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CHANGES IN THE ANNUAL INCREMENT OF *PINUS SYLVESTRIS* (PINACEAE) STEMS UNDER REDUCTION OF AIR TECHNOGENIC POLLUTION

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SUMMARY

The purpose of the study – is a comparative analysis of radial increment and area of annual rings of *Pinus sylvestris* L. stems in middle-aged lichen-mosses pine forests in the background area of the Kola Peninsula and in the area impacted by atmospheric emissions (impacted zone) of «Severonickel» combine (Murmansk region) during periods of high (1985–1999) and significantly reduced (2000–2014) airborne technogenic load. Area of the annual wood increment of P. sylvestris stems was calculated by the methodology developed by the authors and described in the article of Lyanguzov etc. in this issue.

It is established that the behaviour and dimensions of changes in the studied parameters of wood increment in the background area and impacted zone are fundamentally different. In the background area, in pines, with an increase in age, starting from about 15 years-old, the radial increment of wood steadily and reliably decreases from 1.0–1.2 to 0.5–0.6 mm. In the impacted zone in 1970–1990 there was a significant decline in radial increment from 0.7 to 0.3 mm, and then a sharp increase of this index from 0.3 to 1.0 mm. Area of the annual stem wood increment in the background area was stable during the entire observation period, varying from 0.7 to 2.0 cm^2.

Correlation analysis of the data showed significant negative association of the radial increment and area of the annual stem wood increment of *Pinus sylvestris* with the emissions of «Severonickel» combine, both in the periods of high (1985–1999) and significantly reduced (in 2000–2014) airborne technogenic load. A significant growth of the values of both parameters of pine trees in response to a reduced intensity of air pollution is definitely due to a 5–8-fold drop in air pollutant emissions, since the contamination of the upper horizons of Al-Fe humus podzols in the impacted zone has not decreased, but even continues to increase.

Key words: technogenic air pollution, *Pinus sylvestris*, radial increment, area of the annual stem wood increment, Kola Peninsula, Northern taiga.