

Ecosystem approach represents the strategy of integrated management of land, water and live resources which stimulates their preservation and steady use on a fair basis.

Traditional approach to assessment of ecosystem services in nature protection activities is the value assessment of preserving a biodiversity in especially protected natural territories (EPNT). A benefit of this approach is not only a capability to characterize uniqueness and biological diversity of ecoservices of the protected territories, to give them an economic evaluation, to determine benefits and possible losses, but also to develop the principles of preserving the services provided by ecosystems. The main lack of approach consists that efficiency of EPNT is limited to isolation and the small area of the territories, thus it is impossible to estimate a full range of ecosystem services. With respect thereto, the main attention is paid to preserving a biodiversity outside EPNT.

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REED PARAMETERS IN THICKETS OF DIFFERENT DENSITY IN NAROCH LAKE

Naroch Lake is a meso-oligotrophic polymictic lake, which face and functions are significantly influenced by macrophytes. Wide littoral zone, which takes near half of lake's square and high water transparency create fine conditions for water plants to grow. In the shallow water zone of littoral reed beds have the greatest values of biomass and density (Zhukava et al., 2005). Reed grows along the coastline, in some places going 200 meters into the lake from the coast. Those thickets are not continuous. They form sites of different size and density which take in total nearly 20 % of the shallow water zone – the territory from the coastline to isobath limiting 2 m depth (Zhukava et. al., 2009).

The paper is aimed at assessment of reed growth and weight parameters in thickets of different density in the shallow water biotopes in the littoral zone of Naroch Lake.

The studies have been carried out on the premises of the Educational and Research Centre «Naroch Biological Station named after G.G. Vinberg» in July 2016. The investigated part of the coastline stretched from the Biostation to the sanatorium «Naroch» (near 4 km). For sampling we chose biotopes with different density of reedbeds. Reed stems were cut at the ground level using 0,25 m² frame. We took from 3 to 11 samples depending on thickets density so the number of stems in one biotope was more or equal to 30. Depth at the measured sites ranged around 0,3–0,5 m. In the collected samples we measured the number of stems, their length and diameter (at the bottom part), wet and air-dry weight (table 1).

Table 1. – Size and weight parameters of reed in biotopes of different density (average values \pm standard deviation and min-max are given)

№ of biotope	Density, ind./m ²	Number of stems	Wet weight (I), g/m ²	Air-dry weight (II), g/m ²	(I)/(II)	Stem length, cm	Stem diameter, cm	Part of re-growth, %
1	48 (28–84)	38	898,3 (360-1770)	212,7 (140-264)	0,24	188 \pm 58 (84-290)	0,70 \pm 0,22 (0,35-1,1)	18,4
2	78 (48–104)	68	1075 (840-1220)	477,3 (360-586)	0,44	221 \pm 54 (102-294)	0,74 \pm 0,19 (0,25-1,3)	1,5
3	37 (20–60)	33	243,3 (185-355)	127,3 (78-200)	0,52	163 \pm 38 (93-221)	0,53 \pm 0,08 (0,35-0,7)	0
4	123 (68–216)	55	640 (570-725)	265,7 (222-303)	0,42	202 \pm 35 (124-271)	0,59 \pm 0,12 (0,30-0,8)	0
5	126 (68–216)	106	1533,3 (1425-1650)	656,7 (630-680)	0,43	249 \pm 31 (165-305)	0,70 \pm 0,13 (0,40-1,0)	0
6	16 (8–40)	41	39,1 (20-65)	16,8 (5-30)	0,43	96 \pm 32 (35-168)	0,32 \pm 0,11 (0,15-0,6)	41,5
7	30 (20–32)	42	178,3 (130-250)	93,9 (59,9-166)	0,53	174 \pm 39 (85-272)	0,64 \pm 0,14 (0,35-1,0)	11,9
8	15 (12–20)	30	105 (60-195)	46,2 (25,31-66,9)	0,44	175 \pm 45 (68-268)	0,62 \pm 0,17 (0,30-1,0)	20,0

Depending on the thickets density, reed's weight in the samples was quite different, whereas average weight of one stem was 35,0 g/ind. in wet weight (15,5 g/ind. in air-dry weight).

Average length of stems was different among the biotopes, while thickets of higher density had higher size and weight parameters of stems. Part of regrowth (young stems shorter than 1 m) at some sites was up to 20% and in average for all studied biotopes was 8,7%.

Presented data allow us to judge about the spatial distribution of reed at the measured site of littoral. It also can be used when calculating the reed production and square of plant substrate for periphyton.

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