

Features of the structural response of the bark and wood of birch (*Betula platyphylla*, Betulaceae) in the landscapes of sea coasts, magmatic and mud volcanoes of Sakhalin and the Kuril Islands

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Abstract. *Betula platyphylla* is one of the main forest-forming species in Northeast Asia. In the Russian Far East, it forms birch and diverse mixed forests. Due to high germinative ability and growth rates, unpretentiousness, resistance to wind, drought, low and high temperatures, *Betula platyphylla* dominates after clear-cutting, fi and on pyroclastic deposits of volcanoes, and further forms favorable conditions for the restoration of zone coniferous forests. This paper studies the populations of *Betula platyphylla* under the various conditions of mid-mountain massifs, sea shores, active magmatic and mud volcanoes in the south of Sakhalin and Kuril Islands. Tree age and height were measured and macro- an micro-characteristics of the bark and wood of stems were identified in each habitat from 15 trees using the cleavages, cores and sections. The results of the study have shown that *Betula platyphylla* under the impact of natural stress is characterized by the formation of a low-growing multi-stemmed tree with significant damage and deformation of the crown, twisted eccentric stems and structural basal anomalies – woodknobs and gnarls. The structural reaction of the bark and wood of the *Betula platyphylla*, character for many woody plants adapted to extreme habitats, which manifests itself in a decrease in the bark thickness and its growth rate in mature trees was revealed on the Okhotsk coast and under the conditions of the mud volcano on Sakhalin. Under the conditions of gas-hydrothermal springs of magmatic volcanoes, the bark thickness growth rate increases up to 2.7 times compared to the norm, which is probably associated with the young age of trees (10–20 years). The data we have obtained additionally substantiate the adaptive significance of the life strategy of the *Betula platyphylla* as a fast-growing tree species and show that the bark thickness of woody plants and its growth rate can be the plant functional traits that characterize the natural landscape systems with varying degrees of intensity of ecological factors.

Keywords:

***Betula platyphylla*, life-form, bark, bark thickness, growth rate, structural anomaly, woodknob, solfatara, volcanic activity, mud volcano**

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