

Forest tree diversity and dynamics: a research plot data from Russian Far East

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Mountain-Taiga research station maintains an ecological profile, which represents the main forest types of the region: five broad-leaved forest types on the northern slope and four Mongolian oak dominated forest types on the southern slope. Every forest type represented by a permanent sample plot (PSP) established in 1997 and have been remeasured over recent years. The study of structural and functional organization of ecosystem (incl. the study of the vegetation structure, restoration processes, phenological observations, etc.) is carried out in accordance with the generally accepted methodology (Dylis, 1969, 1974; Utkin, 1974, 1982).

PSPs have size from 0.25 ha (50x50 m) to 0.42 ha (60x70 m). The size was determined by the complexity of the parcel structure. Each PSP has been mapped with a detailed description of all vegetation layers. The PSPs were preliminarily divided into sub-plots of 10x10 m, and all work was carried out with reference to the sub-plots. Each tree got ID, species identification, diameter measurements (with an accuracy of 0.1 cm) and health status identification (Vagin et al., 1978).

Here we present an example tree cover layer description of permanent forest research plot at Russian Far East with two censuses: 1997 and 2017.

Plot ID: RPGT-02

Plot location (lat/long): 43.7045, 132.1595

Plot size: 60x70m, 0.42 ha

Forest type: broad-leaved-linden-hazel herbaceous with lianes

Minimum diameter of trees at breast height (DBH) included in the census: 4 cm

Reference: Москалюк Т.А. Стационарные исследования на экологическом профиле "Горнотаежный"; (Южное Приморье) // Лесные стационарные исследования: методы, результаты, перспективы: Мат. Всероссийск. совещ. Тула: Гриф и К°, 2001. С. 230-233.

Table 1. Forest stand parameters in 1997 and 2017

Tree parameters	1997	2017
Average (Lorey's) height, m	16.1	16.4
Height of the tallest tree, m	23	23
Above ground live biomass, t ha ⁻¹	122.7	144.6
Growing stock volume, m ³ ha ⁻¹	201	234
Basal area, m ² ha ⁻¹	26.35	30.28
Stem density, stems ≥4 cm DBH ha ⁻¹	802	1460
Stem density, stems ≥10 cm DBH ha ⁻¹	490	414

Table 2. Tree diversity

Tree species	1997		2007	
	Biomass share,%	Stems per ha	Biomass share,%	Stems per ha
<i>Tilia amurensis</i>	9.08	155	10.76	310
<i>Quercus mongolica</i>	0.84	40	0.92	105
<i>Acer mono</i>			0.01	62
<i>Juglans mandshurica</i>	1.85	5	2.15	2
<i>Fraxinus mandshurica</i>	0.76	24	1.01	145
<i>Ulmus laciniata</i>			0.00	2
<i>Betula dahurica</i>	0.02	5	0.00	10
<i>Kalopanax septemlobus</i>	5.58	48	3.71	19
<i>Maackia amurensis</i>	4.07	24	5.21	19
<i>Carpinus cordata</i>	1.14	7	1.7	7
<i>Acer pseudosieboldianum</i>	1.09	19	1.21	12
<i>Populus tremula</i>	0.04	7	0.08	12
<i>Syringa amurensis</i>	1.22	10	0.37	12
<i>Micromeles alnifolia</i>			0.00	2
<i>Acer tegmentosum</i>	31.30	100	34.91	88
<i>Euonymus maximovicziana</i>	0.31	45	0.30	162
<i>Crataegus pinnatifida</i>	40.68	288	35.13	243
<i>Pyrus ussuriensis</i>	2.00	26	2.53	248