Mapping forest landscape change in Putna-Vrancea Natural Park, Romania, using diachronic cartography and GIS

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Being one of the wildest mountain areas in Romania, Putna-Vrancea Natural Park encompasses within its boundaries species of international importance of flora and fauna. Although the forest occupies most of the park area, it has undergone some significant changes over the past two centuries. This paper aims to provide a temporal and spatial analysis of the modification of the forest landscape based on historical maps and orthophoto plans. Based on available cartographic materials from 1789, 1895, 1957, 1975, and 2018, periods of forest cover decrease or increase were determined. The analysis of forest distribution based on different natural factors (elevation, slope, soil type, and lithology) highlighted the beginning of the 20th century when forest cover decreased at low elevations and slopes. The evolution of forested areas on different soil types and lithology indicates the most significant changes in black and alluvial soils and substrates represented by clay, breccias, and salt. Almost all changes were, however, due to anthropogenic factors. A specific socio-economic system of the mountainous region of Vrancea, whereby the forest was and still is in the common possession of the inhabitants of some villages, led to periods of deforestation: through burning for the expansion of pastures; through unsustainable exploitation of wood by some companies that leased this right from the community. A period of reforestation in the 1960s and 1970s and a transformation of mountain meadows into forests in the last two decades are also noteworthy. Thus, although there are some limitations in using old maps for such analyses, the results obtained decipher the causes of the transformation of forest landscapes in some areas of PVNP.