



Validation of *Araciphyllites austriacus* J. Kvaček et Herman (Monocotyledones: Araceae)

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Abstract. Validation of the species name *Araciphyllites austriacus* J. Kvaček et Herman sp. nov. representing foliage of a monocotyledon plant with affinities to the family Araceae is presented with a brief description of the material.

■ **Keywords:** Cretaceous, Campanian, Monocotyledon, *Araciphyllites*, Austria.

INTRODUCTION.

Difference in speed of publication of two independent papers (Wilde et al. 2005, J. Kvaček & Herman 2004) dealing with the genus *Araciphyllites* caused problems with the validity of the name *Araciphyllites austriacus* J. Kvaček et Herman. Thanks to authors (Wilde et al.) we had their final manuscript for our disposal as a pre-print copy, but the delayed publication of the paper (Wilde et al. 2005) and the faster publication of the paper by J. Kvaček & Herman (2004) caused that the species name *A. austriacus* J. Kvaček et Herman, sp. nov., remained as invalidly published having been connected with an invalid generic name.

In the paper by J. Kvaček & Herman (2004) the direct citation of the type of the genus *Araciphyllites tertarius* (Engelhardt) Wilde et al. was published, hence a diagnosis of that species cannot be considered as a diagnosis generico-specifica, because two species were mentioned. In order to improve this state we validate the name here in.

MATERIAL AND METHODS

Numerous well-preserved plant fossils from beds accompanying the coal seams of the Grünbach Formation are housed in the Department of Geology and Palaeontology of Naturhistorisches Museum Wien (Natural History Museum, Vienna, Austria; NHMW).

The plant remains of the locality Grünbach represent mostly leaf impressions and compressions. The leaf fossils preserve fine details of venation and morphology and show little evidence of having undergone long distance transport or decay prior to burial.

The specimen described here was photographed under low angle incident light using 35 mm Ilford FP4 film in a Contax 167MM SLR camera with a Zeiss S-Planar T* 2.8/60

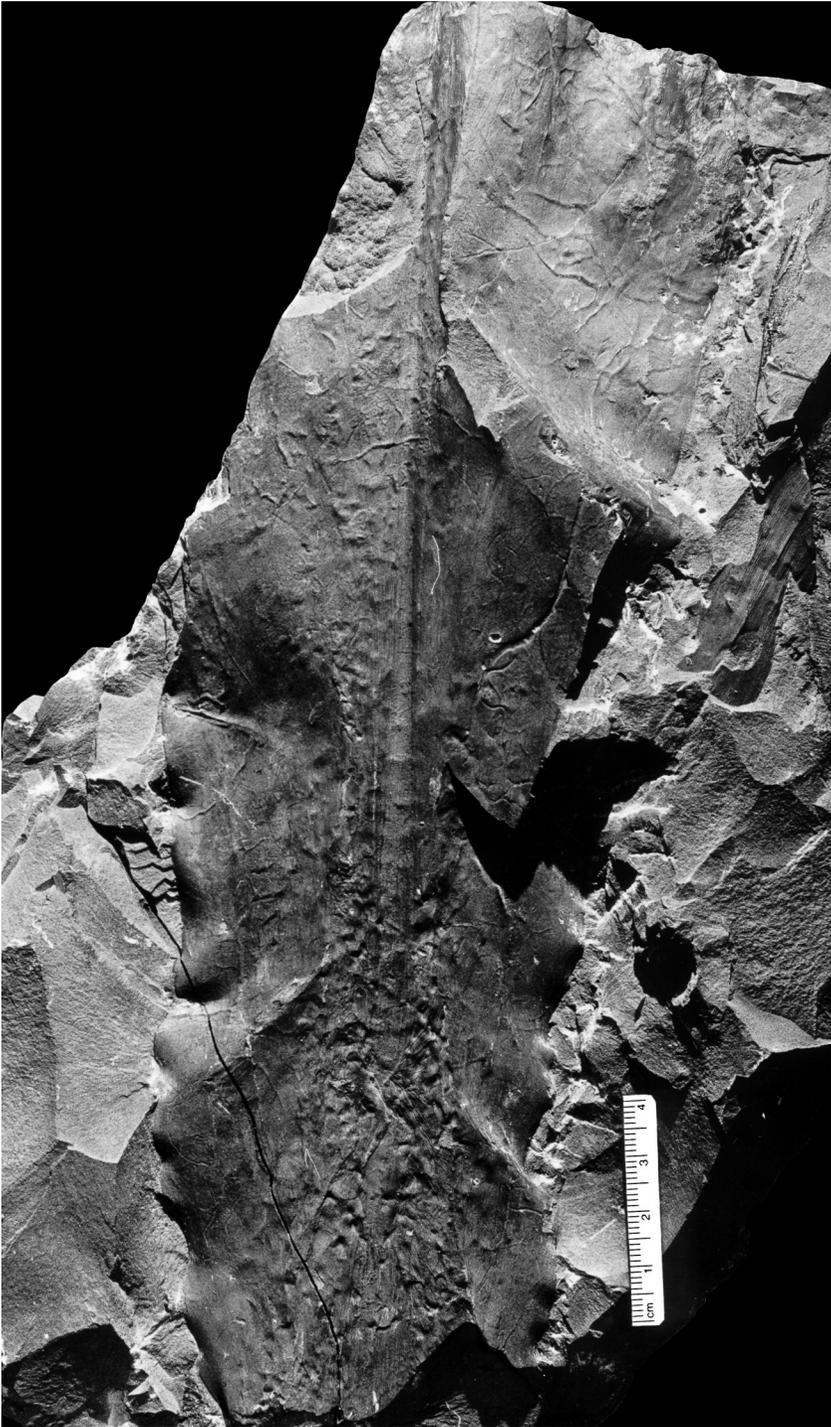


Fig. 1. *Araciphyllites austriacus* J. Kvaček et Herman sp. nov., holotype, Grünbach, NHMW 1999B0057/0183, $\times 0.6$.

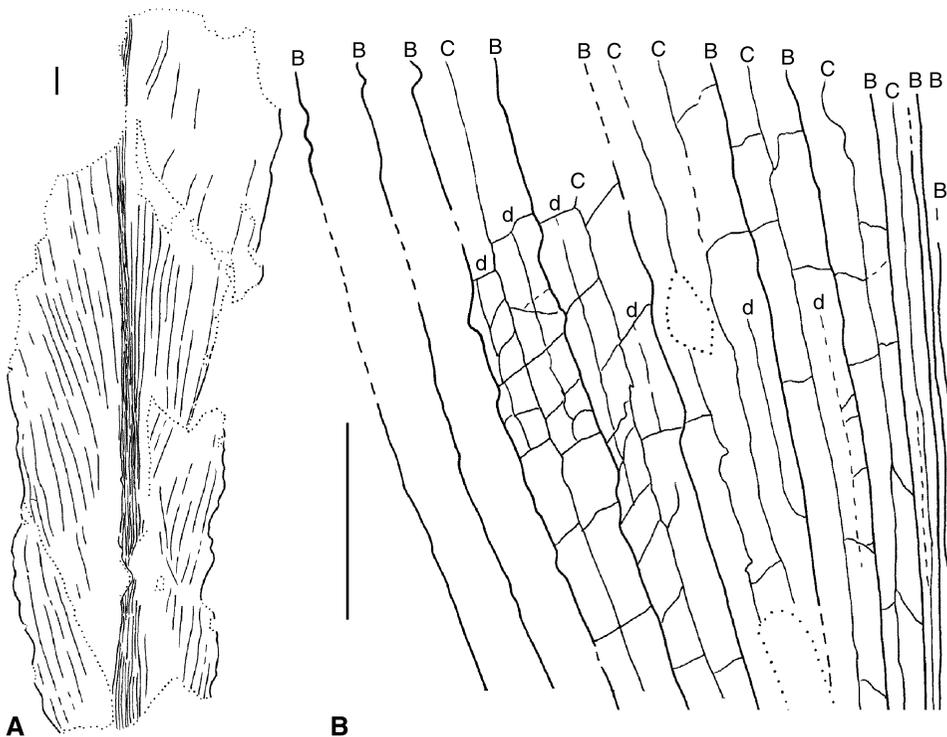


Fig. 2. *Araciphyllites austriacus* J. Kvaček et Herman, sp. nov., Grünbach, (scale bars represent 1 cm): A – NHMW 1999B0057/0183, leaf outline and venation; B – NHMW 1999B0057/0183, detailed venation.

macro lens. Besides normal prints also large black and white prints (20×25 cm) were made and leaf outlines and venation were drawn directly on them. Afterwards, the photographic image was bleached away using an aqueous solution of potassium iodide and iodine. The bleached image was then conventionally fixed leaving an ink drawing that was used for the subsequent study.

Although leaf compressions are sometime recorded among the material the specimen in hand is without cuticle. It was studied and drawn under Leitz binocular microscope in the Department of Geology and Palaeontology of natural History Museum in Vienna.

GEOLOGICAL SETTING AND AGE OF THE GRÜNBACH FLORA

The Grünbach flora comes from the Grünbach Formation (“Coal-bearing Series” according to Ploechinger 1961) of the Gosau Group in the Grünbach – Neue Welt Basin in the Eastern Calcareous Alps, Lower Austria. The coal seams of the Grünbach Formation were exploited from the second half of the 19th century until the 1960s. Mining was extremely difficult in the highly tectonised basin and was finally abandoned as uneconomic.

The Grünbach – Neue Welt Basin of the Eastern Alps represents a syncline with an overturned limb (Ploechinger 1961). The predominantly terrigenous clastic fillings of the basin (Gosau Group) consist of five lithostratigraphic units of Late Santonian to Eocene age. The three lower units, several hundred meters thick, represent the Cretaceous part of the Gosau Group (Summesberger 1997, Summesberger et al. 2000, 2002).

The Grünbach Formation consists of siltstones conglomerates, sandstones, siltstones, coaly siltstones and coal seams. Plant fossils are the most common fossils in the Grünbach Formation. Foraminifera from the Grünbach Formation at Maiersdorf belong to the Globotruncana elevata Zone (Lower Campanian) and the nanofossil association has been assigned to the Campanian UC 15 Zone (Hradecká et al. 2000). The predominating palaeogeography during the accumulation of the Grünbach Formation is that of a large island with unknown relief, at least temporarily connected to the continent. Terrestrial freshwater swamps and shallow water sediments indicate a relatively large deltaic plain under warm and humid climate conditions.

The Grünbach flora consists of 53 taxa assigned to horsetails, ferns, cycadophytes, conifers, monocotyledons and dicotyledons. With regard to the number of species it is dominated by angiosperms (about 70 % of species) followed by ferns, conifers and other groups of plants. The Grünbach vegetation experienced a humid sub-tropical climate with warm/hot summers and short relatively dry seasons (Herman & J. Kvaček 2000, 2002a, b).

SYSTEMATIC PART

Araciphyllites Wilde, Z. Kvaček et Bogner 2005

Type: *Araciphyllites tertarius* (Engelhardt) Wilde, Z. Kvaček et Bogner 2005, p. 159, Figs 1–3.

Araciphyllites austriacus J. Kvaček et Herman, sp. nov.

Figs 1, 2.

Holotype (designated here): NHMW 1999B0057/0183.

Locus typicus: Grünbach am Schneeberg, Segen Gottes Quarry (47°47'52" N, 15°59'17" E).

Stratum typicum: Grünbach Formation, Lower Campanian.

Etymology: Species named after the country of its origin.

Diagnosis. Leaves large, simple; elongate-lanceolate, entire-margined. Apex and base unknown. Venation eucamptodromous, parallel-pinnate. Midrib costa massive, deeply impressed, probably reaching the apex, consisting of numerous vascular bundles. Laterals emerging at low angle from midrib. Parallel venation consisting of three weakly differentiated vein subsets arranged according to the formula BdCdB. Transverse vein sets of two categories, connecting adjacent parallel veins or veins of the same subset (C–C, d–d) being oriented obliquely or perpendicularly. Areoles polygonal-quadrangular, elongate.

Description. For detailed description and discussion we refer to the paper by J. Kvaček and Herman (2004). The only specimen available is the holotype. It shows lanceolate elongate lamina 260 mm long. The leaf margin is entire, slightly bent to undulate in the basal part. The laterals in three poorly differentiated orders emerge at an angle of about 10° from a multistranded midrib.

Discussion. *Araciphyllites austriacus* shows a multistranded midrib, poorly differentiated laterals and perpendicular veins forming areoles – characters, which fit well with the diagnosis of the morphogenus *Araciphyllites* (Wilde et al. 2005). It differs from *Caladiosoma* Berry (1925), *Nitophyllites* Iljinskaja (1963) and *Musopsis* Boyd (1992) in having poorly distinguished primary laterals (ribs) and simple pattern of the venation between them.

Araciphyllites austriacus differs from the type of the morphogenus in two respects: 1) in having two orders of transverse veins, 2) in the lack of prominent submarginal vein

anastomoses along the leaf margin. However, the absence of anastomosing is probably due to poor preservation of the marginal venation of the specimen at hand.

A. austriacus shows a venation pattern similar to *Lysichiton* Schott, 1857 and *Orontium* Linnaeus, 1753, the basal members of the Orontioideae subfamily of the Araceae. The genus *Lysichiton* in particular, is remarkably similar to *A. austriacus* showing an incomplete wide multistranded midrib. *A. austriacus* differs from *Lysichiton* in having a higher number of lateral vein orders and two orders of transversal veins. The similarity of *A. austriacus* to other recent monocotyledon families is less pronounced. Members of the Alismataceae, Hydrocharitaceae and Limnocharitaceae differ from *A. austriacus* in lacking acrodromous venation with reticulate secondaries and the simple midrib.

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