

***Pterygoneurum subsessile* (Brid.) Jur. var. *kieneri* Hab.  
(Musci, Pottiaceae), a putative hybrid**

by

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With 2 figures

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**Abstract:** The hybrid origin of *Pterygoneurum subsessile* var. *kieneri* is postulated. The type material studied presents cleistocarpous capsule similar to those of *Phascum cuspidatum* and intermediate gametophytic characters between *Pterygoneurum ovatum* and *Phascum cuspidatum*, species observed together in the same sample.

For many years certain cleistocarpous taxa of the family Pottiaceae, that possess 2-3 chlorophyllous lamellae on the adaxial surface of the leaf nerve have been included — in our opinion erroneously — in the genus *Pterygoneurum*. *Pterygoneurum koslovii* was the first taxon of this type, described by Lazarenko in Russian and consequently considered as illegitimate by Wijk et al. (1959-1969), although it was later legitimized by Lazarenko (1946). Vanek (1952) described a similar taxon, *Pterygoneurum smardeanum*, which Abramova et al. (1973) considered to be a synonym of *P. koslovii*. Both seem to be very similar, and their hybrid origin has been postulated. Boros (1953) thought that *P. koslovii* might be a hybrid between *Phascum cuspidatum* and *Pterygoneurum ovatum*, and Corley et al. (1981) thought that it was a hybrid between *Phascum cuspidatum* and *Pterygoneurum subsessile*. However there is no clear evidence, because of its scarce abundance (it has been found twice).

During a world wide taxonomic revision of the genus *Pterygoneurum* we studied the type material of *P. subsessile* var. *kieneri* (Habeed 1949), which has a cleistocarpous capsule, mitriform calyptra and short supracostal lamellae with papillose cells (Fig. 1, b). This sample occurred on a piece of soil measuring 4 × 4 cm with *Pterygoneurum ovatum* and *Phascum cuspidatum*.

*Pterygoneurum subsessile* var. *kieneri* has a capsule and calyptra almost identical to those of *Phascum cuspidatum*. The supracostal lamellae are similar to these of the genus *Pterygoneurum*, although shorter (3-4 cells high) and papillose (Fig. 1, b; Fig. 2, c, d). Their aspect is that of an intermediate form between the typical lamellae of *Pterygoneurum ovatum* (Fig. 2, a, b) and the supranervial cells of some taxa

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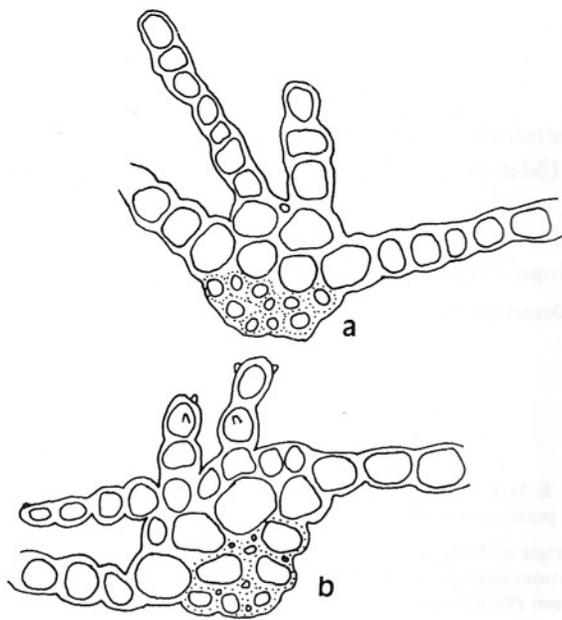


Fig. 1. a, *Pterygoneurum smardeanum* section of nerve of upper third of the leaf (BRNM, Type); b, *Pterygoneurum subsessile* var. *kieneri* idem (NEB).

of the group of *Phascum cuspidatum* (Fig. 2, e, f) (cf. Guerra et al. 1991). The transverse section of the nerve shows that the eurycytes and stereids are in the same position as in the genus *Phascum*. The spores have an ornamentation closer to those of *Pterygoneurum ovatum* (granulate or verrucose surface) than to *Phascum cuspidatum* (baculate-clavate surface), and are sometimes also deformed.

In the genus *Acaulon* some taxa with supracostal lamellae have been described: *Acaulon chrysacanthum* Stone, *A. leucochaete* Stone (both from Australia) and *A. piligerum* (De Not.) Limpr. (from Europe), all belonging to the subgenus *Alaticosta* Stone (cf. Stone 1976, 1989; Sérgio 1992). That these taxa belong to the genus *Acaulon* is not in doubt because they are bulbiform, not ramified plants and their nerve has no guide cells in section (cf. Casas & Sérgio 1990, Casas et al. 1986, Sérgio 1992). They also have a thicker abaxial surface of the cell wall and very small, more or less conic or very slightly mitriform calyptra.

We have also studied plants from Canada that McIntosh (1989) considered to be *Pterygoneurum koslovii*. In our opinion it is a very difficult sample to name, because the plants have all the above mentioned features of the genus *Acaulon* (subgenus *Alaticosta*) except for the nerve, which has typical guide cells at the base of the leaf but not in the upper half of the leaf, where the cell walls are thicker and the cells seem to be typical stereids. This feature has not been observed in the type material of *Pterygoneurum smardeanum* or of *Pterygoneurum subsessile* var. *kieneri* (Fig. 1, a, b).

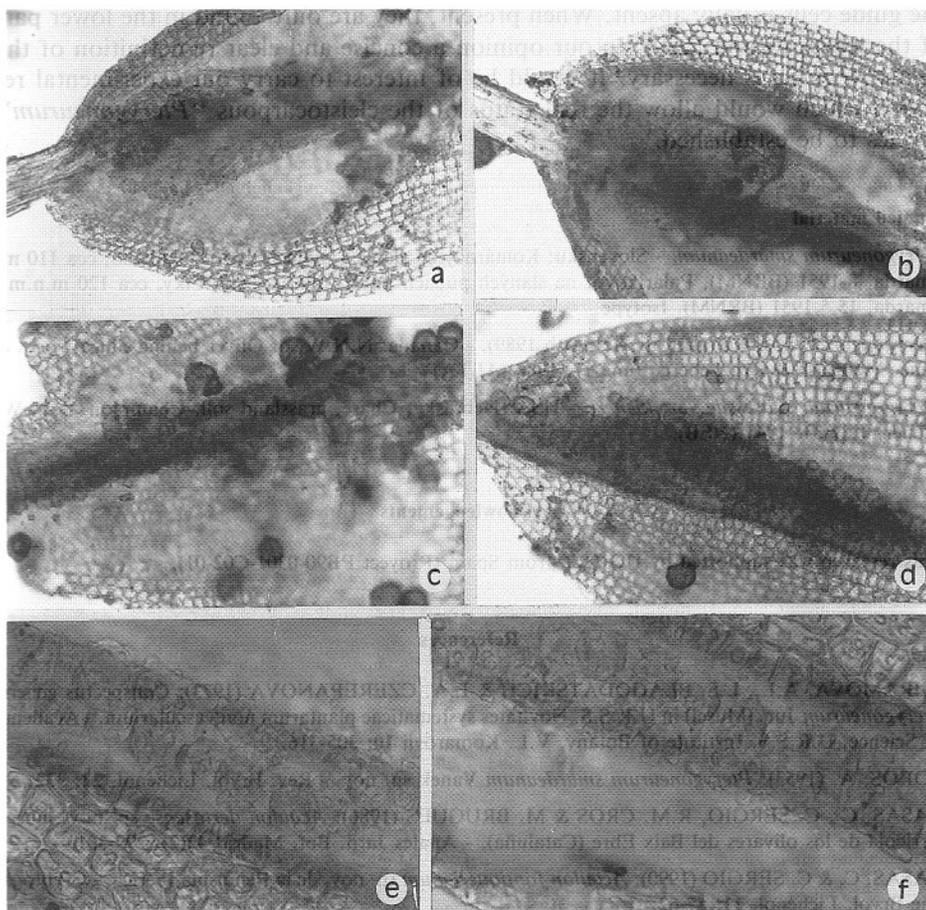


Fig. 2. a, b, *Pterygoneurum ovatum* ventral surface of leaves showing the lamellae; c, d, *Pterygoneurum subsessile* var. *kieneri* idem; e, f, *Phascum cuspidatum* ventral surface of leaves showing the supranervial cells; (all from NEB).

### Conclusions

The hypothesis that *Pterygoneurum subsessile* var. *kieneri* may be a hybrid between *Phascum cuspidatum* and *Pterygoneurum ovatum*, species observed together, lends weight to the opinions of Boros (1953) and Corley et al. (1981) about the hybrid origin of the closely related *Pterygoneurum koslovii*. The anatomy of the leaf nerve (Fig. 1) of *Pterygoneurum subsessile* var. *kieneri* and *P. koslovii* is very close to that of *Phascum* and consequently cannot be considered to belong to the genus *Acaulon*, subgenus *Alaticosta*.

At the moment it is included in *Phascum* (subgenus *Acaulonopsis*) some species with

the guide cells usually absent. When present, they are only found in the lower part of the leaves (Stone 1989). In our opinion a concise and clear re-definition of the genus *Acaulon* is necessary. It would be of interest to carry out experimental research which would allow the real status of the cleistocarpous "*Pterygoneurum*" species to be established.

#### Studied material

*Pterygoneurum smardeanum*. - Slovensku: Komárno, na slaných pudách dvoru Okolicno, cca 110 m, Smarda, 8-1951 (BRNM). Palárikovo, na slaných pudách pobliz dvoru Velké Ciky, cca 120 m.n.m., Smarda, 15.5.1951 (BRNM). Isotype.

*Pterygoneurum koslovii* (cited in McIntosh 1989). - Canada: N.N.W. of Oliver behind Silica works & mine, McIntosh & Kruckeberg, June 27. 1980 (ALTA).

*Pterygoneurum subsessile* var. *kieneri*. - USA: Nebraska, Chase, grassland soil, Champion, 8 mi W, Kiener, July 31. 1941 (NEB).

#### Acknowledgements

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