Rastitelnye Resursy. 51 (3): 383–396, 2015

POST-FIRE TREE STAND AND UNDERGROWTH DYNAMICS OF *PINUS SYLVESTRUS* (PINACEAE) IN LADOGA SKERRIES CONDITIONS

© *E. V. Ashik*,[1] *Yu. M. Chubarova*, *V. T. Yarmishko*

Komarov Botanical Institute Russian Academy of Sciences, St-Petersburg, Russia

[1]E-mail: evashik@gmail.com

SUMMARY

Ladoga Skerries is north-west and north shore region of Ladoga Lake, which consists of a large number of narrow fjord bays and islands. Because of the specific environmental conditions of the territory, even ground fires usually lead to a complete destruction of vegetation that is not characteristic to pine forests usually. Ladoga Skerries vegetation is poorly researched at the moment: the grade of Scots pine (*Pinus sylvestris* L.) forest disturbance under the influence of pyrogenic factor is not estimated; mechanisms of rocky pine forests post-fire recovery are unascertained. The aim of this study was to investigate the processes of the tree layers and undergrowth canopy post-fire dynamics in rocky pine forests under conditions of Ladoga skerry area.

The study was performed on the 6 plots of 0.2—0.3 ha in dwarf shrub—green moss rocky pine forests with 15, 30, 70 and ~150 fire age. Detailed description of tree stand and undergrowth morphometric parameters as well as vitality categories estimation of Scots pine trees were performed.

It was shown that ground fires in rocky Scots pine forests in the Ladoga Skerries can result in almost complete destruction of stands. In studied communities stands (10—20 m2/ha). At the initial stages of post-fire recovery *Betula pendula*, *B. pubescens* and *Populus tremula* were dominant species in undergrowth composition; the share of *Pinus sylvestris* was not exceed 10—15 %. In forest communities with 30 fire age, about 60 % of all trees were Betula pendula and *B. pubescens*; in 70-year-old communities the share of birches reduced to 15 % and in forest community with fire age about 150 years the stand consisted only of Scots pine trees. Weakened individuals prevailed in all stands, regardless of fire age. Healthy trees were identified only in the young 30-year-old tree stand (5 %) and in the community with fire age of 150 years (8 %). This feature of vitality structure was determined by the character of the habitat (small thickness, low fertility and water regime instability of the soil) on the one hand, and increased recreational pressure — on the other.

The maximum total density of Scots pine is typical of the early stages of succession (15 and 30 years after the fire). It averages about 2000 ind./ha and is 10 times lower compared to forest communities formed on unconsolidated sediments. With increasing fire age to 150 years decrease of pine undergrowth density to 200 ind./ha and smoothing of the differences in the value of this parameter with pine forest communities of other habitat types were observed.

Key words: *Pinus sylvestris*, Scots pine, rocky pine forests, Ladoga Skerries, post-fire succession.