Artículo de investigación

Protection of the traditional crafts of the indigenous peoples of northern Russia: socio-economic aspects and methodology

Protección de la artesanía tradicional de los pueblos indígenas del norte de Rusia: aspectos socioeconómicos y metodología

Proteção do artesanato tradicional dos povos indígenas do norte da Rússia: aspectos socioeconômicos e metodologia

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Abstract

The article provides general information about the Republic of Sakha (Yakutia); gives a brief description of the rich resource base of the Republic and the main directions of the economy of administrative regions. Industrial enterprises and transport infrastructure are considered as the main sources of anthropogenic impact on the environment, and specifically on hunting resources.

Information about the indigenous peoples living in the territory of Yakutia, including those engaged in one of the main types of traditional crafts – hunting is given. The general characteristics of the current number of hunting animals in the areas where the largest number of hunting spots assigned to the communities of indigenous peoples of the North of the Republic of Sakha (Yakutia) are described. The dependence of the density of the hunting animals' population on the geographical location of hunting spots is shown. mThe article provides information on the legal protection of the indigenous peoples of Russia in matters of preservation of the native habitat and traditional crafts. The thesis about the need for compensation of losses arising because of industrial enterprises is confirmed.

The method of estimation of losses of indigenous peoples of the North which arise as a result of withdrawal of part of hunting grounds under industrial objects is considered. A brief analysis of

Resumen

El artículo proporciona información general sobre la República de Sakha (Yakutia); ofrece una breve descripción de la rica base de recursos de la República y las principales direcciones de la economía de las regiones administrativas. Las empresas industriales y la infraestructura de transporte se consideran las principales fuentes de impacto antropogénico en el medio ambiente, y específicamente en los recursos de caza.

Información sobre los pueblos indígenas que viven en el territorio de Yakutia, incluidos los que participan en uno de los principales tipos de artesanía tradicional: la caza. Las características generales del número actual de animales de caza en las áreas donde se describe el mayor número de sitios de caza asignados a las comunidades de pueblos indígenas del norte de la República de Sakha (Yakutia). Se muestra la dependencia de la densidad de la población de animales de caza con respecto a la ubicación geográfica de los lugares de caza.

El artículo proporciona información sobre la protección legal de los pueblos indígenas de Rusia en materia de preservación del hábitat nativo y la artesanía tradicional. Se confirma la tesis sobre la necesidad de compensar las pérdidas derivadas de empresas industriales. Se considera el método de estimación de las pérdidas de los pueblos indígenas del norte que surgen como resultado de la retirada de parte de

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the indicators used in the calculation of losses is given, as well as recommendations for improving these indicators.

Keywords: Indigenous peoples, industrial enterprises, hunting resources, impact, compensation for losses, traditional crafts.

los cotos de caza bajo objetos industriales. Se ofrece un breve análisis de los indicadores utilizados en el cálculo de las pérdidas, así como recomendaciones para mejorar estos indicadores.

Palabras claves: Pueblos indígenas, empresas industriales, recursos de caza, impacto, compensación por pérdidas, artesanía tradicional.

Resumo

O artigo fornece informações gerais sobre a República de Sakha (Yakutia); dá uma breve descrição da rica base de recursos da República e as principais direções da economia das regiões administrativas. As empresas industriais e a infraestrutura de transportes são consideradas as principais fontes de impacto antropogênico no meio ambiente e, especificamente, nos recursos de caça.
Informações sobre os povos indígenas que vivem no território de Yakutia, incluindo aqueles envolvidos em um dos principais tipos de artesanato tradicional - a caça é dada.
As características gerais do número atual de animais de caça nas áreas onde o maior número de locais de caça atribuídos às comunidades de povos indígenas do norte da República de Sakha (Yakutia) são descritos. A dependência da densidade da população de animais de caça na localização geográfica dos locais de caça é mostrada. O artigo fornece informações sobre a proteção legal dos povos indígenas da Rússia em questões de preservação do habitat nativo e do artesanato tradicional. A tese sobre a necessidade de compensação de perdas decorrentes de empreendimentos industriais é confirmada. O método de estimação de perdas de povos indígenas do Norte que surgem em consequência da retirada de parte de áreas de caça abaixo de objetos industriais considera-se. É feita uma breve análise dos indicadores utilizados no cálculo das perdas, bem como recomendações para melhoria desses indicadores.

Palavras-chave: Povos indígenas, empresas industriais, recursos de caça, impacto, compensação por perdas, artesanato tradicional.

Introduction

The Republic of Sakha (Yakutia) is the largest subject of the Russian Federation (3103.2 thousand km2), occupying a fifth of the entire territory of the country. In the east, the Republic borders with Magadan region, Khabarovsk territory and Chukotka Autonomous district, in the south with the Amur, Chita, Irkutsk regions, in the west with Krasnoyarsk territory. The northern borders of Yakutia are washed by the Laptev Sea and the East Siberian Sea. The composition of Yakutia also includes the Novosibirsk Islands.

The permanent population of the Republic of Sakha (Yakutia) as of July 1, 2006 was 950.4 thousand people. According to the All-Russian population census, representatives of more than 120 nationalities live here. Indigenous population is yakuts-sakha (45.5%), evens (1.2%), evenks (1.9%), dolgans (0.1%), yukaghirs (0.1%), Russians – 41.2%, Ukrainians – 3.6%. The average population density is 0.3 people/1km2.

Natural and climatic conditions of Yakutia are characterized as extreme. Yakutia is located in several natural zones: Arctic deserts, tundra, forest-tundra and taiga. More than 40% of the territory is located beyond the Arctic circle. Most of the territory of the Republic is occupied by extensive mountain systems, highlands and plateaus. In the Republic there are almost 700 thousand rivers with a total length of over 1.5 million km, over 800 thousand lakes. The percentage of forest land is equal to 63.7%.

Yakutia is one of the coldest regions of the country. Most of the territory of the Republic lies in the permafrost zone. The power of permafrost rocks reaches places 600-800 meters or more. The climate is harsh, sharply continental. The average final temperature in

January is –35.60C, July +13.50C. The absolute minimum temperature in Yakutsk reaches -640C, in the "cold pole" to -700C. Summer is short, but hot. The absolute maximum in Yakutsk reaches +380C, near the "cold pole" – +350C. The average annual precipitation reaches 200-290 mm, in some mountain areas - up to 700 mm.

The territory of the Republic is a rich resource base not only of Russian, but also of global importance, the development of which is in the initial stage. In addition to the development of extractive industries, much attention is paid to the improvement of transport infrastructure. Thus, the basis of the all-season transport network of the Republic should be the railway line Berkakit-Tommot-Yakutsk and paved roads. This will make it possible to connect the Trans-Siberian and Baikal-Amur latitudinal transport highways, on the one hand, and the Northern sea route, on the other, creating a transport corridor that can acquire an international character in the future.

Mineral resource potential of the Republic of Sakha (Yakutia) according to the latest revaluation of the Ministry of Natural Resources of Russia in 2006 is 78.4 trillion rubles.

The Republic of Sakha (Yakutia) provides 98.2% of Russia's diamond production and about 25% of the total world diamond production. With the reconstruction of existing mining and processing enterprises and the creation of industrial infrastructure in new diamond-bearing areas, it is possible to increase diamond production by 1.5 times.

The Republic has significant oil and gas resources. The development and involvement in the economic turnover of oil and natural gas already contributes to the sustainable satisfaction of the needs for oil products of the constituent entities of the Russian Federation that are part of the Far Eastern Federal district. Recoverable oil resources of the Republic of Sakha (Yakutia) are 509.9 million tons, recoverable natural gas resources - 2421.2 billion m3.

Gold reserves of the Republic of Sakha (Yakutia) are about 20% of all reserves of Russia. The main areas of gold mining are in the eastern and southern parts of Yakutia - in the basins of the rivers Indigirka, Yana and Aldan. The share of the gold mining industry in industrial production is about 7%. The strategic course of gold mining of the Republic is to enter the five world gold mining companies by increasing the level of gold production. In addition to the intensification of the development of existing fields, this will be facilitated by the expansion of the geography of geological exploration.

The Republic of Sakha (Yakutia) has significant coal reserves (14.4 billion tons in categories A+B+C1+C2), which is 48% of all reserves in the Far Eastern region of Russia. As of 01.01.2005 in the territory of the Republic of Sakha (Yakutia) 48 coal deposits are considered, uniting 81 sites. The coal industry is in the second place after the diamond industry and accounts for 13.4% of total profits.

Even a brief overview of the main mining enterprises and land transport routes, together with intensive geological exploration, shows the scale of not only today, but also the upcoming impact on natural resources, including the natural resources of hunting.

In this regard, a topical issue for the Republic is the protection of the economic interests of the indigenous peoples of the North, the organizational forms of which are defined by Federal legislation. This list includes: nomadic tribal communities, agricultural production cooperatives, municipal unitary enterprises, etc. (Velichenko,2017; Potravny et al. 2017; Samsonova et al. 2017; Sleptsov,2012). This question is also relevant for other regions of Russia, as well as for all countries on which territories small peoples live (Tysiachniouk et al. 2018; Stammler & Ivanova,2016; Petrov et al.2014; Southcott & Walker,2015).

Currently, in Russia, the assessment of losses in respect of indigenous minorities is mainly determined by the "Method of calculating the amount of losses caused to associations of indigenous minorities of the North, Siberia and the Far East of the Russian Federation as a result of economic and other activities of organizations of all forms of ownership and individuals in places of traditional residence and traditional economic activities of indigenous minorities of the Russian Federation", approved by the Order of the Ministry of Regional Development of the Russian Federation of 9 December 2010 No. 565 (hereinafter - Method No. 565). Taking into account the complexity of calculations by this method, the scientific community is working to improve the methodology for assessing losses.

Materials and methods

The object of the study of this article is the territories assigned to indigenous peoples for traditional hunting within the boundaries of which hunting animals and birds live. After the entry into force in 2009 the Federal law №209 "On hunting and conservation of hunting resources" hunting animals and birds have a common name "hunting resources". In addition, the issues of methodology for calculating losses arising from the activities of industrial enterprises, in particular, the need to improve existing techniques.

The article is prepared on materials of Territorial body of Federal State Statistics Service in the Republic of (Sakha (Yakutia), the Department for the management, use and conservation of hunting resources and management of biological resources of the Ministry of Environment, Natural Resources and Forestry of the Republic of Sakha (Yakutia), and also on the basis of the stock materials of Institute of Applied Ecology of the North in NEFU named after M.K. Ammosov and literary sources.

For the analysis of a condition of populations of hunting animals types on which in the hunting register of Department on Regulation, Use and Preservation of Hunting Resources of the Ministry of Ecology, Nature Management and Forestry of the Republic of Sakha (Yakutia), and also in Territorial authority of Federal State Statistics Service on the Republic of Sakha (Yakutia) were chosen, there is documented information.

The article considers not all areas, but only those in which the largest number of associations of indigenous peoples of the North is registered. To illustrate the diversity of natural conditions of Yakutia areas located in different forest areas are selected, which revealed not only their economic characteristics, but also differences in the productivity of hunting grounds.

Offers to improve the methodology for assessing the losses of indigenous minorities are justified with the need to use of reliable and affordable indicators in the calculation, widely used in the practice of hunting.

Results

In total, more than 70 localities (territories) of compact indigenous residence with a total number of more than 39 thousand people are located on the territory of Yakutia (table 1). For centuries, they lead a kind of nomadic and semi-nomadic way of life, which turned into their habitual way. These peoples have original ancient cultures; their life activity is inextricably linked with ancestral lands and traditions.

Table. 1. The number of indigenous peoples of the Republic of Sakha (Yakutia) (according to the results of the 2010 All-Russian population census)

№	Indigenous small people	Total number in Russia, pers.	Speak native language, pers., %	The total population in Yakutia, pers., in % from Russia
1	Evenks	38396	4802 (12,5 %)	21008 (54,7 %)
2	Evens	21830	5656 (25,9 %)	15071 (69 %)
3	Yukaghirs	1603	370 (23,1 %)	1281 (80 %)
4	Chukchis	15908	5095 (32,0 %)	670 (4,2 %)
5	Dolgans	7885	1054 (13,4 %)	1906 (24,2 %)

The industrialization of previously remote areas along with climate change will definitely result in changes of the habitat of indigenous peoples, which leads to sometimes irreversible transformation of the entire way of life of the local population (Loffler).

The Constitution of Russia, in accordance with the generally recognized principles and norms of international law and international treaties, guarantees the rights of the indigenous peoples of the North of Russia, including the protection of the primordial habitat and traditional way of life. At the same time, both Federal law No. 2060-1 "On environmental protection" (1991) and Federal law No. 209 "On hunting and conservation of hunting resources" (2009) also provide for the liability of individuals and legal entities to representatives of indigenous peoples for habitat violations with mandatory compensation for the losses incurred by them.

As it can be seen, the protection of the indigenous habitat and traditional way of life of the indigenous peoples of the North is closely intertwined with the issues of fair calculation and compensation of losses that arise because of industrial companies operating in the territories of the indigenous peoples of the North. This implies the obligatory presence of a single, scientifically based methodology that would allow the most objective and accurate calculation of the real losses of hunting users as a result of the loss of hunting resources.

Nowadays, a long-term scheme for the use of hunting grounds has been formed in the Republic. Hunting management is carried out by 368 hunting users, including 280 legal entities and 88 individual entrepreneurs. Of the total number of hunting users, 55.1% are represented by associations of indigenous peoples of the North in the form of tribal, tribal nomadic communities, agricultural and consumer cooperatives.

The total area of the fixed hunting grounds in the Republic is 1311840 km2. In each administrative region, according to the requirements of the Russian legislation, public areas of hunting grounds are allocated, the total area of which in the Republic is 967900 km2.

In total, 35 administrative districts were allocated on the territory of the Republic. Table 2 presents data on only six administrative districts, which have the largest number of hunting areas assigned to the indigenous peoples of the North of Yakutia.

Table. 2. Information on the number of hunting areas assigned to the indigenous peoples of the North

Name of the area	Natural areas (according to Shcherbakov, 1985)	Total number of areas	Including:	
			APC*	NTC**
Ust-Yansky	Area of north-eastern mountain north-taiga forests	32	0	26
Oleneksky	Area of north-western northern taiga forests	36	3	22
Mirninsky	Area of central yakutian and west vilyuisk middle-taiga forests	14	0	12
Ust-Maysky		20	0	13
Aldan	Area of south aldan middle-taiga forests	40	2	35
Neryungri		24	0	19

* Agricultural production cooperatives
** Nomadic tribal communities

As it can be seen, the largest number of hunting users is represented by nomadic tribal

communities for which hunting along with fishing and domestic reindeer husbandry is one of the main types of traditional economic activities.

Table 3 presents a brief description of the selected areas to illustrate the intensity of industrial development of natural resources, which can be judged on the degree of impact on hunting resources.

Table. 3. Characteristics of the sample of administrative districts

Name of the area	Natural areas	Area, km2	Number of settlements	The basis of the district economy
Ust-Yansky	Area of north-eastern mountain north-taiga forests	120 278,08	10	Extraction of tin, gold, fishing and processing of fish, reindeer husbandry and animal husbandry. The activities of large enterprises is suspended.
Oleneksky	Area of north-western northern taiga forests	31 7976,06	4	Reindeer husbandry, animal husbandry and hunting. There are no large enterprises.
Mirninsky	Area of central yakutian and west vilyuisk middle-taiga forests	165 779,19	9	Diamond mining, oil and gas industry. There are large mining enterprises.
Ust-Maysky		95 325,47	10	Gold mining, logging, hunting. There are no large mining enterprises.
Aldan	Area of south aldan middle-taiga forests	156 819,78	7	Gold, mica mining, woodworking. On the territory of the district the oil pipeline ESPO* and the pipeline “Power of Siberia” are.
Neryungri		98 889,52	7	Coal, gold mining, power generation. On the territory of the district the

oil pipeline ESPO* and the pipeline "Power of Siberia" are.

** "Eastern Siberia – Pacific Ocean" oil pipeline*

Below there is a brief description of the vegetation and hunting resources of selected by us areas.

-Ust-Yansky district. The area of north-eastern mountain north-taiga forests. The relief is diverse, mainly mountainous, there are vast lowlands. The only coniferous tree species is Larix Cajanderi, Siberian dwarf pine is widely distributed.

On 1 January 2014 the area of registered land is 36228.0 km2, accounting for 30.1% of the hunting area of the ulus. Public land with a total area of 48037.0 km2 amount 39.0 % of the area of the hunting grounds of the ulus.

On 01.05.2017, the number of hunting resources in the ulus according to the WRC was: squirrel – 561 animals; ermine – 3443; hare-Belyak – 11783; fox – 408; elk – 378; wolverine – 186; sable – 1614 animals. In the north of the district there is the Yano-Indigir tundra population of wild reindeer, the number of which, according to the results of the 2012 air census is only 2-2.5 thousand individuals, that is why this population has no economic value. Quotas for commercial and amateur deer production of the Yano-Indigir population are not allocated.

-Oleneksky district. The area of north-western northern taiga forests. It is characterized by plain or flat relief. Sparse larch forests of Larix gmelinii are dominated.

On 1 January 2015 the area of registered land is 119158.0 km2, representing 39.3 % of the area of the hunting grounds of the ulus. Public lands with a total area of 48918.0 km2 make up 15.4% of the hunting area of the ulus.

On 01.05.2017, the number of hunting resources in the ulus according to the WRC was: squirrel – 36686 animals; wolf – 1820; ermine – 5238; hare-Belyak – 27514; fox – 697; elk – 2165; WR (forest population) – 5121; wolverine – 825; sable – 13101 animals.

The greatest commercial value now has the Lena-Oleneksky population of WR (tundra population numbering more than 90 thousand individuals), the main part of which winters in the territory of Oleneksky district. The annual limit of wild reindeer withdrawal in recent years in the Republic is on average 24 thousand individuals, of which 70-75% is the share of this population.

-Mirninsky district. The area of central yakutian and west vilyuisk middle-taiga forests. It includes the hilly plain of the middle Siberian plateau and the Central Yakut lowland. Alas (meadow) landscape is characteristic. In forest plantations Larix gmelinii is dominated, pine, spruce, birch play a significant role.
On January 1, 2015, the area of fixed lands is 52183.0 km2 (33.2% of the ulus area). Public lands with a total area of 84,213.0 km2 (50.8% of the ulus area).

On 01.05.2017, the number of hunting resources in the ulus according to the WRC was: squirrel – 28655 animals; wolf – 643; ermine – 2929; hare-Belyak – 18873; fox – 856; elk –6782; wild reindeer (forest population) – 13708; wolverine – 264; sable – 22194 animals. A part of the Lena-Oleneksky tundra wild reindeer population winters in the district.

-Ust-Maysky district. The area of central yakutian and west vilyuisk middle-taiga forests. It includes the hilly plain of the middle Siberian plateau and the Central Yakut lowland. Alas (meadow) landscape is characteristic. In forest plantations larch is dominated, pine, spruce, birch play a significant role.

On January 1, 2014, the area of the assigned territories is 65031.0 km2, which is 68.2% of the area of hunting grounds of the ulus. Public lands with a total area of 21061.0 km2 amounts to 22.1 % of the area of the hunting grounds of the ulus. On 01.05.2017, the number of the hunting resources according to the materials of the winter route census (WRC) were: squirrel – 15071 animals; wolf – 293 animals; ermine – 1459 animals; hare-Belyak – 9808 animals; elk – 2868 animals; the musk deer – 2582 species; roe

deer – 260 animals; fox – 293 animals; moose – 2302 animals; wild reindeer (wild population) – 2866 animals; wolverine – 32 species; lynx – 28 animals; sable – 7545 individuals.

-Aldan district. The area of south Aldan middle-taiga forests. Mountainous terrain (the Aldan and Olekma-Charsk plateau, the northern slopes of the Stanovoy Range) is dominated. As part of the tree stands in addition to the dominant larch pine, Ayan and Siberian spruce, cedar, fir, birch, aspen grow. Siberian dwarf pine is widely distributed.

On 1 January 2015, the area of assigned land is 12 5545.0 km2 (80.1% of district area). Public lands with a total area of 20356.0 km2 (12.9% of the ulus area).

On 01.05.2017, the number of hunting resources according to the materials of winter route census (WRC) was: squrrel – 57383 animals; wolf – 802, ermine – 5333, hare-Belyak – 13655; musk deer – 7120, roe deer – 452, fox – 891, elk – 5159, Manchurian deer – 2261, wild reindeer (forest population) – 6765 animals.

-Neryungri district. The area of south Aldan middle-taiga forests. Mountainous terrain (the Aldan and Olekma-Charsk plateau, the northern slopes of the Stanovoy Range) is dominated. As part of the tree stands in addition to the dominant larch pine, Ayan and Siberian spruce, cedar, fir, birch, aspen grow. Siberian dwarf pine is widely distributed.

On 1 January 2015, the area of assigned land is 5 2687.0 km2 (53.8 %). Public lands with a total area of 28662.0 km2 (28.9% of the ulus area). The specificity of the hunting economy of the area is the predominance of indigenous communities of the small peoples of the North, engaged in the trade of sable.
On 01.05.2017, the number of hunting resources according to the materials of winter route census (WRC) was: squirrel – 61740 animals, wolf – 304, ermine – 6446, hare-Belyak – 11675, musk deer – 22451, fox – 336, elk – 2761, Manchurian deer – 200, WR – 4690, sable – 20439 animals.

The severe climatic conditions of Yakutia, on which fodder and protective properties of hunting land largely depend, determine the low population densities of hunting animals. Table 4 shows the data on the population density of the main types of hunting animals, calculated on the basis of the results of winter route census of the number conducted by the Ministry of Ecology, Nature Management and Forestry of the Republic of Sakha (Yakutia) (winter route census,2017).

Table. 4. Population density of the main types of hunting resources in the typical for the types of land (according to the winter route census)

Name of the area	Natural areas	Population density of hunting animals, animals/10 km2			
		Wild reindeer (forest)	Лось	Moose	Squirrel
Ust-Yansky	Area of north-eastern mountain north-taiga forests	-	0,1	0,3	0,15
Oleneksky	Area of north-western northern taiga forests	0,4	0,14	0,7	1,5
Mirninsky		1,2	0,9	1,5	2,0

Ust-Maysky	Area of central yakutian and west vilyuisk middle-taiga forests	0,6	0,8	2,3	2,3
Aldan	Area of south aldan middle-taiga forests	0,5	0,75	3,7	4,5
Neryungri		0,6	0,3	2,5	7,4

Discussion

Analysis of the totality of natural and economic features of the selected administrative areas allows us to say that the greatest impact of industrial enterprises, and, accordingly, the greatest losses are the associations of indigenous small peoples, leading hunting in the south of the middle taiga zone, belonging to the region of the southern Aldan middle taiga forests.

An additional confirmation of this is the fact that in these areas, in addition to the existing large mining enterprises, "Eastern Siberia – Pacific ocean" oil pipeline and "Power of Siberia" gas pipeline have been laid in recent years. The length of the routes on the territory of Yakutia is more than 1300 km. In Aldan district, both routes pass through the territories assigned to the indigenous peoples of the North: RKO KMN (e) "Amut-Terra" (area 12600.0 km2), RKO KMNC "Kieng-Yuryakh" (area 14390.0 km2), JSC "Khatystyr" (area 31500.0 km2), and in the Neryungri district: the territories of KRO "Bugat" (area 31600.0 km2), MUP "Iengra" (area 117720.0 km2).

At the same time, the highest population density of hunting animals (resources) in the areas under consideration are also characteristic of the region of the southern Aldan middle taiga forests, which includes the Aldan and Neryungri districts. This thesis was confirmed previously by known researchers of scientific institutions of Yakutia, and it is confirmed nowadays (Mammals of Yakutia,1971).

From this it can be concluded that the greatest losses should be incurred by communities fishing in the most productive areas of hunting grounds, which we observe in reality. However, regardless of the quality of hunting grounds, all losses incurred by indigenous communities because of industrial enterprises, regardless of the quality of hunting grounds, without exception, should be reimbursed (Egorov,1965).

As we have already mentioned above, at present in Russia the assessment of losses in respect of IPN is mainly determined on the basis of Methodology No. 565.

In addition, to assess the damage to hunting resources, several departmental and regional methods are used, which are based on the cost approach. In general, the formula for calculating the loss of hunting has the form:

$D = (Nreal. + (Nreal \times Sperm. \times t)) \times T \times K$

where:

Nreal - the actual number of hunting resources (species) living in the territories seized for the industrial facility, animals;

Sperm. - the ratio of the permissible withdrawal of hunting resources, in %% (The Order of the Ministry of Natural Resources and Ecology,2010);

T - tax for calculation of the size of the harm caused to hunting resources, rub.;

t - the period of exposure, years;

K - scaling factor for the impact area.

The difference of the Method №565 discussed by us is that it is based on the comparison of income and costs, which allows determining economically and more reasonably the lost profit (loss). At the same time, simplified accounting in nomadic tribal communities of indigenous peoples sometimes does not allow obtaining objective costs for hunting, as part of the hunting products goes to the personal consumption of community members.

The second undoubted advantage of the Method №565 the proposal of the authors to carry out calculations on regulatory indicators should be considered, which allows determining not the actual, but the possible volumes of hunting products lost as a result of anthropogenic factors. We agree that the actual production of hunting products (productivity of land) at the present stage is determined not only by the state of the number of hunting animals, but also by subjective factors. The mere change in the demand for certain types of furs can at any time cause an increase in purchase prices, which will immediately lead to a corresponding increase in production volumes. This is a confirmation of the need to use in the calculations the normative indicators of land productivity, which will reflect the potential value of hunting grounds. At the same time, in the considered Method No. 565 calculation of standard indicators is so difficult that as a result it is possible to question reliability of the values received as a result of calculations.

Therefore, like many works of the methodological plan, Method №565 is not without drawbacks, which indicates the need to continue research to develop a more universal and understandable methodology.

Indeed, a clear disadvantage of the methodology under discussion is its complexity, as 101 indicators need to be collected for all types of traditional fisheries. Taking into account the theoretical possibility of incorrect definition of at least several indicators, it is possible to question the objectivity of the calculations. Moreover, among these indicators 24 (twenty-four!) are the coefficients that, according to the authors, are introduced for the "correct calculation of annual gross income". In fact, the authors propose to determine a significant part of the coefficients by expert means, that is, without any scientific justification.

In our opinion, the very presence of unreasonable coefficients in the methods dramatically reduces their scientific significance, especially if the algorithm for their determination is not transparent. Excessive complexity and detail of the calculations complicate the selection of baseline indicators, forcing experts to seek funds and time to develop a large number of standards (coefficients) that do not add accuracy to the calculations (Issues of ecological and economic assessment,2010).

Further, it is proposed to take the fees for calculating the amount of damage caused to hunting resources, which are prescribed in the Annex to one of the methods as a cost indicator in the assessment of losses in the Methodology No. 565. At the same time, in this technique, harm means illegal activity that resulted in the death of animals or violation of their conditions of existence (hunting grounds). It is clear that in this case taxes are aimed at compensation of losses of the state as the owner of natural resources.
We have doubts about the validity of the use of tax data in the case of assessing the performance of industrial enterprises, as industrial enterprises, as a rule, carry out their activities legally. Indeed, the work of enterprises is a legal activity, but as a result of which there is still both the seizure of hunting grounds and the effect of the anxiety factor. And in this case, hunting users lose part of the hunting products, which can be identified as direct losses.

Table 5 shows the fees for calculating the amount of damage caused to hunting resources and the purchase prices for some species of hunting animals living in Yakutia.

Table. 5. Comparative table of tax calculation of the amount of damage and purchase prices

Types of hunting resources	The fee of the harm calculation (rub for 1 animal)	The cost of the animal, calculated through the purchase price (rub)
Moose*	80 000	36000
Wild reindeer*	30 000	12000

Musk deer*	60 000	3000
Roe deer*	40 000	7500
Sable	15 000	5000-7000

** carcass weight multiplied by the price of a kilogram of meat*

As in this case we are talking about compensation of losses of specific hunting users, in our opinion it would be more correct to use the purchase prices for hunting products in the calculations as a cost indicator. Multiplying the number of lost hunting products on purchase price could not be better to show the real losses for each type of products (furs, meat of wild ungulates, upland fowl). It is possible to assume that as a result of application of purchase prices the size of the calculated loss will be a little lower, than with use of taxes, but if we speak about need of determination of real losses of hunting users, purchase prices define the income, and respectively, and losses in case of loss of part of hunting resources.

Experts know that the impact of industrial enterprises on the environment is not limited to the areas occupied by the enterprises themselves. Depending on the period of operation (life) of the enterprise, these areas either permanently fall out of commercial use, or they are withdrawn only for a certain period of time with the possibility of restoring their commercial value. In addition, the so-called zones (territories) of anthropogenic impact are formed along the entire perimeter of enterprises or linear objects (roads, oil pipelines, power lines), the width of which depends on the natural conditions and the type of enterprise or object.

As in most modern works, the authors of the Method №565 discussed by us propose to assess the impact of industrial facilities and in the impact zones. To do this, they set five (!) zones of anthropogenic impact: 1 zone-impact, entailing complete unsuitability of land (loss of 100%); 2 zone - strong impact (loss of 75%); 3 zone - significant impact (loss of 50%); 4 zone - moderate impact (loss of 25%); 5 zone - weak impact (loss of 10%). For each zone, not only its width is determined, but as we can see the coefficients of productivity reduction. At the same time, the proposed coefficients of reducing the productivity of hunting grounds are the same for all species of animals.

In our previous works, we talked about the inadmissibility of such voluntarism in relation to the evaluation of the reaction of wild animals in a state of natural freedom (Velichenko et al. 2004). We proved on the basis of long-term studies that the maximum width of the zone of influence of the anthropogenic factor in the conditions of even the Northern sparse larch is not more than 2000 meters. We showed that at such a distance, taking into account the low population density of hunting animals, it is impossible to differentiate this zone into more fractional bands, which would significantly differ in the population density of hunting animals. On this basis, we propose to allocate one zone of influence, the width of which should be determined in each case and for each species of animals.

Conclusion

The analysis of departmental materials confirms the conclusion about the dependence of the effectiveness of the use of hunting grounds by indigenous peoples not only on natural conditions, but also on the intensity of industrial development of their territories.

The degree of impact of enterprises on hunting grounds is different and depends on both natural conditions and the capacity and type of enterprises. The greatest impact is made by large-scale linear objects, including highways.

The need to assess the losses of indigenous minorities implies the need to develop a science-based methodology, which is possible by improving existing methods and methodological developments.

Considering the simplified accounting system in the associations of indigenous peoples, complicating the allocation of the real cost of doing crafts, it is necessary to focus efforts on improving cost approach to the assessment of damages, precluding the use of costs indicator.

Thus, it is necessary to continue research to improve methodological approaches to assessing the losses incurred by indigenous peoples of the

North as a result of the activities of industrial enterprises and other facilities.

The conclusions and proposals received in the course of the work on improving the methodology for assessing the losses of indigenous minorities can be used by the legislative and state authorities at all levels to improve the legislative framework of the indigenous minorities of the North, in particular, to eliminate the shortcomings of the existing normative documents and to develop common rational approaches for the sustainable development of the indigenous minorities of the North.

The development of a scientifically sound but understandable methodology, using familiar terms, will help indigenous peoples of the North and their tribal communities to participate actively in the assessment of losses and lost profits to be compensated.

Science-based methodology for assessing losses will be the key to improving the calculation process, as well as compensation of subsoil users engaged in economic activities in the territories of indigenous peoples, the real losses that the latter incur because of enterprises.

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References

Egorov, O.V. (1965). Wild ungulates of Yakutia., Moscow: Science, 258 p.

Issues of ecological and economic assessment of natural resources of hunting economy. (2010). Yakutsk: Publishing house of NEFU named after M.K. Ammosov, 130 p.

Mammals of Yakutia. - Moscow: "Science", 1971. – 659 p.

Petrov, A., & Berman, M., & Graybill, J., & Cavin, P., & Cooney, M., & Kuklina, V., &Rasmussen, O.R. (2014). Measuring Impacts: A Review of Frameworks, Methodologies and Indicators for Assessing Socio-Economic Impacts of Resource Activity in the Arctic. Access online: http://yukonresearch.yukoncollege.yk.ca/resda/projects/gap-analysis/

Potravny, I.M., Krivoshapkina, O.A., & Popova, I.M. (2017). Justifying the amount of compensation to the indigenous peoples of the North in the implementation of projects on the territories of their traditional activity, Economics of nature management, Moscow, No. 5. - P. - 65-82.

Report on the processing of winter route census (WRC) on the territory of the Republic of Sakha (Yakutia) in 2017. – Yakutsk: "Academy of the Northern Forum", 2017. – 68 p.

Samsonova, I.V., Neustroeva, A.B., & Pavlova, M.B. (2017). The problems of interaction between indigenous peoples and extractive companies in the Republic of Sakha (Yakutia), Sociodynamics, Notabene, Moscow, No.9, P. 21-37.

Shcherbakov, I.P. (1985). Forest cover of the North-East of the USSR. Novosibirsk, 344 p.

Sleptsov, A.N. (2012,2013). Scientific basis of sustainable development of indigenous peoples of the North // Proceedings of the Republican scientific-practical conference dedicated to the 75th anniversary of the birth of V.A. Robbek. – Novosibirsk, Publishing house: Novosibirsk branch of "Nauka" publishing house, February 17, 158 p.

Southcott, C., Walker, V. (2015). "Chapter 2 The Changing Nature of Social Economy Organizations in Canada's North: A Portrait of Non-profit, Voluntary and Cooperative Organizations" in Southcott, C. (ed.) *Northern Communities Working Together: The Social Economy of Canada's North*, Toronto: University of Toronto Press.

Stammler, F., Ivanova, A. (2016). Resources, rights and communities: extractive mega-projects and local people in the Russian Arctic. Europe-Asia Studies, 68(7), 1220-1244.

The Order of the Ministry of Natural Resources and Ecology of the Russian Federation of April 30, (2010). "On approval of standards of permissible withdrawal of hunting resources and standards of the number of hunting resources in hunting grounds"."

Tysiachniouk, M., Henry, L. A., Lamers, M., & van Tatenhove, J. P. (2018). Oil Extraction and Benefit Sharing in an Illiberal Context: The Nenets and Komi-Izhemtsi Indigenous Peoples in the Russian Arctic. Society & Natural Resources, 31(5), 556-579.

Velichenko, V.V. (2017). Features of damage assessment for indigenous peoples of the North from the loss of hunting resources, Humanities, socio-economic and social sciences, Krasnodar, 12, P. 50-56

Velichenko, V.V., Volpert, I.A., & Danilov, V.A. (2004). To the question of assessing the impact of local industrial facilities on populations of hunting animals in the Far North // Materials of All-Russian scientific conference "Principles and methods of biodiversity conservation". - Yoshkar-Ola, P. 145-146