

**LECTOTYPIFICATION OF *BETULA BOMIENSIS*
P.C. LI (*BETULACEAE*)**

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The herbarium sheet cited as holotype of *Betula bomiensis* (*Betulaceae*) contains two distinct elements belonging to different subsections of the genus *Betula*. One of these elements is here designated as the lectotype.

Keywords. *Betula bomiensis*, lectotypification, Tibet, Xizang.

Betula bomiensis was described by P.C. Li (1983) in *Flora Xizangica*; the brief Latin diagnosis is accompanied by a fuller Chinese description, a key to the species of *Betula* recorded from Xizang (Tibet) and a drawing. The holotype cited is *Huang Yung-fu* 776, collected in August 1979 near Pomi (Bomi) in southeast Tibet, at 3300m. The diagnosis reads ‘Species affinis *B. delavayi*, sed foliis majoribus, orbiculare-ovatis; infructibus minoribus differt’. The drawing on p. 485 of Li (1983), reproduced here as Fig. 1, shows: (1) a sterile leafy extension shoot, (2) a fruiting shoot with spur growths but lacking extension growth, (3) bract scales, and (4) a fruit. In *Flora Xizangica*, *B. bomiensis* keys out close to *B. delavayi* Franch., but away from *B. cylindrostachya* Lindl., *B. platyphylla* Sukaczew (*B. szechuanica* (Schneider) Jansen) and *B. utilis* D. Don.

The drawing shows considerable contrast between the sterile shoot and the fruiting portions. This is most evident in the venation and toothing and suggests that the collection is a mixture of two elements. Examination of the holotype (*Huang* 776, PE) confirmed this to be the case. The herbarium sheet (Fig. 2) comprises a fruiting shoot (specimen A) mounted into the crotch of a V-shaped sterile shoot (specimen B). The two specimens are not connected and clearly only one can be the holotype. The foliage on the two parts is also quite different, but matches the drawings.

The fruiting specimen (A) has foliage on spur shoots but no extension shoots. The spur shoots comprise 2 or 3 oval leaves with blades 1.2–3.8 × 0.6–2.6cm, with petioles of 0.3–0.5cm. Leaf veins range from 4 to 11 pairs. The veins are impressed on the upper surface, with pilose hairs (2mm) and some colleters; on the underside the veins are raised. The midrib and secondary veins are pilose with whitish hairs but the tertiary veins are papillose. Each vein runs out to a sinus and there are 1 or 2 short triangular teeth between each vein-terminating sinus. The shoot, which is two or more years old, is smooth and slender with a few oval lenticels but no warts. The mature catkins are 1.7–2cm long and held erect on densely pilose pedicels of 0.3cm. The bract scales are as in the drawing (Fig. 1: 3), with marginal hairs

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0.5–1mm long. The fruit is approximately 2mm long with a very narrow opaque wing less than a quarter of the width of the fruit and more than 2 cells thick.

The sterile specimen (B) has both extension shoots and spur shoots. The leaves are ovate-orbicular with rounded or subcordate bases on the spur shoots and at the base of the extension shoots, but become more ovate to oval on the extension shoots. The leaf blades are somewhat warty above, 4.0–7.6 × 2.4–6.0cm on grooved, pilose and glandular petioles 0.8–1.2cm long. The veins are in c.9 pairs which are slightly impressed above with some white pilose hairs (especially on extension shoots); on the underside they are raised and hairy on the midrib and lower part of the secondary veins. The veins end in a triangular tooth. The leaf margin is simply toothed, with 2–4 teeth between each vein-terminating tooth. The extension shoots are strongly warty with some white pilose hairs. The buds are ovoid and pointed, with white pilose hairs.

The strongest character which clearly places the two elements in different species is the vein-tooth character. This places specimen A in the group including *B. delavayi*, which Schneider (1916) named as subsection *Chinenses*, also comprising *B. chinensis* Maxim., *B. potaninii* Batalin and *B. calcicola* (W.W. Sm.) P.C. Li. The narrow, thicker wing to the fruit, the upright mature strobilus and the general appearance given by the closely spaced, deeply impressed leaf veins are also consistent with specimen A being in subsection *Chinenses*. Specimen B however appears to be close to *B. utilis*, as suggested by the presence of warts on the twig and the larger leaves with much less deeply impressed veins.

The Latin diagnosis unequivocally relates *B. bomiensis* to *B. delavayi*, although the only diagnostic characters given are foliage characters of specimen B and the ‘smaller fruits’ of specimen A. Three of the four drawings (Fig. 1: 2, 3 and 4) are drawn from specimen A and only Fig. 1: 1 is drawn from specimen B. Taking these factors together leads inescapably to the conclusion that specimen A provides a better fit with the range of characters ascribed to *B. bomiensis* and it is here selected as the lectotype.

Betula bomiensis P.C. Li, *Flora Xizangica* 1: 484 (1983). Type: *Huang 776* (holo. PE). Lectotype (chosen here): *Huang 776* part A.

In *Flora of China*, volume 4 (1999), Li & Skvortsov treat *B. bomiensis* as a synonym of *B. delavayi* var. *microstachya*. This is described in the key (p. 308) as ‘Leaves 1.5–2cm, lateral veins 5–10 on each side of midvein; female inflorescence ca. 10mm × 5mm’, although the main description under the varietas has ‘Leaves 2–2.5 × 1–1.5cm; lateral veins 5–10 on each side of midvein. Female inflorescence

FIG. 1. A reproduction of the drawing of *Betula bomiensis* from Li (1983). (1) A sterile leafy extension shoot, (2) a fruiting shoot with spur growths but lacking extension growth, (3) bract scales, and (4) a fruit.

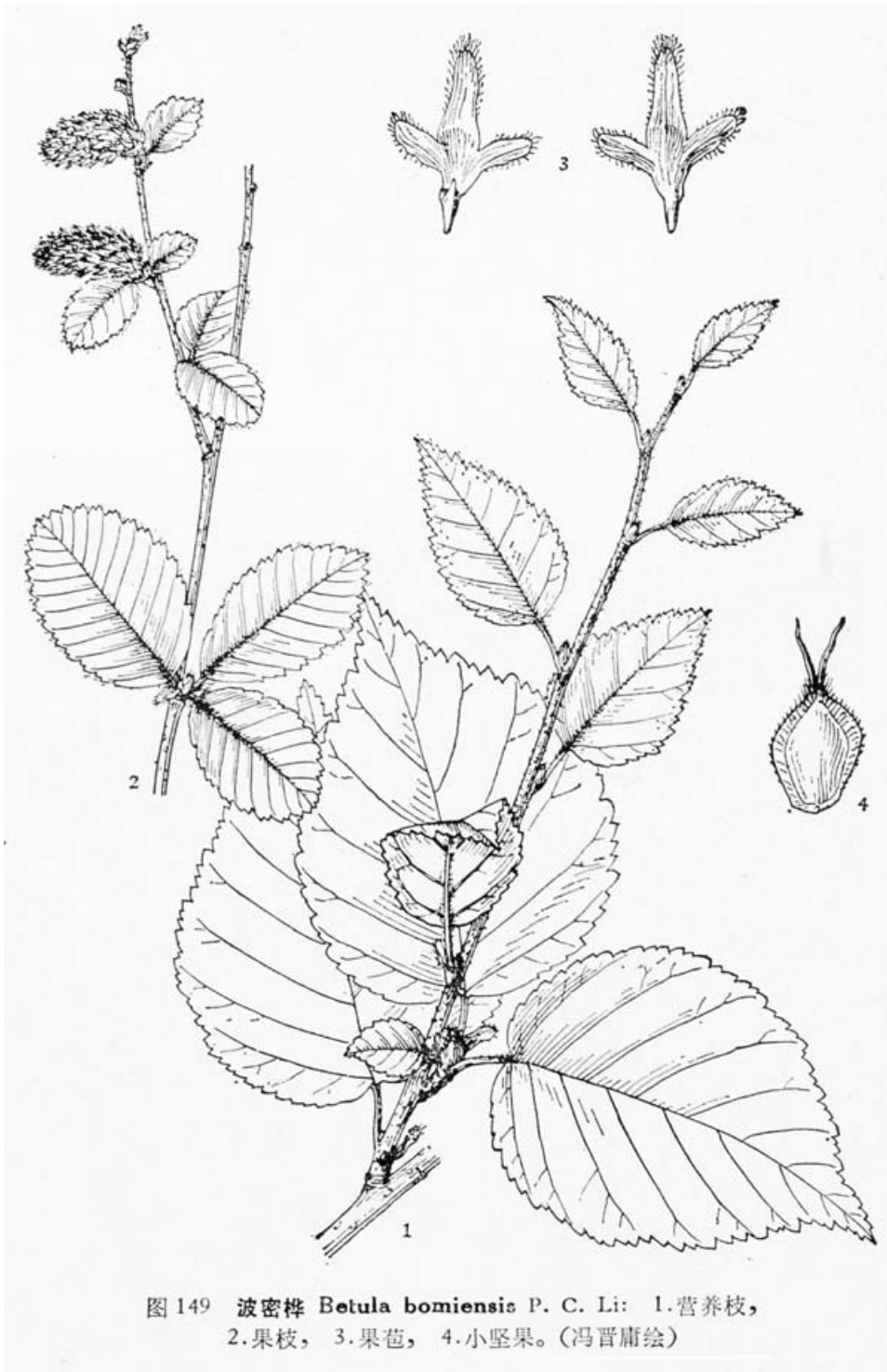


图 149 波密桦 *Betula bomiensis* P. C. Li: 1. 营养枝, 2. 果枝, 3. 果苞, 4. 小坚果。(冯晋庸绘)

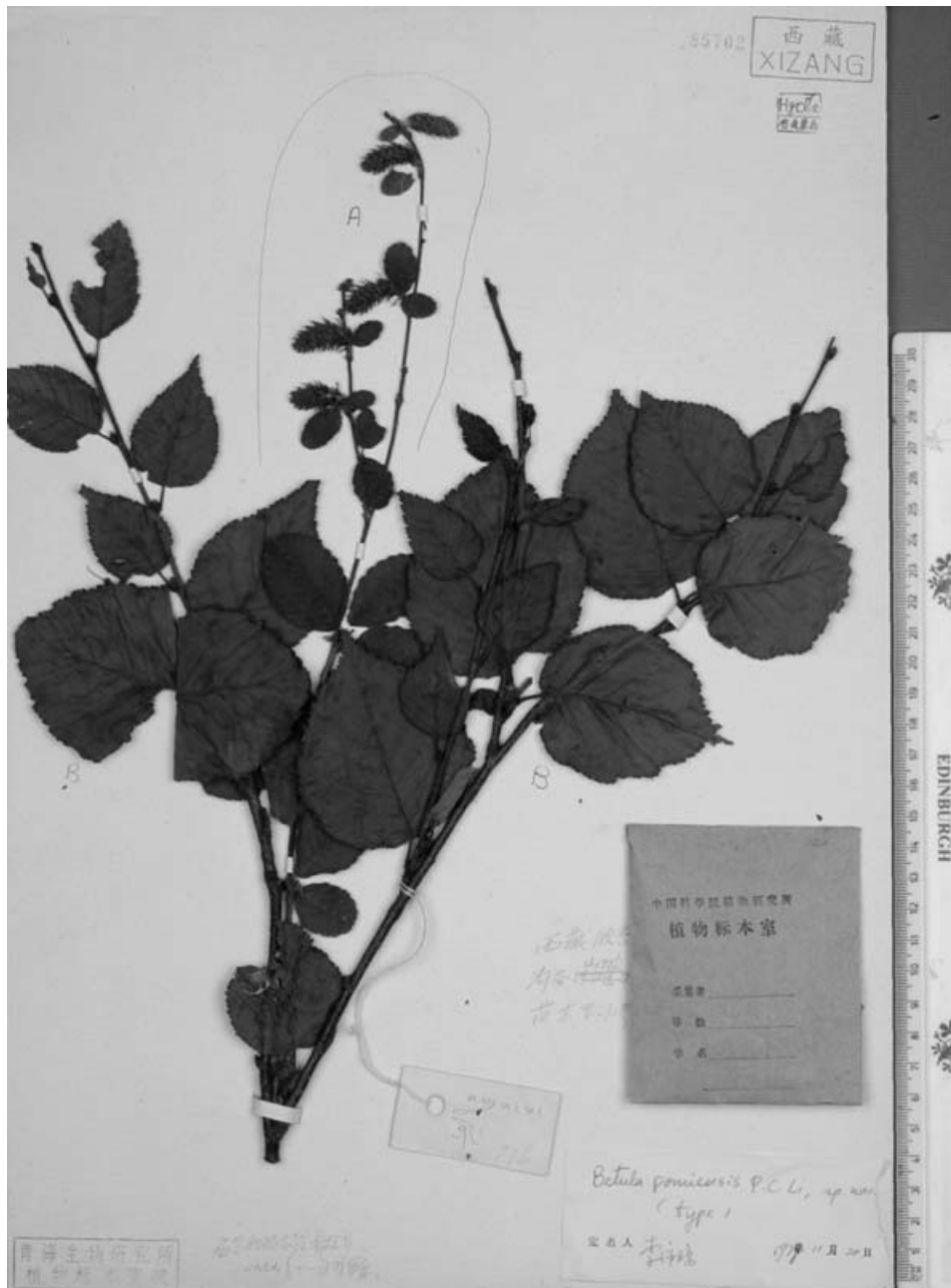


FIG. 2. Herbarium sheet of the holotype of *Betula bomiensis* (Huang 776, PE).

oblong, 1–1.5cm × 5–10mm². As noted above, the lectotype (specimen A) has larger leaves (1.2–3.8 × 0.6–2.6cm), veins in 4–11 pairs and mature catkins 1.7–2cm long. Only in the vein count does *B. bomiensis* agree with *B. delavayi* var. *microstachya*.

Betula bomiensis from the valley in southeast Tibet running from Bagu to Nambu, at c.29°59'43"N, 94°38'47"E, 3300m (where it occurs with *B. utilis*), closely matches the lectotype, differing only in the leaves having 10–13 pairs of veins with 1–3 somewhat acuminate teeth between each vein-ending sinus. Hugh McAllister (pers. comm.) reports that this population is tetraploid ($2n=4x=56$), whereas *B. delavayi* from Yunnan is hexaploid ($2n=6x=84$) and *B. potaninii* and *B. calcicola* are both diploid ($2n=2x=28$). There is thus a difference in ploidy level which separates *B. bomiensis* from its closest relative, *B. delavayi*, and indeed all other species in section *Chinenses*. Further study is required to find the most suitable characters to distinguish these species. McAllister suggests, after a preliminary glance through the Edinburgh herbarium, that specimens of *B. bomiensis* and *B. delavayi* are mixed under the name *B. delavayi*.

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