

Additions of three new species Acanthaceae for the flora of Manipur in Northeast India

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[Received revised 30.11.2011; Accepted 08.12.2011]

Abstract

Asystasia gangetica (Linnaeus) T. Anderson, *Hygrophila polysperma* T. Anderson and *Barleria cristata* Linnaeus var. *albida* Haines is reported as three new additions of Acanthaceae for the flora of Manipur. A detailed description of the three species is provided herewith for easy identification.

Key word: Acanthaceae, New addition, North East India.

INTRODUCTION

Manipur state being a border state of India and happens to be at the confluents of two major Hotspots, Eastern Himalayas and Indo-Myanmar (Myers *et al* 2000), there is a continuous inflow & outflow of species. This region along with Southeast Asian region has been also a major source of many Acanthaceae species found around the globe. Many earlier works had been reported on Acanthaceae species found in India, Northeast region and Manipur (Karthikeyan *et al* 2009; Remadevi & Bijoykumar 2009; Moorthy 2001; Kanjilal *et al* 1938; Sinha 1996; Singh 1990; Singh 1987; Deb 1961; Prain 1903; Clarke 1884). While undergoing a revisionary work of the family Acanthaceae, the authors collected three specimens, which identity was unknown. After critical study, perusal of relevant literatures, comparison with herbarium deposited at Botanical Survey of India and National Botanical Research Institute, the specimens came out to be *Asystasia gangetica* (Linnaeus) T. Anderson (Jiaqui *et al* 2004; Kiew & Vollesen 1997), *Hygrophila polysperma* (Roxburgh) T. Anderson (Jiaqui *et al* 2004; Cook 1996) and *Barleria cristata* Linnaeus var. *albida* Haines (Shendage & Yadav 2010; Myers & Lavergne 2004; Balkwill & Balkwill 1998), which is a new addition for the state flora. A detail description, nomenclature, phenology, origin, are provided to facilitate the identification of species.

The vouchers were deposited in the herbarium of Center of Advanced Studies in Life Sciences, Department of Life Sciences, Manipur University.

Asystasia gangetica (Linnaeus) T. Anderson in Thw. Enum. Pl. Zeyl. 235. 1860; Sant. in Univ. Bombay Bot. Mem. 2: 68. 1952; Durkee in Ann. Missouri Bot. Gard. 65: 177, f.2. 1978. *Justicia gangetica* Linnaeus, Amoen. Acad. 4: 299. 1759. *Asystasia coromandeliana* Wight *ex* Nees in Wallich, Pl. Asiat. Rar. 3: 89, 1932; C.B. Clarke in Hooker f., Fl. Brit. India 4: 493. 1884; Cooke, Fl. Pres. Bombay 2: 466. 1958 (Repr.).

English name: Hunters spinach

Distribution: India, Thailand, China and Malaysia.

Origin: Tropical Africa and Asia.

Perennial herbaceous, erect or procumbent herbs, sometimes climbing on bushes, 35 – 80 cm high; **Stem** much branched, obtusely quadrangular, swollen at nodes, glabrous; branches subglabrous to puberulous; *Leaves* equal in each pair, petiolated; petioles 0.6 - 3 cm long, puberulous; **Lamina** 1.9 – 6.5 cm long, 1 - 3 cm wide, subcordate or ovate, apex acute to acuminate, dark green, base obtuse or cordate, margin entire, shortly and minutely puberulent on both surface, punctuate, cystoliths prominent on adaxial; **Inflorescence** a secund raceme, terminal 6 - 12 cm long, rachis tetragular, distinctly hairy; peduncle 5 – 10 cm long; **Bracts** ca 4.5 mm long, opposite, triangular, minutely short hairy; **Bracteoles** 2, lanceolate ca. 2 mm long, inserted at the base of pedicel; **Pedicel** ca 3 mm long. *Calyx* ca 7 mm long, 5 deeply parted, slightly connected at the base, segments lanceolate 5-8 mm long, linear, acute to acuminate, glandular hairy; **Corolla** short, 2.5-3.5 cm across, thinly pubescent outside; tube 1.5-2.5 cm long, upper cream colour; lobes 5, triangular to ovate, apex rounded, ca 5 mm long, lower lip 3-lobed, lobes long ovate, elliptic, centre one ca 10 mm long, the latter ones 7 mm long, two plicae on middle lobe go down to the lower part of tube, plica densely white villous, with purplish red dots. **Stamens** 4, filaments glabrous, unequal in length, a long and a short- coherent into pairs at the base, anthers purple, oblong, dorsifixed, 2 celled unequal in high, with mucrons at the base. **Style** ca 13 mm long, longly villose at the base; ovary ca 4 mm long, densely and longly villose, disk cup form, plus and minus obtuse, 5-lobed. **Capsule** elliptical with an apical beak, 3-4 cm long, 0.5 - 1 cm thick, pubescent; seeds 4, subglobose, 4-5 mm across, glabrous.

Flowering and Fruiting: February – April

Habitat: Found in lightly shaded habitats along roadside and climbing on bushes.

Exsiccatae : India, Manipur, Imphal West, Langol hill, 784 m, Latitude 24° 49' 4.5" N and 93°54' 08.7" E, dated 16.06.2010, *Deshworjit* 001906.

Hygrophila polysperma (Roxburgh) T. Anderson in J. Linn. Soc. 9: 456. 1867. C.B. Clarke in Hooker f., Fl. Brit. India 4: 406. 1884; Cooke, Fl. Pres. Bombay 2: 429. 1958 (Repr.); Sant. In Univ. Bombay Bot. Mem. 2: 19. 1952. *Justicia polysperma* Roxburgh, Fl. Ind. 1: 119. 1832. *Hemidelpsis polysperma* (Roxburgh) Nees in Wallich, Pl. As. Rar. 3: 80. 1832.

English name: Dwarf Hygrophila.

Origin: India and Malaysia.

Annual herb. **Stems** procumbent, upto 8 cm high or more, usually puberulous-hirsute, soon glabrous, ciliate and geniculate, much branched, patent. **Leaves** cauline, 2-2.2 cm long, oblong-lanceolate, soon withered the upwards and downwards elliptical – oblong, obtuse, all linear, gradually narrow towards the petioles, glabrous, dark green, inconspicuous crenate. **Flower** spike short, ca 1.3 cm long, terminal on branches and branchlets, pedicelless. **Bracts** imbricate, usually obovate and ovate, obtuse, herbaceous, pubescent or hirsute. **Bracteoles** lanceolate, longer than calyx, ciliate. **Calyx** tubular at base, 5- divided to the middle, segments unequal, equal, linear, acuminate, pubescent. **Corolla** 4-4.5 cm long, pubescent, purple, upper lip 2-teethed, lower lip 3 lobed, lobes subequal, round. **Stamens** inserted at lower part of corolla-tube, filaments bilateral coherent into the base; posterior stamens reduced to teeth. Stigma single, acute. Capsules 8.5 cm long, lanceolate, glabrous, compressed, with 6 canals, bearing 24-30 seeds from base. **Seeds** ovate, convex both side. Retinacula shortly hooked at tip.

Flowering & Fruiting: February – April

Habitat: Widely distributed in wetlands and marshes areas of Manipur.

Exsiccatae: India, Manipur, Bishnupur, Loktak pat, 791m, 24° 30' 55.5" N, 93°47' 47.3" E, dated 04.11.2010, *Deshworjit* 00137; Thoubal, Karung pat, *Deshworjit* 00451., Thoubal, Waithou pat, *Deshworjit* 00712.

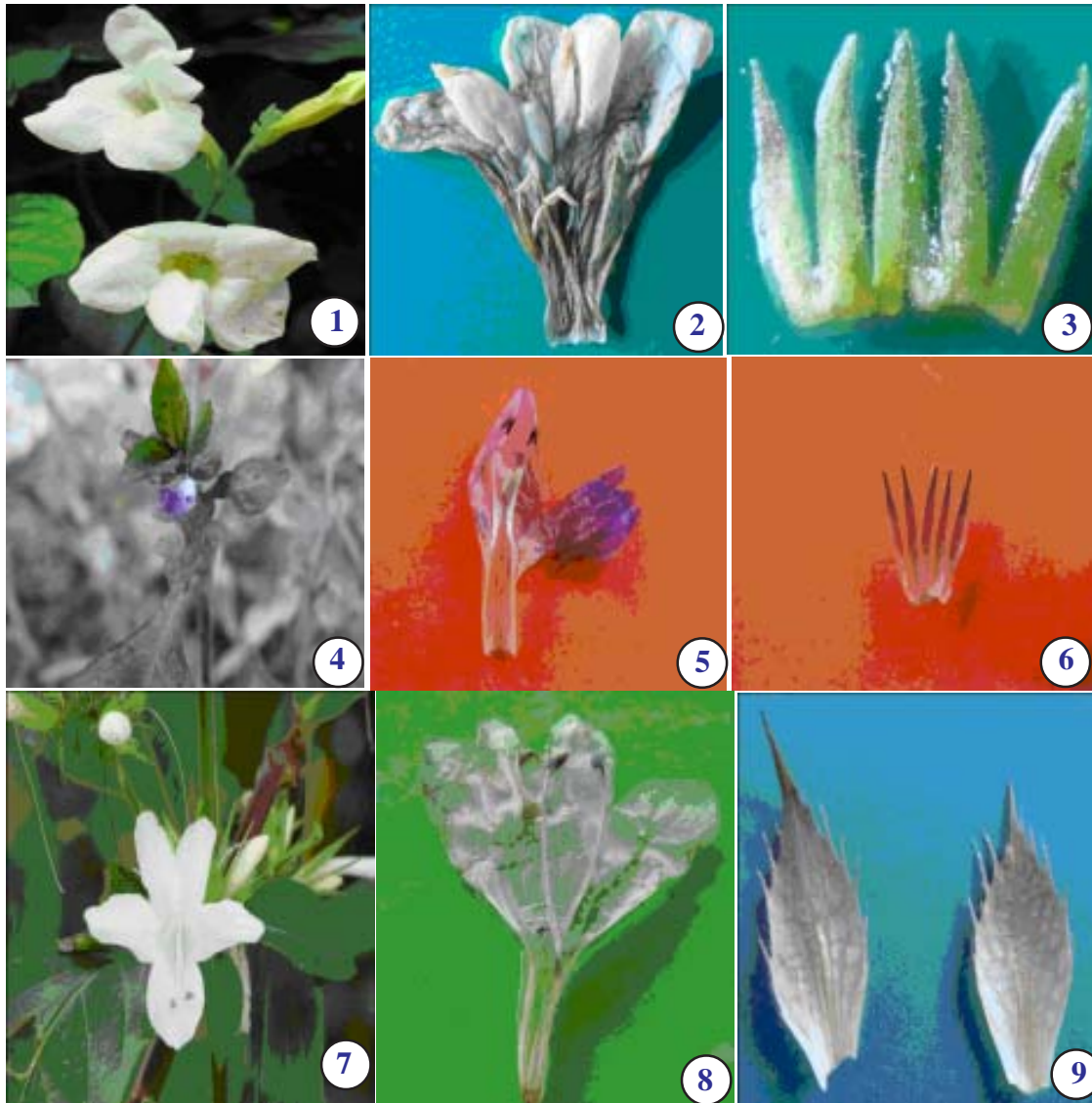


PLATE - I: **Figs. 1 - 3.** *Aystasia gangetica*: 1. Flowering twig; 2. Corolla splitted open with epipetalous stamens; 3. Dissected calyx. **Figs. 4 - 6.** *Hygrophila polysperma*: 4. Flowering twig; 2. Corolla splitted open with epipetalous stamens; 3. Dissected calyx. **Figs. 7 - 9.** *Barleria cristata* var. *alba* : 7. Flowering twig; 8. Corolla splitted open with epipetalous stamens; 9. Bracts

Barleria cristata Linnaeus, Sp. Pl. 636. 1753; var. *alba* Haines in Bufford *et al*, Hort. Fl. Taiwan 6 (ed 1): 129. 2003; Bot. Bihar Orissa 4: 683. 1922; Karthikeyan *et al*, Fl. Pl. India: Dicotyl. 1: 6. 2009.

English name: White Philippine violet

Distribution: Myanmar, China, Bangladesh, Philippines, Nepal, India (throughout), Srilanka, Pakistan and Vietnam.

Origin: India and Southeast Asia

Shrubs, up to 2 m high. **Stems** and branches adpressed hairy, densely so at nodes. Petioles c. 1 cm, perennial leaves on long shoots 0.5 – 2 cm long. **Lamina** papyraceous, elliptic or lanceolate or

ovate, 5 - 16 cm x 1.5 – 5 cm, acute, sometimes acuminate, base attenuate, decurrent, long hairs on both surfaces; midrib hirsute above; margins ciliate, lateral nerves 4 - 5(-7) pairs; leaves on long shoots caduceous on axillary short branches small. **Flowers** usually 2 on leaf axile and terminal, clustered in dense ovoid spikes, 4 – 5.5 cm long; **Bracts** foliose, sessile. **Bracteoles** lanceolate or linear, 1 - 1.5 x 0.1 – 0.2 cm, ciliate and often distantly toothed at margins, acute, membranous, pubescent, veined, mid-rib conspicuous. Two outer segments of **calyx** ovate to lanceolate, subequal, 1.5 – 2 x 0.5 – 0.8 cm, brownish white when dry, with veins raised; anticus broadly lanceolate, margins spinescent, acute – mucronate; posticus similar but slightly narrow, 1.6 – 1.8 x 0.6 -0.7 cm, margins spinescent, pubescent; inner sepals linear- lanceolate, 7 – 8 x 1.5 – 2 mm, acute, margins ciliate, glandular- pubescent outside, whitish, veined. **Corolla** usually 3.5 – 5 cm long, sometimes upto 7.5 cm, pubescent outside with mixed glandular hairs, white; tube cylindrical amplified at throat lower tube narrow; upper tube wide; lobes 5, sub-equal, obovate-oblong, 1 – 1.8 x 0.8 – 1.8 cm, obtuse; lower lobe emarginate. **Stamens** 2 fertile, exerted at the base of throat; filaments 2 -3 cm long, pubescent. **Anthers** c. 2 mm long, 2-celled; sterile 2, 4 - 6 mm long. **Staminode** 1, opposite median lobe, scaly. Disc cupular, covering more than half of ovary, unevenly lobed at the apex. **Ovary** c. 4 mm long; ovules 2 in each loculed; style terete, 2.5 – 4.5 cm long, swollen at apex, hairy at base; stigma c. 5 mm long, 2-lobed, pink. Capsule ellipsoid, 1.1 – 1.9 x 0.3 – 0.6 cm, 4-seeded. **Seeds** ovate or suborbicular, 4 – 5 x 4 - 4.5mm, compressed, silky appressed-hairy.

Flowering & Fruiting: October to March.

Habitat: Found distributed in Baruni hills of Imphal east district, Manipur.

Exsiccatae: India, Manipur, Imphal East, Andro, 903 m, 24° 43' 01.41" N and 94°00' 53.1" E, dated 24.12.2009, *Deshworjit* 00049, Thoubal, Keina, *Deshworjit* 00106.

Acknowledgements

The authors are grateful to the Head, Department of Life Sciences, Manipur University for facilities and encouragement. The authors are thankful to staff members at CAL, ASSAM and LWG for their valuable suggestions for the confirmation of the identity of the specimens.

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