

New report of occurrence of two species of *Begonia* Linnaeus (Begoniaceae) from Assam, India

R. Saikia¹, H. Roy² and S. K. Borthakur

Department of Botany, Gauhati University, Guwahati, 781014, Assam, India

¹Department of Botany, Silapathar Science College, Silapathar, Dhemaji 787059, Assam

²Corresponding author; E-mail: mr.himuroy@yahoo.com

[Received Revised 23.10.2011; Accepted 22.11.2011]

Abstracts

Two species of *Begonia* viz., *B. burkillii* and *B. nepalensis* recorded from Poba Reserve Forest of Dhemaji district and Sonapur of Cachar district in Assam turned out to be new reports for the state of Assam in India.

Key words: *Begonia burkillii*, *Begonia nepalensis*, new reports, Assam, India

INTRODUCTION

With more than 17,000 angiosperms India is considered as one of the floristically rich country in the world (Sanjappa 2008). The Eastern Himalayas and the Peninsular India are abode of many of the endemic, endangered, and vulnerable species. Because of the climatic conditions suitable for the occurrence the members of Begoniaceae, the taxon shows a great diversity in both the areas. In general most of the taxa of *Begonia* Linnaeus are distributed over the Eastern Himalaya. A few are also recorded from the Western Himalaya and from Peninsular India (the Eastern and the Western Ghats).

The Begoniaceae comprises of 2 genera, *Hillbrandia* Oliver and *Begonia* Linnaeus. The monotypic genus *Hillbrandia* with its single species *H. sandwicensis* Oliver is endemic to the Sandwic Island of the Hawaii, North America (Smith *et al* 1986; Doorenbos *et al* 1998; Tebbitt 2007).

Begonia, the larger of the two genera under the Begoniaceae and comprises of about 1600 species distributed throughout the tropical and sub-tropical countries except Australia (Smith *et al* 1986; Doorenbos *et al* 1998; Tebbitt 2007). Except a few species occurring in regions above 1500 m, Begonias are generally flourishing best in the tropical and sub-tropical forests of medium altitude ranging from 350 to 1400 m. They prefer comparatively high precipitation and humidity. Most of the species are terrestrial and prefer to grow on sandy soils. A few occasionally grow on tree trunks as epiphytes or on rock crevices. Secondary forests or the forest clearings are ideal habitats for succulent species while the other species are found mainly as undergrowth. Species of *Funaria*, *Polytrichum*, *Selaginella*, *Colocasia*, *Alocasia*, etc. are some of the associated plants growing with different species of *Begonia*.

Different species of *Begonia* with their beautiful flowers and foliages has always been the most sought after indoor as well as out door ornamental plants. Being ideal for hybridization they also play important role in the creation of many hybrid species. Begonias have tremendous floricultural and ethno-medicinal potential. These potentialities inspired countries like America, Canada and Australia to form separate societies to work on different aspects of *Begonia*. In spite of this potentiality, they are overlooked by most of the collectors because they are less important otherwise (Kanjilal *et al* 1938) or require critical study for their identification and painstaking techniques in their preservation (Wilde & Plana 2003).

MATERIALS AND METHODS

During floristic survey of Poba Reserve Forest in Dhemaji and Cachar districts of Assam, two interesting specimens were collected during January, 2009 to February, 2010. Specimens were processed following standard herbarium techniques (Jain & Rao 1977). The specimens were carefully examined and identified as *Begonia* species on the basis of relevant literature (Clarke 1879; Doorenbos *et al* 1998; Shui *et al* 2002; Forrest & Hollingsworth 2003; Hoover *et al* 2004) and subsequently confirmed as *Begonia burkillii* Dunn and *Begonia nepalensis* (A. DC.) Warburg on matching the collected materials at CAL, ASSAM and ARUN herbaria. The scrutiny of literature reveals that both these species of *Begonia* viz., *Begonia burkillii* and *Begonia nepalensis* have not been reported from Assam till date and hence the present communication. These specimens have been deposited in the herbarium of the Botany Department, Gauhati University (GUBH).

ENUMERATION

Begonia burkillii Dunn in Kew Bull. Misc. Inform. 1920(4): 110.1920; Burkill in Rec. Bot. Surv. India 10(1): 289.1924; Kumar & Bhattach. in Nair & Sastry (ed) Red Data Book of Indian Plants. 3: 85. 1990.

Plants acaulescent, rhizomatous, dioecious, 15 – 30 cm high; rhizome creeping; petioles 7 – 12 cm long, glabrous; lamina 10 – 20 × 3.7 – 7.8 cm, glabrous, oblique, ovate – cordate or lanceolate, acute – acuminate, sinuate – dentate, blue-green, often variegated, venation palmate; stipules 0.6 – 0.8 × 0.3 – 0.5 cm, ovate – triangular, pubescent, entire, acuminate, persistent; inflorescence biparous cymes; scapes 4.5 – 15.5 cm, glabrous. *Male flowers*: pedicel 1.5 – 1.9 cm, slender; bracts membranous, oblong, caudate, 1 – 2 × 0.5 – 0.8 cm; sepals 2, obovate – oblanceolate, 3.1 – 4 × 2.1 – 2.5 cm, acute, pale rose or white, glabrous; petals 2, lanceolate, 1.2 – 1.4 × 0.4 – 0.8 cm; stamens numerous, free; anthers 2 mm long, obovoid; *Female flowers*: pedicel 1.4 – 1.6 cm; tepals 2 + 2; outer tepals obovate – oblanceolate, 3.1 – 4 × 2.1 – 2.5 cm, acute, pale rose or white, glabrous; inner tepals lanceolate, 2.8 – 3 × 1.5 – 1.7 cm; ovary 4 celled, pubescent, placenta bifid; styles 4, joined half way up and divided and contorted at the apex, 8 – 8.2 mm long; stigma 2-cleft, lunate, persistent. Fruits rhomboid, 1 – 1.5 cm. in diameter, 4 celled, 4-horned, indehiscent. Seeds ellipsoid, brown (Fig A).

Type: Arunachal Pradesh, Abor Hills, Jauamukh, 7.1.1912, *Burkill* 37706, 37121 (CAL)

Flowering & Fruiting: January – April

Distribution: India: Assam, Arunachal Pradesh (Endemic)

Exsiccatae: Arunachal Pradesh, Abor Hills, Jauamukh, 7.1.1912, *Burkill* 37706, 37121 (CAL) (lectotypes); Changlang, Namdapha Biosphere Reserve, Anamica Falls, 30.11.2004 *Amad Uddin* 107934 (ASSAM); Assam, Cacchar, Sonapur, 13.01.2011, *Himu Roy* 143 (GUBH); Dhemaji, Silapathar, Poba Reserve Forest, 13.01.2010. *Ranjit Saikia* 300 (GUBH).

Begonia nepalensis (A. DC.) Warburg in Engler, Pflanzenfam. 3(6a): 142. 1849; Hara in Fl. E. Himal. 2: 214. 1971; Hara & Williams, Enum. Fl. Pl. Nepal 2: 129. 1979; Rao & Gupta in Rec. Bot. Surv. Ind. 20(2): 1973; Matthew in Ind. J. For. Addl. ser. 2: 37. 1980. *Meziera nepalensis* A. DC., Prodr. 15(1): 406. 1864. *Begonia gigantea* Wallich ex C.B. Clarke in Hooker f., Fl. Brit. India 2: 643. 1879.

Herbs or sub-shrubs, 60 – 90 cm high, caulescent, monoecious; leaves cauline; stipules narrow, lanceolate, glabrous, deciduous; petioles 0.7 – 2.2 cm; lamina 12 – 20 × 2.5 – 9.5 cm, oblique, cordate, glabrous except the nerves beneath, serrate, acute – acuminate; inflorescence axillary or

terminal biparous cymes; bracts ovate, acute, deciduous. *Male flowers*: sepals 2, ovate, subacute, glabrous; petals 0; stamens \pm 40, shortly monadelphous; anthers obovoid, connective not produced. *Female flowers*: tepals 3; outer tepals 2 ovate, subacute; inner tepal narrow, lanceolate; styles 2–3, nearly free, joined half way up, more or less contorted above; ovary 2 celled, placentas bifid; capsules 1-winged; distal wing 1.8–2.2 cm long, lateral wings 0.2–0.4 cm; seeds short, ellipsoid (Fig B).

Type: Chireeaghatte, Nepalia infer, 1820, *Wallich* 3677(G-DC, photo CAL!).

Flowering & Fruiting: November – February.

Distribution: India: Sikkim, West Bengal(Darjeling), Arunachal Pradesh, Meghalaya; Nepal; Bhutan.

Exsiccatae: Sikkim, 1875, *King* 187 (CAL); Labdoh, 1908, *Smith* 609 (CAL); *Griffith* 1592 (CAL); *Craib* 230 (CAL); *Hooper s.n.* (CAL 14240); *Pashok* 1896 (BSIS); West Bengal, Darjeeling, 1870, *C.B. Clarke* 1374 (CAL); Buxaduar 1975, *Sikdar* 934 (CAL); Meghalaya, Jowai, 1916, *E.C.G. Modder s.n.* (CAL); Arunachal Pradesh, *N.L. Bor* 15703 (ASSAM); Kameng, *D.K. Singh* 97230 (ASSAM); *G. Mann* 99 (ASSAM); Assam, Dhemaji, Poba Reserve Forest, 13.01.2010, Himu Roy 231 (GUBH); Dhemaji, Poba Reserve Forest, 13.01.2010, Ranjit Saikia 302 (GUBH).



Fig. A. *Begonia burkillii* Dunn



Fig. B. *Begonia nepalensis* (A. DC.) Warburg

Conclusion: Both the species, *Begonia burkillii* Dunn and *Begonia nepalensis* (A. DC.) Warburgh can be easily identifiable in that the plants being acaulescent and dioceous in the former and caulescent and monoceous in the later. On the other hand *B. burkillii* was known as endemic to Arunachal Pradesh till now, but the present work has confirmed its occurrence in the Dhemaji and Cachar districts of Assam too. Similarly, *Begonia nepalensis* collected from the Poba Reserve Forest of Dhemaji district establishes its occurrence in the state otherwise the species was known from Sikkim, Arunachal Pradesh, West Bengal and Meghalaya.

LITERATURE CITED

- Clarke, C.B. 1879. In J.D. Hooker, *Flora of British India*. Vol. 2. L. Reeve & Co., London. Pp. 635-656.
- Doorenbos, J.; Sosef, M.S.M. & de Wilde, J.J.F.E. 1998. The Sections of *Begonia*, including descriptions, key and species lists (*Studies in Begoniaceae VI*). Wageningen Agricultural University Papers. Wageningen.

- Forrest, L.L. & Hollingsworth, P.M. 2003. A Recircumscription of *Begonia* based on nuclear ribosomal sequences. *Pl. Syst. Evol.* 241: 193 – 211.
- Hoover, W.S.; Karegeannes, C.; Wiridanata, H. & Hunter, J.M. 2004. Notes on the geography of South-East Asian *Begonia* and species diversity in montane forests. *Telopea* 10(3): 749.
- Jain, S.K. & Rao, R.R. 1977. *Herbarium Methodology*. Botanical Survey of India, Kolkata.
- Kanjilal, U.N.; Kanjilal, P.C. & Das, A. 1938. Begoniaceae in *Flora of Assam*. 2: 333. Forest Department. Shillong.
- Sanjappa, M. 2008. *Floristic Diversity and Conservation Strategies*. Botanical Survey of India, Howrah.
- Shui, y.M.; Peng, C. & Wu, C.Y. 2002. Synopsis of the Chinese species of *Begonia* (Begoniaceae), with a reprisal of sectional delimitation. *Bot. Bull. Acad. Sin.* 43: 313.
- Smith, L.B.; Wasshausen, D.C.; Golding, J. & Karegeannes, C.E. 1986. *Begoniaceae. Part-I: Illustrated Key, Part-II: Annotated Species List*. Smithsonian Institution Press, Washington.
- Tebbutt, M.C. 2007. *Begonia kingdom-wardii* (Begoniaceae), a New Species from Myanmar. *Kew Bull.* 62: 143 – 146.
- Wilde, J.J.E.F. De & Plana, V. 2003. A New Section of *Begonia* (Begoniaceae) from West Central Africa. *Edinburgh J. Bot.* 60(2): 121 - 130.