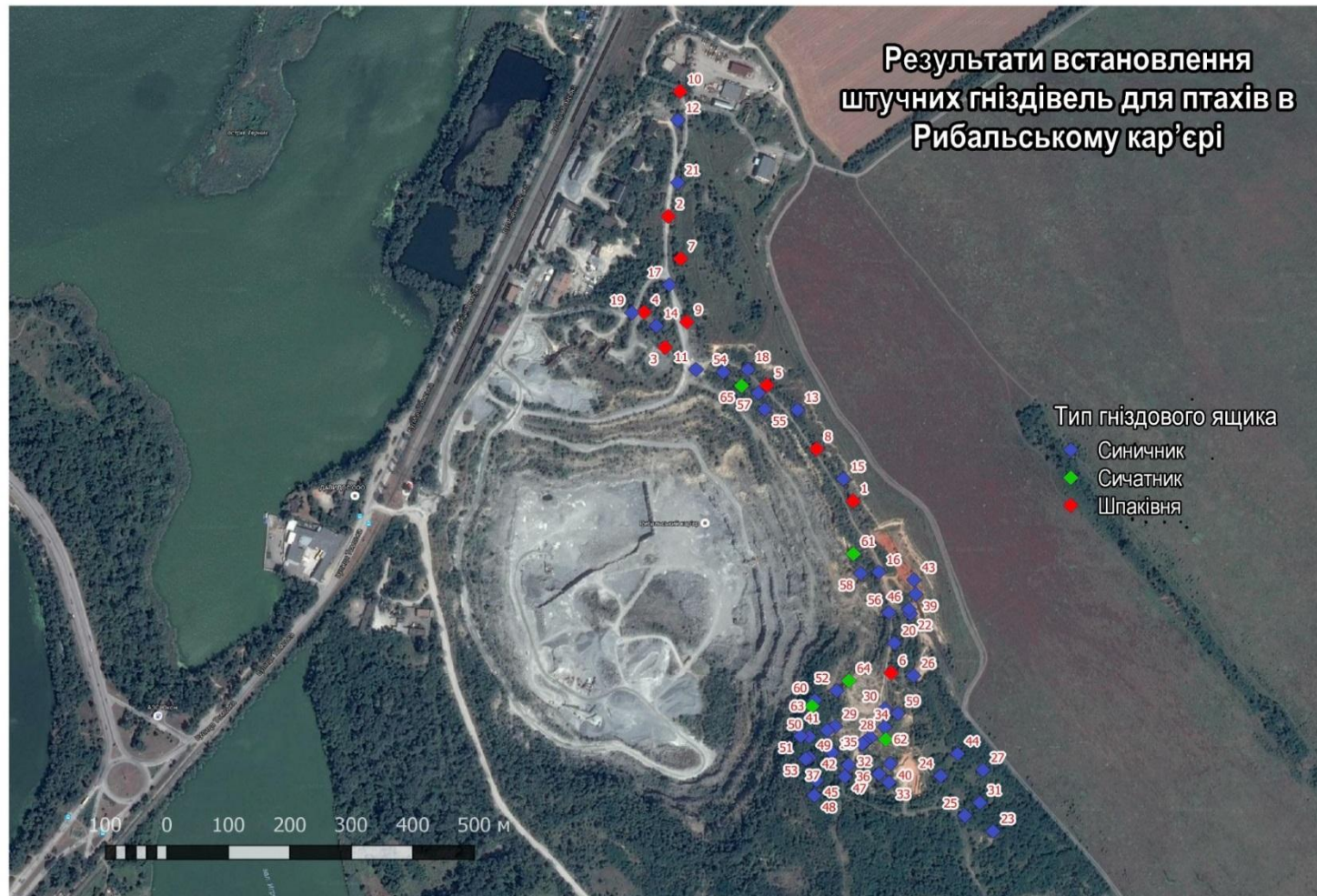
Figura 4. Preparation of a second batch of nests



Figura 5. The installation of bird houses



Appendix E. The scheme of location of the artificial nests on the map of quarry.



Appendix F. Construction sources for watering.
Fig. 1. Dug bowl where water will be collected.



Fig. 2. The second mini-pond is almost ready.



Fig. 3. Put on the bottom of flat stones



Appendix G. Cover coloring books for children "Birds of Rybalsky Quarry"

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August 3, 2016



Appendix H. Scheme comprehensive tour route "Rybalsky Trip quarry"



Райские птицы Днепра

Александр РАЗУМНЫЙ

Оказывается, чтобы увидеть самых удивительных и неповторимых птичек, вовсе не обязательно отправляться в дальние страны. Воистину райских птиц можно увидеть и на окраинах промышленного мегаполиса, в чем убедилась команда днепровских орнитологов во главе с председателем местного отделения Украинского общества охраны птиц Петром Чегоркой.



Ласточка-береговушка

Самый крылатый проект

- Рыбальский гранитный карьер, находящийся на окраине Днепра, приобрел мировую известность благодаря находкам здесь ископаемых остатков обитателей морских глубин: кораллов, моллюсков, древних рыб, возраст которых исчисляется миллионами лет, - рассказывает «Вечерке» Петр Чегорка. - Его значение как своеобразного природного оазиса, где благодаря процессам саморегулирования формируется «новая жизнь», оставалось вне поля внимания экологов. А ведь это - особенное место в ландшафте области. Находясь среди равнины, карьер напоминает скалистую местность с настоящими горными пейзажами. Наверное, потому наш карьер включен в Международный научно-образовательный конкурс Quaggy Life Award, организованный компанией HeidelbergCement. Крылатый проект изучает биоразнообразие 69 карьеров в 22 странах Европы, Азии и Африки. Украину представляют 3 карьера, два из которых (Рыбальский и Желтокаменский в Софиевском районе) находятся в Днепропетровщине.

Птичье разнообразие в Рыбальском карьере еще с весны нынешнего года изучает команда в составе орнитолога Владимира Сыжко, бьордвотнера Пола Бредбиера, фотографа дикой природы Вячеслава Кайстро, патеонтолога-любителя (работающего на уровне профессионалов) Виктора Демьянова.

И что же они обнаружили?

Среди нагромождения камней гнездятся каменки

Оказалось, что весной и летом здесь можно встретить 65 видов пернатых, 39 из которых здесь гнездятся.

- В глиняных обрывах устроили свои норы-гнезда золотистые щурки, ласточки-береговушки, соколки пустельги и сизоворонки (последние занесены в Красную книгу Украины), - отмечает Петр Чегорка. - Среди нагромождения камней гнездятся два вида каменок. Одна из них, каменка-плевашка, свое распространение на территории области приурочивает как раз к каменистым биотомам. Живут здесь домовые сычи и козодои, которые активны преимущественно ночью. Встречаются и четвероногие обитатели - лисички, зайцы, несколько видов летучих мышей.

Обилие птиц поразило и фотографа Вячеслава Кайстро, который в поисках своих пернатых «моделей» объездил разные уголки Украины - Азов-



Сизоворонка

ское побережье и карпатские леса, бывал в дельте Дуная и на Полесье.

- Не ожидал найти на карьере, расположенном в пяти километрах от центра Днепра, такого богатого птичьего населения, - удивляется Вячеслав Кайстро. - Это настоящий рай для фотоохотника! Пустельги и сизоворонки, щурки и козодои, фазаны и ушастую сову и еще более 30 видов птиц можно встретить здесь в течение одной экскурсии. Мне больше всего запомнились часы, посвященные фотографи-



Щурка золотистая

рованию каменки-плевашки. Она гнездится на каменистых склонах карьера, и, несмотря на довольно высокую плотность местной популяции, сфотографировать ее было непросто.

Квартирный вопрос можно решить. Хотя бы для птиц

Впрочем, сказать, что в Рыбальском карьере наши райские птицы живут как в раю, было бы большим преувеличением. Есть проблемы, к примеру с водой. Свою потребность в воде для питья и купания птицы удовлетворяют за счет луж, которые образуются после дождя, и на мелководьях Самарского залива. Но орнитологи помогли пернатым. Заметив струйку живой влаги, стекающую по каменной стенке карьерной выемки, участники проекта соорудили для пернатых небольшой водоем. Пользуйтесь!

Но, разумеется, самый насущный вопрос для птичек (как, собственно, и для нас) - квартирный. Ведь склоны карьера заросли молодыми деревьями - акациями, тополями, абрикосами, вязами, стволы которых недостаточно толсты для строительных работ.

- Квартирный вопрос для птичье-дуплогнездников стоит довольно остро, - констатирует орнитолог Петр Чегорка. - Чтобы ликвидировать этот дефицит, мы изготовили и развесили 65 искусственных гнездовий 3-х типов: синичники, скворечники, совиатники. 20 % птичьих домиков уже заселили. Их обитателями стали большая синица, полевой воробей и скворец. Надеемся, что и в остальных «квартирах» в будущем появятся жильцы.

Как тут не позавидовать птичкам? Уже завидуем!



Участники «крылатого» проекта - Владимир Сыжко, Вячеслав Кайстро, Петр Чегорка



Бджолоїдки

В унікальній місцині на Дніпропетровщині дослідники виявили 65 видів птахів. Тепер поліпшують їм умови проживання

ПРОЕКТ

Кар'єр особливої уваги

Міжнародний науково-освітній конкурс Quaggy Life Award, організований відомою у світі компанією HeidelbergCement, відбувається вже втретє. Його головна мета — підвищення рівня наших знань про біорізноманіття в кар'єрах і сприяння його розвитку. На двох попередніх етапах (2012 і 2014 років) українські учасники займалися фіторекультивацією кар'єрів, розробляли методи інтродукції рідкісних рослин, використовували кар'єри як елемент екологічного виховання та освіти молоді.

У 2016 році конкурсом охоплено 69 кар'єрів у 22 країнах Європи, Азії і Африки. Три з п'яти українських проектів виконують на території Дніпропетровської області в Рибальському кар'єрі. Тут команда дніпровських орнітологів з весни цього року втілює в життя проект

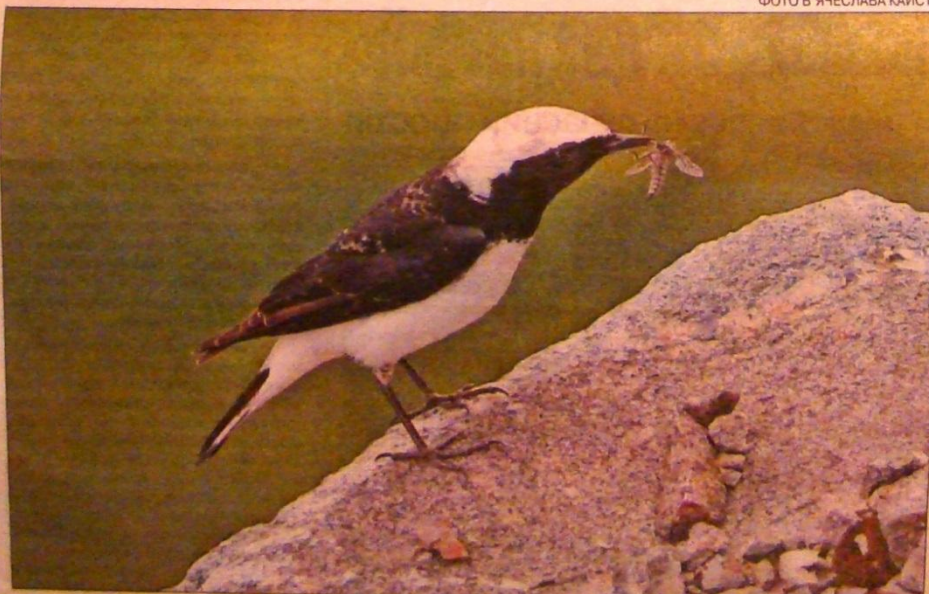
«Підвищення орнітобіорізноманіття Рибальського кар'єру». Ось, що розповів орнітолог Володимир Сижко: «Рибальський кар'єр має світову популярність завдяки відкриттю тут так званих мандриківських верств — викопних залишків мешканців прадавніх морів: коралів, молюсків, древніх риб, вік яких обчислюється мільйонами років. Його значення як своєрідної природної оази, де завдяки процесам самовідновлення формується «нове життя», залишалося поза увагою екологів. Але це — особливе місце на ландшафтній мапі області. Знаходячись на плоскому лівобережжі Самарської затоки, кар'єр своїми «гірськими» пейзажами нагадує скелясту місцевість.

Наша команда головну мету проекту бачить у поліпшенні умов проживання птахів. Приступивши

до роботи у квітні, ми провели оцінку сучасного стану населення птахів і були приємно вражені. Виявилося, що навесні і влітку тут можна зустріти 65 видів птахів, 42 з яких гніздяться. У глиняних урвищах влаштували свої нори-гнізда барвіст бджолоїдки, берегові ластівки, соколи боривітри і занесені до Червоної книги України сиворакші. Серед нагромадження каменів гніздяться два види кам'янок. Одна з них, лиса кам'янка, своє поширення на території області приурочує виключно до кам'янистих біотопів. Живуть у кар'єрі домові сичі і дрімлюги, активні переважно вночі. Зустрічаються й чотириногі мешканці — лисиці, зайці, кілька видів летючих мишей.

Схили кар'єру заросли молодими деревами акації, тополі, абрикоси, в'язи. Їх стовбури ще недо-

ФОТО В'ЯЧЕСЛАВА КАЙСТРА



ЛИСА КАМ'ЯНКА

