

THE STATE OF HEALTH OF FOURTY YEARS OLD SCOTS PINE (PINUS SYLVESTRIS L.) IN FOREST SITE TYPE MYRTILLOSA ONE YEAR AFTER A WILDFIRE IN LATVIA



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Introduction

Background information

Baltic Sea coastal forests in Latvia are well known for their high fire hazard particularly in dry and hot summers. Even if wildfire is advisable for biological diversity, it doesn't always benefit tree stand. And even if Scots pine is relatively more resistant in comparison to Latvia's second most widespread coniferous tree species – Norway spruce (*Picea abies* (L.) Karst.), the physiological state of trees worse, and they can become objects of increased attacks of forest pests and sicknesses that may lead to minting of trees.



The aim of research

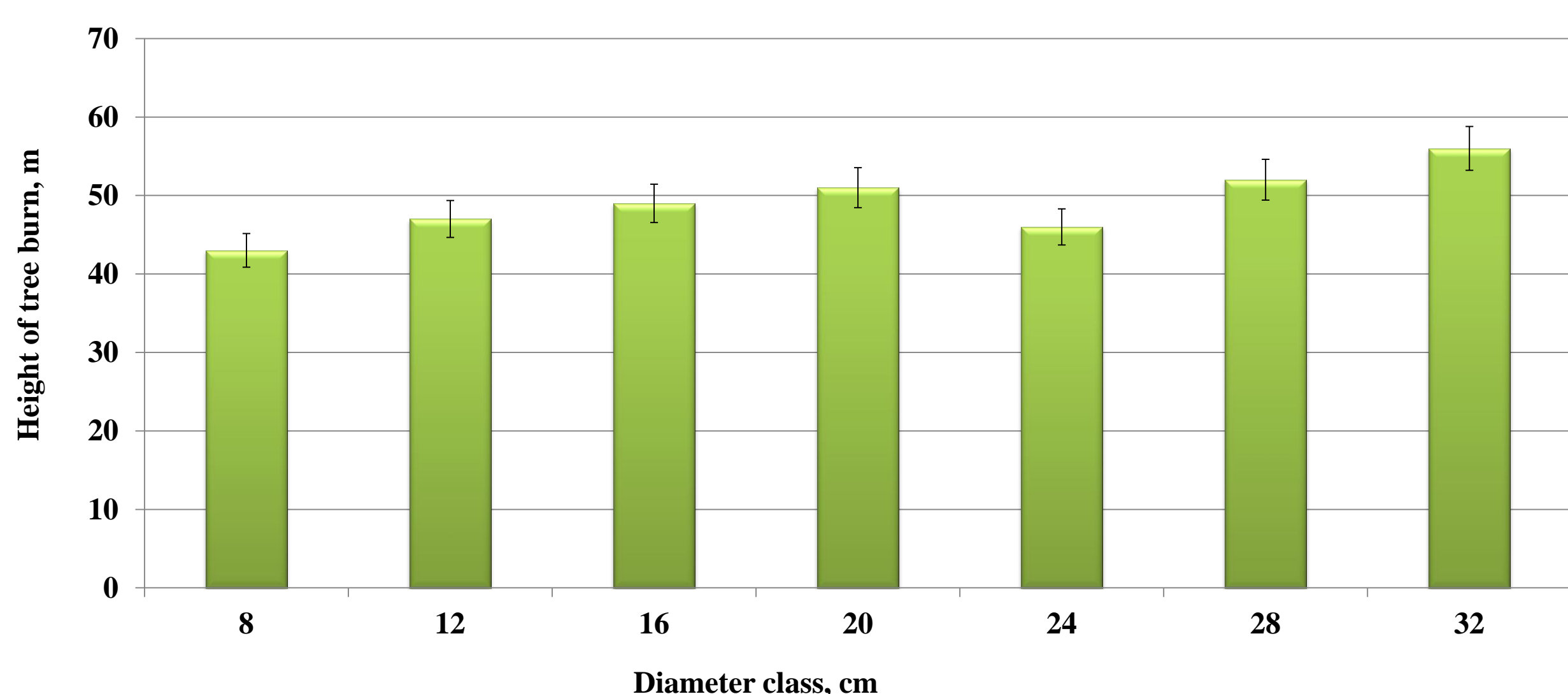
is to explore the state of health of forty years old Scots pine stands in forest site type *Myrtillosa* (the tree composition 90 % Scots spruce, 10 % Norway spruce, both 40 years old) in South of Kurzeme, in Nīca forest region a year after a wildfire; the territory of plot - 9.6 ha, 4.1 ha of it was affected by wildfire.

Methods

There were 2 plots established for research, each 2250 m² (50x45 m), one was arranged in part affected by wildfire, other – in that not impacted. Sample plot area selected so that in each plot were surveyed 190 trees. In each plot all trees diameter were measured and a certain growth class after Kraft established. In each young forest plot surveyed heights of 20 trees were measured using VERTEX. Also scorching height were measuring using tape DUNLOP. For accounting of ground cover plants in each major sample plot were 20 small (1 x 1 m) plots arranged small - each in one.

Results

The average diameter of Surveyed Scots pine stands is 20.9 ± 0.62 cm and average tree height -14.0 ± 0.18 m, stand basal area - 24 m² per ha, growing stock 132 m³ per ha. The lowest average height of a scorching 43 ± 2.1 cm is found in pine trees with an diameter class of 8 cm, the largest average tree height of a scorching 56 ± 3.7 cm in the trees with an average level of 32 cm. The average tree height of a scorching is 49.1 ± 1.62 cm.

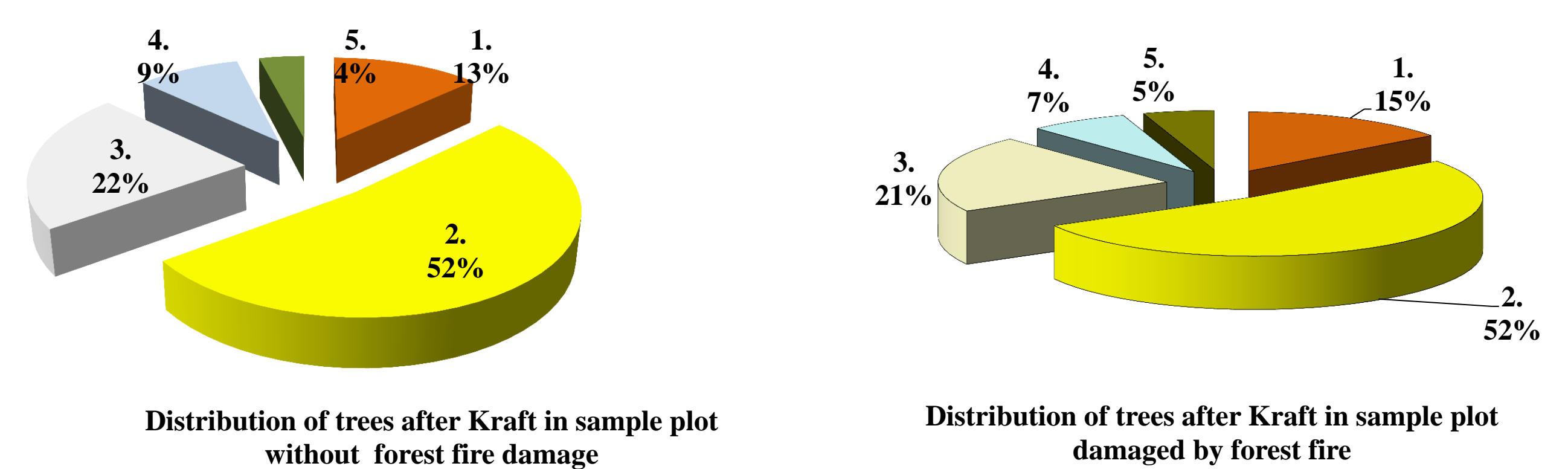


A year after outbreak of wildfire it can be concluded, that in the plot affected by wildfire the number of dead trees is by 11% bigger than in other plot – not impacted by wildfire. Also the intensity of trees impacted by forest pests was by 3 % higher in the area affected by wildfire, making 94% of survived trees in area not impacted by wildfire. At the same time in the area affected by wildfire the trees survived were only 83 %.



As the result of wildfire, the undergrowth was forming, at some points it could be observed, that spruce had sowed 21±5 seedlings on ha (the arithmetic mean ± standard error). Researching undergrowth, it could be observed, that almost 90% of common juniper (*Juniperus communis* L.) had been withered away by impact of wildfire. Also – the biggest part of dead trees in main stand consist of Norway spruce (*Picea abies* (L.) Karst.) being in admixture, that might be explained by a thin bark and low crown, that may be affected even by a wildfire of weak intensity in height of 0.5 m. Damaged trees of Norway spruce, which were not withered away by the influence of wildfire, have been perished because of damages of spruce bark beetle (*Pityogenes chalcographus* L.), while living soil cover is completely destroyed and even during a year has not been able to recover in poor sandy soil.

All the suppressed trees have suffered in wildfire, all the trees of the fourth and fifth class are dead as well as Norway spruce of superior stand. All trees damaged by insects are from dominant stand (the second and the third class after Kraft).



Conclusions

Young forest stand in *Myrtillosa* site type (the tree composition 90 % Scots spruce, 10 % Norway spruce, both 40 years old) has suffered from weak intensity wildfire, because the average height of trees burn - 49.1 ± 1.62 cm.

Stand wildfire affected part of the stand has 11% more dead trees comparing to unaffected part of the stand.

Impact of insects' damage is 3% higher in wildfire affected part.

Damaged Norway spruce trees what have not wilted after wildfire, are dead after the spruce bark beetle (*Pityogenes chalcographus* L.) population increase.

According to the fact that cause of the forest fire in 99.5% of all cases is anthropogenic, there should be paid more attention to direct information of people about the risk of forest fires in the forests.

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