

Tupistra nagarum (Asparagaceae), a new species from Nagaland, North-eastern India

Nripemo Odyuo, Dilip Kumar Roy✉ and Ashiho A. Mao

Botanical Survey of India, Eastern Regional Centre, Lower New Colony, Laitumkhrah, Shillong – 793 003, Meghalaya, India.

✉Corresponding author: dilipbsierc@gmail.com

टूपिस्ट्रा नागारम (एस्परेगेशी), नागालैंड, उत्तर पूर्वी भारत से एक नवीन जाति

नेरिपेमो ओड्यूओ, दिलीप कुमार रॉय एवं आशिहो ए. माओ

सारांश

नवीन जाति टूपिस्ट्रा नागारम एन. ओड्यूओ, डी. के. रॉय एवं ए. माओ, कुल एस्परेगेशी के अन्तर्गत आती है जिसे भारत के उत्तर-पूर्वी राज्य नागालैंड से अन्वेषित एवं वर्णित किया गया है। इस जाति की समानता इसकी अन्य संबद्ध जातियों से की गई है और वर्गिकी कुंजी उपलब्ध करवाई गई है।

ABSTRACT

Tupistra nagarum N. Odyuo, D. K. Roy & A. A. Mao, a new species belonging to the family Asparagaceae from Nagaland, north-eastern India is described and illustrated. Its affinities to the allied species are discussed and taxonomic key is presented.

Keywords: Nagaland, India, New Species, *Tupistra nagarum*, Asparagaceae.

INTRODUCTION

The genus *Tupistra* Ker Gawler (Asparagaceae) is greatly diversified with 30 species (Roy & al., 2017a, b; Averyanov & al., 2017, 2018; Govaerts 2018; Roy & Mao, 2018) in south and south-east of continental Asia, including Nepal, Bhutan, India, Myanmar, China, Laos, Vietnam, Thailand and Malaysia (Tanaka 2003a, b, 2010a, b; Averyanov & al., 2016). In India, it is so far represented by 7 species namely *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. stoliczana* Kurz and *T. tupistroides* (Kunth) Dandy, of which *T. ashiohi* (Assam, Meghalaya), *T. khasiana* (Meghalaya), *T. leonidii* D.K. Roy & A.A. Mao (Meghalaya) and *T. tupistroides* (Meghalaya, Sikkim) are Indian endemics (Tanaka 2010a; Roy & al., 2017a,b; Roy & Mao, 2018). During field exploration in October 2016 to Hekeshe village forest under Medziphema sub-division of Dimapur district, Nagaland, north-eastern India under Approved Research Programme – “State flora of Nagaland” by the Botanical Survey of India, the authors (NO & DKR) encountered one interesting plant of Asparagaceae. It was growing in moist shady places on

the banks of Atoghoki stream in evergreen forest floors. After critical study of the specimens and consultation of literature (Lindley 1829; Hooker 1831; Hooker 1894; Hemsley 1904; Alexander 1961; Dandy 1932; Liang & Tamura, 2000; Bhaumik & Gogoi, 2008; Tanaka 2003a, 2010a, b; Averyanov & Tanaka, 2012; Hu & al., 2013; Vislobokov & al., 2014; Averyanov & al., 2015, 2016, 2017; Roy & al., 2017a,b; Roy & Mao, 2018) revealed that the plant belongs to the genus *Tupistra* and is closely related to *Tupistra clarkei*, *T. nutans* and *T. tupistroides*, but differs in many diagnostic characters (Table 1) which warrant its description as a new species.

TAXONOMIC TREATMENTS

Tupistra nagarum N. Odyuo, D.K. Roy & A.A. Mao, *sp. nov.* (Figs 1, 2)

The new species differs from its allied congeners, *T. clarkei* in erect to down curved, up to 30 cm long peduncle, laxly flowered spike, ventrally dark purple perianth lobes and in white, hemispheric stigma nearly closing the orifice of the perianth tube and concealing the anthers; from *T. nutans* in laxly up to 30-flowered, 10–13 cm long spike, retrorse flowers, ventrally dark purple perianth lobes and in hemispheric stigma and from *T. tupistroides* in erect to down curved peduncle, up to 30-flowered spike and in white stigma.

Type: INDIA, Nagaland, Dimapur district, Medziphema sub-division, Hekeshe village forest, 1003 m, 08.10.2016, N. Odyuo & D.K. Roy 136745 (holotype, ASSAM; isotype, ASSAM).

Lithophytic or terrestrial, perennial herb, with leaves up to 175 cm long. Rhizomatous stem suberect to erect, stout, with dense nodes, 1.5–2.5 cm in diam., white inside. Roots many, cord-like, thick, fleshy, 5–7 mm in diam., velutinous. Sheath leaves straight, ensiform, 7–30 × 1.5–2 cm. Leaves 2–4, basal, erect, distinctly petiolate, 120–175 cm long including petiole; petioles adaxially channelled, 30–50 cm long; leaf blade oblanceolate, 90–125 × 5.5–11.5 cm, acuminate at apex, tapering to the base, uniform glossy green, leathery, entire, with prominent midvein abaxially. Peduncle slightly erect to down curved, 22–30 cm long, 0.4–0.6 cm in diam., smooth, purplish-green, arises from apical part of stem, axillary, with no sterile bracts. Spike pendulous, 10–13 cm long, laxly 10–30-flowered; rachis

twisted, slightly angled longitudinally, fleshy. Bracts 2 per flower, fleshy, borne shortly apart from flowers; outer bract borne below flower, broadly ovate, 3–4 × 4.5–5 mm, concave, light purplish, rounded at apex; inner bract (bracteole) borne lateral to flower, ovate-lanceolate, 3–3.5 × 2.5–3 mm, light purplish white, apex reflexed. Flowers sessile, 1.2–1.5 cm across, retrorse. Perianth campanulate, 6-cleft, fleshy; tube 7–10 mm long, light purplish-white externally, white below the anthers inside; lobes ovate, 5–10 × 4.5–6 mm, dark purple inside, light purple outside, spreading, strongly reflexed on anthesis projecting the stigma, apex acute. Stamens 6; filaments incurved, to 1 mm long; anthers dorsifixed, broadly ovate, introrse, 1.5–2 × 1.5–2 mm, light yellowish, arising from the throat of the perianth tube. Pistil mushroom-shaped, 9–13 mm long including ovary; style pale yellow to creamy white, columnar, slightly broadening upward, 5–7 × 1.5–2 mm, glabrous; stigma much exceeds tube, not concealing the stamens, hemispheric, 6–6.5 mm in diam., 2.5–3.5 mm in height, pale yellow to completely white, distinctly lobed at margin; ovary superior, situated at the base of columnar pistil, 1.5–2.5 mm high, 2–2.5 mm in diam., light purple, 3-locular. Fruits globular, 2.5–3 cm in diam., muricate, green, 3-seeded; seeds ellipsoidal, white, shining, 1.8–2 × 1.3–1.5 cm.

Flowering & Fruiting: September – December.

Etymology: The new plant species is named in honour of the Naga tribe inhabiting the state of Nagaland, India.

Distribution: INDIA. Nagaland (Dimapur district, Hekeshe village forest). So far only known from the type locality.

Affinities: Superficially *Tupistra nagarum* N. Odyuo, D.K. Roy & A.A. Mao is close to *Tupistra clarkei*, *T. nutans* and *T. tupistroides*. But it differs from *T. clarkei* in erect to down curved, up to 30 cm long peduncle (vs pendulous, up to 12 cm long), laxly flowered spike (vs densely flowered), ventrally dark purple perianth lobes (vs pale fulvous or creamy with purplish tinges) and in white, hemispheric stigma nearly closing the orifice of the perianth tube and concealing the anthers (vs dark purple, peltate, apically nearly flat, 3-lobed stigma not large enough to conceal the anthers located at the orifice of the perianth tube). The new species differs from *T. nutans* in laxly up to 30-flowered, 10–13 cm long spike (vs densely up to 23-flowered, 5–7 cm long), retrorse flowers (vs flowers perpendicular

to rachis or somewhat antrorse), ventrally dark purple perianth lobes (vs pale yellowish brown to greenish with purple streaks/dots ventrally) and in hemispheric stigma with denticulation at margin (vs subcapitate, 3-lobed and undulate in limb). The discovered species differs from *T. tupistroides* in erect to down curved peduncle (vs pendulous), up to 30-flowered spike (vs 17-flowered) and in white stigma (vs purplish pink).

TAXONOMIC KEY TO THE ALLIED SPECIES

- 1a. Stigma hemispheric or subcapitate, nearly closing the orifice of the perianth tube and concealing the anthers 2
- 1b. Stigma peltate, nearly flat, not large enough to conceal the anthers located at the orifice of the perianth tube *T. clarkei*
- 2a. Spike often somewhat laxly flowered, flowers retrorse, perianth lobes dark purple ventrally, stigma hemispheric with denticulation at margin 3
- 2b. Spike densely flowered, flowers antrorse, perianth lobes pale yellowish brown to greenish with purple streaks/dots ventrally, stigma subcapitate, 3-lobed and undulate in limb *T. nutans*
- 3a. Stigma purplish pink, spike up to 17-flowered *T. tupistroides*
- 3b. Stigma white, spike up to 30-flowered *T. nagarum*



Fig. 1. *Tupistra nagarum* N. Odyuo, D.K. Roy & A.A. Mao: **A & B.** Habit, *in-situ*; **C.** Rhizomatous stem.

Table 1: Comparison of morphological characters between *Tupistra nagarum*, *T. clarkei*, *T. nutans* and *T. tupistroides*.

Characters	<i>T. nagarum</i>	<i>T. clarkei</i>	<i>T. nutans</i>	<i>T. tupistroides</i>
Peduncle	Erect to down curved, 2–3 times longer than spike, 22–30 cm long	Pendulous, nearly as long as spike, to 12 cm long	Erect to declinate distally, usually 3–4 times longer than spike, 17–25 cm long	Pendulous, 1–2 times longer than spike, 5–28 cm long
Spike	10–13 cm long, laxly 10–30-flowered	to 11 cm long, densely 30-flowered	5–7 cm long, densely up to 23-flowered	3–11 cm long, laxly 6–17-flowered
Flowers	Retrorse	Retrorse	Antrorse	Retrorse
Perianth lobes	Ovate, 5–10 mm long, dark purple ventrally	Ovate or broadly ovate, 7.5–10 mm long, pale fulvous or creamy with purplish tinges ventrally	Narrowly ovate, 6–6.5 mm long, pale yellowish brown to greenish with purple streaks/dots ventrally	Ovate, 5.5–10 mm long, dark purple ventrally
Anther	Concealed by stigma	Not concealed by stigma	Concealed by stigma	Concealed by stigma
Stigma	Hemispheric, with denticulation at margin, white	Peltate, nearly flat, usually 3-lobed, dark purple	Subcapitate, 3-lobed and undulate in limb, white	Hemispheric, with denticulation at margin, purplish pink

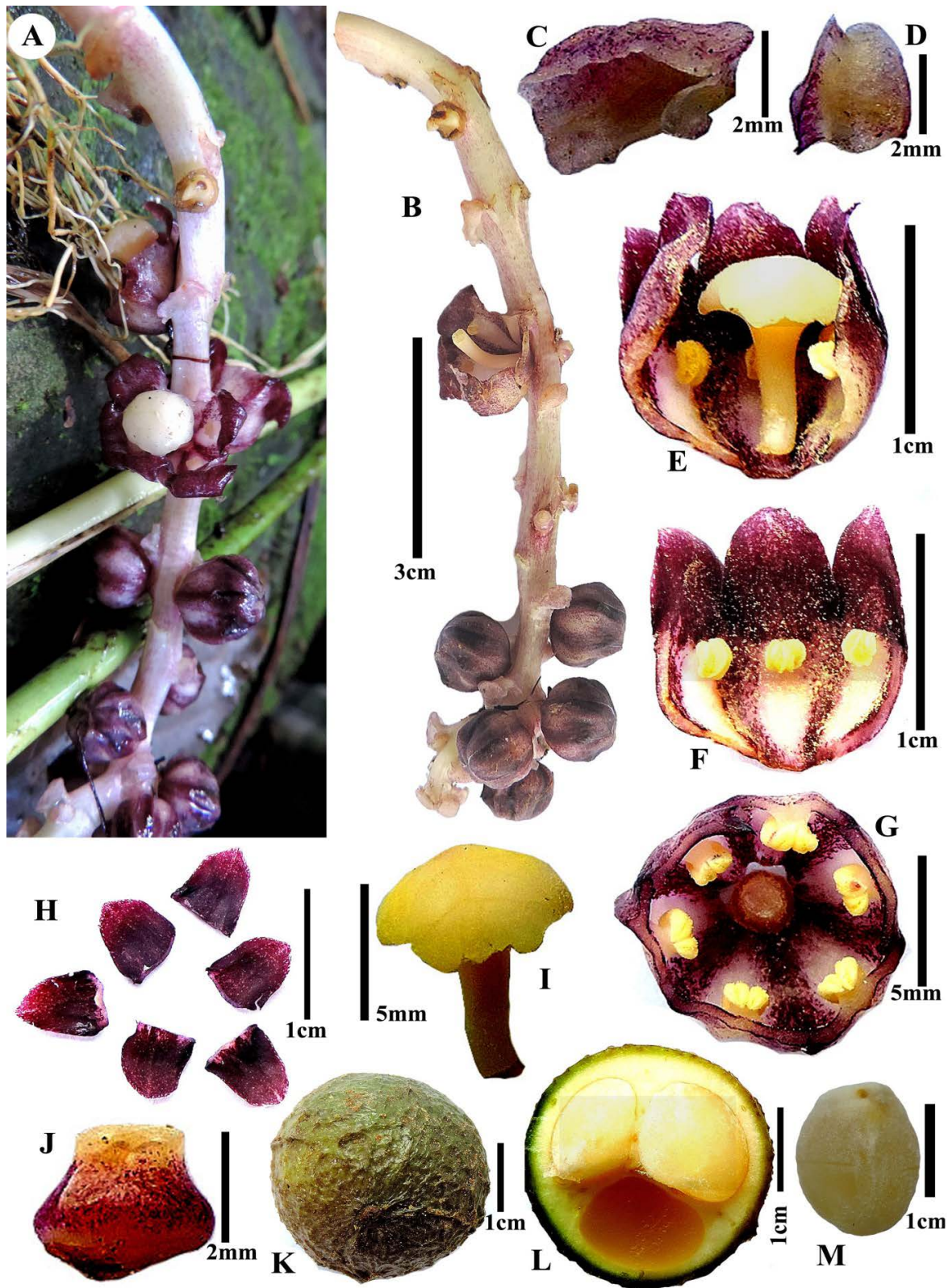


Fig. 2. *Tupistra nagarum* N. Odyuo, D.K. Roy & A.A. Mao: A-B. Spike; C. Bract; D. Bracteole; E. Tangential section of flower; F. Sagittal section of perianth; G. Frontal view of perianth tube; H. Perianth lobes; I. Pistil; J. Ovary; K. Fruit; L. Fruit, transversal section; M. Seed.

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