

УДК 630.6:630.27

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STRUCTURE OF THE FOREST FUND OF FOREST GREEN ZONE IN YEKATERINBURG (СТРУКТУРА ЛЕСНОГО ФОНДА ЗЕЛЕННОЙ ЗОНЫ ЕКАТЕРИНБУРГА)

*State forestry fund land (dissolved in 2013 due to the territorial expansion of the city of Yekaterinburg municipal unit) with a total area of 28113.5 ha. The results of evaluation the current state of the forestry fund are presented in the article. The forest land is evaluated as follows: the area is highly forested – 99 percent; the area is dominated by natural forest stand with close canopy forest plantation ratio being 656 ha or 2.5 percent; non-forested area is 1.5 per cent, open canopy forest plantation ratio is 0.2 percent; forest regeneration reserve is not large, it is 167 ha. Non-forested land is 12 percent of total forest land. The main forest forming species are Scots Pine (*Pinus sylvestris* L.) and silver birch (*Betula pendula* Roth.) – 74 and 24 % of total forest area respectively. The dominant forest stand belongs to productivity class 1 and productivity class 2, which suggests their high productivity. At present average productivity class is 2.5, which means that Yekaterinburg forest stand is relatively very productive. Forest stand density distribution shows that forest stand in municipal green space is of medium density with an average density of 0.77.*

*Земли государственного лесного фонда муниципального образования г. Екатеринбург составляют 28113,5 га. В статье представлены результаты оценки текущего состояния лесного фонда. Лесные участки характеризуются высоким процентом лесопокрытой площади – 99; преобладают насаждения естественного происхождения, удельный вес сомкнувшихся лесных культур составляет 656 га, или 2,5 %; не покрытые лесом площади занимают 1,5 %, несомкнувшиеся лесные культуры – 0,2 %, фонд лесовосстановления невелик, составляет 167 га. Нелесные земли занимают 12% от общей площади земель лесного фонда зеленой зоны. Основными лесобразующими видами являются сосна обыкновенная (*Pinus sylvestris* L.) и береза повислая (*Betula pendula* Roth.), доля участия соответственно 74 и 24% от общей площади зеленой зоны. Преобладают насаждения первого и второго класса бонитета, что говорит об их высокой производительности. На момент анализа средний класс бонитета составляет 2,3 – это дает основание отнести насаждения зеленой зоны МО г. Екатеринбург в целом к насаждениям относительно высокой производительности.*

Introduction

Urban forest is a very important environmental part of a big city. At present Yekaterinburg is one Russia's biggest cities with a population of more than 1.4 million people, and the number is still growing. The City of Yekaterinburg municipal unit includes 29 settlements. The total area of the city of Yekaterinburg municipal unit is 114.7 thousand hectares where Yekaterinburg occupies an area of 49.1 thousand hectares, which is 43 percent of the municipal unit total area.

All forest land within the city of Yekaterinburg is divided into:

1. Woodland parks (property of Sverdlovsk region) 15 parks with a total area of 12337.7 ha which is 28 percent of Yekaterinburg forest land
2. Urban forest (property of the Russian Federation) with a total area of 12337.7 ha which is 8 percent of Yekaterinburg forest land
3. State forestry fund land (dissolved in 2013 due to the territorial expansion of the city of Yekaterinburg municipal unit) (property of Sverdlovsk region) with a total area

of 28113.5 ha which is 64 percent of Yekaterinburg forest land (Fig. 1).

Since there is no up-to-date forest management data on the municipal unit's forest land the project aim – evaluate the current state of the forestry fund (its composition, age class, productivity class, forest type, etc.).

Materials and methods

To achieve this objective have analyzed forest survey data, forest management regulations of forest districts within Yekaterinburg municipal unit.

Discussion

Forest land distribution in terms of land use categories is shown on Fig. 2. The forest land is evaluated as follows:

- the area is highly forested – 99 percent;
- the area is dominated by natural forest stand with close canopy forest plantation ratio being 656 ha or 2.5 percent;
- non-forested area is 1.5 percent, open canopy forest plantation ratio is 0.2 percent;
- forest regeneration reserve is not large, it is 167 ha, non-forested land is 12 percent of total forest land;
- non-forested land mostly includes a net of rides, developed forest roads and paths – 950 ha (28 percent): landscape openings are 762 ha or 22.5 percent.

The species composition of Yekaterinburg forest stand is rather diverse. More than 10 species grow in regional forest. Coniferous species include pine, spruce, larch, fir and Siberian stone pine. Soft-wooded broadleaved species include birch, aspen, European black alder (*Alnus glutinosa*), speckled alder (*Alnus incana*), willow and poplar. The main forest forming species are Scots Pine (*Pinus sylvestris*) and silver birch (*Betula pendula*) – 74 and 24 % of total forest area respectively. The rest of the species are about 2 percent. Analyze forest land area distribution in general in terms of age group and silvicultural system show on Fig. 3.

Coniferous and soft-wooded broadleaved systems are dominated by middle-aged forest stand, which is 57 and 40 percent of total forest area respectively. The percentage of young and mature forest stand is not significant.

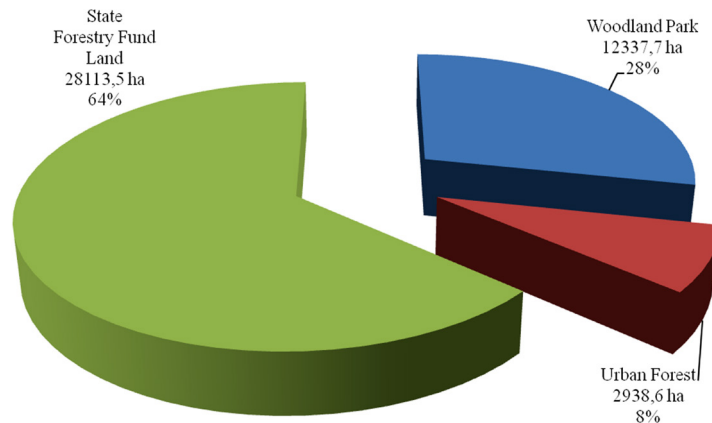


Figure 1. Forest Land structure in the city of Yekaterinburg

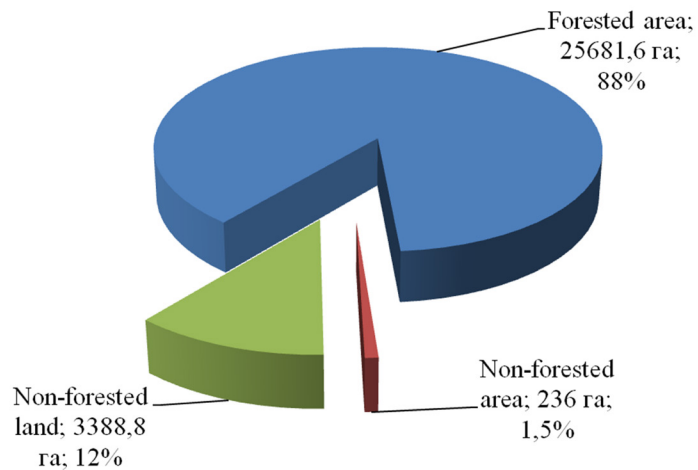


Figure 2. Forest land distribution in terms of land use categories, ha

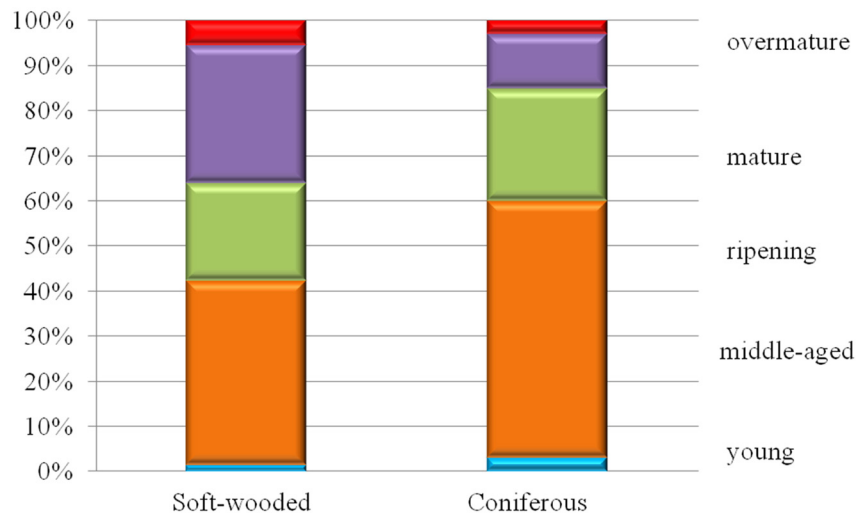


Figure 3. Forest land area distribution of age group and silvicultural system, %

The dominant forest stand belongs to productivity class 1 and productivity class 2, which suggests their high productivity. At present average productivity class is 2.5, which means that Yekaterinburg forest stand is relatively very productive.

Forest stand density distribution shows that forest stand in municipal green space is of medium density with an average density of 0.77.

Incomplete forest stand occupies a small area of 267 ha or

1 percent. Medium density forest stand is predominant in all forest districts. Its area is 15389 ha or 60 percent of forested green space. High density forest stand area is 10081ha or 39 percent.

Having analyzed mean valuation factors of the dominant species may conclude that at present the average age of pine stand is 110 years; the mean productivity class is 2.2, which suggests highly productive stand; the dominant forest type is berry pine forest; mean density is 0.73, which sug-

gests it is of medium density and is quite productive; mean increment is 3,3 cubic metres per ha.

Birch stand has high and medium mean valuation factors, such as a productivity class of 2.5, a density of 0.75, mature and overmature forest stand covering 244 cubic metres per ha, forested land stand covering 226 cubic metres per ha, a mean increment of 3.1 cubic metres per ha. The average age is quite old – 73 years. The dominant forest type is berry pine forest, birch forest being secondary forest growth.

Resume

This is the first attempt to study the structure of forest land of Yekaterinburg green space in such a way. The data obtained may be used:

to study further the municipal forest using development dynamics monitoring;

The data obtained is the basis for studying forest oxygen productivity and carbon sequestration;

Yekaterinburg municipal administration could use this data when creating or improving the urban development master plan to minimize the damage to natural forest land during the design and construction phases of projects of various applications.

УДК 502.4(470.23)

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THE RATIONALE FOR CHOOSING RESTORATION METHODS FOR MONREPOS PARK NATURAL MUSEUM RESERVE (VYBORG, LENINGRAD REGION) (ОБОСНОВАНИЕ НАПРАВЛЕНИЯ РЕСТАВРАЦИИ ТЕРРИТОРИИ ПРИРОДНОГО МУЗЕЯ- ЗАПОВЕДНИКА «ПАРКА МОНРЕПО» Г. ВЫБОРГ ЛЕНИНГРАДСКОЙ ОБЛАСТИ)

The retrospection method (analogous to Humphry Repton`s in late 18th – early 19th centuries) makes it possible to assess the degree of transformation of a historical site over the period of its existence. The results establish a rationale for choosing restoration methods for landmark landscapes.

Метод ретроспекции (аналог работ Х. Рептона, кон. XVIII – нач. XIX вв.) позволяет оценить степень преобразования исторического объекта в течение долгих лет его существования. Результаты работы дают обоснованность методов реставрации памятников садово-паркового искусства.

At present landmark landscape preservation is of great importance. It includes preservation of cultural

heritage, promoting cultural landmarks and using them for research, cultural and educational purposes.

Monrepos, the only rocky landscape park in Russia, is situated on Tverdysh island (the Vyborg Bay,