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The Świętokrzyski National Park (Central Poland)

Edward BRÓŹ

The Swietokrzyski National Park is the central and most important object in the system of protected territories of the Gory Swietokrzyskie Mts. It was established in 1950, and included to the formerly existing (in the period between the I and II World Wars) complex of strict and partial reserves. The area of the National Park (5883 ha) includes the central part of the 'main range' (Lysogory) with the highest culminations of the Gory Swietokrzyskie Mts. - Mt. Lysica and Mt. Lysa Gora (Sw. Krzyz), a part of the Klonowski range (Gora Miejska and Gora Psarska), the Pokrzywianski Range (Chelmowa Gora), and part of valley Wilkowska, Debnianska, and Slupianska (Fig. 1).

The most important components of woods, especially of the Lysogory range, are *Abies alba* and *Fagus sylvatica*. At lower altitudes and in valleys an important role is played by *Quercus robur*, *Quercus petraea* and *Pinus sylvestris*. Locally, depending on habitat conditions, *Acer pseudoplatanus*, *Alnus glutinosa*, *Carpinus betulus*, *Larix decidua* ssp. *polonica*, *Picea abies*, *Sorbus aucuparia* and *Tilia cordata* may turn large to be dominant.

Rich diversification of wood communities and their distribution (altitudinal and horizontal) is conditioned, above all, by soil factors but the distribution of beech wood (particularly the fertile Carpathian beech wood *Dentario glandulosae-Fagetum*) is limited by the local climate. A very important role in the forming of the present wood vegetation of the Swietokrzyski National Park can be ascribed to the long-term and diverse anthropogenic influences.

The most important wood associations of the Swietokrzyski National Park are: *Abietetum polonicum*, *Luzulo pilosae-Fagetum*, *Dentario glandulosae-Fagetum*, *Tilio-Carpinetum* and *Querco-Pinetum* (BROZ 1992). The propor-

tion of other associations (such as *Leucobryo-Pinetum*, *Molinio-Pinetum*, *Calamagrostis villosae-Pinetum*, *Vaccinio uliginosi-Pinetum*, *Circae-Alnetum*) is marginal. The fir wood *Abietetum polonicum* is considered the most representative association of the Park. The Lysogory range is a classical stand of this association (BRAUN-BLANQUET 1939), which was first recorded from there by DZIUBALTOWSKI (1928). Although the floristic and habitat distinctness of this phytocoenosis is fairly slight and, in many ways, controversial, and similarly to fir woods, it has always been treated in Poland, not only in the Gory Swietokrzyskie Mts., as a separate association (MATUSZKIEWICZ 1984). Its typical appearance is that of a shady coniferous wood with the dominant *Abies alba* in the treelayer and groundlayer, and with a more or less acidophilous herblayer (*Hieracium murorum*, *Luzula pilosa*, *Majanthemum bifolium*, *Oxalis acetosella*, *Vaccinium myrtillus*, and others), often with an abundant proportion of ferns (*Dryopteris dilatata*), and, as a rule, without 'good' characteristic species. Apart from this, the phytocoenosis is not stable and in

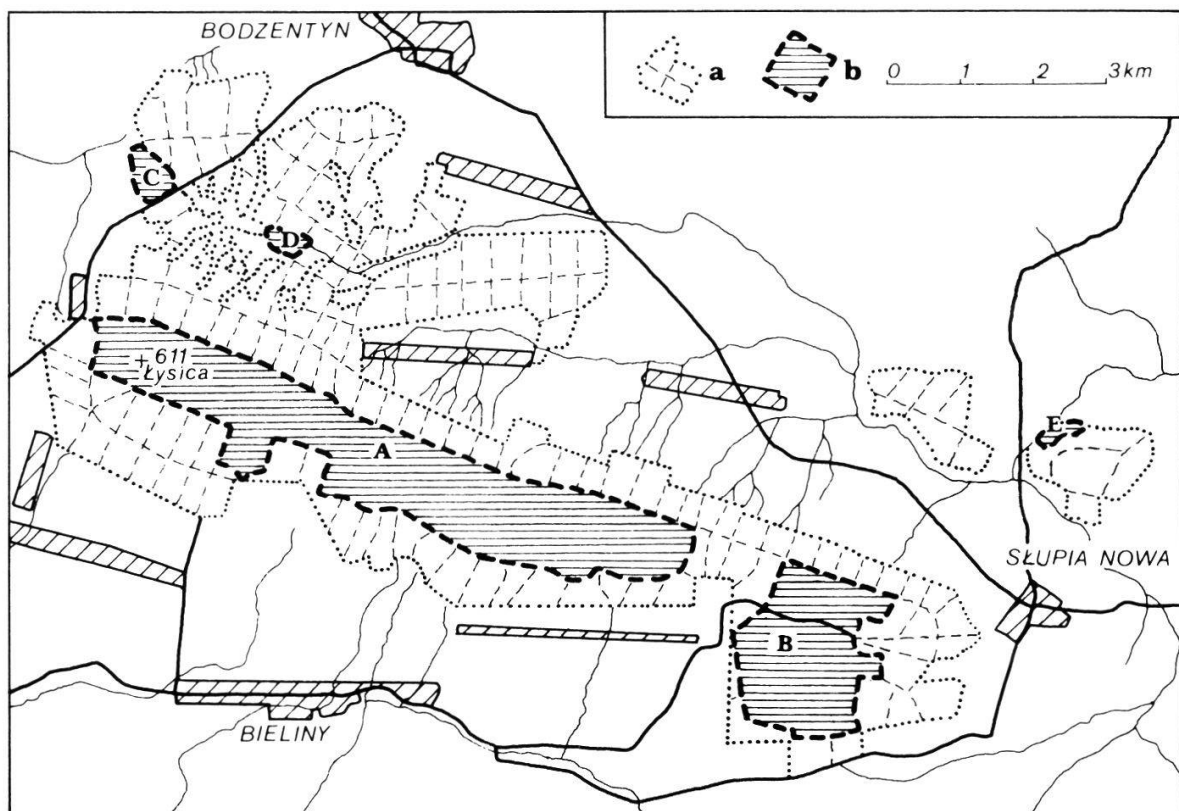


Fig. 1. Location and limits of the Swietokrzyski National Park.

a - limits and area of partial nature reserves, b - limits and area of strictly controlled reserves.

A - Lysica, B - Sw. Krzyz, C - Mokry Bor, D - Czarny Las, E - Chelmowa Gora.

natural conditions it exhibits a tendency towards changing into the beechwood (of the type of *Luzulo-Fagetum*) as a result of replacement of *Abies alba* by *Fagus sylvatica*.

Within the period of the last decade, a total desintegration of the forest structure has occurred as a result of an abrupt decaying of *Abies alba* (Fig. 2) and especially of the woods with participation of this species. As a result, sparsely timbered areas became dominated by mass occurring of brambles (*Rubus* sp.

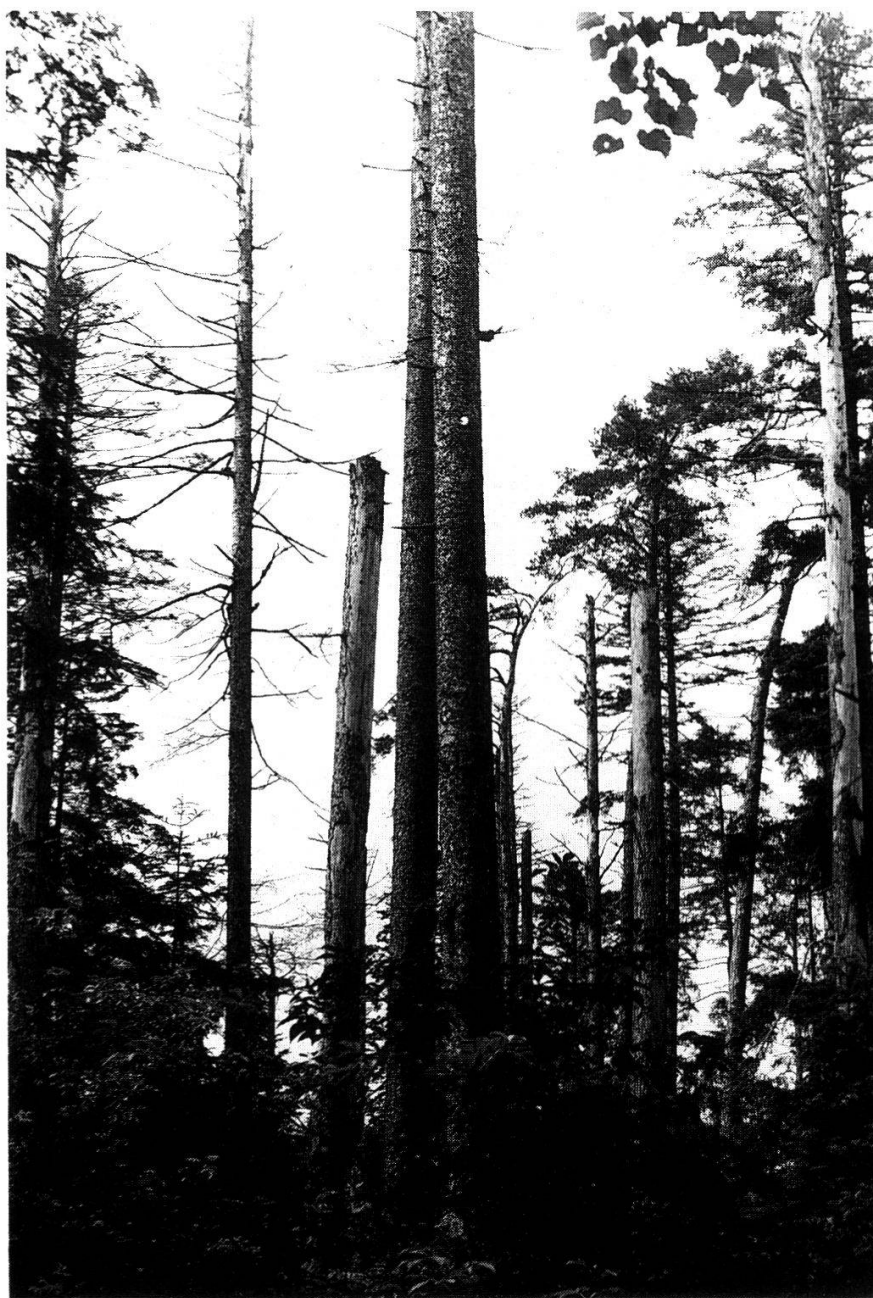


Fig. 2. Desintegration of woods with *Abies alba* in the Swietokrzyski National Park.

div.), brushwoods of pioneer tree species and also by *Fagus sylvatica*, *Acer pseudoplatanus* and *Sorbus aucuparia*. These processes forbade the replacement of the extinction of fir with mixed deciduous forests. Because the importance of the fir in forest, the rapid extinction of it is a serious problem for the economy and science of the forest. Therefore, attempts of explaining the primary causes of the decreasing duration of timber and its mass disappearance from the Park are being made. The grounds for this lie, above all, in unfavourable to fir, changes in the abiotic environment such as, drying-out of soil with the simultaneous increase in its acidification (effect of 'acid rains'), changes in the local climate, growing atmosphere contamination by sulphur dioxide and dusts. These factors also constitute a threat to other sensitive plant groups e.g. lichens, which are also in rapid regress in the Park (CIESLINSKI 1985, CIESLINSKI and CZYZEWSKA 1991). Another characteristic element of the Swietokrzyski National Park landscape are the rock fields called 'goloborza' (HURUK 1986). These are treeless patches of rock debris occurring at 2-3 different altitudes, mainly on the northern slopes of the Lysogory. They occurred as a result of fissuring of quartzite sandstone beds and their slumping onto lower terraces composed of slates. The conditions of the Pleistocene, periglacial climate were favourable to the processes of weathering and to the congelifluctional confluence of rock blocks. According to some researchers, their slumping also takes place at present as a result of neotectonical phenomena.

A thick, sometimes several metre thick, layer of rock blocks, with big cleavages filled with air, hampers the expansion of plants. Water which after rain-falls soaks quickly deep into the rock field and nutrients suffice only for the most resistant epilithic cryptogamic plants. The pioneer associations of lichens and bryophytes are also composed of the relict Arctic-alpine species (KOBENDZA and MOTYKA 1928, CIESLINSKI and HALICZ 1971). On the outskirts of the rock fields there occurs a specific ecological forest limit. The effects of the progressing, primary succession of the forest are very slow and undiscernible even to several generations of researchers. The most important role in the domination of rock fields by vascular plant communities is played by ferns (particularly by *Polypodium vulgare*) and by *Sorbus aucuparia*.

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