The role of hunting enterprises in forest exploitation

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Abstract. Global environmental changes and increased consumption of forest resources require special attention to forest exploitation. The relevance of studying the role of forest hunting in solving the problems of exploitation and regeneration of forest resources is justified by the need to switch to sustainable forest management, increase the biological stability and productivity of forests, strengthen water and soil protection, and ensure sanitary, recreational and other benefits of forests. The article substantiates that the future development of forestry should be based on the principles of sustainability; that is, in the process of regeneration and development of forests, environmental, economic and social goals should be taken into account. We have formulated the tasks and the role of forest hunting enterprises in forest exploitation. As structures engaged in integrated economic activity, forest hunting enterprises, with a rational approach, are able to reduce the risks of forestry activities and ensure environmental, economic and social effects. We have clarified that these effects can only be obtained if the balance between environmental, economic and social components of the sustainable development model is ensured. We have formulated the basic conditions that will allow forestry enterprises to carry out their tasks with maximum efficiency.

1. Introduction

Russia is rich in forest resources, as 20% of the world's forests are concentrated on its territory. Forests are important on both national and global scale, since they allow preserving biodiversity, help to prevent global climate change, protect from desertification and land degradation, and play water-regulating and field-protecting roles. Forest resources, being an important regulator of the environmental balance, are also used in a wide variety of industries. Forestry is the main supplier of valuable wood, technical raw materials for the construction and pharmaceutical industries, food products of natural origin, etc. However, in Russia the forest exploitation is not effective and causes degradation of both forestry and forests in general. In this regard, the need to increase the efficiency of forest exploitation remains relevant and requires further research.

The issues of the efficient use of forest resources and forest management have been studied by a number of Russian researchers, including V N Petrov, T E Katkov, S Karvinen [1], A Kh Chochev, M A Zhashuev, O A Vorobyova [2], T L Bezrukova, I S Zinovieva [3], V P Korpachev, A I Perezhilin, A A Andriyas [4], A L Kamenev [5], V N Lazhentsev, S I Chuzhmarova, A I Chuzhmarov [6], Yu P Likhatsky, A S Chernyk, and S V Harin [7]. Despite a large number of studies in the field of forest management, the breadth of the problems of the forest sector is so great that there are still issues that need to be studied. Among these issues are the features of forest hunting enterprises and their role in forest exploitation. The purpose of this study is to define the role of forest hunting enterprises in forest exploitation.
2. Methods and Materials
The methodology of the research presented was adopted from research publications of national and international scientists in the field of forest management, forestry, and sustainable development. We used periodicals and Internet resources, as well as the results of our own research as sources of information for the present study. We used systemic and integrated approaches, as well as the methods of synthesis, generalization and comparison.

3. Results and Discussion
Forests, as a reproducible natural resource with a long production cycle, are in monopoly state ownership. They provide the basis for various types of economic activity, the implementation of which should take into account the fact that a forest simultaneously acts as an object, product and means of labor, and also is multifunctional. Subject to forestry rules, in the process of forest exploitation conditions are created for forest regeneration. Forests are large areas where forest management should take into account the influence of seasonality, climate, and forest growing and economic conditions. The forest resources of Russia are distributed unevenly across the territory. About 90% of forests are taiga forests of Siberia, the Far East, the Urals and the European North, with their own climatic conditions. These territories are characterized by low population density, poorly developed road network, sometimes even its absence, and, as a result, by an extremely low level of consumption of forest resources. Since the days of the USSR, in these territories the main task has been the use of wood resources and accelerated development of forest industries; that is, the organization of forest use was determined solely by the priority of wood harvesting. At the same time, natural factors are the main prerequisite for pronounced seasonality, and a low level of mechanization has become the main reason for a high complexity of forestry operations. As a result, there are difficulties in attracting and deploying professional personnel. The long rotation period, the need for large production capacities, and a significant influence of biological processes of growth and development of forest resources make forestry activities highly risky. As a result, to date all indicators of the intensity of forest use in such Russia's territories are significantly lower than similar indicators in other countries actively engaged in forestry [1]. At the same time, forestry activities in forest-deficient areas are complex in nature and include forestry, logging, protection against forest fires, hunting, recreational activities, activities to ensure biological diversity, forest regeneration, etc., thereby reducing forestry risks. These features reflect the specifics of the current state of Russia's forestry as an economic activity and are manifested in the ownership and management of forests as real estate, as well as in the process of forestry production [8]. Thus, the exploitation of forests should be multi-purpose, rational, and continuous, so as it would not deplete forest resources, and aimed at meeting the needs of the society in forests and forest resources.

According to the Forest Code of the Russian Federation, the main areas of forest exploitation include: harvesting of wood, gum, non-timber forest products, and forest food resources; harvesting of medicinal plants; activities in the field of hunting and agriculture; research and education; recreational activities; creation of forest plantations and their maintenance; construction, reconstruction, operation of power and communication lines, roads, pipelines and other linear facilities; development of mineral deposits; construction and operation of reservoirs and other artificial water bodies, etc. [9]. Consequently, as a result of forest exploitation, various raw materials are extracted and processed, non-primary forest resources and the whole range of natural conditions of the forest environment are used, as well as forest land is used for the placement of industrial, recreational and other objects [9]. It should be noted that the priority area of forest exploitation is wood harvesting, which provides largest share of the total value of the forest biological resources. Hunting and recreational activities, geological exploration of mineral resources, and wood processing are of medium priority. Of low priority are the harvesting of food and non-timber forest resources, and agricultural activities. The remaining activities are non-priority. Forest management is a holistic production process, which involves both the exploitation of forest resources and their reproduction. Therefore, the main condition for the rational exploitation of forest stands is the conformity of the processes of consumption and
renewal, which implies an excess of the rate of renewal of forest resources over the speed of their use [3]. The increasing demand for all types of forest resources leads to the need for the development of multi-purpose forest use. The transition from single-purpose forest management to integrated forest management characterizes a higher stage of forestry development, as it provides prolonged reproduction not only of wood, but of the entire diversity of forest resources [2]. The development of the multi-purpose forest exploitation and the formation of a forest market for products and services necessitate the expansion of the scope of market relations in the forest sector to ensure efficient management. A striking example of the multi-purpose use of forests are forest hunting enterprises.

In the Russian Federation, 15 state experimental forestry and hunting and 5 state experimental hunting enterprises are located on the lands of specially protected territories [10]. In Russia, the hunting grounds occupy an area of ca 1.5 billion hectares, of which more than half are used by 4450 legal entities and individual entrepreneurs who operate in 6050 hunting grounds. Hunting animals living on the territory of the Russian Federation are estimated at more than 87 billion rubles. The total annual turnover of hunting is estimated at 80-100 billion rubles; it permanently or temporarily employs more than 80 thousand workers [6].

Forest hunting enterprises are experimental enterprises, the purpose of which is to conduct hunting management in combination with forestry. As a result, they face several complex problems that cannot be solved by hunting and forestry enterprises operating separately. Among the tasks to be fulfilled are: maintaining and protecting favorable ecosystems in the entire territory assigned to the enterprise, which would allow maximizing both biological and economic productivity without causing damage to their elements; increasing the productivity of forests and strengthening their functions (water and soil protection, etc.); increasing the productivity of hunting grounds and strengthening their potential to meet the needs for various types of products of the hunting enterprise, including sports and amateur hunting; development and practical testing of integrated forestry and hunting management methods that ensure the rational use and reproduction of forest and hunting resources; enrichment of land and adjacent territories with valuable species of wild animals and birds; the use of other forest resources (wild, medicinal and honey-bearing plants, etc.) [9]. To fulfill the tasks, forest hunting enterprises carry out various types of activities in the territories assigned to them, namely: forestry and hunting; forest, hunting fauna, and fish stocks protection and regeneration; fish farming, organisation of sports and commercial fishing; the use of the stocks of wood and livestock of game animals; organisation of their territory; maintenance of the optimal number of main types of game animals; inventory of hunting fauna; timely extermination of harmful animals in the hunting grounds; acclimatization and re-acclimatization of valuable species of game animals; selection, veterinary and preventive activities; organization of sports and guest hunting, hunting tourism and provision of recreational services; wood processing and waste utilization; mushroom, berries, nuts, and juice harvesting; procurement of medicinal and technical raw materials; beekeeping and gardening; construction of industrial facilities, road networks, and the hunting facilities (feeding platforms, shooting towers, aviaries, etc.) [9, 10]. Thus, the exploitation of a forest by forest hunting enterprises is multi-purpose, rational, and allows to smooth out the influence of seasonality and ensure the restoration of forest resources due to the close relationship between forestry and hunting. At the same time, forestry activities are aimed at creating and maintaining favorable conditions in forest hunting grounds to ensure the formation of various alternating stations of many types of game animals and birds. Forest hunting is characterized by the need to attract significant investment in fixed assets, a large volume of regeneration activities and a large number of animals and birds in the designated area.

Forestry and hunting enterprises seek to maximize profits from the use of forest and hunting resources in the conditions of strict environmental and forestry requirements. Integrated forest management makes it possible for such enterprises to diversify their activities in the production of wood and non-wood products, and the provision of recreational and protective services, thus reducing the risks of capital concentration in one of the areas under unstable market conditions, toughening competition, and seasonal effects. In turn, rapid scientific and technological progress is changing the role of certain types of resources in economic development, reinforcing their intersectoral importance,
which presents new requirements for assessing both the areas of resource use and their distribution. In such conditions, the key issue is the identification of priority types of forest hunting activities. To make such decisions it is necessary: for each individual type of use, determine how to effectively apply labor and capital to the forest area in order to maximize profits from the land used; identify all types of forest utilisation and the possibilities of combining them for each forest site; and evaluate the effectiveness of the identified areas in accordance with the plan of the most profitable resource use model. As a result of such an analysis, a hunting enterprise will have information on forest areas where it is necessary to maintain the forest environment and abandon inefficient investments, but in the future be able to get the maximum profit from forest exploitation by observing the necessary environmental requirements [11].

As a result of their activities, forestry enterprises produce several types of end products and services. Non-wood products include: berries and fruit, medicinal plants, cereals, vegetables, melons and watermelons, nuts, meat, fish, honey, and hay. It should be noted that the use of non-wood and food resources assists in creating additional jobs, preserving traditional knowledge and environmental management, and contributes to improving food security. Protective forest activities include: creation of protective farmland; afforestation of waste land and erosion control; and protection of spawning grounds, sanatorium resorts, and roads. Recreational services of forest hunting enterprises include: hunting services, fishing, maintenance of boarding houses and recreation facilities, organization of excursions, youth camps, grazing and keeping livestock [9, 10]. It should be noted that in national forest hunting enterprises the wood production structure is not efficient enough, the collection and processing of non-wood products is poorly developed, protective services are provided mainly on a gratuitous basis in small volumes, and a limited range of recreational services is offered. The most promising and profitable type of activity of forest hunting enterprises is currently the organization of hunting, as there is a demand, and the potential of the tourist-hunting market in Russia is not yet fully utilized.

When forming the structure of production and provision of services, forestry enterprises should take into account, on the one hand, the demand for these types of products and services, and on the other hand, the most efficient use of both forest and hunting resources, as well as labor, technical, technological, financial and other resources at their disposal. To determine the effective structure of production and focus on the most promising activities it is advisable: to study and determine the current and future needs of customers; to assess the level of competitiveness of products and services; to study the life cycle of products and services in the markets, which will allow taking timely measures to introduce new, advanced types of products and services, as well as eliminating obsolete and economically inefficient products or services from the production program; and evaluate the effectiveness and level of risk of changes in the range of products and services. It should be borne in mind that the profitability of forest exploitation and the efficiency of forest management should not be achieved by increasing the volume of timber harvesting, but due to the development of other types of forest use.

Today, the principle of sustainable management should be recognized as the main principle of forest management. The principle of sustainable forest management is referred to by the norm contained in Article 1 of the Forest Code of the Russian Federation as one of the basic principles of forest legislation and legal acts regulating forest relations [9]. The selection of this principle as the main one does not raise any doubts “in view of the universal, complex and comprehensive nature of its content” [12]. Sustainable forest management is a long-term, focused, economically viable, environmentally responsible and socially oriented interaction between humans and the forest ecosystem. The principle of sustainable management is a prerequisite for ensuring the conservation of forest resources and sustainable development of both forest hunting and forestry in general. In turn, the sustainable development of forestry should be considered as one of the aspects of the implementation of the global concept of sustainable development, covering the environmental, economic and social components and aimed, inter alia, at the rational and inexhaustible use of limited natural resources, ensuring the viability of ecosystems, and maintaining biological diversity. Formed
by several international initiatives (the UN Conference on Environment and Development, Rio de Janeiro, 1992; the European Ministerial Conference on the Protection of Forests in Europe, Strasbourg, 1990; Helsinki, 1993; Lisbon, 1998; Vienna, 2003; Warsaw, 2007; Oslo, 2011; Madrid, 2015 and others) the concept of sustainable development is focused on improving the quality of life for the present and future generations and ensuring social justice.

The key issues, both in the context of sustainable forestry development and historically recognized forestry principles, are: environmentally balanced forest management, meeting the needs of population in wood and non-timber forest resources, and forest conservation for future generations. The essence of the concept of sustainable forestry development is revealed by its principles: assistance in increasing the forest cover of a territory; ensuring effective control over the state of forests; preservation of biological diversity; strengthening water conservation and soil protection functions of forests; rational and sustainable forest management, and support for forest productivity; multi-purpose forest management; economic incentives for the use of forest resources on the principles of sustainable development; formation of a competitive forest products market and effective trade policy for forestry enterprises; planning of forest management activities; and ensuring a transparent decision-making on forests and forestry. These principles reflect the importance of an integrated approach to the use of forest resources. Therefore, we can conclude that the content of these principles has something in common with the purpose and functions that are performed by forest hunting enterprises. Thus, forest hunting enterprises, by their very nature, are able to provide such economic results that will be a prerequisite for sustainable development of forestry as a whole, and become part of the general concept of sustainable development, by contributing to the achievement of its goals.

The significance of the integrated activities of forestry enterprises is undeniable, as it allows us to get the ecological, social and economic effect from the exploitation of forests.

The environmental effect is manifested in an increase in profitability without increasing logging volumes, thereby reducing the load on forest ecosystems or distributing it more evenly, which contributes to maintaining the ecological functions of forests. This can be achieved by following the principles of environmental management: the rate of consumption of renewable resources should not exceed the rate of recovery; the rate of consumption of non-renewable resources should not exceed the rate of development of their sustainable renewable replacement; and the intensity of pollutant emissions should not exceed the ability of the environment to absorb them. Compliance with these principles is a prerequisite for achieving sustainable development of a forest hunting enterprise, since an alternative approach to environmental management leads to environmental problems and destruction; and without natural resources, no development is possible. The environmental effect also consists of the development of new methods of hunting management, which will guarantee the conservation and increase in the diversity of hunting animals. For this, the purposeful development of fundamental and applied research in the biology and ecology of wild animals, the development and implementation of scientifically based legal, protective, biotechnical, organizational, economic, and educational measures aimed at preserving biodiversity, reproduction and rational use of game animals, and monitoring of the animal world with the goal of improving and increasing the efficiency of forest hunting activities are required.

The economic effect is manifested in ensuring a stable income for hunting enterprises for the long term, which guarantees the state income in the form of taxes, fees, and license fees. In turn, the achievement of a stable income is based on the rational use of natural resources while reducing forest industry waste, reducing losses from improper storage, transportation, losses from not using potential secondary raw materials. A special role belongs to the activities of forest hunting enterprises aimed to preserve the ability of forest resources to regenerate. Extreme pressures on ecosystems should be taken into account, because under excessive loads ecosystems lose their ability to recover and are destroyed. The economic effect will also be manifested in industries that can be called “partners” of forestry and hunting enterprises, for example, in tourism, agriculture, and the food industry.

The social effect is manifested in new jobs created, and in local residents and farm workers receiving new services and goods on preferential terms. A special role is given to maintaining social
and cultural stability. An important aspect is that the activities of forestry enterprises contribute to human development, including spiritual values, the preservation of national traditions and identity, the formation and development of hunting ethics, culture and traditions of hunting. The social effect is also manifested in improving the quality of life, since the services of forestry enterprises provide for the satisfaction of recreational and aesthetic needs.

It should be noted that the sustainable development of forestry enterprises cannot be ensured without at least one component, the targets of each of them should be considered in conjunction with the existing relationships. Therefore, achieving sustainable development requires a balance between its components, which is a rather difficult task. Moreover, contradictions often arise between various components of the sustainable development model. For example, conflicts can arise between economic and environmental goals, which are expressed in the desire to maximize economic results to the detriment of environmental aspects. In this regard, the social component of the model of sustainable development of forestry should include the cultural aspect, which is based on the norms of human behavior, attitude to nature, understanding of the value of wildlife, national traditions, as well as the need to humanize human behavior. In addition, in order to eliminate possible contradictions, sustainable development should be understood as the development when management of forestry and hunting enterprises is focused on achieving long-term rather than short-term goals, and decisions are made taking into account the long-term consequences of the relationship between the economy and environment.

Thus, forest hunting enterprises contribute to all three components of sustainable forest management, and their activities make it possible to rationally use various forest and hunting resources, and allow for non-depleting ecosystem management, while maximizing economic returns per unit area and preserving and enhancing ecological potential and social significance of forests. At the same time, certain conditions are necessary for the effective performance of forestry and hunting enterprises. Among these conditions are the following: the introduction of economic incentives and amendments to the regulatory framework in order to eliminate the "gray" schemes of industrial harvesting of non-timber and food forest resources, as well as in the implementation of forest uses not related to wood harvesting; taking into account regional characteristics of individual types of forest use; amending the regulatory framework to reduce the total cost of tenants in the implementation of multi-purpose forest management; introduction of differentiated rents for the integrated use of forest resources; budgetary allocations for the construction of roads, hiking trails, R&D and design work related to the implementation of specific projects in the hunting sector; state assistance to voluntary forest certification systems; creation of public-private partnerships in the field of forestry; improving the structure of services provided by forest hunting enterprises; entering new fundamentally new segments of demand. Under these conditions, it becomes possible to make sound strategic development plans in all areas of forestry, as well as increase the efficiency of the use of forestry resources and the exploitation of the forest as a whole.

4. Conclusions
The study identified the role of forestry and hunting enterprises in forest exploitation. The multi-purpose and integrated nature of the economic activities of forestry and hunting enterprises contributes to the sustainable development of forestry in general. At the same time, sustainable development of forestry and hunting enterprises is called, first of all, to ensure high efficiency and conservation of forest ecosystems. Today, the strategic guidelines of forestry and hunting enterprises are ecologically oriented. They serve to preserve faunal complexes and their habitats; provide assistance in the conservation of game species of animals in all their diversity and at all stages of development; ensure differentiated hunting management in forests of different categories; ensure the investment attractiveness of the industry, its technical equipment and computerization, the formation of state support mechanisms, and improving the regulatory framework.
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