Fight against alien (invasive) species of plants, animals and microorganisms in the Russian Federation

Natalya Lisina, Vasili Erin and Albina Rybashkova
Kemerovo State University, Krasnaya St. 6, Kemerovo, 650000, Russia
E-mail: lisina_nl@mail.ru

Abstract. The article analyzes the restrictions that are necessary to combat alien species of animals, plants and microorganisms in the Russian Federation. The authors identify regulatory problems and offer solutions. The authors propose to develop a basic document at the national level. This document will be the basis for all government agencies and public organizations in the fight against invasive species of plants, animals and microorganisms. It is also necessary to assign to one state body the functions of combating invasive species throughout the country, to form and constantly update the list of alien (invasive) species of plants, animals and microorganisms on the territory of the Russian Federation.

1. Introduction
One of the most important principles of environmental protection, which is enshrined in the Federal Law "On Environmental Protection" [1], is the preservation of a favorable environment and biological diversity. To ensure this principle, the President of the Russian Federation approved the Fundamentals of State Policy in the field of environmental development of the Russian Federation for the period up to 2030 [2]. An important mechanism providing for the preservation of the natural environment is the prevention of the uncontrolled spread of alien (invasive) species of animals, plants and microorganisms on the territory of our state. Much attention is paid to countering the spread of alien (invasive) species of animals, plants and microorganisms, since they contribute to the destruction and reduction of animals and plants of particular value, as well as the reduction of the area of forest resources. Invasions of alien species are representatives of various groups of living organisms that spread beyond the primary habitats [3].

One of the main directions of state policy in the field of combating alien (invasive) species is the improvement of the regulatory framework for the preservation of animal and plant diversity. The current legislation, in particular the Federal Law "On Environmental Protection" and the Federal Law "On the Animal World" [4] do not allow the production, breeding and use of those plants, animals and other organisms that are not only not characteristic of natural ecological systems, but also artificially created without the development of effective measures to prevent their uncontrolled reproduction and a positive conclusion of the state ecological expertise, permission of the federal executive authorities exercising state management in the field of environmental protection, other federal executive authorities in accordance with their competence and the legislation of the Russian Federation.

The need to resolve this issue is due to invasions of alien species that pose a threat to the economic and environmental security of the country.
2. Materials and methods
Alien (invasive) species of animals, plants and microorganisms are currently one of the greatest threats to world diversity. Invasive species mainly enter ecosystems because of human activities, which may be random. For example, the ctenophore mnemiopsis, this species of ctenophores lives in the seawater of the Azov and Black seas, where ships along with brought it there ballast waters. This species caused great damage, devouring zooplankton and eggs of local fish [5]. In some cases, the spread of invasive species can be facilitated by the special nature of human activity, for example, the Sosnovsky hogweed. Initially, this plant was cultivated in the USSR as a silage plant. Subsequently, it turned out that this plant penetrates well into natural ecosystems and subsequently destroys them. In addition to destroying the ecosystem, this plant can cause severe burns in humans.

The spread of this plant in the central part of the Russian Federation has now led to catastrophic results and contributed to the development of the Comprehensive Program for the Control of Sosnovsky Hogweed, for example, in the Moscow Region [6]. Currently, there are several anthropogenic corridors for the spread of invasive species (for herbaceous plants: wastelands and fallow lands, railways and highways, fragmented forests, cemeteries, fire ditches, settlements; for insects: unrooted wood and packaging materials; for fish and algae: main transport systems, canals connecting rivers and seas, mariculture) [7]. The problem of invasive species in the Russian Federation poses the greatest threat to the biodiversity of those regions that are characterized by the presence of endemics, relict species and endangered forms. The latter include, first, the Caucasus, Crimea, and Lake Baikal.

Now, the most developed system for regulating the regime of invasions of living organisms, which pose a threat to the country's crop production. The legal basis in this area consists of normative acts that determine the executive body and regulate its powers in the field of plant quarantine. Thus, in accordance with the Decree of the Government of the Russian Federation dated June 30, 2004 No. 327 [8], the Federal Service for Veterinary and PhytoSanitary Surveillance is endowed with the functions of control and supervision in the field of veterinary medicine, circulation of medicines for veterinary use, quarantine and plant protection, safe handling of pesticides and agrochemicals, ensuring soil fertility, ensuring the quality and safety of grain, cereals, mixed feed and components for their production, by-products of grain processing, land relations, protecting the population from diseases common to humans and animals. In addition, a list of pests, pathogens of plant diseases, weeds of quarantine significance for the Russian Federation, rules for the protection of the territory of the Russian Federation from quarantine pests, plant diseases and weeds, a list of quarantine objects [9], Federal Law dated July 21, 2014 No. 206 "On plant quarantine" [10], Regulation on the implementation of pest risk analysis [11]. The significance of pest risk lies in the ability of a pest to either be a quarantine object or not, that is, in its inability to be such. As a result, there is a need to regulate the spread of a quarantine object and / or take phytosanitary quarantine measures in relation to it.

With regard to objects of the animal world, acclimatization and resettlement and measures for the hybridization of objects of the animal world are carried out by the authorized state body (Federal Service for Supervision of Natural Resources) and subject to the conclusion of competent scientific organizations, taking into account the requirements of environmental safety [12]. The list of normative acts regulating the procedure for acclimatization, resettlement and hybridization mainly affects the objects of the animal world that are listed in the Red Book of the Russian Federation or are located in specially protected natural areas. This list does not include those objects of the animal world that can harm the native species in the corresponding territory.

3. Results
According to the state report "On the state and protection of the environment in the Russian Federation in 2018", the monitoring of the spread in the forests of the Russian Federation of alien (invasive) species of animals, plants and microorganisms in the area of sixty-three subjects of our country was carried out, in forty-five of which there are harmful organisms not found. In the Altai Republic, on an
area of 11,000 hectares, foci of a gypsy moth were identified, in the Kamchatka Territory on the
territory of the Petropavlovsk-Kamchatsky urban district and a number of villages in the Elizovsky
district, the presence of Sosnovsky hogweed was revealed, and in the Kamchatka Territory, a large
distribution of the maple mealybug was revealed, which causes harm to the tree and shrub vegetation.
In the Krasnoyarsk Territory, an invasive species of the Siberian fir pest was identified - the Ussuri
polygraph (white fir). The area affected by these species was 126,519.21 ha.

In the Kemerovo region, the area affected by the Ussuri polygraph was about 6,000 hectares. For
pest control, sanitary and recreational activities (clear sanitary felling) were carried out. In the
Republic of Adygea, on an area of 1028.5 hectares, a focus of boxwood moth was identified, and an
increase in the area of damage to oak plantations by the oak lace bug was noted. In order to monitor
the spread of invasive species in the forests of the Russian Federation, methods for their detection and
registration were developed. At the federal level, a concept for the development of a quarantine
service was developed and adopted, in which a list of issues of protection against invasions of alien
species was determined. The institutes of the Russian Academy of Sciences and the Ministry of
Agriculture of the Russian Federation maintain databases on invasive species. In a number of regions
(Tver region, Voronezh region) "Black books" are compiled with an indication of alien species of
plants and microorganisms for this region. The Federal Forestry Agency organizes a system for
monitoring the spread of invasive species of animals, plants and microorganisms in the forests of the
Russian Federation.

4. Discussion

In the prevailing conditions, several acute problems arise. The first of them is the absence of a single
coordinating body of state power. As a result, several state bodies (the Federal Service for Veterinary
and Phytosanitary Supervision and the Federal Agency for Forestry) are engaged in the fight and
control over the spread of similar invasive species. To a certain extent, there is no single centralized
body dealing with the problems of invasive species and accumulating all information about them. Its
existence, as well as the consolidation of powers in this area by any one coordinating state body,
would make it possible to effectively manage, conduct an in-depth analysis of the state and
distribution of invasive species on the territory of our country, and make forecasts for the development
of the situation. It should be noted that the territory of the Russian Federation is very extensive; it
includes several climatic and natural zones. One cannot but take into account the fact that even various
species of plants, animals and microorganisms that are indigenous to a certain climatic zone in another
climatic zone in the territory of the Russian Federation may turn out to be alien and, by their spread,
cause significant damage to the ecosystem.

Currently, there is a List of pests, causative agents of plant diseases, weeds of quarantine
significance and a list of quarantine objects [13], as well as a List of infectious, including especially
dangerous, animal diseases, for which restrictive measures (quarantine) can be established. At the
same time, at the legislative level, there is no list of animal species that are invasive and can pose a
threat to native species inhabiting the territory of our state.

Based on the foregoing, it is necessary to form a regulatory framework by creating new ones and
making changes to existing regulatory acts. This regulatory framework will reflect the restrictions and
prohibitions that are required to combat and control invasive species of plants, animals and
microorganisms for the territory of the Russian Federation.

Thus, together with the Strategy for the Conservation of Rare and Endangered Species of Animals,
Plants and Fungi in the Russian Federation for the Period up to 2030 [14], there should also coexist a
basic document on the fight against alien (invasive) species of plants, animals and microorganisms.
This document must be developed and approved as soon as possible. The presence of the proposed
strategy would allow consolidating the efforts of all government agencies, scientific institutions and
public organizations in this area develop clear plans to combat the existing invasive species and
develop lists of possible or suspected invasive species that pose a threat to flora and fauna. Along with
the Red Book, it is advisable to draw up and constantly update the list of invasions ("Black Book"),
which will contain a set of documented information on the list and status of the distribution of alien (invasive) species of animals, plants and microorganisms on the territory of the Russian Federation, taking into account natural features and climatic zones of the Russian Federation.

5. Conclusion

Based on the above, it can be concluded that in order to ensure environmental safety, sustainable development of territories and objects of the animal and plant world, the problem with invasive species of animals, plants and microorganisms needs to be addressed and regulated. For this purpose, it is necessary to create a unified organizational mechanism in the field of preventing the spread of alien species of animals, plants and microorganisms on the territory of the Russian Federation, taking into account the peculiarities of natural and climatic zones, which assumes, first:

- Development and approval of a basic document on the fight against alien (invasive) species of animals, plants and microorganisms;
- Consolidation of the main powers for the registration and prevention of the spread of alien species of animals, plants and microorganisms on the territory of the Russian Federation for a single state authority;
- The implementation of state registration of alien species of animals, plants and microorganisms, the creation and maintenance of the "Black Book" containing a list and the state of distribution in the territory of the Russian Federation of alien species of animals, plants and microorganisms.

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