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Regulation of fish resources rational using on the territory of the NNP “BUG GARD”

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Today on the territory of Ukraine there are 40 national nature parks which include the NNP “Bug Gard”. One of the main tasks of the NNP is to preserve the valuable natural objects and to develop the scientific recommendations for protecting the environment and using the natural resources efficiently. Modern poaching, with its mass, technical armament, impunity and constant rapid growth, poses a serious threat to the national security of Ukraine. Significant damage to fishing and fish farming on the territory of the NNP “Bug Gard” is caused by the actions of poachers. During the functioning of the NNP “Bug Gard” the State Protection Service constantly conducts inspections and patrols the territory of the park to identify and to stop violations of the environmental legislation. The evaluation of the effectiveness of the fish protection measures carrying out in the Bug National Nature Park by the State Protection Service has been assessed. Annually the State Protection Service of the NNP “Bug Gard” conducts on average of 120 activities to identify environmental offenses, practices the explanatory talks, on average, 600 conversations per year, which are aimed at clarifying the environmental legislation in the field of fauna and flora protection, as well as it constantly informs the public through the media about the individual cases of poaching in order to further preventing the environmental offenses. Annually, an average of 1.000 leaflets with the fire safety rules on the territory of the NNP and with the environmental issues were produced and distributed among the population and the visitors of the park. It is established that, according to the analysis, the State Protection Service of the NNP “Bug Gard” carries out the effective measures in the field of fish resources conserving and rational using in the area of its responsibility, carries out a widespread waste water pollution control in the water bodies, creates the conditions for normal fish reproduction and keeps a track of environmental and fishing offenses, which not only preserves the flora and fauna, but also compensates the damage caused by the actions of poachers and other violators.

Key words: fishing, environmental legislation, poaching, fishery protection measures, offenses, illegal fishing gear, catch, national nature park.

Introduction

One of the main directions in the field of rational use and protection of the water resources in Ukraine is establishing and implementing the relevant legislative framework and conducting the competent policy for their management. In recent years in Ukraine there have been changes in favor of improving the legislative activities in the field of rational using, integrated developing, protecting and environmental-economic assessing the water resources, which predetermined the implementation of special programs and projects as well as the adoption of a

number of regulatory documents (Nakaz Minpryrody Ukrainy № 245, 2005).

The fish stocks protection and the fisheries regulation are of great importance for maintaining and increasing the commercial fish resources. Valuable fish species poaching has been causing a great damage to fish resources.

National nature parks of Ukraine are the protected areas that are a part of the nature reserve fund of Ukraine. Currently, there are 40 national nature parks in Ukraine with a total area of more than 10.000 km (1.8 % of the territory), one of them is the Bug Gard National Nature Park (Nakaz Minpryrody Ukrainy № 245, 2005).

Analysis of the sources. Fish resources are a set of fish with consumer value, which is used or can be used in the implementation of economic or other activities by the legal entities and citizens (Burhaz et al., 2020; Vodianitskyi et al., 2020; Hrynevych et al., 2021; Prychepa et al., 2021).

Fish protection is an activity aimed at preventing harm to the vital activity of the fishing objects from the impact of the anthropogenic factors, diseases, as well as the emergencies and the adverse environmental conditions. In some cases the intensive human activities associated with the development of industry, agriculture, transport, etc. had a negative impact on the state of fisheries (Nakaz Minpryrody № 27, 2008).

Further decline in certain commercial fish species (exploited populations initially always have a high number) may lead to the disappearance of their populations and to the changes in the structure of the aquatic ecosystems (Nakaz Minpryrody № 27, 2008).

35 fish species have been recorded in the ichthyofauna of the Bug Gard National Park. 5 of these are listed in the Red Book of Ukraine, 2 species are listed in the IUCN Red List, and 12 species are in the protection list of Annex 3 of the Berne Convention (Sydorak, 2020).

The State Protection Service has an important role in the organization of using and protecting the water resources in the NNP “Bug Gard”, which carries out the control measures that significantly reduce the adverse impact of anthropogenic factors on the ichthyofauna and reduce the damage from the plunderers and poachers actions.

The purpose of the work was to assess the effectiveness of the fish protection measures carrying out in the National Nature Park “Bug Gard” by the State Protection Service.

Materials and methods

The effectiveness of the fish conservation measures was evaluated by the following indicators:

- revealed cases of braking the rules of fish farming and fishing;
- the number of seized fishing gear;
- the amount of seized illegally caught fish, etc.

The dynamics of the effectiveness of implementing the fish protection measures and the amount of the economic damage resulting from the braking the Rules for conducting the fisheries have been assessed.

Results and discussion

The Bug National Nature Park was established by the Decree of the President of Ukraine № 279 on April 30, 2009 for the purpose of preserving, reproducing and rational using the unique natural and historical-cultural complexes in the Southern Bug basin, which have an important environmental, scientific, historical-cultural, aesthetic, recreational and health value (Nakaz Minpryrody Ukrainy № 245, 2005).

The “Bug Gard” is a national nature park in Ukraine, on the Southern Bug River, located within the Mykolayiv

region in the areas of five districts: Pervomaisky, Arbusynsky, Domanivsky, Voznesensky and Bratsky.

The NNP “Bug Gard” performs the following main tasks:

- preserves the valuable natural and historical-cultural complexes and objects;
- creates the conditions for organized tourism, recreation and other types of recreational activities in the natural conditions in compliance with the protection regime of the protected natural complexes and objects;
- conducts the scientific researches of the natural complexes and their changes in the conditions of recreational using,
- develops the scientific recommendations for the environmental protection and efficient using the natural resources;
- carries out an ecological-educational work.

The administration of the Bug National Nature Park, as an institution of a nature reserve fund with a national importance, conducts the background monitoring of the biodiversity in the location region (Nakaz Minpryrody № 27, 2008).

The NNP “Bug Gard” is constantly working with the State Protection Service, which conducts the park area inspections and patrols to detect and to stop the violations of the environmental legislation.

The protection of the fishing grounds is realizing by carrying out the field control measures for preventing, detecting and suppressing the cases of poaching in them, as well as by taking the measures aimed at preventing, detecting and suppressing the violations of the fishing rules, and other regulatory legal acts regulating issues of protecting and using the fish resources.

The State Protection Service, which constantly conducts inspections and patrols on the territory of the park to identify and to stop the violations of the environmental legislation, looks after a general state of the environmental law and order on the territory of the NNP “Bug Gard”. A total number of revealed violations in the law in the field of nature management, using and protecting the surface waters, flora and fauna are shown in Table 1 (Litopys pryrody NPP; Sydorak, 2020).

Table 1
Revealed violations

Years	Number of cases	Revealed violations
2015	126	15
2016	147	7
2017	117	12
2018	92	13
2019	123	12

In 2019 the State Protection Service of the NNP “Bug Gard” detected 123 violations, which is 25% more compared to 2018 and 16 % less compared to 2016. 15 violations were detected on the territory of the NNP “Bug Gard” in 2015, which is 53 % more than in 2016, and in 2019 there were 12 violations.

Poachers inflict a significant damage on fishing and fish farming on the territory of the NNP “Bug Gard”. With regard to fishing, poaching is understood as such

fishing that violates the environmental legislation, fishing rules established in a certain territory.

The following cases fall under the definition of poaching:

- fishing in a period not established by law - during the fish breeding season;
- fishing without a duly issued license or exceeding the catch quotas in the places where and when fishing is permitted only under a license and fishing norms are limited;
- fishing with the use of fishing gear and tackles prohibited by fishing law;
- fishing in protected natural areas (reserves, national parks);
- catching fish that belong to rare or endangered

species and are protected by law (Nakaz Minpryrody № 27, 2008).

Modern poaching can be described as a stable criminal system that is updating its methods of committing crimes, using the latest technical devices (the latest navigation devices, satellite communications, high-speed cars, boats, electric fishing rods, echo sounders, etc.), which is actively taking root in the district, regional and national scales.

In this regard the State Protection Service of the NNP “Bug Gard” pays much attention to detaining the poachers and confiscating the illegal fishing gear from them (Table 2) (Sydorak, 2020).

Table 2
Number of seized illegal fishing gear

Indicators	Years				
	2015	2016	2017	2018	2019
Seized “Path” type fishnets, pcs.	26	13	11	14	20
Seized “Peremet” type fishnets, pcs.		3		3	
Electro fishing rod	1				
Other seized fishing gear:					
Butterfly net	1				
Metal snares			39		
Silky				23	10
Screen					4
Crayfish catcher					2
Live bait tackle					12
Fish-trap					1
Total number of seized fishing gear	28	16	50	40	49

Table 2 data indicate that nets are the main fishing tools for poachers. Despite their overall decline over three years (2016–2018) a share of nets in the total number of seized fishing gear decreased by almost 50 % and amounted to 41 % in 2019, 35 % in 2018, 22 % in 2017, 81 % in 2016, 93 % in 2015.

The second place in terms of a number of seized fishing gear is occupied by other devices. Other fishing gear includes a venter, a net, a snare, a spear gun, a heap tackle, as well as spinning during the forbidden fishing time.

For this position, there has been an increase in the indicator over the past year, which indicates that poachers are exploring new ways of fishing.

As a result of the measures taken to suppress the actions of poachers and other offenders, along with seizing the illegal fishing gear, the seizure of illegally caught fish is carried out.

In 2019 the fish species diversity in the NNP “Bug Gard” aquatoria is represented by 35 species (Table 3) (Litopys pryrody NPP; Sydorak, 2020).

Table 3
A state of fish species diversity in the NNP “Bug Gard” in 2019

Number	Number of species	
	Marked in the waters of the park	Have marked this year
<i>Cypriniformes</i>	23	13
<i>Siluriformes</i>	1	1
<i>Esociformes</i>	2	2
<i>Perciformes</i>	7	4
<i>Gasterosteiformes</i>	2	-
Total:	35	20

From the data of table 3 it is seen that among the fish recorded in the park the largest number of species is a number of *Cypriniformes* – 18 species, a number of perch is characterized by a smaller number – 8 species, a small number of species have rows: *Gasterosteiformes* – 2

species, *Ecociformes* and *Siluriformes Cuvier* – 1 species (Litopys pryrody NPP).

On the territory of the NNP “Bug Gard” fishing the fish and aquatic invertebrates which are smaller in size than indicated in table 4 is prohibited (Litopys pryrody NPP).

The preventive measures carried out by the State Protection Service of the NNP “Bug Gard” consist in the speeches in the media and in the labor collectives and are aimed at explaining the environmental legislation in the field of flora and fauna protection, as well as informing the population through the media about the individual

cases of poaching for the purpose of further preventing the violations in the field of environmental protection (Nakaz Holovnoho upravlinnia..., 1999; Public management: collection, 2018).

A state of the preventive work aimed at preventing the violations of the law is presented in table 5.

Table 4

Minimum sizes of the fish and aquatic invertebrates allowed to be caught by amateur fishermen within the NNP “Bug Gard”

Species of fish and aquatic invertebrates	Size, cm	Species of fish and aquatic invertebrates	Size, cm
<i>Neogobius fluviatilis</i>	11	<i>Rutilus rutilus</i>	18
<i>Ctenopharyngodon idella</i>	40	<i>Cyprinus carpio</i>	35
<i>Aspius aspius</i>	30	<i>Ballerus ballerus</i>	22
<i>Squalius</i>	24	<i>Silurus glanis</i>	70
<i>Carassius gibelio</i>	15	<i>Sander lucioperca</i>	42
<i>Cyprinus carpio</i>	25	<i>Esox lucius</i>	35
<i>Tinca tinca</i>	20	<i>Anodonta cygnea</i>	12
<i>Abramis brama</i>	32	<i>Unio pictorum</i>	7
<i>Chondrostoma nasus</i>	25	<i>Astacus</i>	10

Table 5

Preventive work in the NPP “Buzkiy Gard”

Years	Number of articles in the media	Preventive conversations (specimens) / A number of leaflets with the rules of the fire safety on the NPP territory and on the environmental topics prepared and distributed among the population and the visitors of the park (pieces)
2015	-	250/870
2016	6	370/1110
2017	8	270/935
2018	7	1200/1050
2019	6	900/1600

The employees of the NNP “Bug Gard” pay some attention to the preventive work, for example, for the period from 2015 to 2019 a total number of media appearances and preventive talks increased to 650 or 260 %. Moreover, a significant increase was noted in conducting the preventive conversations. If a number of publications in the newspapers is approximately at the same level, a number of the preventive conversations has increased by 260 %, and the production and distribution of the leaflets with the environmental issues has almost doubled.

Conclusions

The scale of poaching is increasing every year. According to the law enforcement officers statistics in 1966 on the territory of Ukraine 15 thousand people were detained, in 1975 – 30 thousand, in 2007 – 96.6 thousand people, in 2014 – 150 thousand people and in 2018 this figure rose to 210 thousand people engaged in illegal fishing. By now the scale has turned out to be catastrophic, especially if we take into account the percentage of poachers who, for one reason or another, have been able to avoid responsibility or hadn't just been seen by the law enforcement.

The average amount of fines and lawsuits per one fish poacher is 72 hryvnias. It is clear that with such a low penalty, poaching can be practiced at least every day. Every year in Ukraine about 100 thousand poaching tack-

les are seized, however, only fish poachers have up to 10 million prohibited tackles in their hands.

In recent years not only the mass of poachers has increased sharply but also and their technical equipment. They use night vision devices, satellite navigators, computers, electronic machines, echo sounders, helicopters, high-speed boats.

The State Protection Service of the NNP “Bug Gard” carries out the effective measures in the field of conserving and rational using the fish resources in the area of its responsibility, fulfills a widespread waste water pollution control in the water bodies, creates the conditions for the normal fish reproduction and monitors the environmental and fishing offenses. Due to these measures not only the flora and fauna are preserved, but the damage caused by the actions of poachers and other violators is also compensated.

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