

# Rectification of invalidly published new names for plants from the late Eocene of North Bohemia

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**ABSTRACT.** Valid publication of new names of fossil plant taxa published since 1 January 1996 requires a diagnosis or description in English, besides other requirements included in the International Code of Nomenclature for algae, fungi, and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress, Melbourne, Australia, July 2011 (McNeill et al. 2012). In order to validate names published from the late Eocene flora of the Staré Sedlo Formation, North Bohemia, diagnosed only in German (Knobloch et al. 1996), English translations are provided, including references to the type material and further relevant information.

**KEYWORDS:** plants, nomenclature, validation of new species, Late Eocene, North Bohemia, Czech Republic

## INTRODUCTION

The late Eocene flora of the Staré Sedlo (Altsattel) Formation in North Bohemia, Czech Republic, has been known from the very beginning of palaeobotanical research in this region. A monographic treatment of megafossils (except fossil wood) and palynology was issued by a team of three authors (Knobloch et al. 1996) specialising in Tertiary plant megafossil research (Erwin Knobloch and Zlatko Kvaček) and palaeopalynology (Magda Konzalová). The revision of the Staré Sedlo flora required much effort to gather the available information on taxonomy, stratigraphy, and correlation with adjacent regions in Europe. Mai (1995) included this flora in his *Floren-Komplex Hordle-Zeitz*. The preparation and production of the book took several years; it was finally published in 1996, thanks mainly to the efforts of my late colleague Erwin Knobloch. Since 1 January 1996 an English description or diagnosis is required for valid publication of plant names, including fossils. English translations are added here to meet this requirement and validate the new fossil taxa published there with German

diagnoses only (Knobloch et al. 1996). The type specimens, housed in the National Museum in Prague (prefixes NM G.), Senckenberg Natural History Collections Dresden, Museum of Mineralogy and Geology (MMG), and Natural History Museum in Vienna (NHM), are listed for each taxon. The illustrations are not repeated and are only referred to, as the publication is currently available at the Czech Geological Survey (CZ 118 21 Praha 1, Klárov 3, Czech Republic). To translate the remaining text written in German is beyond the scope of the present account.

## DIAGNOSES AND LOCATION OF TYPES

### *Daphnogene* Unger

#### *Daphnogene pseudopolymorpha*

Knobloch et Kvaček (in Knobloch et al. 1996, p. 41, pl. 8, fig. 7, pl. 11, fig. 11, pl. 13, figs 4–6, text-fig. 7c–f)

Leaves narrow-ovate to widely rounded-ovoid, widest in lower third, partly asymmetrical, basis

truncate. Two lower secondary veins opposite, reaching to half of leaf length or higher, both giving off abaxially rounded fields. Higher secondary veins bent, only weakly looping.

Holotype: NM G 6549 (Knobloch et al. 1996, pl. 13, fig. 6, text-fig. 7d – Staré Sedlo).

### *Laurophyllum* Göppert

#### *Laurophyllum syncarpifolium* (Friedrich)

Wilde forma *pallidum* Kvaček (in Knobloch et al. 1996, p. 49, pl. 16, fig. 6)

Leaves and fragments lanceolate, entire-margined, differing from typical form by having faintly staining guard and subsidiary cells and very slightly staining encircling cells. Stomata more widely spaced than in typical form, epidermis of both leaf sides almost of the same pattern as in typical form, with hypodermis almost hairless to densely pubescent.

Holotype. NM G 6818 (Knobloch et al., pl. 16, fig. 6 – Nový Kostel, drill-core NK 54, depth 123.5–124.5 m).

#### *Laurophyllum pseudoprinceps* Weyland

et Kilpper forma *eoprinceps* Kvaček (in Knobloch et al. 1996, p. 47, pl. 16, figs 1, 2)

Leaves entire-margined, coriaceous, strongly petiolate. Epidermal structure of abaxial leaf side as in typical form. Anticlinal cell walls of adaxial cuticle never with bead-like thickenings, mostly pitted or smooth, straight or slightly bent.

Holotype. NM G 6819 (Knobloch et al., pl. 16, figs 1, 2 – Nový Kostel, drill-core NK 37, depth 208–210 m).

### *Matudaea* Lundell

#### *Matudaea praemenzelii* Kvaček

(in Knobloch et al. 1996, p. 53, pl. 17, fig. 5, pl. 18, figs 4–7, text-fig. 14)

Leaves ovate, slightly asymmetrical, entire-margined, triveined, 25–30 mm wide, complete length unknown, venation brochidodromous, midrib thin, secondary veins widely spaced, intersecondary veins and tertiary veins dense, horizontal to midrib, tertiary veins oblique between secondary veins, dense, areolation polygonal, near midrib forming elongate fields

perpendicular to midrib. Leaves coriaceous, hypostomatic. Adaxial epidermis thickly cutinised, almost hairless, trichome bases solitary, outlines of cells polygonal-lobate, 23–40 µm in diameter, anticlinal cell walls more or less U-form undulate, in sinus slightly lens-shaped thickened. Abaxial epidermis also thickly cutinised, striate in costal areas. Ordinary cells polygonal, 22–35 µm in diameter, anticlinal cell walls fine and strongly undulate, costal cells almost straight-walled. Stomata brachyparacytic, pairs of guard cells widely elliptic, 26–28 (–30) µm by 17–19 (–22) µm in size, with wide, continuous stomatal ledges thickened on inner side, forming a spindle-shaped to widely spindle-shaped pore, stomatal polar T-shaped pieces developed. Two lateral subsidiary cells on the same level and of the same length as the guard cells. Trichome bases large (up to 60 µm in diameter), thickly cutinised, darker-staining, star-shaped with a polygonal central pore surrounded by two circles of smaller subsidiary cells. Trichome bases frequent on veins as well as dispersed in intercostal areas.

Holotype. NM G 6645 (Knobloch et al. 1996, p. 53, pl. 17, fig. 5, text-fig. 14 – Královské Poříčí, drill-core 36-H, depth 202.6–303.0 m).

### *Quercus* L.

#### *Quercus* (?) *haraldii* Knobloch et Kvaček

(in Knobloch et al. 1996, p. 86, pl. 8, fig. 9, pl. 30, fig. 6, pl. 33, figs 1–6, text-fig. 39a–g)

Leaves lanceolate, gradually narrowed towards base and apex, secondary veins arising at 30–60° angle from the thick midrib, often forked towards margin, though partly only abmedially. Secondary veins as well as branches mostly looping. Various thick intersecondary veins present. Tertiaries running irregularly between secondary veins. Quaternary venation a polygonal network.

Holotype. NHM 1882/C/2865 (Knobloch et al. 1996, p. 86, pl. 33, fig. 2, text-fig. 39g – Žitenice).

### *Engelhardia* Lesch.

*Engelhardia haraldii* Kvaček (in Knobloch et al. 1996, p. 91, pl. 18, figs 1–3, 8–11)

Leaflets (?) fragmentary, partly strongly asymmetrical, with rounded base, 2–4 cm wide,

complete length unknown. Leaf margin slightly wavy, petiolule short, thick. Midrib slightly bent; secondary veins at leaflet base, at least on one side of the lamina horizontal, curved. Venation eucamptodromous, tertiary veins simple or rarely forked, looping along margin. Areolation coarse, polygonal, not very distinct. Lamina thin, crisp. Adaxial cuticle less cutinised than abaxial cuticle, consisting of polygonal, straight-walled (to slightly wavy) cells ca 30 µm in diameter, hairless or with glandular trichome bases near margin. Abaxial cuticle smooth, ordinary epidermal cells polygonal, 20–30 µm in diameter. Anticlinal walls straight to bent. Stomata widely oval to circular (to transversally oval), very variable in size, 22–30 µm long and 18–30 µm wide, larger stomata cyclocytic, surrounded by one or two circles of narrow (up to 8) subsidiary cells, otherwise anomocytic. Stomatal ledges slightly thickened around a wide oval to spindle-shaped outer cavity, in optimally preserved samples also inner cavity slightly visible. Stomatal T-shaped pieces on poles rarely preserved. Abaxial cuticle covered by dense, peltate trichomes. Shield, if preserved, composed of many narrow, radially arranged cells, 45–90 µm in diameter, besides smaller trichomes with weakly cutinised shields. Trichome bases simple, uniform, with double outline, ca 15 µm in diameter. Simple, polygonal trichome bases with thickened margin and hollow central pore solitary on veins, probably left by simple trichomes.

Holotype. NM G 6614 (Knobloch et al. 1996, pl. 18, figs 10, 11 – Královské Poříčí, drill-core 36-H, depth 202.6–303.0 m).

### *Ternstroemites* Berry

*Ternstroemites magdae* Kvaček (in Knobloch et al. 1996, p. 94, pl. 17, fig. 8, pl. 34, figs 4–5, text-fig. 42g)

Leaves entire-margined, elongate, only fragmentarily preserved, 15–25 mm wide, base cuneate, venation scarcely visible, pinnate, secondary veins at 60° angle. Leaves hypostomatic. Adaxial epidermis strongly cutinised, with very distinct costal fields, hairless. Cells polygonal (to trigonal) in outline, 7–20 µm in diameter, with almost straight to slightly undulate anticlinal walls with slight thickenings. Abaxial epidermis less strongly cutinised. Ordinary cells polygonal-lobed in

outline with more or less intense (Ω-form) undulating anticlinal walls. Stomata cyclocytic (to incompletely bicyclic). Subsidiary cells narrow, mostly 6–8, forming strongly cutinised, rugose ring around guard cells. Guard cell pairs widely oval, circular to transversally oval, 15–28 µm long and 20–32 µm wide, on outer periclinal walls with concentric wrinkles. Stomatal ledges thick, passing through cell length, on poles slightly narrowed. Outer cavity elliptic, ca half the length of guard cells. Radial fine striation around some solitary stomata (? hydatods). Trichome bases simple, star-shaped (mostly 10 µm in diameter) surrounded with strongly cutinised ring of subsidiary cells, rare in intercostal areas, more often on midrib. Simple unicellular trichomes belonging to bases up to 45 µm long, rarely preserved. Rounded cork warts (ca 80 µm in diameter) composed of small cells, commonly dispersed on abaxial side.

Holotype. NM G 6628 (Knobloch et al. 1996, pl. 17, fig. 8 – Královské Poříčí, drill-core 40-H, depth 85.5 m).

### *Crassulaceophyllum* Kräusel et Weyland

*Crassulaceophyllum eocenicum* Kvaček  
(in Knobloch et al. 1996, p. 106, pl. 34, figs 9–10)

Leaves probably entire-margined, hypostomatic. Details of gross morphology unknown. Adaxial cuticle straight-walled, smooth, cells polygonal, 15–30 µm in diameter, anticlinal walls seen in double lines (deeply cutinised). Abaxial epidermis very thinly cutinised, smooth. Ordinary cells polygonal, ca 30 µm in diameter, with straight to slightly wavy anticlines. Stomata anisocytic. Guard cell pairs sunken, on outer periclinal walls forming narrow oval contact area (12–20 µm long and 7–14 µm wide), remains of guard cells rarely preserved, darkly staining, reniform, slightly radially striate. Complete width of guard cell pairs up to 20 µm. Stomatal ledges thickened only in middle, surrounding spindle-shaped outer cavity. Pore linear. Subsidiary cells 3, rarely more, uneven in outline, forming simple (or double) ring. Glabrous.

Holotype. NM G 6790 (Knobloch et al. 1996, pl. 34, figs 9, 10 – Nový Kostel, drill-core NK 17, depth 141.3 m).

*Dicotylophyllum* Saporta

*Dicotylophyllum magnolioides* Knobloch et Kvaček (in Knobloch et al. 1996, p. 111, pl. 9, figs 1–3, text-figs 56a, b, 57a, d)

Leaves ovate to widely ovate, 14 cm long, 7.6 cm wide, entire-margined. Base cuneate, apex short, acuminate. Midrib very wide (up to 2 mm at base, up to 1 mm near apex). Secondary veins straight or only slightly curved, running towards margin, probably looping (hardly visible due to thin vein endings). Occasionally forking at variable distances (in first or also last quarter of length). Originating from midrib at narrow angles (30–40°). Tertiaries arising from first pair of secondaries curved, looping with the margin, tertiaries between secondaries very weak, hardly visible, oriented obliquely to perpendicularly.

Holotype. MMG Ss 10 (Knobloch et al. 1996, pl. 9, fig.1, text-fig. 56a – Staré Sedlo).

*Dicotylophyllum rossmaessleri* Knobloch et Kvaček (in Knobloch et al. 1996, p. 114, pl. 8, fig. 2, pl. 21, fig. 6 (cf.), pl. 23, fig. 2, pl. 35, figs 4–6, text-figs 59a–g)

Leaves entire-margined, linear (3.5 cm wide in the length of 23 cm). narrowing to a long elongated apex. Base mostly cuneate. Secondary veins originating from the midrib at ca 30° angle, eucamptodromous, without

interconnecting each other. Tertiary veins in holotype very dense, perpendicular to midrib.

Holotype. MMG Ss 56 (Knobloch et al. 1996, pl. 8, fig.2, text-fig. 59f – Staré Sedlo).

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