

## NOTES ON TAXONOMIC RECOGNITION AND RECOLLECTION OF *TUPISTRA NUTANS* (ASPARAGACEAE)

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### Abstract

*Tupistra nutans* Wall. in Lindl. (Asparagaceae), an endemic species of Indo-Burma Biodiversity Hotspot is recollected after a long gap of more than a century. A brief description, along with its photograph is presented. Taxonomic relationships with allied species are discussed.

**Keywords:** Endemic, Indo-Burma.

### INTRODUCTION

The genus *Tupistra* Ker Gawl. belonging to Asparagaceae subfamily Nolinoideae (Chase et al., 2009) comprises about 31 species (Roy et al., 2017a,b; Averyanov et al., 2018; Roy and Mao 2018; Odyuo et al., 2018) in the world. It is distributed in south and south-east of continental Asia, including Nepal, Bhutan, India, Myanmar, China, Laos, Vietnam, Thailand and Malaysia (Tanaka 2003a,b; Tanaka 2010a,b; Averyanov et al., 2016). There are 8 species of the genus in India (Roy et al. 2017a,b; Roy and Mao 2018; Odyuo et al., 2018). They are *Tupistra ashiohi* D.K. Roy, N. Odyuo & Aver., *T. clarkei* Hook.f., *T. khasiana* D.K. Roy, A.A. Mao & Aver., *T. leonidii* D.K. Roy & A.A. Mao, *T. nutans* Wall. in Lindl., *T. nagarum* N. Odyuo, D.K. Roy & A.A. Mao, *T. stoliczana* Kurz and *T. tupistroides* (Kunth) Dandy. Of these, five species namely *T. ashiohi* (Assam, Meghalaya), *T. khasiana* (Meghalaya), *T. leonidii* D.K. Roy & A.A. Mao (Meghalaya), *T. nagarum* N. Odyuo, D.K. Roy & A.A. Mao (Nagaland) and *T. tupistroides* (Meghalaya, Sikkim) are Indian endemics (Tanaka 2010a; Roy et al., 2017a,b; Roy and Mao 2018; Odyuo et al., 2018).

*Tupistra nutans* Wall. in Lindl. was described from the frontiers of Sylhet,

Bangladesh in the year 1829 by Wallich in Edwards's Botanical Register (Lindley 1829). Later on, the species was reported from Khasia Hills, India by Griffith (5885 (K!)) and C. B. Clarke (1886, 45292B (K!); 1871, 16577A (BM!), 16577D (K!)). Subsequent workers say Hara (1975) reported it from Sikkim, India and Noltie (1994) from Bhutan erroneously. Tanaka (2010a) while revised the genus *Tupistra* mentioned that the material of Hara (1975) recorded from Sikkim, India actually agrees with *T. clakei* Hook.f., whereas, the record of it from Bhutan is doubtful. Thus, he revealed that *T. nutans* is confined to Khasia Hills, India and Sylhet, Bangladesh and not found on the Himalayas. During field botanical survey in the year 2006, one of the authors (BKS) could relocate it in Nokrek Biosphere reserve (near Chandigre village under West Garo Hills, 25°31'45.28" N and 90°19'55.88" E), Meghalaya, India. The identity of the species is confirmed based on critical observations of available specimens and consultation with literature (Lindley 1829; Hooker 1831; Hooker 1894; Liang and Tamura 2000; Bhaumik and Gogoi 2008; Tanaka 2003a; Tanaka 2010a,b; Averyanov and Tanaka 2012; Hu et al., 2013; Vislobokov et al., 2014; Averyanov et al., 2015, 2016, 2017, 2018; Roy et al. 2017a,b; Roy and Mao 2018).

Morphologically it is allied to *T. clarkei* Hook.f., *T. leonidii* D.K. Roy & A.A. Mao and *T. tupistroides* (Kunth) Dandy. A brief description, along with its photograph (Fig. 1) is presented. Taxonomic relationships with allied species are discussed.

### TAXONOMIC TREATMENTS

*Tupistra nutans* Wall. in Lindl. in Edward's Bot. Reg. 15: t. 1223 (1829); Hook. in Bot. Mag. 58: t. 3054 (1831); Wall., Numer. List 5193 (1831–1832); Bl., Tijdschr. Natuurl. Gesch. Physiol. 1: 83 (1834); D. Dietr., Syn. Pl. 2: 1123 (1840); Kunth, Enum. Pl. 5: 318 (1850); Tanaka, Makinoa New Series 9: 55–93.

**Type:**— Sylhet. November, *Wallich 5193* (lectotype, K!; isolecto-BM!).

Terrestrial perennial herb. Rhizomatous stem cylindrical, ascending, 1.5–1.7 cm in diameter. Cataphylls linear-lanceolate, to 24 cm long, 1.5 cm broad. Leaves 1 or 2 produced annually from shoot apex, narrowly oblanceolate or narrowly oblong-oblanceolate, to 112 × 9.5–12 cm, acute or acuminate at apex, tapering gradually to petiole. Peduncle green, erect, slightly declinate distally, terete, usually 3–4 times longer than spike, 17–25 cm long, arising from apical part of stem, axillary. Spike pendulous, densely up to 23-flowered, 5–7 cm long. Bracts 2 per flower; outer bract borne below and adjacent to flower, lanceolate, deltoid-ovate or ovate, 7–12 mm long, to 8 mm broad; inner bract (bracteole) lanceolate, to ca. 6 mm long, borne lateral to flower. Flowers sessile. Perianth campanulate, 6-cleft, fleshy; tube 5–6 mm long; lobes narrowly ovate, recurved, 6–6.5 mm long, 3–4.5 mm broad, pale yellowish brown to greenish with purple streaks/dots ventrally. Stamens 6; anthers subsessile, dorsifixed, oblong, introrse, inserted at apex of perianth tube, concealed by stigma, 1–1.5 mm long. Pistil 1; style columnar, 4.5–6

mm long; stigma white, subcapitate, with 3-lobes and undulated limb, 3–6 mm across; ovary superior, situated at the base of columnar pistil, ca. 1 mm high, 3-locular. Fruit not seen.

**Flowering:** September–October.

**Distribution:** India (Meghalaya: Khasi and Garo Hills), Bangladesh (Sylhet).

**Specimens examined:** INDIA. Meghalaya, Garo Hills, Nokrek Biosphere reserve, 14.10.2006, *BK Singh 3270* (BSIS).

**Taxonomic recognition:** *Tupistra nutans* (Lindley 1829; Hooker 1831; Tanaka 2010a) superficially resembles *T. clarkei* (Hemsley 1904; Tanaka 2010a), *T. leonidii* (Roy and Mao 2018) and *T. tupistroides* (Dandy 1932; Alexander 1961; Tanaka 2010a). However, *T. nutans* differs from *T. clarkei* in erect to distally declinate, 17–25 cm long peduncle, usually 3–4 times longer than spike (vs. pendulous, to 12 cm long, nearly as long as spike), densely up to 23-flowered 5–7 cm long spike (vs. 30-flowered, to 11 cm long), subcapitate white stigma large enough to close the orifice of the perianth tube and concealing the anthers (vs. peltate, apically nearly flat, dark purple, not large enough to conceal the anthers located at the orifice of the perianth tube) and in less distinctly stipitate anthers (distinctly stipitate). While, *T. nutans* differs from *T. leonidii* in narrowly oblanceolate or narrowly oblong-oblanceolate leaf blade, to 112 cm long (vs. obliquely oblong-elliptic, 23–28 cm long), comparatively longer peduncle, to 25 cm long and spike, to 5–7 cm long, with up to 23-flowers (vs. peduncle up to 10 cm long, spike to 3 cm long, with 10–12-flowers), larger perianth tube, 5–6 mm long (vs. very short, 1.5–2 mm long), longer style, 4.5–6 mm long (vs. 2–3 mm long) and in subcapitate, white stigma without purple spots (vs. hemispheric to hemioblate, white speckled with purple). Whereas, *T. nutans* is distinct from *T.*

*tupistroides* in erect to distally declinate peduncle, usually 3–4 times longer than spike (vs. pendulous, 1–2 times longer than spike), densely up to 23-flowered spike (vs. laxly 6–17-flowered), narrowly ovate perianth lobes 6–6.5 mm long, pale yellowish brown to greenish with purple streaks/dots ventrally (vs. ovate, 5.5–10 mm long, dark purple ventrally) and in white, subcapitate stigma with 3-lobes and undulate limb (vs. purplish pink, hemispheric with denticulation at margin).



Figure 1: *Tupistra nutans* – a. Habit [from BK Singh 3270 (BSIS)]; b. Spike.

**Recollection:** Observations of available specimens and consultation with literature reveal that the last collections of *T. nutans* were made by C. B. Clarke (1886, 45292B (K!); 1871, 16577A (BM!), 16577D (K!)) from Khasia Hills of Meghalaya, India. The subsequent reports of the species from Sikkim by Hara (1975) and from Bhutan by Noltie (1994) are erroneous (Tanaka 2010a).

Therefore, the present report of it from Garo Hills, India is a recollection after a long gap of more than a century. Thus, the present distribution of the species is restricted only in the state of Meghalaya, India and in the frontiers of Sylhet, Bangladesh, which come under the region of Indo-Burma Biodiversity Hotspot.

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