

PAPER • OPEN ACCESS

Method for Preserving High Conservation Value Forests in the Prichulym Taiga of Tomsk Region During Logging

To cite this article: E Kh Khasanova *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **666** 042021

View the [article online](#) for updates and enhancements.



240th ECS Meeting ORLANDO, FL

Orange County Convention Center Oct 10-14, 2021



Abstract submission due: April 9

SUBMIT NOW

Method for Preserving High Conservation Value Forests in the Prichulym Taiga of Tomsk Region During Logging

E Kh Khasanova¹, N L Yablochkina¹, M A Iuzhakova²

¹Tomsk State University, Lenin Ave., 36, Tomsk, 634050, Russia

²Tomsk Polytechnic University, Lenin Ave., 30, Tomsk, 634050, Russia

E-mail: ely71@mail.ru

Abstract. The paper presents a method to preserve high conservation value forests in accordance with the international certification system of the Forest Stewardship Council (FSC) in the Prichulym taiga of Tomsk region during logging. The taiga landscapes in the area of Prichulym'e are unique due to natural monuments, reserves, and specially protected natural areas with rare species of animals, birds, plants and valuable coniferous stands. These territories included in the forest fund of Tomsk region demand increased attention and systematic control, especially during logging and timber harvesting. At the first stage of the study, forest areas in the operational forests of the Zyryanskiy forestry in Tomsk region, leased by Sibirles OOO for logging and timber harvesting, were investigated. Based on the results of the study, some forest areas were referred to the category of high conservation value forests in accordance with the above-mentioned voluntary international certification system that implies an important function of protecting habitats of rare and endangered species of animals and plants, including those listed in the Red Book and regionally significant species. In such forests, logging and any type of felling are prohibited. Thus, these areas were conditionally excluded from the list of forests allowed for final felling. The results of the independent monitoring performed by the authors allowed the following conclusion: no violations were found in logging activities of Sibirles OOO that leased the parts of the forest in Zyryanskiy district for logging and timber harvesting. On the one hand, such joint activities and monitoring are economically costly; on the other hand, they are important and significant for further identification of the places abundant in unique flora and fauna.

1. Introduction

Throughout the course of history, the dynamics of naturally disturbed taiga ecosystems was largely affected by insect invasions and forest fires – these two factors mainly caused the reduction in areas and degradation of woody vegetation in taiga forests. However, invasion of human in nature has markedly increased over the past years as his needs for forest resources grew [1]. The timber industry is gaining momentum every year. Development of forest areas, forest felling and other forestry activities pose a problem of preservation of natural landscapes [2]. Reduction in forest area entails serious environmental after-effects: ecological imbalance leads to environmental crisis. According to some data, the forest belongs to the category of exhaustible natural resources (its depletion rate exceeds the rate of its natural renewal). Renewal of forest vegetation takes on average 60–80 years, therefore partially (not fully) renewable resources are of particular relevance, including forests with



mature stands, which are most often chosen for felling. Over the past decade, rapid global deforestation gives grounds to classify forests as non-renewable in some regions of the planet [3].

Different mechanisms (including the regulatory framework of the Russian Federation) are employed to preserve forest resources during logging. Voluntary international certification, which is actively developing in the Russian Federation – the certification system of the Forest Stewardship Council (FSC), was one of the most effective ways to preserve forests in Zyryanskiy district when it entered the international market. Certification is an important mechanism for conservation of forests. One of its main requirements is preservation and maintenance of the environmental and environment-forming functions of the forest [4]. For Tomsk region, this was the first experience and example of preserving high conservation value forests.

2. Study area

Tomsk region, part of the Siberian Federal District, is located within 56–61 °N and 75–89 ° E. It stretches 600 km from north to south, and 780 km from west to east. Distance along the Ob River between the extreme points of the region from north to south is equal to 1,065 km. The area of Tomsk region is 314.4 thousand km² [5]. The study object is forest areas allotted for logging on the territory of the forest fund of the Zyryanskiy forestry, Zyryanskiy district, located in the southeastern part of Tomsk region (Fig. 1). The areas are known for abundance of rare species of animals, birds and plants, including those listed in the Red Book (regionally significant) and valuable coniferous stands.

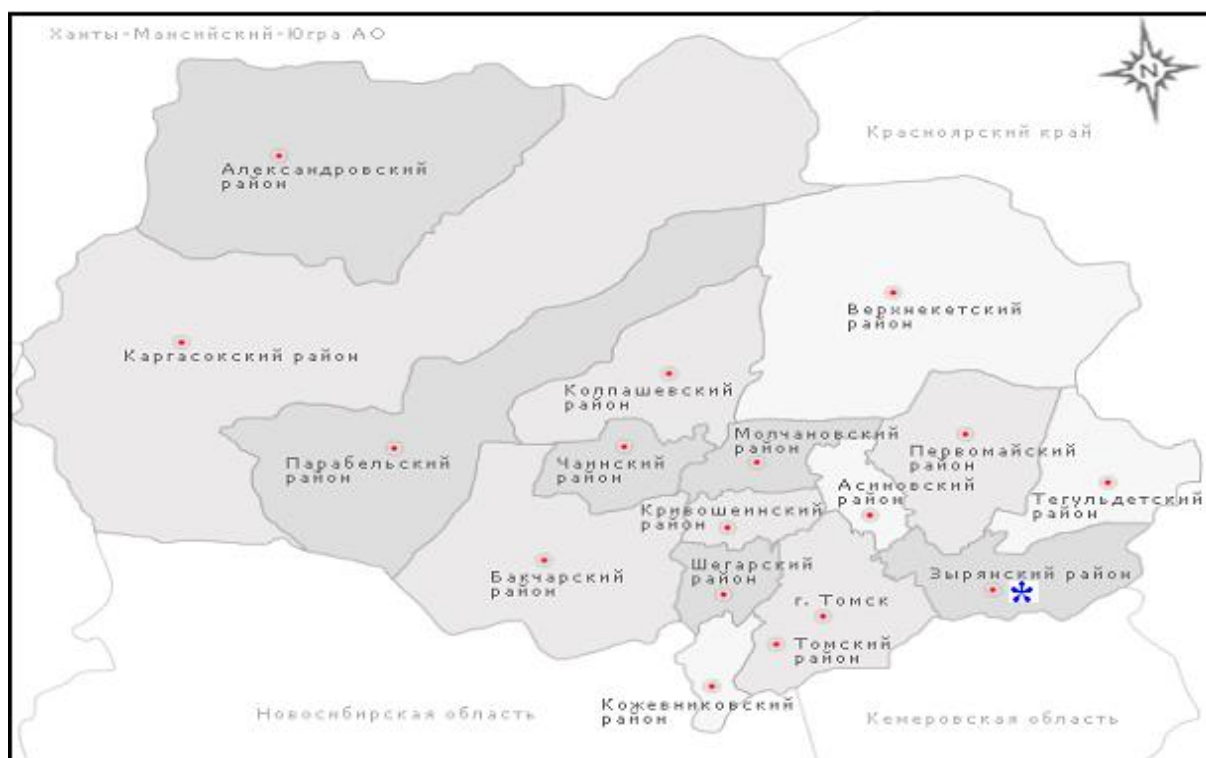


Figure 1. Administrative division of Tomsk region. ● – districts of Tomsk region; * – Zyryanskiy district (designated by the authors).

3. Materials and methods

The study aims to provide an example of preservation of high conservation value forests in the Prichulym taiga of Tomsk region during logging.

A survey of the areas allotted for logging and timber harvesting to reveal the location of biodiversity and status of the environment was performed in summer 2011–2012. The authors as the members of the team of specialists from non-profit enterprise Center for Organization of Works and Services for Environmental Protection headed by N.L. Yablochkina, and consultants from the Department of Natural Resources and Environmental Protection of Tomsk region identified particularly valuable forest areas on the lands of the forest fund in the Zyryanskiy forestry, Tomsk region, in accordance with the current forest code and other Regulatory documents [6]. The survey used available cartographic and other fund materials provided by specialists of the Department of Natural Resources and Environmental Protection of Tomsk Region, the Forestry Agency in Tomsk Region and employees of Sibirles OOO specializing in the forestry industry. Scientists from Tomsk State University provided consultations and recommendations on high conservation value forests identification. Meetings and discussions with the local population of Zyryanskiy district: hunters, gatherers of mushrooms, berries and herbs turned out to be important for identifying particularly valuable forest plots. The work was carried out by order of Siberia OOO, within the framework of the forest development project for 2011–2018 [7]. The project is aimed at ensuring multi-purpose, rational, continuous and sustainable use of forests, their protection and reproduction, and protection of wildlife and water bodies. According to Articles 51 and 61 of the Forest Code of the Russian Federation [6], lessee's failure to fulfill these obligations is the basis for early termination of the lease agreement. On the leased areas, high conservation value forests located within the boundaries of the Okuneevskoye tract, the Zyryanskiy forestry, were identified. Such an event became the first experience and example in Tomsk region.

4. Results and discussion

4.1. Characteristics of the landscape zone in the study area

According to geobotanical zoning, the study area belongs to the Eurasian coniferous-forest (taiga) region of the European-Siberian subregion of dark coniferous forests. The southern subzone of the taiga that covers the basins of the Chulym and other rivers exhibits a more diverse vegetation cover. It is characterized by dark coniferous and mixed forests. At present, secondary derivative birch and birch-aspen plantations occupy a large area in this subzone [8]. By order of the Federal Forestry Agency On approval of the List of Forest Growing Zones of the Russian Federation and the List of Forest Regions of the Russian Federation of 9.03.2011 No. 61 [9], the territory of Zyryanskiy district is assigned to the West Siberian southern taiga plain area of the taiga zone that features zonal forest cover, flora and fauna of the southern taiga zone in Tomsk region, and covers the third terrace above flood-plain of the Chulym River. The terrace is mainly composed of fine-grained yellow-gray and gray sands with interlayers of loam, sandy loam, clay, and silt; interlayers and lenses of buried peat bogs are encountered [10]. The most widespread are gray forest and podzolic soils. Sod-podzolic soils are found to form under mixed coniferous-deciduous and pine forests, and under secondary birch-aspen plantations.

4.2. Conservation of forests under the international forest certification system

In the last decade, the forests of Zyryanskiy district became the focus of harvesting of trees and subsequent sale of roundwood and products of its processing in the territory of the Russian Federation and its export abroad. Russian enterprises engaged in logging and production of timber or other wood products must comply with the current Russian legislation, whereas foreign enterprises purchasing forest products must comply with international standards. The management of Sibirles OOO represented by its director A.V. Novikov met these requirements. The enterprise is engaged in logging in the Okuneevskoye tract of the Zyryanskiy forestry and sells timber to foreign investors. This means that the forest in this area is subject to mandatory certification that confirms its undeniable value and high price [11,12]. One of the international certification systems is a voluntary certification system in the forestry industry, which is actively developing in the Russian Federation – the Forest Stewardship

Council (FSC) certification system. Certification is an important mechanism for conservation of forests on our planet, and one of its main requirements is preservation and maintenance of the environmental and environment-forming functions of the forest.

In addition to the measures provided for by the current legislation of Russia, the FSC voluntary certification system implies mandatory preservation of high conservation value forests as an additional measure of protection and conservation of forests during logging. The emergence of forest certification is closely related to international conventions on sustainable development, which laid the foundations for a balanced decision-making in the field of environmental protection and rational use of forest resources. It should be noted that most of the principles of sustainable forest management are mentioned in the articles of the Forest Code [6].

4.3. Description of the studied forest areas

The surveyed leased forests are divided into protective and production forests in terms of the designated purpose. Protective forests are of high conservation value and perform an important function of protecting habitats of rare and endangered species of regionally significant animals and plants. Production forests are allocated for timber harvesting in the form of clear and selective logging of ripe and overripe trees, and sanitary felling of dead or damaged middle-aged and ripening trees.

The area of the Okuneevskoye tract allocated for logging amounts to 2,792 hectares. The territory of the tract is conditionally divided into areas, including allotments. Woody vegetation, which grows within the boundaries of areas 15 and 16, is characterized mainly by ripe and medium-aged coniferous stands, which are classified as high conservation value forests (Fig. 2).

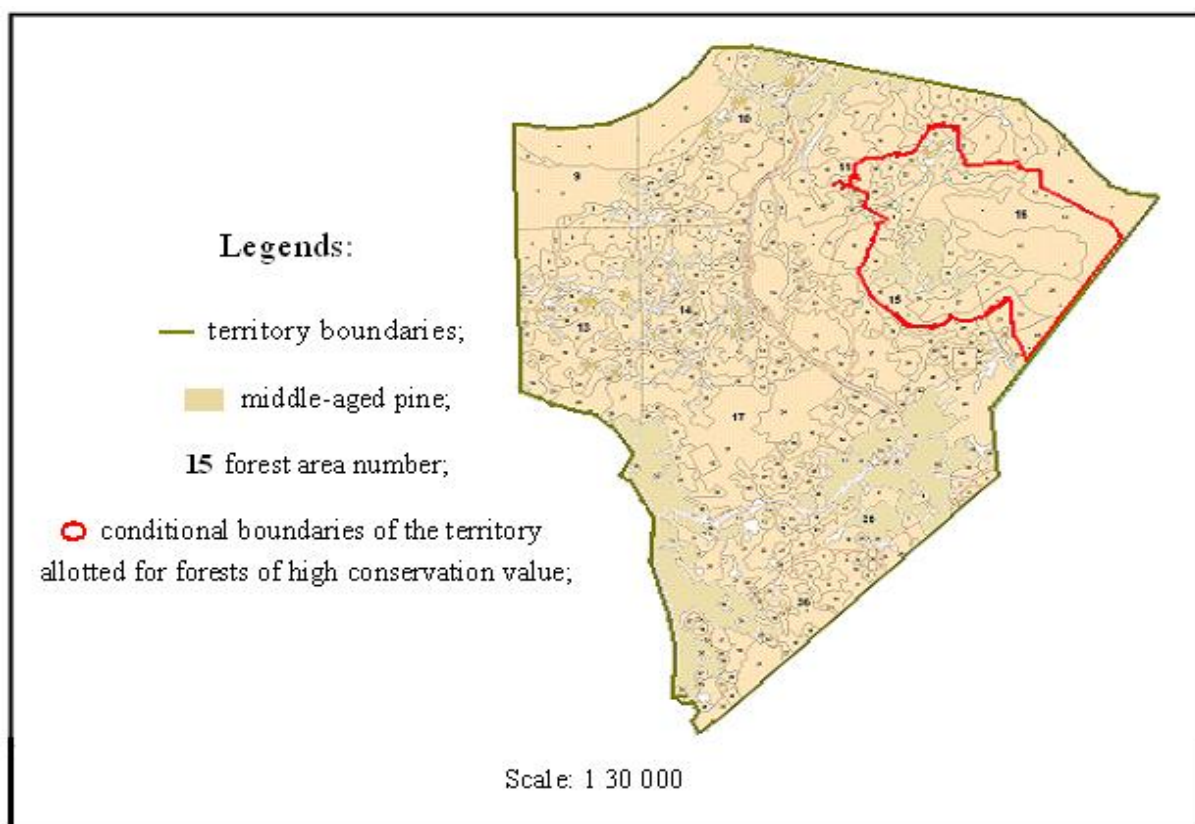


Figure 2. Sketch-map of the Okuneevskoye tract Zyryanskiy district of Tomsk region [7]. Legends: — territory boundaries; ○ conditional boundaries of the territory allotted for forests of high conservation value; ■ middle-aged pine; 15 forest area number.

4.4. Measures for conservation and protection of forests

In summer 2018, the management of Sibirles OOO assisted in organizing a two-week field expedition to study the territories designated on the map as high conservation value forests. Monitoring carried out in the areas specified as high conservation value forests in the forest development project revealed no logging activities and any type of felling [7]. These areas were conventionally excluded from the list of areas allowed for felling. Such measures are economically costly, but they are crucial for further identification of areas with unique flora and fauna. In addition, the management of Sibirles OOO undertakes the responsibility for implementation of these measures in the future.

5. Conclusion

Study is of high relevance to assess the readiness of Russian enterprises engaged in the forestry industry to make responsible decisions in the field of conservation of forests as the habitats for rare species of animals, birds and plants. A number of enterprises take on a voluntarily responsibility for meeting international standards for forest management to ensure high competitiveness in environmentally sensitive international markets.

The FSC certification system is one of the standards that are becoming increasingly prevalent worldwide. Certification requirements are a challenge associated with the ineffective and irresponsible approach to forest management by the enterprises engaged in timber harvesting. The forestry sector in the regions should be developed in parallel with measures for preserving high conservation value forests to become a priority in planning and implementation of logging activities. More effective mechanisms are required to prevent adverse effects on forests. Annual monitoring of the environment with the obligatory invitation of specialists to the areas of planned logging activities will extend preservation of high conservation value forests beyond the legal background and forest legislation. Cooperation of enterprises with scientific communities concerned with this problem can be an important step in preserving the wealth of the forests in Tomsk region.

6. References

- [1] Warkentin I G, Bradshaw C J A 2012 A tropical perspective on conserving the boreal 'lung of the planet' (Review) *Biological Conservation* **151**(1) 50–52
- [2] Khasanova E Kh, Yablochkina N L 2018 Methods for conservation of specially protected natural areas in the southeast of Tomsk region on the example of forestry activities in the Zyryanskiy forestry (in Russian) *Conference proceedings* (Gomel, Belarus) (electronic resources) <http://conference.gsu.by> 161–165
- [3] *Geocology and Nature Management* 2010 ed N G Komarova (Moscow: Academy Publishing House) 12–72
- [4] Ptichnikov A V, Bubko E V, Zagidullina A T 2011 *Voluntary Forest Certification* ed. A V Ptichnikova, S V Tretyakova, N M Shmatkova (Moscow: WWF) 8–22
- [5] Geography of Siberia at the beginning of the XXI century 2016 ed V M Plyusnin (Novosibirsk: Geo Publishing House) *Western Siberia* **5** 231–32
- [6] Forest Code of the Russian Federation 2011 (Moscow: Eksmo) p 96
- [7] Plan for exploitation of forests leased to Sibirles OOO for timber harvesting in the Zyryanskiy forestry of Tomsk region in 2011–2018 2011 (Tomsk: Roslesinforg) p 125
- [8] Nepryakhin E M 1977 Soils of Tomsk region *Tomsk University Press* 44–45
- [9] Order of Rosleskhoz № 61 On approval of the list of forest zones of the Russian Federation and the list of forest areas of the Russian Federation dated 09.03.2011 <https://www.garant.ru/products/ipo/prime/doc/2074564/>
- [10] Bog landscapes of Tomsk region 2012 ed. N S Evseeva (Tomsk: NTL Publishing House) 45–49
- [11] Khasanova E Kh, Yablochkina N L, Novikov A V 2020 Conservation of high conservation value forests in the taiga Prichulymye of Tomsk region during logging (in Russian) Nature management and protection: Proceedings of the IX All-Russian Scientific and Practical Conference with international participation dedicated to the 45th anniversary of the Department

of Nature Protection of TSU and the beginning of university training of specialists in the field of ecology and nature management in Trans-Ural area of the Russian Federation (Tomsk: TPU Publishing House) 180–87

- [12] Khasanova E Kh 2020 Methods of preserving the forest fund in the taiga areas of the Prichulymye of the Tomsk region during forestry (in Russian) Problems of Geology and Subsoil Development: Proceedings of the XXIV International Symposium named after Academician M.A. Usov of students and young scientists, dedicated to the 75th anniversary of Victory in the Great Patriotic War. Volume I (Tomsk: TPU Publishing House) 643 – 644

Acknowledgements

The authors would like to express their sincere gratitude to Alexander Vladimirovich Novikov, the director of Sibirles OOO, for his assistance in organizing expeditions to the study area and collecting data for writing publications. We are most grateful to Natalya Ivanovna Savina, Candidate of Geological and Mineralogical Sciences, Associate Professor of the Department of Paleontology and Historical Geology, Academic Secretary of the Dissertation Council, Geological and Geographical Faculty, Tomsk State University (for 30 years), for her valuable advice when writing the paper. Many thanks go to the staff of the Department of Ecology and Nature Management, Tomsk State University.