Begonia flaviflora Hara (Begoniaceae): a new record to the flora of Bhutan

Phub Gyeltshen, Sherab Jamtsho, Sangay Wangchuk & Dhan Bahadur Subba

26 March 2021 | Vol. 13 | No. 3 | Pages: 18050–18053
DOI: 10.11609/jott.6709.13.3.18050-18053
Begonia flaviflora Hara (Begoniaceae): a new record to the flora of Bhutan

Phub Gyeltshen, 1, Sherab Jamtsho, 2, Sangay Wangchuk, 3 & Dhan Bahadur Subba

1 Bumthang Forest Division, Department of Forest and Park Services, Trongsa, Nubi-33001, Bhutan. 2 Zhemgang Forest Division, Department of Forest Park Services, Zhemgang, Shingkhar-3400, Bhutan. 3 Royal Botanical Park, Department of Forest Park Services, Thimphu, Bhutan.

gyeltshenforest@gmail.com (corresponding author), sherabjamtsho85@gmail.com, gensanwanchu@gmail.com, dhans1302@gmail.com

The genus Begonia L. (Begoniaceae) is one of the largest genera of angiosperm in the world, estimated to comprise up to approximately 2,500 species (Tian et al. 2018), of which about 1991 are currently accepted species (Hughes et al. 2015), currently divided into 70 sections and distributed mostly in the tropical and subtropical zones in the world (Doorenbos et al. 1998; Moonlight et al. 2018). In Asia, around 959 species in 19 sections have been recorded with maximum occurrences in southeastern Asia (Shui et al. 2002; Moonlight et al. 2018). Begonia sect. Platycentrum (Klotzsch) A. DC. is the largest section with 16 species in northeastern India (Camfield & Hughes 2018). Grierson (1991) described 20 species of Begonias in the Flora of Bhutan, of which only 13 species are recorded from Bhutan. No further study has been conducted on the genus in Bhutan since Grierson (1991) and the occurrence of remaining seven species including B. flaviflora are unknown.

During recent botanical exploration in Zhemgang District in August 2020, specimens of an interesting Begonia species were collected from the cool broadleaved forest. After substantial study on its morphological characteristics and reviewing the taxonomic literature (Clarke 1879; Har a 1970; Grierson 1991; Tsuechih et al. 1999; Hughes et al. 2015; Camfield & Hughes 2018), and consultation of herbarium specimens available at Global Biodiversity Information Facility (https://www.gbif.org/), and Kew Science (https://specimens.kew.org/) including the type specimens, it was identified as B. flaviflora Hara, a new record to Bhutan. The addition of one species from the current study confirms 14 species of Begonia from Bhutan and more are likely to be found and confirmed with further exploration. Detailed morphological description, phenology, ecology, distribution and notes along with photographs are provided. The voucher specimens are deposited at the National Herbarium (THIM!), National Biodiversity Centre, Thimphu, Bhutan.

Begonia flaviflora H. Hara


Type: India, Sikkim, Darjeeling, 5 July 1969, Hara, Kurosawa & Ohashi 69218 (holotype: TI n.v.; isotype: BM000839167).

Plant monoecious, herbaceous, 30–80 cm tall. Rhizome oblong, 6–12 × 1–3 cm with several offsets giving rise to new shoots, adventitious roots growing from the rhizome. Stem erect, 20–40 cm long, with sparsely brownish pubescent, lowermost internodes 10–22 cm long and 6–7 mm wide, unbranching, 2–4 leaves per stem. Stipule persistent, ovate, 10–15 × 3–5 mm, papery, keeled, apex cuspidate (1–4 mm), margin entire. Leaves alternate; petiole cylindrical, 4–28 cm long, 3–8 mm thick, green, brownish pubescent surface; blade asymmetric, ovate to broadly ovate 10–20 × 8–23 cm, basifixed, apex acute to acuminate or shortly caudate, base deeply cordate, margin shallowly lobed and ciliate, venation palmate-reticulate, 7–8 veined; adaxial surface green or dark green with minute appressed white hairs, hairs less than 0.2 mm long; abaxial surface glabrous, sparsely brownish pubescent on veins, green with purplish colour along the veins and towards the margin. Inflorescences cymose, 1–2, terminal or axillary on long stem with 1–2 internodes, 2–4 flowers per peduncle, erect; peduncles cylindrical, 8–15 cm long, 2–3 mm wide, green to red, brownish pubescent. Florals bracts narrowly ovate, 2–3.5 × 1.5–2.5 cm, pinkish, glabrous, margin entire, base and apex truncate, adaxial surface is wrinkled and covered with soft hairs, veins numerous, deciduous. Staminate flower: pedicel up to 3 cm long, pale red to pale greenish-yellow, brownish pubescent; tepals 4, golden yellow, glabrous, margin entire; outer 2, deltoid, 15–19 × 12–16 mm, cucullate, upper tepal’s apex prominently recurved, lower tepal’s apex slightly recurved, base truncate, 10–12 veined; inner 2, ovate-elliptic, 12–14 × 7–9 mm, cucullate, apex rounded to sub-acute, base slightly oblique-truncate, 9–11 veined; stamens numerous, 2–3 mm long, filaments free, anther obovate-oblong; golden yellow. Pistillate flower: pedicel up to 3 cm long, pale yellowish-green, light pinkish-green, brownish pubescent; tepals 5, unequal, golden yellow, glabrous, margin entire to slightly wavy; outer 2, ovate, 7–11 × 5–7 mm, concave, apex acute, base truncate, 12–13 veined; inner 3, ovate to ovate-elliptic,
Begonia flaviflora, new record to the flora of Bhutan

Gyeltshen et al.

17.5–19 × 14–16 cm, concave, apex acute to subacute, base truncate; ovary yellowish-green, glabrous, with three unequal wings, 2 locules, placentation axillary, two branches per locule; styles 2, Y-shaped, 3–3.5 mm long, fused at base, golden yellow; stigma spiraled, papilllose all around. Capsule trigonous-globose, 7–11 × 6–8 mm, yellowish-green; longest wing obovoid-oblong, 1.5–1.7 × 1.5–1.7 cm, slightly falcate at apex, crenate, narrow towards base, lateral wings 1.6–2.2 × 0.4–0.6 cm, tuberculate on surface of the ovary including its wings. Seeds numerous, white when young, oblong, c. 0.2–0.3 × c. 0.2 mm.

Specimens examined: THIM15583, 10 August 2019, Shingkhar, Zhemgang, Bhutan, 27.152°N, 90.875°E, 1,914–2,399 m, P. Gyeltshen & S. Sherab 012–013.

Phenology: Flowering and fruiting July to August

Habitat and ecology: This species prefers moist soil in shady areas in broadleaved forest at 1,900–2,400 m elevation. Associated species includes Pouzolzia hirta (Blume) Hassk., Pilea scripta (Buch.-Ham. ex D.Don) Wedd., Streptolirion volubile Edgew., Swertia bimaculata Hook.f. & Thomson ex C.B.Clarke, Carpesium nepalense Less., Rubus calycinus Wall., Dichroa febrifuga Lour. and Impatiens pseudolaevigata Gogoi, B.B.T.Tham & Lidén.

Distribution: India, China, Mayanmar, Nepal, Malaysia, and new to Bhutan.

Notes: The new species is vegetatively similar to Begonia palmata but can be distinguished by yellow flower, smaller capsule and wings of the fruit. The key morphological differences between B. flaviflora and its closely related taxon B. palmata is presented in Table 1. An image and key morphological differences are presented in Table 1.
Table 1. Comparison of key morphological characters of Begonia flaviflora and B. palmata.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>B. flaviflora</th>
<th>B. palmata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit</td>
<td>erect, 30–80 cm tall</td>
<td>erect, 45–100 cm tall</td>
</tr>
<tr>
<td>Rhizome</td>
<td>10–30 mm wide</td>
<td>5–15 mm wide</td>
</tr>
<tr>
<td>Stem</td>
<td>6–7 mm wide, brownish pubescent</td>
<td>5–15 mm wide, sparsely to densely tomentose to villose</td>
</tr>
<tr>
<td>Stipule</td>
<td>ovate, 3–5 mm wide</td>
<td>lanceolate, 3–10 mm wide</td>
</tr>
<tr>
<td>Petiole</td>
<td>4–28 cm long, brownish pubescent</td>
<td>1.5–19 cm long, densely tomentose to sparsely puberulous</td>
</tr>
<tr>
<td>Lamina</td>
<td>ovate to broadly ovate, 10–20 x 8–23 cm, base deeply cordate</td>
<td>narrowly to broadly ovate, 5–20 x 2–20 cm, base truncate, or base cordate to shallowly cordate</td>
</tr>
<tr>
<td>Abaxial surface</td>
<td>glabrous, brownish pubescent on veins</td>
<td>pubescent to pilose throughout or denser on veins</td>
</tr>
<tr>
<td>Bract</td>
<td>narrowly ovate, 20–35 x 15–25 mm</td>
<td>lanceolate or sub-orbicular or triangular, 6–17 x 3–13 mm</td>
</tr>
<tr>
<td>Staminate flower</td>
<td>tepals 4, golden yellow</td>
<td>tepals 5, white to pale pink</td>
</tr>
<tr>
<td>Pistillate flower</td>
<td>tepals 5, unequal, golden yellow</td>
<td></td>
</tr>
<tr>
<td>Style</td>
<td>2 or 3</td>
<td>2</td>
</tr>
<tr>
<td>Capsule</td>
<td>trigonous-globose, 7–11 mm long, longest wing obovoid-oblong, 15–17 mm long</td>
<td>oblong-ellipsoid, 7–18 mm long, longest wing triangular to rounded oblong, 9–20 mm long</td>
</tr>
</tbody>
</table>

1 using the descriptions [Grierson 1991; Camfield & Hughes 2018]. The current distribution site is located within Biological Corridor–4 of the district with population less than 10 individuals and no threats have been observed in the field.

References


