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Gheorghe Coldea • Vasile Cristea

# The Vascular Plant Communities of the Retezat National Park (Southern Carpathians)

 Springer

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*1887–1971*

*This book is dedicated to the memory of the Academician Prof. Dr. Alexandru Borza, extraordinary botanist and phytocoenologist, the founder of the Retezat National Park and of the Romanian phytocoenology.*

# Preface

The flora of the Retezat Mountains, which are located in the southwestern part of the Southern Romanian Carpathians, was continuously influenced by species migration from different regions of Europe during the deluge. The floristic richness of the Retezat Mountains captivated the interest of botanists since the beginning of the nineteenth century (Baumgarten 1816; Rochel 1828; Heuffel 1858; Schur 1866), and their interest in this area continued through the twentieth century (Jávorka 1911; Pax 1898, 1919; Zahn 1928; Prodan 1930, 1931; Borza 1934; Csűrös et al. 1956a, b). Based on available literature and his personal research, Nyárády (1958) had published the first global enumeration of vascular plants in Retezat, including 920 species. Subsequent research was conducted mainly in the Calcareous Retezat. Csűrös and others (1962, 1972) updated the floristic list to a total of 1152 species and 104 subspecies.

The dominant floristic element in the flora of Retezat is the Alpine-Middle European (37.8%), while the Arctic-Alpine-Boreal and Arctic-Atlantic element is present in small percentage (4.6%) (*Salix herbacea*, *Carex atrata*, *Dryas octopetala*, *Silene acaulis*, *Veronica alpina*, *Cerastium alpinum*, *C. fontanum*, *Lloydia serotina*, *Loiseleuria procumbens*, *Juncus trifidus*, *Carex rupestris*, *Epilobium anagallidifolium*, and *E. alsinifolium*). Compared to these, the Balkan and Caucasian elements are present in higher numbers (12.2%) in Retezat (*Alyssum repens*, *Bruckenthalia spiculifolia*, *Campanula abietina*, *C. transsilvanica*, *Carduus kernerii*, *Carex nigra* subsp. *dacica*, *Pseudorchis frivaldii*, *Hypericum richeri* subsp. *grisebachii*, *Lathyrus hallersteinii*, *Phyteuma confusum*, *Plantago gentianoides*, *Poa media*, *Pulmonaria rubra*, *Saxifraga pedemontana* subsp. *cymosa*, *Senecio doronicum* subsp. *transsilvanicum*, *Symphandra wanneri*, *Saxifraga marginata*, *Veronica bachofenii*, and *V. baumgartenii*). Also, the pan-Carpathian endemic elements and the endemic taxa in the Southeastern Carpathians are well represented (12.5%) in the Retezat Mountains. Pan-Carpathian and Dacian paleoendemics are supposed to originate from Tertiary taxa and have heterogeneous florogenetic origin (Boşcaiu 1971). The high speciation potential of the Retezat area is also revealed by

the exuberant variation of the *Hieracium* populations, from which numerous local and regional microendemisms have been described (Zahn 1928; Nyárády 1958).

All these floristic elements have left their phytogeographical markings within the plant communities, particularly from the types described in this massif. Borza (1934), in his first phytocoenological work on Retezat, noted that some of the associations differed floristically from those in the Tatra Mountains and the Alps, which is why he considered them regional variants specific to the massif or to the Southern Romanian Carpathians. Impressed by the floristic richness, Prof. Alexandru Borza managed to establish the Retezat National Park in 1935. He also intended writing a geobotanical monograph of the park that he unfortunately did not achieve, although at his urging, research in the Retezat National Park resumed for a short period of time in 1965. Some data on several types of vegetation in the Calcareous Retezat area were published in specialized journals of the time (Boşcaiu et al. 1972, 1978; Resmeriță 1987). In this work, we analyzed syntaxonomically the multitude of unpublished relevés, which were later completed with new ones for certain plant associations that were less outlined floristically, to elaborate the monograph of the vegetation of Retezat. Based on 545 relevés, representative for the habitat types occurring in Retezat, we distinguished and described 67 plant associations on floristic and ecological grounds. These were classified into 13 vegetation classes, 19 orders, and 28 alliances. Of the 67 plant associations described in the paper, three were described as new syntaxa: *Salici kitaibelianae*–*Dryadetum octopetalae*, *Phyteumo confusi*–*Juncetum trifidi*, and *Aconito taurici*–*Rumicetum alpini*. Also, the relict association *Vaccinio myrtilli*–*Pinetum sylvestris* was identified and described from the studied area as a new sub-association: *Jovibarbetosum heuffelii*. This sub-association is individualized by several regional species, like *Jovibarba heuffelii*, *Moehringia pendula*, *Dianthus tenuifolius*, *Symphandra wanneri*, and *Silene nutans* subsp. *dubia*.

To support the classification of the 67 plant associations within the European syntaxonomic framework, we briefly characterized floristically and ecologically the higher rank syntaxa.

Through such an arrangement and presentation of community floristic composition, we consider that we have revealed more prominently the regional specificity of the distinguished syntaxa and their similarity or differences compared to their counterparts described in the neighboring geographical areas.

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## About the Book

Situated in the western part of the Southern Romanian Carpathians, the **Retezat National Park**, founded by Alexandru Borza in 1935, covers 38,300 ha, while in the north-western part of the Retezat Massif the “Gemenele Reserve” (1947 ha) was established, which is strictly protected.

The heterogeneous geological structure, comprising both crystalline and calcareous rocks and the diverse landscape of the Retezat Massif, incessantly influenced the evolution of the flora and vegetation of this area, during the Pleistocene.

The floristic studies carried out during the nineteenth and twentieth centuries in the Retezat Massif identified 1152 plant species and 104 subspecies from the *Cormobionta* sub-regnum. Of these, about 12% are endemic Carpathian and Dacian-Balkan taxa that provide the local specificity of the associations hosting them. The phytocoenological research that we performed resulted in the description of 67 associations that we grouped into 28 alliances, 19 orders, and 13 vegetation classes. These classes are *Asplenietea trichomanis*, *Thlaspietea rotundifolii*, *Salicetea herbaceae*, *Montio-Cardaminetea*, *Scheuchzerio-Caricetea fuscae*, *Oxycocco-Sphagnetes*, *Molinio-Arrhenatheretea*, *Caricetea curvulae*, *Loiseleurio-Vaccinietea*, *Elyno-Seslerietea*, *Mulgedio-Aconitetea*, *Carpino-Fagetea*, and *Vaccinio-Piceetea*. We mention that the following plant associations that we are describing are new syntaxa: *Phyteumo confusi-Juncetum trifidi*, *Salici kitaibelianae-Dryadetum octopetalae*, and *Aconito taurici-Rumicetum alpine*. For the protection of some rare plant species and vulnerable plant associations from the area of the “Limestone Retezat,” we propose the delimitation of two new botanical reserves, the first on the peaks Albele-Scorota-Piatra Iorgovanului (3500 ha) and a second one on the Piule Mountain (2500 ha).



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