



## Present condition of the coniferous undergrowth of forest-tundra ecotone of North-Chuya ridge (Central Altai)

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Investigations of high-mountain regions which are characterized by extreme climate conditions are of current importance since the response of environmental ecosystems to climate changes is clearly expressed there. The work presented was performed on the territory of two mountain glacial basins located on the northern macroslope of North-Chuya ridge (Russia, Central Altai). High-mountain vegetation of the area being considered didn't undergo an anthropogenic impact.

It should be noted that investigations of coniferous undergrowth of forest-tundra ecotone of Aktru and Korumdu mountain glacial basins (2200–2500 m ab. s.l.) haven't been conducted before. A climatic representativeness of Aktru basin was proved by numerous data (Tronov et al, 1965, Sevastianov, 1998).

The goal of the work was studying of condition and adaptations of young *Pinus sibirica* Du Tour and *Larix sibirica* Ledeb. to forest-tundra ecotone conditions. These species form the treeline on many ridges of Central Altai (Kuminova, 1960), including North-Chuya (Timoshok, 2004).

It is shown that the number of young Siberian stone pines and larches in the forest-tundra ecotone is not big, Siberian stone pine being found more often than larch. A considerable quantity of young Siberian stone pines grows in sheltered sites (near big stones, boulders, stumps, etc.). During the research period dead young trees have been found in single cases.

The maximum percentage of Siberian stone pine trees (42.4%) growing in sheltered sites was registered in Aktru basin on the east-southeast slope whereas on the west-northwest slope the maximum percentage of Siberian stone pines growing in clusters has been revealed (34.4%). Also on the west-northwest slope the maximum quantity of Siberian stone pines that changed their terminal shoots have been found (62.5%).

During the investigation young trees with signs of diseases were registered. Chermes (*Pineus cembrae* Chol.) has been found on shoots and needles. On the west-northwest slope the corresponding damage constitutes about 3.2% of target Siberian stone pine trees.

In forest-tundra ecotone of Aktru basin young larches, often single, grow on exposed sites, and their stems often change terminal shoots. There are no diseased trees discovered.

For Korumdu mountain glacial basin high percentage of Siberian stone pine trees (41.4%) was registered on the west-northwest slope growing in sheltered sites, as well as trees in clusters (7.2%). On this slope 100% of Siberian stone pines change their terminal shoots meanwhile for the east-southeast slope this characteristic constitutes just 57%. Siberian stone pines with diseases have been registered for the west-northwest slope (7.2%).

Thus, considering forest-tundra ecotone of North-Chuya ridge one can conclude that the Siberian stone pine undergrowth condition is more viable on east-southeast slopes than on the west-northwest slopes. The larch undergrowth is not as viable as the Siberian stone pine's one. The work presented is supposed to be used as a basis for detecting response and adaptations of high-mountain coniferous undergrowth to regional climate changes.

### References

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