



Rohdea extrorsandra (Asparagaceae), a new species from north-eastern India

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The genus *Rohdea* Roth (1821: 196) belonging to the family Asparagaceae (APG 2009) comprises 14 species and is distributed in South East Asia (Tanaka 2003, Averyanov *et al.* 2014, Govaerts 2016). In India, the genus includes 4 species namely *R. delavayi* (Franchet 1896: 40) Tanaka (2003: 331), *R. eucomoides* (Baker 1875: 581) Tanaka (2003: 332), *R. nepalensis* (Rafinesque 1838: 15) Tanaka (2010: 23) and *R. wattii* (Clarke 1889: 78) Yamashita & Tamura (2004: 369) (Hooker 1894, Liang & Tamura 2000).

During a field trip in July 2004, in connection with the preparation of the floral diversity of Dampa Tiger Reserve of Mizoram, north-eastern India, one plant of Asparagaceae was encountered at the Tiger Reserve and was planted in the Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya, which was left unattended for more than 12 years. Several years later, in September 2016 the plant was found flowering in the garden and the observation of the flowers confirmed to belong to the genus *Rohdea*. On closer observation under the microscope it was found that the style was constricted at the base in contact with the ovary, the stamens were erect, and had distinct free filaments, up to 1.5 mm long and with extrorse anthers. Critical observations of all known specimens and literature survey (Hooker 1894, Liang & Tamura 2000, Tanaka 2003, 2010, Averyanov *et al.* 2014) have revealed a number of distinct morphological differences of the studied plant from all its congeners. Therefore, it is described and illustrated here as a new species.

Taxonomic treatment

Rohdea extrorsandra N.Odyuo, D.K.Roy & Aver., *sp. nov.* (Figs. 1, 2)

Differs from all known taxa of the genus *Rohdea* Roth in having strongly inflexed perianth segments, erect stamens with distinct free filaments and extrorse anthers.

Type:—INDIA. Dampa Tiger Reserve, Tuichar stream banks in Dampa Hill, Mizoram, 25 September 2016 ex hort. in Garden of Botanical Survey of India (Eastern Regional Centre, Meghalaya, East Khasi Hills, Shillong, Woodland Campus), *N. Odyuo 117300* (holotype, ASSAM!, isotype CAL!).

Terrestrial perennial herb. Rhizomatous stem erect, 25–35 cm long, thick, fleshy, 2–2.5 cm in diam., terete, simple, white or dull creamy-white inside, with distinct nodes and internodes. Roots tuft, arising from only one side of rhizomatous stem, to 5 mm in diam., light grey velutinous. Leaves 2–3, distinctly petiolate; petiole thick, channelled adaxially, 20–43 cm long; leaf blade oblanceolate, 130–185 × 11.5–13.5 cm, leathery, glabrous, uniformly glossy green, with distinct midvein, base gradually tapering, apex shortly acuminate. Inflorescences axillary in apical part of rhizomatous stem, subtended by 3–4 sheath leaves; sheath leaves ensiform, conduplicate, 18–36 × 1–3 cm, glabrous; peduncle erect, straight, rigid, glabrous, 35–60 cm long, 5–7 mm in diam., semi-circular in cross section; spike densely many flowered, 5–10 cm long, 1.5–1.7 cm in diam., simple, with few sterile bracts apically. Fertile bract 1 per flower, ovate-triangular, 0.4–4.2 cm long, 3.8–4 mm wide, slightly concave at the base, shorter than the flower, triangular obtuse at the apex, green, with white membranous, sparsely dentate margin. Flowers sessile, 1.3–1.5 cm in diameter. Perianth urceolate, very thick, fleshy, greenish when young, later turning to light creamy-pink outside, light creamy, tinged with purple inside, 6–7 mm long, 9–11 mm wide, proximal syntepalous part 1.5–2 mm long; distal perianth part 6-lobed; lobes not spreading, strongly inflexed, thick, triangular, 2.5–4 × 2–3 mm, ridged inside, smooth outside, acute at apex. Stamens 6, free, arising from median part of perianth tube; filaments erect, straight, ca. 1.5 mm long; anthers ellipsoid, 1–1.2 mm long, 0.8–1 mm wide, pale-yellow, dorsifixed, extrorse, with short appendage, overtopping the stigma. Pistil 1; style very short, inconspicuous; stigma 3-lobed, each lobe ovate to almost half-circular, curved abaxially downwards. Ovary superior, subglobose, 2–2.5 mm wide, light green, 3-loculed; each locule containing 2(3) obovoid ovules on basal placenta. Fruit berry-like, subglobose, dark brown, irregularly tuberculate, 2–2.3 cm wide, without persistent remnant of the style at apex.



FIGURE 1. *Rohdea extrorsandra*. A-C. Plant in nature. D, E. Rhizomatous stem with roots. [Image design by D.K. Roy].

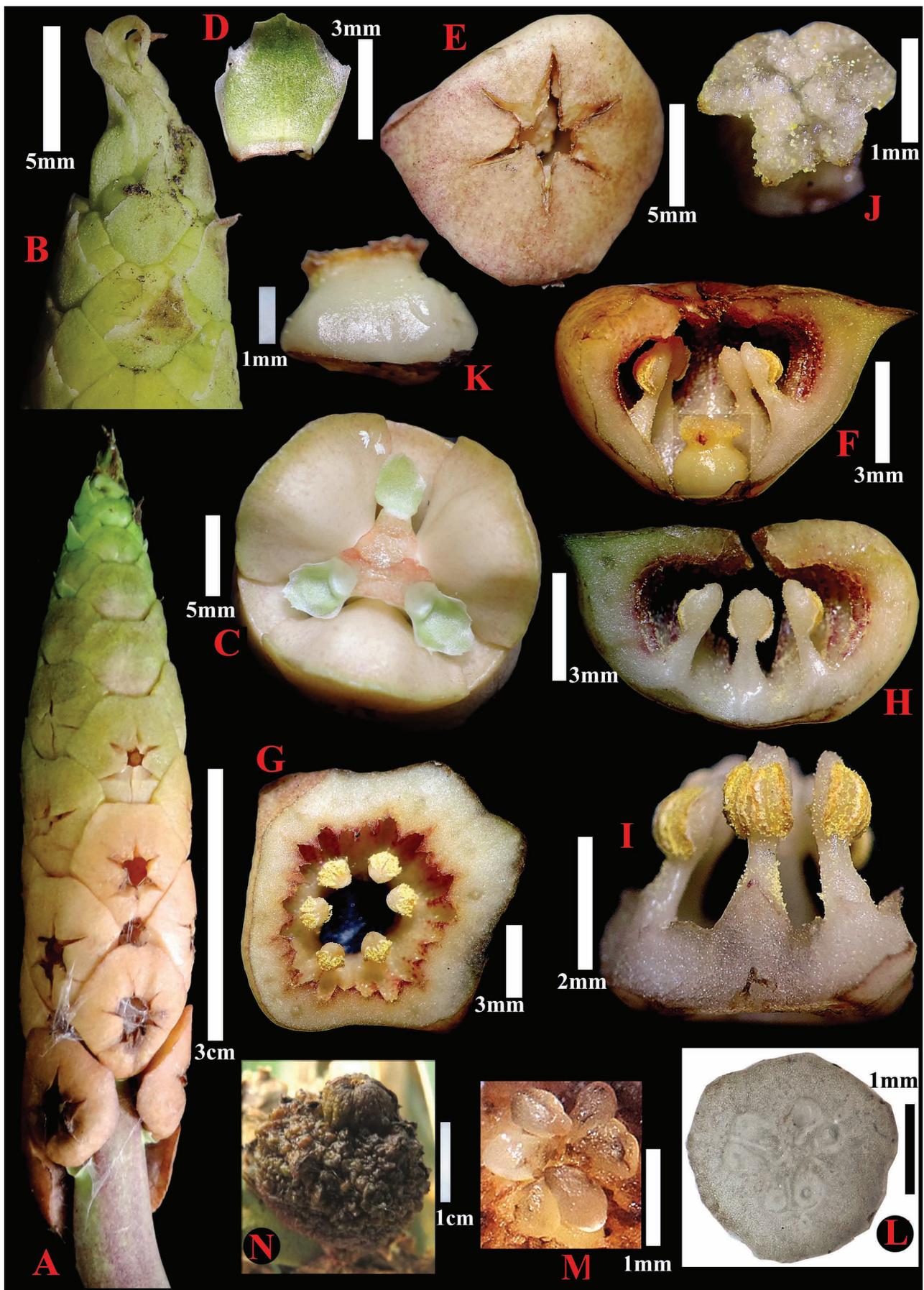


FIGURE 2. *Rohdea extrorsandra*. A. Spike. B. Spike apex. C. Spike cross section, view from above. D. Floral bract, adaxial surface. E. Flower, frontal view. F. Flower, sagittal section. G. Transversal section of perianth tube, with stamens. H. Sagittal section of perianth, with stamens. I. Stamens, side view. J. Pistil. K. Ovary. L. Ovary, transversal section. M. Ovules. N. Fruit. [Image design by D.K. Roy].

Phenology:—Flowering from August to September. Initial development of fruits was observed from September to December and they were matured in April.

Etymology:—The specific epithet refers to the extrorse anthers, which is the most significant character differentiating the species from all known congeners.

Habitat:—The new species was found growing on the banks of stream in tropical wet semi-evergreen forests. The soil texture varies from sandy loam to clay loam. The forests are of medium stature with tree height reaching up to 25 m.

Distribution:—INDIA. Mizoram (Dampa Tiger Reserve). So far only known from the type locality (banks of Tuichar stream in Dampa Hill).

Taxonomic relationship:—The comparison of morphology among all known species of *Rohdea* indicates that *R. extrorsandra* superficially resembles to *R. longipedunculata* (Wang & Liang 1978: 249) Tanaka (2003: 332). However, *R. extrorsandra* differs from *R. longipedunculata* by the large leathery, oblanceolate leaf blade, 130–185 cm long and 11.5–13.5 cm wide (vs. herbaceous or subleathery, linear-oblanceolate, 40–80 cm long and 3–6.5 cm wide), 1 bract per flower (vs. 2), strongly inflexed, triangular perianth segments, 2.5–4 mm long, 2–3 mm wide (vs. almost erect to incurved, deltoid-ovate, 2–2.5 mm long, 1.5–2.5 mm wide (Fig. 3A)), stamens with erect filaments located in the median part of the perianth tube (vs. with incurved filaments located at the throat of the perianth tube (Fig. 3B)), extrorse anthers, with appendage (vs. introrse, without appendage (Fig. 3B)), inconspicuous style, much shorter than 1 mm long (vs. distinct, about 1.5 mm long (Fig. 3C)), distinctly 3-lobed stigma, each lobe ovate to half circular (vs. obscurely 3-lobed, to subcapitate (Fig. 3C)).

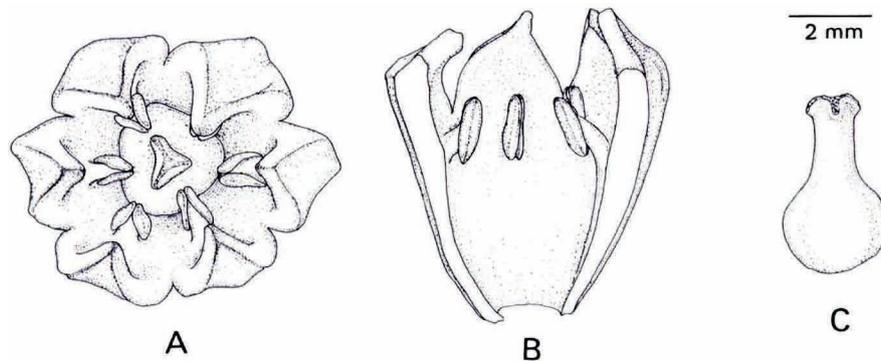


FIGURE 3. Flower of *Rohdea longipedunculata*. **A.** Frontal view, **B.** Sagittal perianth section, **C.** Pistil, side view (A-C of the same scale), adopted from Tanaka (2003).

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