

The phytogeographical boundary between the East and West Carpathians - past and present

Bogdan Zemanek

*Botanic Garden, Institute of Botany, Jagiellonian University,
ul. Kopernika 27, 31-501 Kraków, Poland*

ZEMANEK B. (1991): The phytogeographical boundary between the East and West Carpathians - past and present. - *Thaiszia, Košice, 1:59-67*. ISSN 1210-0420.

ABSTRACT: A history of investigations and discussion on the phytogeographical boundary between the West and the East Carpathians is given in the paper.

KEYWORDS: History of botany, phytogeographical boundary, the Carpathians

The differences between the East and West Carpathians, both in flora, vegetation and landscape, are so distinct that it was natural that the problem of demarcation of a boundary between these areas must have arisen. This is one of the oldest and most important phytogeographical questions of the Carpathians. The discussion has started 150 years ago and still it is not finished and solved definitely.

The demarcation of every phytogeographical boundary, even the most obvious, is biased to some extent. In nature the boundary is a wider or narrower transitive belt while the line drawn by the investigator is an arbitrary solution mainly of an informative character. Its location depends on the criteria adopted (floristic, phytocoenotic, etc.) and is, in most cases, a compromise between an orthodox observance of these criteria and practical reasons (sometimes a human factor should also be added, i.e. a personal attitude of the investigator). In phytogeographical investigations the floristic criterion is usually the most important. The places where the number of range limits of indicator plants (endemics, floristic elements) occur are those where phytogeographical boundaries should be marked out (KORNAŚ and MEDWECKA-KORNAŚ 1986). This method is widely used in the

Carpathian floristic investigations.

The most important proposals of a boundary between the East and West Carpathians were as follows (from west to east) (Fig. 1):

- 1) the Tylicz Pass (TAĆIK et al. 1957, ZARZYCKI 1963),
- 2) the Dukla Pass (KOTULA 1881, PAWŁOWSKI 1948),
- 3) the Łupków Pass (WOŁOSZCZAK 1895, PAX 1898, 1908),
- 4) the Użok Pass (HERBICH 1861, DOMIN 1938),
- 5) the Jabłonica (Tatarów) pass (ZAPAŁOWICZ 1909).

The first serious proposal where the boundary between the West and the East Carpathians should be placed was that of HERBICH (1861) (Fig. 2, line 4a). He presented a map with the boundary drawn in the Użok Pass region, along the river Latorica and the river Stryj. This proposal was supported by a floristic and geological analysis, naturally rather simple but on the level of botanical knowledge of that period.

The proposal of KOTULA (1881) was not based on any floristic analysis but merely on the botanical intuition of investigator and a conviction that the boundary should be placed in the lowest point of the main range of the Carpathians, i.e. in the Dukla Pass (Fig. 2, line 2).

WOŁOSZCZAK in 1895 proposed to put the boundary between the East and the West Carpathians in the Lupkow Pass (Fig. 2, line 3a). The proposal was supported by his considerable floristic knowledge; in the years 1892-1895, he traversed almost the whole Carpathian arch.

This idea was then taken up by Pax. His first concept was to look for the demarcation line along so-called "Prešov - Košice break-line", a natural tectonic break of the main Carpathian range (PAX 1896) (Fig. 2, line 1a), but later he placed it right in the Łupków Pass (PAX 1898, 1908, cf. also WOŁOSZCZAK 1908).

In discussion with Pax, ZAPAŁOWICZ (1909) suggested another place to draw the boundary - the Jabłonica (or Tatarów) Pass, deep in the East Carpathians, between the Świdowiec and the Czarnohora (Fig. 2, line 5). This opinion remained isolated as the criteria used were complex and not very sound. So the Łupków Pass concept was rather predominating in 1920s and 1930s (cf. HENDRYCH and HENDRYCHOVÁ 1979 and discussion there).

In DOMIN (1938) revived the Herbich's idea of the Użok Pass, but without any further consequences (he was followed only by Fodor, cf. CHOPIK 1969) (Fig. 2, line 4b). The same happened to the Dukla Pass concept in the paper of PAWŁOWSKI (1948).

Rather inconsiderable attention also received the idea of Tylicz

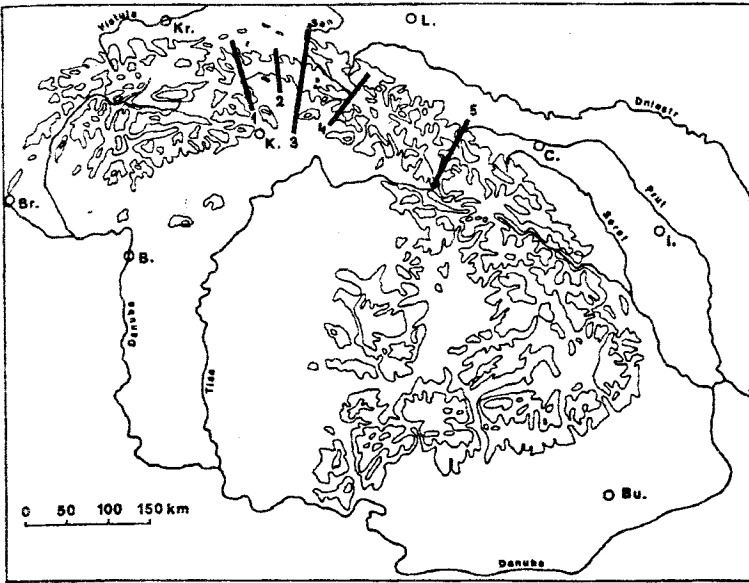


Fig. 1. Boundary between the East and the West Carpathians - a general view: 1 - Tylicz Pass, 2 - Dukla Pass, 3 - Łupków Pass, 4 - Użok Pass, 5 - Jabłonica Pass.

Pass proposed by TACIK, ZAJACÓWNA and ZARZYCKI (1957), repeated later by ZARZYCKI (1963) (Fig. 2, line 1a). Here the vegetation played the crucial role in phytogeographical considerations.

PAWŁOWSKI (1959, 1972) drew the boundary between the East and West Carpathians from the Łupków Pass to the north along the rivers Osławica and Osława and farther along the river San (Fig. 2, line 3a). Investigations in the Bieszczady Mts. (JASIEWICZ 1965) and in adjacent territories of the Beskid Niski Mts. (GRODZIŃSKA and PANCER-KOTEJOWA 1965, GRODZIŃSKA 1968) supported this idea to a certain extent. The eastern and western elements are almost in balance in the Beskid Niski Mts. It is obvious that the eastern influences are stronger in the eastern flank (near the Łupków Pass) while western - near the Tylicz Pass. So the territory of the Beskid Niski Mts. should be treated as an intermediate area.

In the light of the results of JASIEWICZ's (1965) studies in the Bieszczady Mts., the Jabłonica Pass and the Użok Pass concepts must be abandoned because they placed territories rich in East Carpathian species in the West Carpathians. On the other hand the Dukla Pass

concept must be rejected because it divides a fairly uniform unit as the Beskid Niski Mts. into two parts.

In this situation the most reasonable were the proposals considering the Tylicz Pass and the Łupków Pass. This raised the question whether the Beskid Niski Mts. should be included in the East Carpathians or not.

ŚWIĘS (1980) in his comparative study on the Beskid Niski Mts. proposed to draw the boundary between the West and East Carpathians along the watershed ridge between the rivers Biała and Ropa, then along the Ropa to the town of Jasło, whence to Frysztak and farther along the river Wisłok to the foot of the Carpathians (Fig. 2, line 1b). This takes, however, an intermediate position between the KOTULA's Dukla Pass concept and PAX's Prešov - Košice break line, but more complex in its run, and it must raise similar objections, the more so that criteria used were not clear and rather not well defined.

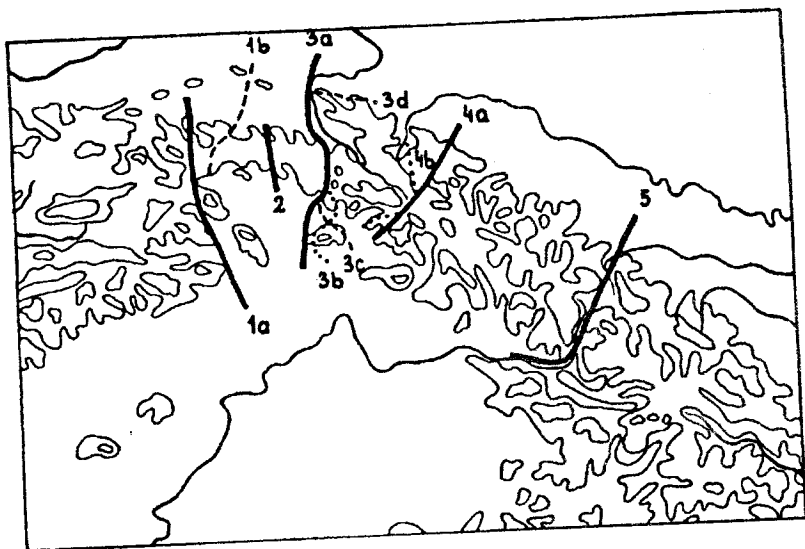


Fig. 2. Boundary between the East and the West Carpathians - a detail view: 1a - Pax 1896, Tacik et al. 1957, Zarzycki 1963; 1b - Świąs 1980; 2 - Kotula 1881, Pawłowski 1948; 3a - Wołoszczak 1895, Pax 1898, 1908, Pawłowski 1959, 1972, Jasiewicz 1965, Krippel 1983; 3b - Hendrych, Hendrychová 1979, Hadač 1989; 3c - Futák 1980; 3d - Zemanek 1991; 4a - Herbich 1861; 4b - Domin 1938; 5 - Zapałowicz 1909.



Fig. 3. Distribution of East Carpathian taxa in the Polish Carpathians.

Recent floristic and phytogeographical investigations in Slovakia and in Poland return the boundary back to the region of the Łupków Pass. The boundary further to the north in Poland and to the south in Slovakia has merely been discussed without drawing the concrete line.

HENDRYCH and HENDRYCHOVÁ (1979) proposed to draw the boundary from the Ruské sedlo Pass down along river Cirocha and to include the Vihorlat Mts. to the East Carpathians (Fig. 2, line 3b). According to the map in that paper in Polish territory the boundary runs along the river Solinka (mistakenly named Wisłok), so in quite different way than that of JASIEWICZ (1965).

Similar proposal gave KRIPPEL (1983) but just from the Łupków Pass down along river Vydranka and Laborec, also including Vihorlat.

HADAČ (1989) moved the boundary on Mt. Černiny i.e. between the Łupków Pass and the Ruské sedlo Pass.

On the other hand, FUTAK (1980), in spite of accepting the Łupkov Pass as a borderline, excluded the Vihorlat from the East Carpathians (Fig. 2, line 3c).

In the latest paper on the phytogeographical division of the Polish East Carpathians (ZEMANEK 1991), the boundary corresponds to that proposed by JASIEWICZ (1965), but the publication was not specially aimed at solving this problem.

The number of East Carpathian plants falls from 30 taxa in Mt. Tarnica group to 5 taxa in the Ośława valley (distance of about 45 km). The next East Carpathian taxon disappears 60 km farther to the west, near the Dukla Pass, and another two disappear in the Pieniny Mts. (about 100 km to the west from the Dukla Pass) (Fig. 3). Hence, according to the floristic criterion the boundary of the East Carpathian flora should be sought rather in the vicinity of the Ośława valley.

The Polish part of the boundary should go from the sources of the river Ośława down along its valley, further run of this boundary being as proposed by ZEMANEK (1991) (cf. Fig. 2, line 3d).

Summary

The problem of demarcation of a boundary between the West and the East Carpathians is one of the oldest and most important phytogeographical questions of this area. The discussion was started 150 years ago and still it has not finished and solved definitely.

The most important proposals of boundary between the East and West Carpathians were as follows (from west to east) (Fig. 1 and 2):

- 1) the Tylicz Pass (TACIK et al. 1957, ZARZYCKI 1963),

- 2) the Dukla Pass (KOTULA 1881, PAWŁOWSKI 1948),
- 3) the Łupków Pass (WOŁOSZCZAK 1895, PAX 1898, 1908),
- 4) the Użok Pass (HERBICH 1861, DOMIN 1938),
- 5) the Jabłonica (Tatarów) Pass (ZAPAŁOWICZ 1909).

Last floristic and phytogeographic investigations in Slovakia and in Poland put the boundary to the region of the Łupków Pass.

In Slovakia HENDRYCH and HENDRYCHOVÁ (1979) proposed to draw the boundary from the Ruské sedlo Pass down along river Cirocha and to include the Vihorlat Mts. to the East Carpathians (Fig. 2, line 3b) while HADAČ (1989) moved the boundary on Mt. Černiny i.e. between the Łupków Pass and the Ruské sedlo Pass.

The Polish part of the boundary should go from the sources of the river Ośława down along its valley, further run of this boundary being as proposed by ZEMANEK (1991).

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Accepted 15 January 1991

Red Data Book of Armenian SSR

E. Tz. Gabrielyan (ed.), V. E. Avetisyan, A. M. Barsegyan, P. A. Gandilyan, K. G. Tamanyan, G. M. Fayyush

Ayastan, Yerevan, 1989, 284 p. + 63 illus. + 59 col. pl. + 8 bl. wh. pl. + 325 maps, 6 rub. 90 kop.

Reviewed Red Data Book of Armenia is, together with uncompleted edition of Flora of Armenia, the most important collective botanical work coming from Botanical Institute of Academy of Sciences of Armenian Soviet Republic in Yerevan, led by Dr. E. Tz. Gabrielyan, an outstanding plant taxonomist not only in Armenia.

Armenia lies on northern edge of volcanic Armenian Highlands within the height span of 450 to 4095 m a. s. l. The republic is situated at the junction of three floristic