

Tupistra hongheensis (Ruscaceae), a new species from Yunnan, China based on morphological, karyotypic, and pollen morphological studies

¹Guang-Wan HU* ¹Heng LI ¹Ying TAN ²Yan LIU ¹Chun-Lin LONG*

¹(Key Laboratory of Economic Plants and Biotechnology, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China)

²(Guangxi Institute of Botany, Guangxi Zhuang Autonomous Region and Chinese Academy of Sciences, Guilin 541006, Guangxi, China)

Tupistra hongheensis G. W. Hu & H. Li, sp. nov.

红河长柱开口箭 (S6-4. Fig. 1, S6-6. Fig. 3)

Type: **China. Yunnan:** Honghe Prefecture, Mengzi County, Shuitian village, Wantian, on limestone cliff, under evergreen forest, alt. 1070 m, 2011-09-24, G. W. Hu & Y. Tan HGW-00855 (holotype, KUN!; isotype, KUN!).

Latin diagnosis: Species *T. grandistigmae* F. T. Wang & S. Y. Liang similis, sed rhizomate longo, perianthio albo, stamine medio lobi perianthii inserto, polline flavo, stigmathe peltato differt; etiam similis *T. longispicae* Y. Wan & X. H. Lu, sed rhizomate longo, perianthio albo, polline flavo, stigmathe albo, stylo 10–12 mm longo differt.

Morphological description: Perennial herb. Rhizome to 1 m long, basally creeping, apically ascending, single or few-branched, 2–3 cm thick. Leaves 8 or more, on the top of rhizome, 2–6 per year, distichous and equitant, 8–10 sheaths between two adjacent yearly leaf clusters. Sheaths ovate to lanceolate, 1–19 cm. Leaf blade oblong-oblancheolate, 64–80 × 7–10 cm, apex acuminate, base narrowing gradually into petiole-like. Spike 11–13 cm, erect, 31–37-flowered; peduncle 9–11 cm, with one sterile bract near the middle. Bracts 2 per flower, greenish white; outer one bigger, under the flower, concave adaxially, saccate with a flat top, apex obtuse, ca. 3 × 3 mm; inner one smaller, beside the flower, ovate, 1–2 × ca. 1 mm. Perianth white turning yellow, shortly campanulate, tube ca. 4 mm, lobes recurved, ovate, 7–8.5 × ca. 5 mm. Stamens on the middle of perianth lobes; filaments basally widened, free part ca. 1 mm; anthers elliptic, introrse, ca. 1.5 mm; pollen yellow. Pistil 12–13 mm, white; ovary subglobose; style 10–12 mm; stigma peltate, suborbicular, dilated, 6–7 mm in diam., slightly 3-lobed. Fruit subglobose, surface subsmooth. Seeds 1–4. Flowering from September to October.

Additional statements: In *Tupistra hongheensis*, chromosomes are trimodal in length and asymmetry type of karyotype is 2C (S6-6. Fig. 3). The pollen grains of *T. hongheensis* are spheroidal, inaperturate, with regulate-tuberculate exine sculpture. The diameters of pollen grains are between 25.71 and 30.48 μm (S6-6. Fig. 3).

Distribution: Only two populations of *Tupistra hongheensis* were found in Honghe Prefecture of SE Yunnan, China, occurring on limestone cliff and rocks under evergreen forests at altitude 1070–1240 m. One population is in Mengzi County, comprising approximately 200 individuals. The other population is in Hekou County, comprising approximately 100 individuals. The habitat of these two populations has been seriously disturbed by crop farming and road building. According to the IUCN (2008), this new species should be regarded as endangered (EN).

Additional specimens examined:

China. Yunnan: The same location as the holotype, 2010-09-13, G. W. Hu HGW-00584 (KUN); the same location as the holotype, 2011-08-28, G. W. Hu & D. K. Zhao HGW-00812 (KUN); Honghe Prefecture, Hekou County, Yaoshan, alt. 1240 m, 2011-08-29, G. W. Hu & D. K. Zhao HGW-00817 (KUN).

Online supplementary data:

The following supplementary materials are available online for this article at http://onlinelibrary.wiley.com/doi/10.1111/jse.12008_6/supinfo:

S6-1. Doc. 1. Background and additional discussion.

S6-2. Table 1. Morphological comparison of *Tupistra hongheensis* G. W. Hu & H. Li, *T. grandistigma* F. T. Wang & S. Y. Liang and *T. longispica* Y. Wan & X. H. Lu.

S6-3. Table 2. Comparison of chromosome parameters among *Tupistra hongheensis* G. W. Hu & H. Li, *T. grandistigma* F. T. Wang & S. Y. Liang and *T. longispica* Y. Wan & X. H. Lu.

S6-4. Fig. 1. *Tupistra hongheensis* G. W. Hu & H. Li.

S6-5. Fig. 2. *Tupistra grandistigma* F. T. Wang & S. Y. Liang and *T. longispica* Y. Wan & X. H. Lu.

S6-6. Fig. 3. Somatic chromosome and pollen grains of *Tupistra hongheensis* G. W. Hu & H. Li.

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* Authors for correspondence. GW HU. E-mail: guangwanhu@mail.kib.ac.cn. Tel.: 86-13708703508. Fax: 86-871-5223318. CL LONG. E-mail: long@mail.kib.ac.cn. Tel.: 86-871-5223318. Fax: 86-871-5223318.