



Role of Red Data Book in Conservation of Biodiversity in Stavropol Territory

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ABSTRACT

The Red Data Book of Stavropol territory has been the most important part of the modern strategy of wild-life conservation of the North Caucasus. This strategy has been based on the preservation of all the natural specific biodiversity of the region. The problem of the wildlife conservation of Stavropol territory and the North Caucasus can be solved only by the combination of the carefully worked-on legislation with the active competent work of all the interested and competent organizations directed on the protection of flora and fauna, and complex preservation of all biodiversity, and also the own participation of the local population in the destiny of the territory.

Keywords: Red Data Book, Biodiversity, Stavropol Territory.

HOW TO CITE THIS ARTICLE: Pushkin Sergey Victorovich, Ilyukh Mikhail Pavlovich; Role of Red Data Book in Conservation of Biodiversity in Stavropol Ter-ritory, Entomol Appl Sci Lett, 2018, 5 (4): 45-48.

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Received: 02/08/2018

Accepted: 17/11/2018

INTRODUCTION

Today, it has been well-known that the number of many species of plants and animals as a result of direct and indirect anthropogenous influences, has been reduced in different areas, and they have become rare and disappearing. Human activities such as agriculture transform the land surface and add or remove species in most of Earth's ecosystem [1]. In a study, Pushkin and Kharchenko (2017) investigated the possibility of determining the degree of preservation of zoological complexes in terms of the number and diversity of tropics groups of animals that constitute one or another faunal complex [2]. One of the most important forms of their protection is the Red Data Book – the main official document according to which the region protection of the rare and under the threat of disappearance species of plants and animals is carried out. It reflects a disturbing condition of some ecosystems of the region for these rare vulnerable species. Thus, the Red Data Book – not simply is the reference

book on rare species, but also the evidence-based program and plan for their preservation. Also, it focuses not only on the specialist scientists – botanists, zoologists and ecologists, but, first of all, on all local population – from school students to pensioners, because to keep a regional biodiversity, common efforts and mass awareness are of importance. The Red Data Book as the red light of the traffic light, has to stop all mankind and set them thinking, whether we do everything correctly in this fragile and easily vulnerable world.

Along with the nature protection legislation and various forms of territorial conservation (creation of an ecological framework from a network of the especially protected natural territories (EPNT) in the form of reserves, wildlife areas, national and natural parks and nature sanctuaries), the Red Data Book effectively promotes the preservation of both directly rare species, and natural ecosystems in general environment of their dwelling.

The main functions of the Red Data Book are: 1) drawing attention of the public to the protection of rare and endangered species; 2) the systematization of data on number and the distribution of

these species; 3) the identification of the specific limiting factors of the rare species; 4) the development of nature protection recommendations in relation to the local conditions; 5) a capture under the special protection of the regional rare species; 6) the implementation of the regional monitoring of the rare species.

The first collection of information for the Red Data Book was begun in 1949, by International Union of Conservation of Nature (IUCN). In 1966, the first volumes of «The Red Book of the facts» («Red Data Book») were published. In a number of the countries (Australia, USA, Sweden, Germany, Czech Republic, Japan), the first national Red Data Books were created. In the USSR, the Red Data Book was founded in 1974. In 1983, the Red Data Book RSFSR was published, and in 1984, the Red Data Book USSR was published. In 1988, more unabridged edition of the Red Data Book RSFSR was published. The latest Red Data Book of Russia was published in 2001 (volume «Animals») [3] and in 2008 (volume «Plants») [4].

The Red Data Book Russian Federation has included: 1) The act of the Russian Federation of 19.12.1991 №2060-1 «About the protection of the surrounding environment»; 2) The act of the Russian Federation of 24.04.1995 №52-FZ «About fauna»; 3) The resolution of the Government of the Russian Federation of 19.02.1996 №158 «About the Red Data Book of the Russian Federation»; 4) The order of the State committee Russian Federation on the environmental protection of 03.10.1997 «About the statement of an order of maintaining the Red Data Book of the Russian Federation».

Based on these regulations, the Resolution of the Governor of Stavropol territory of 13.04.2000 №187 about the establishment of the Red Data Book of Stavropol territory, founded the Red Data Book of Stavropol territory. The resolution of the government of Stavropol territory of 24.10.2000 №189-p approved the provision of an order of maintaining the Red Data Book of Stavropol territory.

The edition of the Red Data Book of Stavropol territory provides a legislative base for the protection of rare and endangered species of plants and animals, which serves as the tool preventing their loss, and promotes the preservation and reproduction of the natural gene pool of the edge and south of Russia. Considering the prompt dy-

namics of a condition of natural ecosystems and populations of rare species, Red Data Books have to be updated and republished each 10 years.

The species which number is being reduced, or the species being under the threat of disappearance, and also the species included in Red Data Books of higher ranks extensive territories have been considered rare for this territory in regional Red Data Books. Proceeding from these principles, the Red Data Book of Stavropol territory, besides regional rare species, also included all the species which have been found in the territory of the region brought in the Red Data Book Russian Federation (2001, 2008) in which, the globally rare and endangered species living here from the IUCN Red List have been brought. The Red Data Book of Stavropol territory contains the data on the distribution, number, main lines of biology, limiting factors and measures of protection of rare, endangered and vulnerable species of plants, mushrooms and animals of this region. Red Data Books species of plants and animals have been widespread on all parts of Stavropol territory in forest, steppe, water and mountain ecosystems, and also in the urbanized landscapes.

Here, it is especially necessary to focus on the most mobile organisms on Earth, i.e., birds. Considering their specific unique mobility, in the local Red Data Book, it is necessary to bring, first of all, those rare species which nest in this territory and lead a settled life, but aren't flying migrants or only wintering. After all, the regional Red Data Book has hardly promoted the complex and effective protection of the species staying in the respective region only in a short certain period out of the reproduction season.

The Red Data Bo

ok of Stavropol territory so far underwent two editions, and two volumes on plants and animals were published in 2002 and 2013. 309 species of plants have been mentioned in the first volume of the first edition of the Red Data Book of Stavropol territory (2002) including: 5 species of mushrooms, 1 species of mosses, 1 species of club mosses, 17 species of ferns, 1 species of gymnospermous, 284 species of angiospermous [5]. 164 species of animals have been mentioned in the second volume of the first edition of the Red Data Book of Stavropol territory (2002) including: 50 species of arthropods, 2 species of

lampreys, 12 species of fish, 1 species of amphibious, 8 species of reptiles, 70 species of birds, 18 species of mammals [6]. 333 species of plants have been mentioned in the first volume of the second edition of the Red Data Book of Stavropol territory (2013) including: 7 species of mushrooms, 9 species of seaweed, 1 species of club mosses, 20 species of ferns, 1 species of gymnospermous, 295 species of angiospermous [7]. 179 species of animals have been mentioned in the second volume of the second edition of the Red Data Book of Stavropol territory (2013) including: 77 species of arthropods, 2 species of lampreys, 14 species of fish, 4 species of amphib-

ious, 14 species of reptiles, 47 species of birds, 21 species of mammals [8]. In the second edition of the book, there are 24 species of plants and 15 species of animal more than in the first one. It in a certain measure, can testify that only in a duration of one decade between two editions of the Red Data Book, the number of the rare species became more, and the ecological situation in the region did not become better.

Each species of plants of the Red Data Book, considering the degree of being threatened, has been appointed to one of the categories related to the status of the rarity mentioned in the Red Data Book of the Russian Federation (2008) (table 1).

Table 1. Categories and statuses of a rarity of plants of the Red Data Book of the Russian Federation

Category	Status
0	Possibly, the disappeared species.
1	Being under the threat of disappearance – the species which preservation is improbable if the factors causing the reduction of their number continue to work.
2	The vulnerable – the species which apparently are moving to category 1 in the near future, if the factors causing the reduction of their number continue to work.
3	The rare – the species presented by small populations which aren't under the threat of disappearance now and aren't vulnerable, but there is a risk of disappearance and vulnerability for them. These species are usually widespread in a limited territory, or have a narrow ecological niche, or are absent-mindedly widespread in a considerable territory.
4	Uncertain according to the status – the species which, obviously, belong to one of the previous categories, but sufficient data on their state do not exist now.

Each species of animals mentioned as being under the threat of disappearance in the Red Data Book has been appointed to one of the categories

with the corresponding status of a rarity accepted in the Red Data Book of the Russian Federation (2001) (table 2).

Table 2. Categories and statuses of a rarity of animals of the Red Data Book of the Russian Federation

Category	Status
0	Possibly, disappeared – the species which have been known earlier in the territory (or water areas), but the Russian Federation could not confirm their existence in the nature (for invertebrate animals – in the last 100 years, for vertebrata – in the last 50 years).
1	Being under the threat of disappearance – the species which number of individuals decreased to such a critical level that soon they can disappear.
2	Reduced in number – the species with steadily reduced number which at further influence of the factors, the number will be reduced in a way that they will disappear in a short term.
3	The rare – the species which have the low number and are widespread in the limited territory (or water areas) or sporadic in the considerable territories (or water areas).
4	Uncertain according to the status – the species which probably belong to one of the previous categories, but sufficient data on their state in the nature do not exist now, or they do not fully correspond to the criteria of all the other categories.
5	Restored – considering their number and distribution under the influence of the natural reasons or as a result of the taken measures, this category includes the species which have been restored and come nearer to a state when they don't need urgent measures of protection and reproduction.

As any work done on the assessment of the condition of the natural resources, the Red Data Book of Stavropol territory has been a valuable experience of reflection of this state in a concrete time interval, and therefore, it can not be applied

for the exhaustive completeness. The publication of the Red Data Book has been the initial stage for the organization of the practical protection of the species included in it. Further works on the control of the condition of their populations

which will more profoundly study the limiting factors, distribution, number and biology of species, and in case of need – the development of the additional actions for their preservation are necessary. During this work, the inevitable identification of the new species including the corresponding category of the rarity, and also the change of the status of the earlier known species has been accomplished. All these are needed to be reflected in the next edition of the Red Data Book of Stavropol territory.

The key circumstance defining the distribution and the number of the rare species is under the impact of the limiting factors. Therefore, the extremely important factors should be precisely and authentically established for their further neutralization. In fact, the nature of the influence of various limiting factors on live organisms also defines their inclusion in the Red Data Book. From this, it can be concluded that the paramount task of the Red Data Book includes the development of a program for the identification and decrease of the negative impact of the limiting factors on rare and vulnerable species. But, in this sense, this work can be made effective only by neutralization of the impact of anthropogenous limiting factors connected with the direct and indirect influence of the human activity. If the species has become rare because of the natural reasons, they will be much more difficult to be studied. However, as the studies and materials mentioned in the Red Data Book have shown, the number of the vast majority of the rare species has been reduced in areas as a result of anthropogenous influence, including Stavropol territory. Therefore, the regional Red Data Book can really improve the condition of the populations of the species of the included plants and animals.

It is necessary to consider that the Red Data Book will only reach the maximum effect, and this book will be able to work, only if it becomes public for all the segments of the population, as a printed or electronic (interactive) option placed on the corresponding well-known portal. Otherwise, all the initial functional meaning of the Red Data Book will be lost.

Thus, the Red Data Book of Stavropol territory is the most important part of the modern strategy of wildlife conservation of the North Caucasus.

This strategy has been based on the preservation of all natural varieties (biodiversity) of the region for each species, possessing a unique gene pool, representing a unique product of evolution in the future. Even the most perfect legislation would not be able to solve the problem of wildlife conservation alone [9, 10], therefore, only the combination of a carefully worked on legislation including the active competent work of all the interested and competent organizations directed on the protection of flora and fauna, and complex preservation of all biodiversity, and also, the own participation of the local population in the destiny of the territory will allow to account for the general success in the vital business of the conservation of Stavropol territory and the North Caucasus.

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