

Biological Productivity of Bogs in the Middle Taiga Subzone of Western Siberia

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Abstract—New experimental data on biological productivity of plant communities in oligotrophic and mesotrophic bogs of the middle taiga subzone over the past five years are presented. The relationship between net primary production and the stock of live phytomass is estimated. The stock of necromass in oligotrophic bog ecosystems increases from west to east, while the stock of live phytomass and net primary production decrease.

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The middle taiga subzone covers 22% of Western Siberia. The climatic conditions of this subzone are favorable for the development of bog vegetation and the expansion of bogs, which occupy up to 34% of the area in present-day landscapes. The total area of the Western Siberian Lowland is about 260.6×10^6 ha (Table 1). The average amount of bogs in it is considerable. Their relative area is minimal in the north (in the northern tundra subzone) and in the south (in the steppe zone) of Western Siberia, reaching a maximum in the taiga zone. An abundant moisture supply in the middle taiga subzone,

with its numerous primary and secondary lakes, results in the development of oligotrophic areas merging into vast bog systems. Some authors separate them into a special zone of oligotrophic sphagnum bogs (Kats, 1948; Berezina et al., 1974) or into a group of bog oligotrophic complex in the zone of overmoistening (Romanova, 1974).

In the Holocene, the development of oligotrophic bogs in the middle taiga was facilitated by its lowland relief and favorable climatic conditions (Liss et al., 2001). The recent state of bogs, their growth, and the

Table 1. Amounts of bogs within the limits of bioclimatic subzones and bog zones of Western Siberia according to the Typological Map of Bogs in the Western Siberian Plain (*Tipologicheskaya karta...*, 1976)

Bioclimatic subzone	Mire zone	Mire area		Subzone area, 10^6 ha
		10^6 ha	percentage of subzone area	
Northern tundra	Polygonal mires	1.6	6.7	24.0
Southern tundra		5.5	18	30.5
Forest–tundra	Flat- and high-palsa bogs	3.8	27	13.7
Northern taiga		17.8	30.6	58.2
Middle taiga	Oligotrophic (sphagnum) bogs	19.5	34	56.5
Southern taiga		14.1	32	42.8
Subtaiga	Flat eutrophic and mesotrophic bogs and eutrophic salty mires	3.6	12	27.6
Forest–steppe and steppe		2.5	9	7.3
Total		68.4	26	260.6