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The peat bog at Słopiec and the history of the vegetation of the Góry Świętokrzyskie Mts. (Central Poland) in the past 10'000 years

Kazimierz SZCZEPANEK

1. INTRODUCTION

The peat bog is situated about 20 km SE of Kielce on the north-east outskirts of the village Słopiec. It occupies a small depression (possibly an old river bed) in the Belnianka Stream valley at an altitude of 248 m a.s.l. (Fig. 1). The surface of the peat bog is overgrown with a complex of natural plant communities. The forests to the south and east are successional stages of the

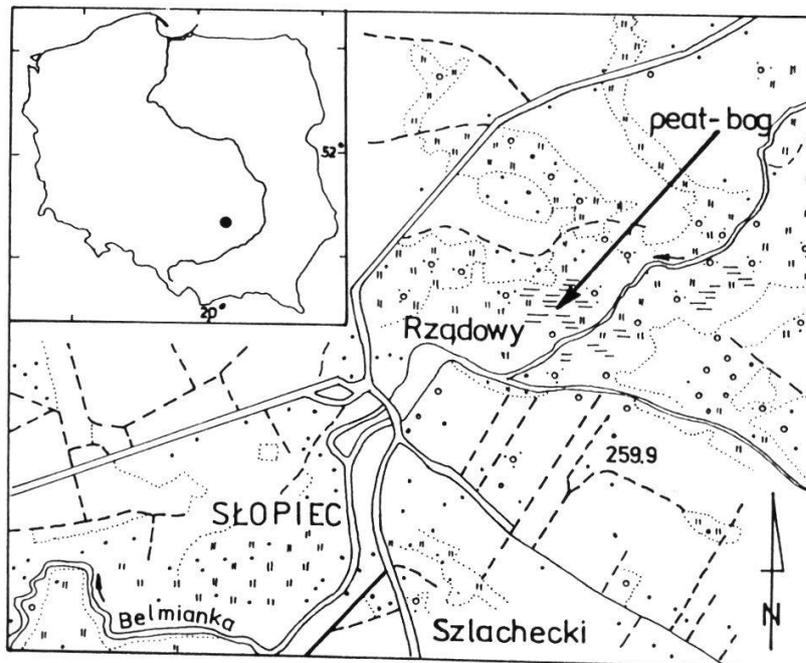


Fig. 1. The location of the peat bog at Słopiec.

Alnetea communities. *Eriophoro-Sphagnetum recurvi*, in a variant with *Carex rostrata* forming a mosaic with the typical form of that association, predominates the peat bog cover to a considerable degree. The central part is occupied by patches of *Sphagnetum medii* forming characteristic hummocks (c. 30-50 cm high), with small hollows between them. Dwarf specimens of *Pinus sylvestris*, *Frangula alnus*, *Alnus glutinosa*, *Juniperus communis* and shrub willows grow on these hummocks. The community *Caricetum lasiocarpae* very often develops in hollows which are waterlogged during a considerable part of the year. Of the more interesting and rare vascular plants there occur: *Andromeda polifolia*, *Betula pubescens*, *Salix myrtilloides*, *Ledum palustre*, *Oxycoccus quadripetalus*, *Vaccinium uliginosum*, *Drosera rotundifolia*, *Menyanthes trifoliata*, *Triglochin palustre*, *Rhynchospora alba*, and the relic, boreal-arctic mosses: *Calliergon trifarium*, *Meesea triquetra*, *Scorpidium scorpioides*, *Cynclidium stygium* (KUC 1964).

2. HISTORY OF REGIONAL CHANGES IN VEGETATION

A pollen analysis of peat bogs in the region of the Gory Swietokrzyskie Mts. (SZCZEPANEK 1961, 1971, 1982, 1989) showed that the Słopiec peat bog contains the fullest series of sediments and is representative of that region (Fig. 2). A short history of the vegetation of the Gory Swietokrzyskie Mts. is as follows:

- The forests with dominant *Pinus*, *Betula*, *Salix* and admixture of *Larix* and, for a short time also *Populus*, are typical for the decline period of the Late Glacial and the beginning of Holocene periods (10'300 to 9'900 B.P.). Macrofossils of *Betula carpatica*, *B. tortuosa*, *B. nana* and *B. pendula* (WOJCICKI 1974) indicate that the boreal element played a big role.
- From approx. 9'900 B.P., *Pinus* curve declines; *Corylus* appears; the contribution of *Ulmus*, present from 10'300 B.P., slightly increases.
- From approx. 9'300 *Salix* declines; *Alnus*, *Corylus* and *Fraxinus* become widely distributed.
- From approx. 9'000 B.P. *Betula* declines; *Alnus* curve increases; *Tilia* appears.
- From approx. 9'000 to approx. 4'000 B.P., deciduous and mixed forests with a high proportion of oligotrophic and heliophilous *Pinus* and *Betula* dominate. In this period, until approx. 7'000 B.P., the contribution of local mire vegetation (*Gramineae* and *Cyperaceae*) is very important. The increase of *Picea*, *Alnus*, *Betula*, *Quercus* and *Ericaceae* observed after 7'000 B.P., may be connected with the of groundwater level decline and overgrowing of the basin.
- From c. 5'500 (5'000) B.P., *Carpinus* expands.
- From c. 4'500-4'300 B.P., the *Ulmus* curve declines slightly, while the *Betula*, *Alnus*, *Carpinus* and *Corylus* curves rise. There are some charcoal layers in the profile. This fact may be connected with colonization of the region by tribes practicing cattle grazing and agriculture (single pollen grains of *Rumex* and *Centaurea cyanus*).

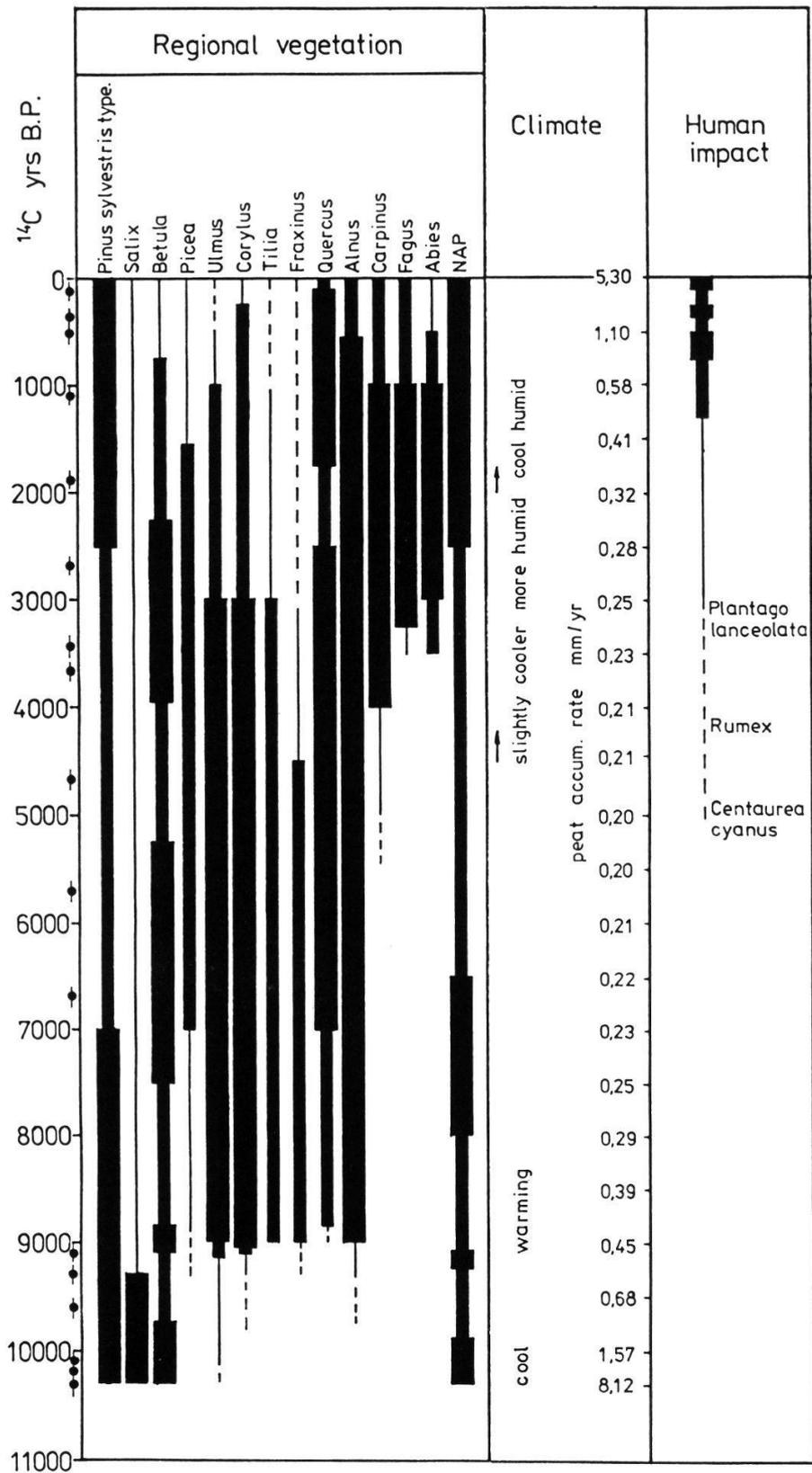


Fig. 2. Event stratigraphy table for the peat bog at Slopiec.
B.P. - before present.

- At c. 3'750 B.P., after a short culmination, the *Alnus* curve declines, while *Betula*, *Pinus*, and *Salix* curves rise.
- From approx. 3'500 B.P., *Fagus* and *Abies* expand.
- From approx. 3'000 B.P., *Ulmus* and *Corylus* decline significantly; *Carpinus*, *Abies*, *Fagus* and *Alnus* dominate.
- At approx. 2'700 B.P., the curves of culture indicators (*Secale*, *Cannabis*, *Rumex* and *Plantago lanceolata*) rise. The *Gramineae* curve also rises. *Alnus* declines.
- From c. 1'300-1'100 B.P., almost all deciduous tree curves decline except *Quercus*. The *Pinus* and *Betula* curves rise. Herbaceous plants (including cultivated plants and weeds) dominate. These vegetation changes were certainly due to agriculture as well as ancient mining and iron smelting (cf. BIELENIN 1974, ORZECOWSKI 1991, 1992).
- At c. 400 B.P., an intensive regional deforestation and agriculture development is recorded.
- The youngest stage of vegetational changes is less than 120 years old. Pine forests, or mixed forests with pine, predominated. Other types of forest communities were heavily transformed by man and were similar to the recent vegetation in the surroundings of the peat bog and region. *Cerealia* and cultivated and synanthropic plants were its most typical components.

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