

## **O 10. ENDEMIC AND SUBENDEMIC PLANT SPECIES IN MT TREBESHINA IN SOUTHERN ALBANIA; THEIR STATUS AND THREATS**

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**ABSTRACT:** The Trebeshina Mt is part of a very important Albanian mountain range Trebeshine-Dhembel-Nemercke, known for its biodiversity richness, situated in Southern Albania. Trebeshina Mt is one of the main source of livelihood for the surrounding communities, which have long benefited from the utilisation of its natural resources, mainly in harvesting of medicinal plants, grazing livestock and extensive use of woody ecosystems. The sustainable utilisation of mountain biodiversity, especially the conservation of subendemic and endemic vascular plant species that falls under the threatened IUCN categories is of great importance. In the present study we investigated the status of plant species grown in Trebeshina Mt and their threats factors this plants are facing. In total, we identified 15 endemic vascular plant taxa, from which 4% were endemic of Albania and 10% were subendemic. Based on IUCN categories, 50% of endemic plant taxa found in Trebeshina Mt are listed in the Albanian Red List and classified as threatened. The major threats affecting the status of endangered species were due to anthropogenic activity, habitat fragmentation and uncontrolled harvesting of medicinal plants. This study, as an approach of plant conservation, provides the first baseline for future research towards the protection of the endemic and subendemic plant species of this mountain in order to prevent future plant extinction and loss of biodiversity.

**Keywords:** *Trebeshina Mt., Endemic and Subendemic species, IUCN, Albania*

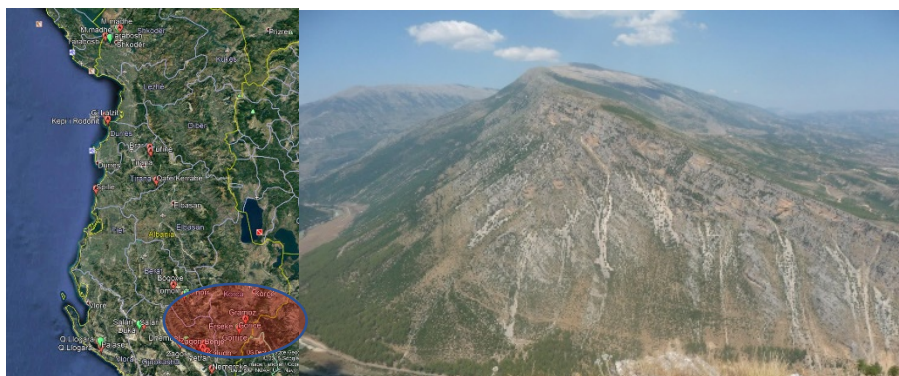
### **1. INTRODUCTION**

The Albanian flora comprises more than 3629 plant species, which belong to 960 genera and 175 families, they constitute approximately 30% of the European flora. (Vangjeli et al. 1997; Vangjeli, 2015). According to Papparisto et al. (1988), around 160 of these plant species share the distribution area with neighboring countries, such as, Kosovo, Macedonia Montenegro and Greece and are considered as subendemic species. This considerable species richness is attributable to the country's geographical position, geological composition, relief as well as large altitudinal and climatic conditions range. The Red list of Albania includes 420 vascular plant species, which represent around 9.3 % of Albanian Flora. The conservation of rare and threatened species in Albania is focused mainly on the high mountains. Based on the statement of Mayers et al (2000), Trebeshine-Dhembel-Nemercke mount range, situated in Southern Albania, is considered as a biodiversity hotspot area, featuring exceptional concentrations of endemic species as well as experiencing extreme loss of habitats. Trebeshina Mt, as a part of this mount range, contributes to the endemism degree of it. In addition, the surrounding communities have long benefited from ecosystem services that its area provides by harvesting of medicinal plants, grazing livestock and extensive use of forest ecosystems and quarries. Several studies provide data on flora of the Nemercka Mountain, which is part of the same mount range (Baldacci. 1896, 1897, 1900; Mitrushi, 1955, Mahmutaj et al. 2015; Peci et al. 2016), and a very few studies consider the distribution and the status of endemic plant species, in mountain areas in the Southern Albania (Peci et al. 2016; Mahmutaj et al., 2015).

Identifying areas of endemisms is an essential part of planning conservation management (Noroozi et al. 2018). The sustainable utilisation of mountain biodiversity, especially the conservation of subendemic and endemic vascular plant species that falls under the threatened IUCN categories is of great importance. The aim of the present study was the identification of the endemic and subendemic plant species grown in the Trebeshina Mt. the evaluation of their habitat conditions and the investigation of threats they are facing. In addition, this study yields pertinent information and the first data on the degree of endemisms and its conservation status in Trebeshina Mt, which will serve its conservation and sustainable use programs.

## 2. MATERIAL AND METHOD

Trebeshina Mt. is situated in Southern Albania, it is part of a very important Albanian Mountain Range Trebeshine-Dhembel-Nemercke. It is extended about 20 km from South East to North East in the geographical positions of N 40° 17' 55.9" ; E 20° 10' 09.73" (Kelcyra Gorge) to the N 40° 25' 09.75" ; E 20° 06' 28.55 (Kicoku Pas). The altitude ranges from 170 m asl in Kelcyra Gorge to 1923 m asl in the Dean Peak and it has a total area of 35.06km<sup>2</sup>. The figure 1 gives the map of geographical location and a peak view of Trebeshina Mt. The area is characterized by Mediterranean climate, and three types of soil compositions; silt, greyish brown and calcareous.



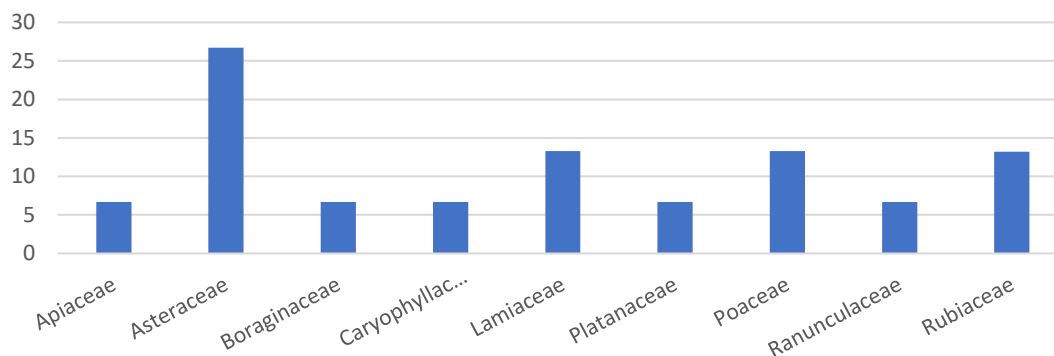
**Figure 1.** Geographical position and a view of the Trebeshina Mountain

Field investigations have been carried out for two successive years. Vegetation samples (2m x 2m) have been taken in the entire mountain and presence-frequency tables have been recorded using Braun–Blanquet method. All identified vascular plants species have been registered and a voucher of them is deposited in the National Herbarium. In addition, a list of data including information on the existing status of plant populations, habitat and ecological characteristics, the observed threats, was compiled. Careful observation have been carried out in the area in order to identify any sign of human activity in the habitat of species. Plant conservation status was assessed based on IUCN criteria.

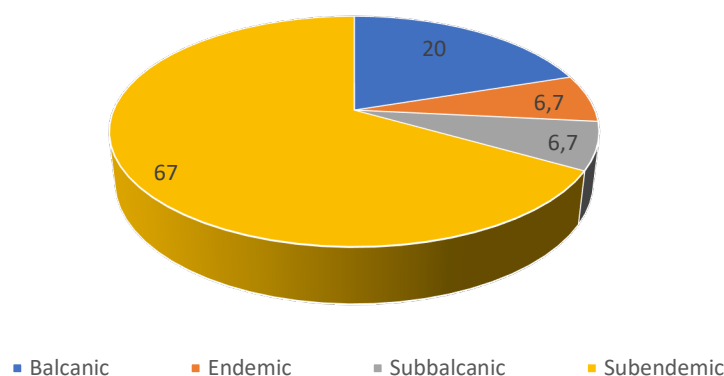
## 3. RESEARCH FINDINGS

A list of all plant taxa found in the Trebeshina Mt was compiled during field surveys in two years, from which there were identified in total 15 endemic plant species, from which 4 % were endemic of Albania and 10% subendemic of Balkan. These endemic and subendemic plant species belong to nine families; the majority of them, 26 % belong to Asteraceae family, around 13% belong to each of Lamiaceae, Poaceae and Rubiaceae families while the other families were represented by less than 6.7 % (Figure 2, and Table 1).

The chorological spectrum of endemic vascular plant species of Trebeshina Mt. shows three elements, most representative is the subendemic element with 67%, while balcanic and subbalcanic elements were represented by 20% and 6.7 %, respectively (figure 3).



**Figure 2.** Family composition of endemic plants found in Trebeshine Mt.



**Figure 3.** Chorological element of endemic vascular plant species in Trebeshina Mt.

**Table 1.** List of endemic and subendemic plant species found in Trebeshina Mt., Red List status and their threats

No	Family	Species	Chorological element	IUCN categories	Threats
1	Poaceae	<i>Achilleafrasii</i>	Balc	CR	Habitat destruction
2	Apiaceae	<i>Bupleurumbaldense</i>	Subende	NT	Not on Red List
3	Asteraceae	<i>Cirsiumtymphaeum</i>	Subende	EN	Overgrazing
4	Rubiaceae	<i>Asperulascutellaris</i>	Subende	NT	Not on Red List
5	Asteraceae	<i>Carduusmicropterus</i>	Subende	EN	Fire occurrences
6	Rubiaceae	<i>Galiumpseudaristatum</i>	Subende	NT	Not on Red List
7	Ranunculaceae	<i>Helleborusmultifidus</i>	Subende	NT	Not on Red List
8	Asteraceae	<i>Helycrisumplicatum</i>	Balc	EN	Overharvesting
9	Caryophyllaceae	<i>Herniariaparnassica</i>	Subende	NT	Not on Red List
10	Platanaceae	<i>Platanusorientalis</i>	Subbale	VU	Habitat destruction
11	Lamiaceae	<i>Scutellariarubicunda</i>	Subende	NT	Not on Red List
12	Poaceae	<i>Sesleriaaautumnalis</i>	Subende	NT	Not on Red List
13	Lamiaceae	<i>Sideritisraeseri</i>	Balc	EN	Overharvesting
14	Boraginaceae	<i>Alkannasandwithii</i>	Ende	CR	Deforestation
15	Asteraceae	<i>Centaureazuccariniana</i>	Subende	VU	Habitat destruction

Based on IUCN criteria the endemic and subendemic plant taxa found in Trebeshina Mt. were assigned to different categories of extinction, 50 % of them were also listed in the Albanian Red List and classified as threatened, from which 50 % were endangered, 25 % fall under vulnerable and 25% in the category critically endangered (Table 1). This data suggests that the endemic species in this mountain are facing risk of extinction.

During the study habitat conditions of endemic and subendemic species were visually inspected and major threats that species were facing were identified. The most prominent threats found in endemic species of Trebeshina Mt. were habitat destruction and harvesting of individual species, which over years had become more intensive posing a increased risk and damages to the mount ecosystems, leading to the degradation of habitats mainly the pastures and shrublands. The main human activities with negative impact were deforestation, overgrazing and medicinal and aromatic plant bad practices of harvesting

#### 4. CONCLUSION AND DISSCUSION

The study aims at identification of endemisms in the Trebeshina Mountain, the investigation of factors and threats affecting their distribution and conservation status. The floristic analysis of endemic plant species in Trebeshina Mt. represents an important contribution to the knowledge in the Mountain

Range it belongs to. Asteraceae family is more represented in the endemic plants recorded. However, a list of 15 Albanian endemic and subendemic species was identified and registered, suggesting that this mountain is moderately rich of endemic plants increasing its habitat conservation importance. Among the main threats species were facing was habitat destruction and long overexploitation, along with uncontrolled harvesting especially true for the medicinal plants. The fragmentation and loss of habitats due to the urbanisation was observed as well. Despite of the anthropogenic activity a negative effect on the species conservation status and their habitat health had also the climate change, increased temperatures and decreased of rainfalls. These threats were also identified as the main reason of species vulnerability in Southern mountain areas in Albania (Mahmutaj et al. 2014; 2015). There is the need to develop plan strategies and to control the threats, especially human activity on endemic species in order to preserve them. This study, as an approach of plant conservation, provides the first baseline for future research towards the protection of the endemic and subendemic plant species of this mountain, in order to prevent future plant extinction and loss of biodiversity. We recommend the development of strategies to control threats especially those related to human activity as restriction of ecosystem use for a certain period of time.

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