

The habitats of Sarnena Gora Mountains: a short review

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Abstract. A short literature review on the vegetation associations and the habitats of Sarnena Gora was done.

Key words: vegetations, associations, habitats.

Introduction

This review article aims to support the analysis and other data processing according to the fauna of Sarnena Gora Mts.

Material and Methods

The literature survey includes a short list of sources (Toshev 1903, Stanev 1973, 1975, Michev *et al.* 1980, Penin 2007, Radanova, 2015, Radukova & Lacheva 2017). A small amount of information was collected and by the original observations of the author during years.

Results

Geographical features

Sredna Gora (Sarnena Gora) is a mountain massif of the easternmost part of Sredna Gora Mts. It's a hilly area between the rivers Stryama (to the west) and Tundzha (to the east). Its northern borders are Karlovska, Kazanlashka and Slivenska Valleys, and also the Mezdenishki Gorge of Tundzha River. To the south the mountain slopes gradually transform into the Upper Thracian Lowland and the Yambol Plain. There is a mountain bridge between Sredna Gora and Stara Planina Mts near Kalofer town, called Strazhata (Krastets).

The total mountain length from west to east is 153 km, and its width varies from 35 km (in the middle) to 5 km (the easternmost part). The area is situated on 2280 km². The mean altitude is 416 m a.s.l. with highest point Bratan Peak, 1235.8 m a.s.l. South of Bratan area there is a hilly part extending to the south and almost reaching Chirpan town called Chirpanski Heights (or "vazvishenia" = heights in Bulgarian) with highest point Kitkata Peak (651 m a.s.l.).

The climate is dry, transitional-continental with some areas of strong submediterranean influence. For example in some villages of the southern slope of the mountains some worm loving plants can survive winters without any protection (or just mulching): *Nerium oleander*, *Washingtonia* sp., *Opuntia ficus-indica*, *Agave americana*, *Arundo donax* and others. However in such places the winter temperatures can occasionally drop dramatically during some years (for examples to -12 or -15° C).

The whole area of Sarnena Gora is situated in the catchment of Maritsa River having a lot of springs of its left tributaries as: Svezhenska (tributary of Stryama), Srebra, Brezovska, Omurovska (with its tributary Novoselska Reka), Tekirska, Starata Reka,

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Merichlerska, Martinka and Sazlyika (with its tributaries Azmaka, Bedechka and Kumurdzha), and the two right tributaries of Tundzha River – Turyiska and Gyurlyka.

Urbanization and other human influence

Human settlements are known from the Neolith and the Bronze Ages. Now there are one city (Stara Zagora), one town (Pavel Banya) and 90 villages in the area of Sarnena Gora.

The agriculture and horticulture are mainly developed at the low areas of Sarnena Gora.

The logging and hunting pressure on the wildlife are intense. Tourism and recreation activities are poorly developed, mainly at the area of the highest peak at Kavaklyika Hut area. The pollution of waters and soils are very intense near the villages and roads.

Vegetation

Main ecosystems in the mountains. Toshev (1903) divided the whole chain of Sredna Gora Mts into 4 zones according to vegetation: 1. *Paliurus* zone; 2. *Quercus* zone; 3. *Fagus sylvatica* zone, to which the scarce zone of coniferous trees was also assigned; 4. Lower Alpine zone. The last zone is lacking in Sarnena Gora Mts. In contrast, the *Paliurus* and *Quercus* zones strongly dominated in large areas. The subdominants in these zones are mainly *Carpinus orientalis*, *C. betulus*, *Tilia* spp., *Ulmus* spp., *Fraxinus* spp. and some others. The natural *Fagus sylvatica* forests are restricted around the highest mountain parts – near Bratan Peak and Kavaklyika Hut. Kochev (1969) determined common fir, hornbeam and black pine as subdominants in common beech associations of a mixed tree forests.

The most remarkable azonal plant associations are the remnants of flood forests along the lower river parts. Areas of dense bushes dominated by *Clematis vitalba*, *Salix alba*, *S. fragilis*, *S. caprea*, *Rubus* sp., *Petasites* sp. and *Thypha* sp. can be observed along Bedechka River, north of Stara Zagora city. At some river banks gallery forest of *Salix* sp. and *Populus* sp. occur.

At the very small karst areas there are a kind of “islands” of wet and very rich on mosses and ferns among the xeric habitats dominated the mountains (Fig. 1). Such places are situated around some caves and limestone rock niches. There are around 10 caves and niches registered near Ostra Mogila, Novo Selo, Zemeevo and Dalboki villages, and Zhrebchevo Dam.

Rare species and species of conservation importance. In the published by Stanev (1973, 1975) floristic materials about Eastern Sredna Gora Mt. some new and rare plant species were mentioned for this floristic region: *Oryzopsis holciformis*, *Rumex tuberosus*, *Silene trinervia*, *Lathyrus aureus*, *Hypericum hirsutum*, *Amelanchier oveli*, *Carex depauperata*, *Ophris cortuna*, and *Iris sintenisii* (according Radukova & Lacheva 2017).

A large list of species was later published by Radanova (2015): *Cyclamen hederifolium*, *Fritilaria pontica*, *Ruscus aculeatus*, *Himanthoglossum hircinum*, *Bupleurum flavum*, *Dianthus moesiacus*, *Echinops ritro*, *Digitalis viridiflora*, *Paeonia peregrina*, *Bupleurum rotundifolium*, *Erytronium dens-canis*, *Asparagus officinalis*, *Lilium mortagon*, *Anacamptis pyramidalis* and others.

Invasive or introduced plant species. Possibly *Amorpha fruticosa* is one of the most notable invader species at the low wetland areas of Sarnena Gora. Most of the introduced and/or invasive grass species occur at and around the human settlements or in degraded natural habitats.

There are a lot of *Pinus nigra* and *Robinia pseudoacacia* plantations at the lower mountain parts, and such of *P. sylvestris* mainly at the areas above 400-800 m a.s.l. There are also some small patches of planted *Cedrus* species (e.g. south of Shanovo vill. and Ayazmoto Park, north of Stara Zagora city) and *Picea abies* (mostly at the higher areas).

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Fig. 1. A small, newly found karstic niche near a stream south of Shanovo village (15.5.2018).

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