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The "Wały" steppe reserve near Miechów (S. Poland)

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The small "Waly" steppe reserve, (5.81 ha), near Raclawice is located 16 km east of Miechow at an altitude up to 365 m a.s.l. (see MEDWECKA-KORNAS 1992, General information on the surroundings of Krakow, Fig. 4, this volume). The landscape of this region is gently undulating, with wide valleys separated by low, dome-like hills (Fig. 1). The climate is slightly more continental than in the Ojcow area (with mean annual temperature of 7-8°C and mean annual precipitation of 600-650 mm). The geological substratum consists mainly of Cretaceous marl, cropping out locally or covered with loess. The rendzina soils on marl outcrops, too shallow to be cultivated, form a refuge for xerothermic grasslands, often referred to as "steppe" vegetation. The most interesting type of this vegetation is the *Inuletum ensifoliae* community (Fig. 2), which comprises an especially large proportion of Pontic and Pontic-Pannonian species. The sedge, *Carex humilis**, and the herb, *Inula ensifolia**, are usually dominant, other characteristic components being *Carlina onopordifolia** (POZNANSKA 1991), *Cytisus* (*Chamaecytisus*) *ruthenicus**, *Iris aphylla*, *Linum flavum*, *L. hirsutum** (KAZMIERCZAKOWA 1991), etc. (species occurring in the "Waly" reserve are marked with an asterisk).

The "Waly" reserve was formed to protect one of the most beautiful stands of *Inuletum ensifoliae* with an extremely vigorous population of 10'000-12'000 individuals of *Carlina onopordifolia* - a great rarity among the Polish flora (POZNANSKA 1991), depicted in the emblem of the Polish Botanical Society. This plant is strictly monocarpic. It germinates in the gaps of the sward, on bare rendzina soil and forms leaf rosettes of up to 1 m in diameter, remaining sterile for a couple of years. They finally flower in late summer, produce fruits which ripen in autumn or in winter, and then die. Therefore, the plant is clearly connected with early successional stages on rendzina slopes.

Fig. 1. Xerothermic grassland (*Inuletum ensifoliae*) in the "Waly" reserve near Miechow. Locality of *Adonis vernalis*, *Carlina onopordifolia* and other Pontic and Pontic-Pannonian species. Photo by A. Medwecka-Kornas, 1960.

Fig. 2. *Adonis vernalis* in the "Waly" reserve. May 1979. Photo by A. Medwecka-Kornas.

The "Waly" reserve was originally grazed, and new gaps in the sward were continuously formed by grazing animals. When the reserve was set aside in 1954, grazing was prohibited, but this regulation was not efficiently enforced, especially in the SEE part of the reserve which is surrounded by arable fields. Consequently, there was a marked invasion of shrubs in the NWW part of the reserve adjoining the forest, but the vegetation in the SEE corner still remains more open, with *Carlina onopordifolia* seedlings appearing in the gaps and encroaching on the neighbouring fields which have since been abandoned. This very clearly indicates that *Inuletum ensifoliae* is a seral plant community which can be maintained (with all its interesting components) only through continuous disturbance (e.g. grazing). The "Waly" reserve is the locus classicus of the hybrid *Carlina* x *szaferi* (= *C. acaulis* x *C. onopordifolia*).
On the arable fields near the "Waly" reserve many rare thermophilous and calciphilous segetal weeds once occurred, forming the community *Caucalido-Scandicetum* (with *Adonis aestivalis, Anagallis foemina, Caucalis platycarpos, Conringia orientalis, Fumaria vaillantii*, etc.) (KORNAS 1950). Most of them have recently become very scarce or even extinct because of modernization of the agricultural practices.

REFERENCES

JASIEWICZ A. and PAWLOWSKI B., 1956: De *Carlinae onopordifoliae* Bess. loco natali novo in Polonia reperto. (In Polish with Latin summary). Fragm.Flor.Geobot. *2(2)*, 12-19.
KAZMIERCZAKOWA R., 1991: Biology, habitat requirements, and perspectives of the protection of *Linum hirsutum* L. in Poland. (In Polish with English summary). Ochrona Przyrody *48*, 31-54.
KORNAS J., 1950: Les associations végétales du Jura Cracovien. 1. partie: Les associations des champs cultivés. (In Polish with French summary). Acta Soc.Bot.Pol. *20(2)*, 361-438.
MEDWECKA-KORNAS A., 1992: General information on the surroundings of Krakow (S. Poland). Veröff. Geobot.Inst.ETH, Stiftung Rübel, Zürich *107*, 40-43
POZNANSKA Z., 1991: *Carlina onopordifolia* Besser - the dynamics of its population in the course of succession of xerothermal swards and the problem of active ecological protection. Ochrona Przyrody *48*, 55-83.

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Palaeoenvironmental changes in the Polish Carpathians (S. Poland) during the last 12'000 years

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INTRODUCTION

The Polish Carpathians include the northern part of the West Carpathians and a small northwestern part of the East Carpathians. For the purpose of palaeoecological synthesis within IGCP Project No. 158 (RALSKA-JASIEWICZOWA and LATALOWA 1992), the area has been subdivided into five type regions (Fig. 1). Type regions P-a and P-b, in the West Carpathians, include the Polish part of the Tatra Mts. (2500 m a.s.l.), the Western Beskidy Mts. (1725 m a.s.l.) and the intervening Orawa-Nowy Targ Basin (650-700 m a.s.l.). The region P-c, Low Beskidy, lies between 500-800 m with occasional elevations up to 997 m a.s.l. Region P-d comprises the Jaslo-Sanok Depression and Forelands with elevations in the range of 230-600 m a.s.l. Regions P-c and P-d together form a lower-lying corridor between the western and eastern ranges of the Carpathians, directly exposed to the climatic influences of the Hungarian Plain. The Bieszczady Mts. in the East Carpathians, which rise from 420 to 1350 m a.s.l., form type region P-e.
Although geologically similar, formed chiefly of flysch, there are major differences in geomorphology, hydrology, climate and vegetation between the eastern and western parts of the Polish Carpathians. Thus, the climate of the