

STUDY ON THE VASCULAR FLORA AND ANALYSIS OF DENDROFLORA OF LOZEN MOUNTAIN

Plamen Glogov
Forest Research Institute – Sofia
Bulgarian Academy of Sciences
(Summary)

The purpose of this study is to characterize the vascular flora of Lozen mountain, focusing on dendroflora including some aggressive edificator species in indigenous forest formations, and predict possible changes in the composition and quantitative share of these species. The study is new for the territory of the mountain, part of which (1294,4 ha) is included in NATURA 2000 and its results will be a basis for assessing the status and potential of the ecosystems.

Lozen mountain is part of Sredna gora floristic region. It is situated in Southwest Bulgaria close to Sofia and covers an area of 80 sq.km. The highest point is peak Popov del (1190 m a.s.l.). Variety of rocks are revealed on the slopes of the mountain: sandstone mainly on the northern slopes and metamorphic rocks on the southern slopes. Limestones and dolomites form a part of the ridge of the mountain peak Bachul, Rakovica mound, Lalina mogila and Polovrak. The predominant soil types in the mountain are Chromic Cambisols and Humic Cambisols. The climate is characterized by relatively mild winters, low annual temperature amplitudes and two periods of maximum rainfall over the year.

The principles and the methodological approach of the flora survey and the analysis of the dendroflora of Lozenska Mountain follow the generally accepted practice in foreign and Bulgarian literary sources (Kamelin, 1973, Tolmachov, 1970, 1986, Schmidt, 1980, Novosad, 1992 etc.). The investigations were carried out in the period 2002-2017 in different seasons. Bryophytes are not included in the floristic inventories. The analysis of dendroflora is based on the studies by Pinto & Gégout (2005), according to which the use of the environmental indices allows to estimate the range of the "niche" of tree species in large areas according to main ecological factors. To study the dynamics of growth and dendrobiometric changes in the investigated aggressive species from the understorey (*Carpinus orientalis* Mill. and *Fraxinus ornus* L.) in the territory of Lozenska Mountain, 71 sample plots with a surface of 100 m² have been set. For statistical evaluation of the collected data, nonparametric methods were used - the tests of Clopper-Pearson, Mann-Whitney and Wilcoxon. The plantations comprising the two aggressive edificator species from the understorey are compared to: dominant height, density, mean number of stems of Eastern hornbeam in tufts and preferences to certain habitats.

As a result of the study, the following more important conclusions can be drawn:

The geographic location and the complex of climatic, orographic and edaphic conditions are the reason for the significant floristic diversity of Lozen Mountain, where 823 species and 38 subspecies belonging to 406 genera and 91 families of higher plants are found in the present study. Lozen Mountain occupies only 0.07% of the territory of the country, but there are situated more than 1/5 of the species, 1/3 of the genera and more than half of the families of the high flora of Bulgaria.

The floristic composition of the mountain has largely preserved its autochthony despite the presence of a high percentage of anthropophytes and apophytes (a total of 39.4%) and the appearance of invasive alien species.

The phytogeographical spectrum of the Lozen Mountain flora can be defined as a medium European with a Mediterranean influence.

The floristic complex is represented by a small number of endemic (12 species, 1.5%) and subendemic species (15 species, 1.8%) in the absence of local endemics, indicating the young age

of the flora. Evidence of its primary character is the low number of relic species found (56 species, 6.8%).

As a result of the analysis of the flora of Lozen Mountain, the transitional nature between Ihtiman Sredna Gora on one side and Vitosha on the other is confirmed, as reflected in the specificity of its individual parts.

Due to its relatively small area and relatively low altitude, Lozen Mountain has a significant number of medicinal plants (38.7% of the flora of the mountain and 45.8% of the species included in the LDP).

The conservation status of the mountain flora is represented by 31 species (3.5%), 2 of which are classified as endangered (*Dactylorhiza incarnata* (L.) Soó, *Geranium bohemicum* L.) and 4 are vulnerable (*Atropa bella-donna* L., *Anacamptis pyramidalis* (L.) Rich., *Orchis ustulata* L., and *Orchis laxiflora* Lam subsp. *elegans* (Heuffel) Soo).

The natural dendroflora of Lozenska Mountain constitutes 31% of Bulgarian dendroflora. With regard to the individual ecological factors in the dendroflora of the mountain, the following ecological groups predominate: orthopolibionts, mesomegatrophs, mesophytes, alkaline polyphytes, hypoheliophytes and species of the southern European thermo-ecological group.

Ecologically most compatible to all edificators are *Carpinus orientalis* Mill., *Fraxinus ornus* L., *Quercus cerris* L. and *Q. frainetto* Ten. Between the two major tree species *Pinus nigra* Arn. and *P. sylvestris* L., used for reconstruction, the first one is more adaptable to the ecological conditions of Lozen Mountain and more suitable for afforestation.

Carpinus orientalis Mill. tends to shift *Fraxinus ornus* L., and this is evident of hornbeam's predominance on better habitats and mixed plantations. Both species took advantageously territories in coniferous plantations rather than in natural forest communities.