Migratory waterbirds life improvement in Slatioara pit. Case study: Eurasian Coot (Fulica atra)

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Abstract

This study aimed to evaluate the protection of migratory waterbird species in Slătioara pit, Olt County, focusing on one of the most representative local species, Fulica atra, popularly known as "Eurasian coot" . Although we initially proposed a study the species Ciconia ciconia, known as white stork, we noticed that it is not very representative for the study area, and the case study was consequently devoted to the Eurasian coot.

The study involved the description of the habitat for this species and the method of direct observation of the individuals, in order to estimate their number and observe their behaviour.

The project visibility at the local level was provided by informing and helping the pupils from Slătioara primary school to achieve awareness of the protection of migratory waterbird species from the pit area, which are potentially affected by the economical activity.

By applying the method of observing birds from certain fixed points, a total number of approximately 40 individuals of Fulica atra was estimated in the southern sector of the lake, with the mention that about 21 individuals live in the reeds of the island which was artificially created through aggregates deposition, due to the wheel drainage process. Also, almost 500 individuals live in the northern sector, where the rush-bed habitat area is considerably higher.

Regarding the habitat condition, the impacts of fishing and leisure activities performed by the local residents must be noted.

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Overall, rush-bed areas have a very high density of vegetation and a high compactness, which are important features in terms of the habitats ability to support wildlife.

Introduction

The protection of migratory waterbird species in the pit's area of influence is very important due to the their dependence on the quality of the habitat which they occupy during the migration season.

Thus, preserving the rush-bed habitat and the riparian area is a priority in terms of keeping a favourable state of the species during their stay, especially during the nesting period.

The aggregate extraction activity in Olt river bed can affect the productivity of natural ecosystems, particularly by increasing water turbidity and therefore removing sources of food for birds, such as fish and amphibians.

Rush-bed attract many species, so that they allow the development of biota, based on the irreversible interdependence between populations, expressed by the trophic relations.

Thereby, preserving the rush-bed area from the island which was artificially created by aggregates depositing from the drainage wheel presents a high interest in the protection of these type of habitats and their multiple functions, as offering shelter, reproduction areas and allowing food resources concentration.

As a consequence, the main purpose of the project is to increase the protection of Fulica atra species in Slătioara pit area of influence.

Objectives

The overall objective is to identify viable measures to increase the protection of Fulica atra species in the operating area of Slătioara pit. Specific objectives include, firstly, the identification, location and description of rush-bed habitats and the estimation of the number of individual of Fulica atra species, but also achieving better information and awareness on the need to protect migratory waterbird species from the study area.

Methods

Mapping and describing the major habitats occupied by Fulica atra species

The first visit to the pit took place on July 27, 2014 and assumed direct observation of habitats used by migratory waterbirds, in order to assess their condition and their location, and to furtherly trace and quantify the limits of available habitat areas.

The weight of rush-bed habitat area is an important indicator which may be used to state the species preservation, and the probability that they continue to survive within the study area.

In order to map the available habitat areas for waterbirds, ArcGIS 10.1 software and Orux Maps mobile application for collecting GPS points were used. Rush-bed habitats and other important elements from the pit area were digitized from the 2008 Orthophotomap.

The main habitat features which were digitized are related to their impact on bird species, such as habitat size, vegetation density, degree of isolation and fragmentation.

Estimating the number of individuals of Fulica atra species

The second visit on the field was destined for the estimation of the number of Fulica atra individuals, by observing the birds from fixed locations, which were determined according to the individuals tendency to concentrate in large groups near extended rush-bed areas, and to the presence of anthropogenic sources of disturbance.

The observation species individuals took place from five observing points during the days of 09 and 10 August, the most important observation point being placed near the unique habitat represented by the semi-natural island created over time by depositing sand and gravel extracted from the riverbed, due to the process of separating mineral aggregates during from water, during their transport to the storage area.

The period of observation and estimation of the number of Eurasian coot individuals was chosen so that to avoid with the period of eggs incubation.

The observation was performed during maximum two hours in each observation point, during each day, depending on the habitat size and visibility, in order to avoid overestimation of the number of individuals by counting a single individual more than once. The method of counting Fulica atra individuals from fixed observation points was chosen because it is the most proper for habitats that are not easily penetrable, like dense

rush-bed vegetation. We also considered that this method is most suited to the estimation of this species individuals, given that they are constantly moving and spending time searching for food. In this way, mature individuals from water surface and also females with their babies could be seen when coming out of the rush-bed, at increased time lag.

For a precise identification of Fulica atra individuals and differentiation from other bird species, was used Celestron UpClose binocular, with a with a minimum focusing distance of 10 m was used.

Increasing the popularity of Fulica atra species

Increasing awareness of the importance of migratory waterbird species protection involved a presentation on their life in the pit areas, with particular attention to Fulica atra species

The activity of informing and increasing awareness took place in Slătioara primary school.

The non-formal presentation was held for pupils from V to VIII class. They were brought together and acquired knowledge about the unique habitats from the pit area, biodiversity, nature protection and the importance of research carried for promoting and preserving species potentially affected by the economic activities.

Communication materials were adapted to the pupils ages and consisted of photographs taken in the field, especially within the island created by aggregate discharge and videos, in order to capture their attention and to illustrate the most interesting features of Fulica atra species.

Our work involved the presentation of CarpatAgregate company values in which regards environmental responsibility and special natural elements found in the pit area, like unique habitats and migratory bird species potentially affected or endangered by human activities.

Firstly, children became familiar with the work of Carpat Aggregate company within the pit and with several important terms, biodiversity, pit, environmental protection.

The interactivity during our presentation was supported by questioning the students and structuring our speech by "Did you know ...?" questions.

After the presentation, we offered the pupils an informative and educational poster on nature protection and the distinctive features of Slătioara pit. Also, illustrative materials were accompanied by Carpat Aggregate company and Quarry Life Award competition logos, for a better relation of the research project to the company's values.

Results

The unique habitats from Slătioara pit are mainly represented by the island and the associated rush-bed, resulted from deposition and channel drains which have been created to prevent flooding, where rush-bed are well developed.

In terms of migratory waterbird habitats assessment, represented by rish-bed areas, these are kept in a favourable state, given the high density of vegetation, the low degree of fragmentation and the lack of waste (or its presence in small amounts, exclusively near the bridge that crosses river Olt).

For the location and spatial analysis of habitat surface within the pit area of influence, the overall map of the pit, including the representation of the number of individuals of Fulica atra species, was obtained.

Finally, the total area of available habitat is about 79.3 ha, respectively almost 20% of the total accumulation lake area, is an important indicator which can be used for planning the waterdbird bird species live improvement in the operational pit areas.

However, the degree of isolation expressed by the minimum distance from sources of disturbance, such as roads, leisure and technological processes areas, is an important indicator of birds vulnerability to human activities.

The spatial analyzes provided that the most important habitat areas, where more than 20 Eurasian coot individuals live, are found at distances less than 10 m from the anthropogenic sources of disturbance. Thus, this indicator is important for setting conservation priorities.

By estimating the number of Fulica atra individuals, it was observed that approximately 21 individuals, both adults and juveniles, are nestled in the drainage wheel area. Their high density, which is about 21 individuals / ha, highlights the importance of preserving and promoting the unique habitats resulting from the pit specific activities.

Regarding the communication of CarpatAgregate company values regarding

biodiversity and the promotion of the outstanding elements from the pit, the pupils have improved their knowledge about the pit processes and learned how a semi-natural habitat can be created and maintained to compensate the impact of the economic activity.

Children also achieved knowledge about the most prolific local species, Eurasian coot, through illustrative material, but also about other rare and of particular importance in terms of biodiversity, like cormorants, white stork, swans, herons.

Regarding pupils sensibilization, shirt documentary videos and illustrative pictures of the morphological and behavioural characteristics of Fulica atra species, at its maturity and juvenile stages, had the highest positive impact.

Discussions

The project aims to improve the attitudes of future generations towards the preservation of important local habitats and species.

The added value of the project is the increase of awareness among the target audience about the importance of environmental protection, in association with the company's vision and efforts to hold scientific research and to promote the specific natural elements of the pit.

The number of individuals of the studied species and the available area for habitat are important in terms of prospecting the implementation of measures for a better nature preservation.

Also, taking into account the placement of the waterbird species habitats, proper measures for increasing their protection may be proposed, such as placing sound absorbing panels in areas used for recreational activities, expanding or improving sectors of habitat with a higher degree of fragmentation.

Finally, the project provides a description of the pit area in terms of its natural elements that need protection, being important elements of local identity at the same.

Regarding the pupils' attitude towards nature preservation, better information on local biodiversity is needed, illustrative material about the species and their habitats proved to be the most effective and to arise the pupils curiosity.

Also, placing informative boards in areas used for fishing or leisure activities during migratory waterbirds stay is of great importance in which regards the increase of the awareness and improvement of environmental behaviour.

Conclusions

The project entitled " Migratory waterbirds life improvement in Slatioara pit. Case study: Eurasian Coot (Fulica atra)" provides important information about items requiring a special attention in the plans for increasing preservation of bird species that migrate to the area.

The pit's area of influence is characterised by outstanding natural features due to its unique habitats and the presence of many migratory waterbird species of waterfowl, so that these can be vlorized for a better biodiversity promotion.

The project achieved its goal to highlight the most representative local natural elements, like Fulica atra are species, due to high number of individuals and specific habitats from the pit area. The promotion of the unique natural elements form the pit had a positive impact on the pupils, which achieved new information about the environment of the pit.

Appendixes

1. Semi-natural habitat created by aggregate deposition from the drainage wheel process

2 . Other habitats

3. Achieving information and awareness, in Slătioara primary school


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GRANDEX


De ce este importa
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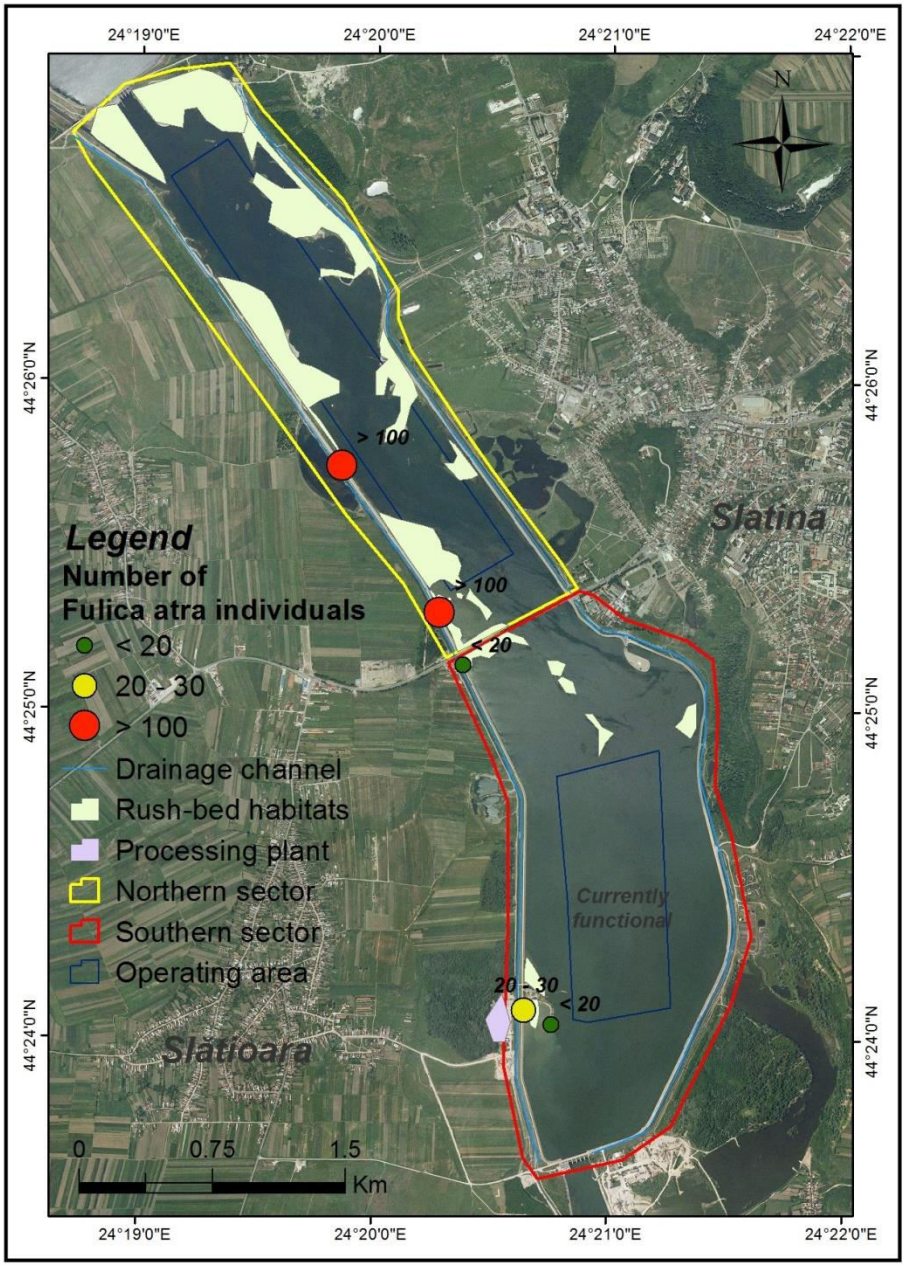
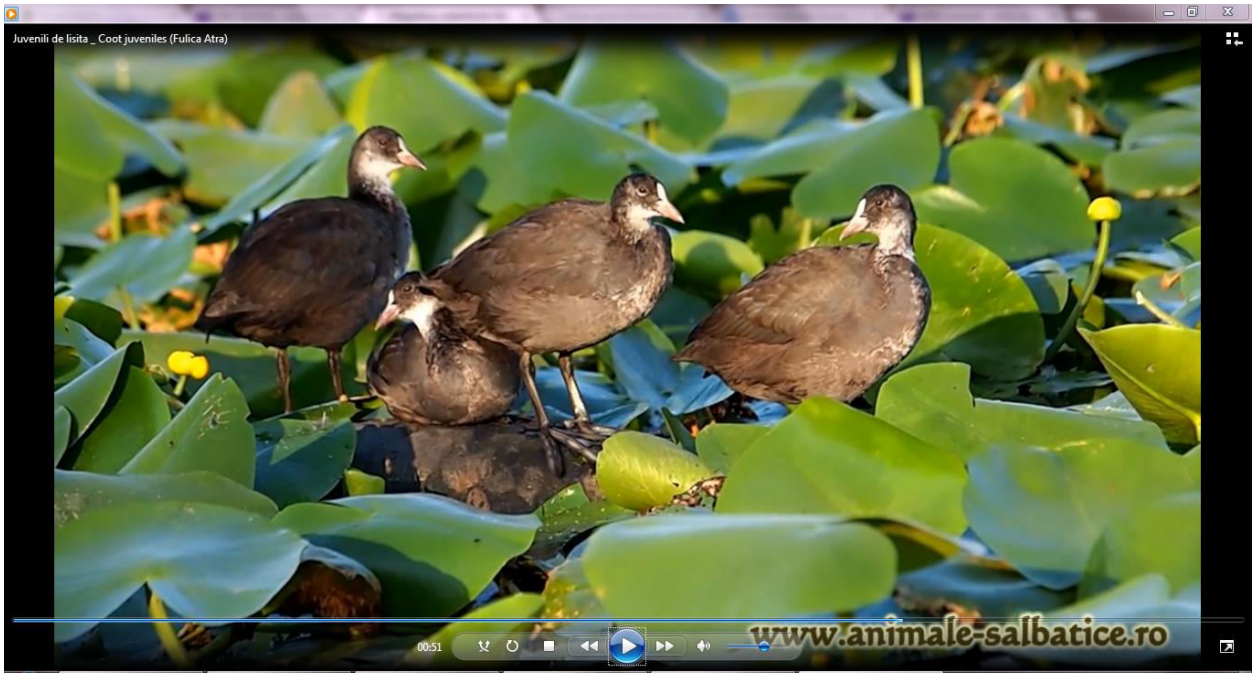
4. The number of individual of Fulica atra species



5. Screenshots of the documentary materials used for increasing Fulica atra species popularity



Video – Lisita, Fulica atra: