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Spread of alien plants along the Trans-Siberian railway: the effect of biogeographical zones

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Abstract

We present results of the field inventory made in railway areas along the Trans-Siberian railway (Trassib). The uniqueness of Transsib as a model system for studying the alien plant species diversity is due to isolation from the road network and crossing two disconnected parts of the world.

We aim at making an inventory of plant species at a large part of Russia along the Transsib (the Trans-Siberian railway) in relation to the biogeographic regions of occurrence and the native ranges. Our data allow to analyse if there are differences in the composition and features of flora accompanying Transsib along the west-east longitudinal gradient. We focus on the analysis at spatial pattern of the distribution a west-east gradient.

We used vegetation sampling in areas of the railway stops. We analysed the origin of the found species in Russia and in the global in relation to the area where they occur. Sampling was done in several habitat types along the railway ranging from rails to neighbouring vegetation. The ordination methods were used to assess the role of habitat.

We found in total 579 species in the 239 study plots. In European part there was 61 plots, 111 in Siberia and 67 in Far East. In European releves, 264 species were found, 388 in Siberia, and 201 in Far East. 98 species were unique to the European part of Russia, 208 to Siberia and 81 to the Far East.

Proportion of alien species (alien to each region) was significantly different between the regions, but there were no differences in the identity of habitat or urbanity. Vegetation data on species composition analysed by multivariate methods (RDA) on habitats and urbanity showed significant differences. Species occurring in studied habitats created clear groups growing in the railway neighbourhood (rails) and the adjacent areas.