

## A new variety of *Impatiens radiata* Hook. f. from Myanmar

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**Abstract** A new variety of *Impatiens radiata* Hook. f., var. *mindatensis* S.Akiyama, from Chin State, Myanmar was described. This variety is distinguished from var. *radiata* by the lower sepal without spur.

**Key words:** Balsaminaceae, Flora of Myanmar, Himalaya, *Impatiens*, spurless, taxonomy.

### Introduction

*Impatiens* (Balsaminaceae) is one of the most diversified genera in the Sino-Himalayan region. The first author has been studying Sino-Himalayan *Impatiens* since 1983, particularly in Nepal (Akiyama *et al.*, 1991). During our field survey in northwestern Myanmar in November 2017 we noticed plants of *Impatiens* that resembled *I. radiata* but the lower sepal lacked a spur. The length of the spur in *Impatiens* is usually one of the distinguishing characteristics and is considered to be important for the interactions with pollinators. *Impatiens radiata*, described by Hooker (1875) from Sikkim Himalaya and Khasia Mts, is a distinct species with interrupted racemes with many small flowers, and navicular lower sepals with straight spur and known to occur over a rather wide range in the Sino-Himalayan region; East Himalaya (Nepal to Bhutan), Assam to Myanmar, Tibet, and SW China (Yunnan, Sichuan, Guizhou) (Hara, 1979; Akiyama *et al.*, 1991, 1995; Grey-Wilson, 1991; Vivekananthan *et al.*, 1997; Kress *et al.*, 2003; Chen *et al.*, 2007). A variety of *I. radiata* with a long spur is recognized as var. *graciliflora* (Hook. f.) S.Aki-

yama (Akiyama, 2017). It is interesting that the spur of the lower sepal of *I. radiata* varies widely in length.

### Observation and Discussion

We observed *Impatiens* in the field in northwestern Myanmar and herbarium materials deposited in A, BM, CAL, E, G, GH, K, KATH, KYO, KUN, L, NA, NY, P, PE, RAF, TI, TNS, W, and WU. The *Impatiens* concerned, found in the vicinity of Mindat town, Natma Taung National Park, Mindat District, Chin State, northwestern Myanmar, has a spurless lower sepal (Figs. 1 and 2), which is apparently beyond the known variation (Akiyama, 2017). We therefore regard these plants as representing a new variety of *I. radiata*, which is named *I. radiata* var. *mindatensis*.

In *I. racemosa*, flowers of small individuals (5–10 cm tall) with a rather short spur are reported to be self-pollinating (Akiyama *et al.*, 1991), i.e. cleistogamous. This spurless variety of *I. radiata* grows to the normal height of *I. radiata* var. *radiata*, and bears chasmogamous flowers with a spurless lower sepal. *Impatiens*



Fig. 1. *Impatiens radiata* Hook. f. var. *mindatensis* at the type locality in Myanmar. A. Front view. B. Lateral view.

*margaritifera* Hook. f. in Yunnan, Tibet, and Szechuan has spurless flowers and similar to this new variety but differs from the latter by having uninterrupted racemes and larger flowers (to 2 cm long) (Chen *et al.*, 2007). To clarify the pollination of spurless flowers in *I. radiata* and other species of *Impatiens* more detailed observations and studies in the field are needed.

***Impatiens radiata*** Hook. f. in Fl. Brit. India 1: 476 (1875); Rec. Bot. Surv. Ind. 4: 15, 20 (1905). Hara in Hara & Williams, Enum. Flow. Pl. Nepal 2: 80 (1979). Akiyama, Ohba & Wakabayashi in Himal. Pl. 2: 70 (1991). Grey-Wilson in Fl. Bhutan 2: 96 (1991). Chen, Akiyama & Ohba in Fl. China 12: 76 (2007). Akiyama in Bull. Natl. Mus. Nat. Sci., Ser. B 43: 114 (2017); J. Jap. Bot. 93: 57 (2018).

Lectotype: Sikkim, Lachung, 9–10000 ft. (J. D. Hooker s.n., K000694747 [branch on right] [<http://specimens.kew.org/herbarium/K000694747>] [designated by Akiyama, 2018]). Syntypes: Sikkim, Regio temp., 6–12000 ft. (J. D. Hooker s.n., K000694746 [<http://specimens.kew.org/herbarium/K000694746>]). Khasia Mts., 5–7000 ft. (K?, not seen).

#### Key to the varieties

1a. Lower sepal without a spur

- ..... var. *mindatensis*
- 1b. Lower sepal with a distinct spur ..... 2
- 2a. Lower sepal, including spur, 7–15 mm long
- ..... var. *radiata*
- 2b. Lower sepal, including spur, 17–38 mm long
- ..... var. *graciliflora*

#### var. *radiata*

Distribution: East Himalaya (Nepal to Bhutan), Assam to Myanmar, Tibet, and SW China (Yunnan, Sichuan, Guizhou).

Specimens examined (see Akiyama, 2017).

var. ***graciliflora*** (Hook. f.) S. Akiyama in Bull. Natl. Mus. Nat. Sci., Ser. B 43: 115 (2017).

*Impatiens graciliflora* Hook. f. in Rec. Bot. Surv. India 4: 15, 21 (1905). Hara in Hara & Williams, Enum. Flow. Pl. Nepal 2: 79 (1979). Grey-Wilson in Fl. Bhutan 2: 96 (1991). Akiyama in Bull. Natl. Mus. Nat. Sci., Ser. B 43: 115 (2017); J. Jap. Bot. 93: 57 (2018), as *I. graciliflora*.

Lectotype: Sikkim, near Kurseong, 6000 ft. (Dr. Prain's Collector no. 64 I, in Aug. 1903, K000694665 [<http://specimens.kew.org/herbarium/K000694665>] [designated by Akiyama, 2018]). Syntype: Sikkim, Senchal, 7000 ft. (R. Pantling s.n., 25 Aug. 1901, K; Hort. Bot. Calcuta. [Kolkata] Recd [received] 1903).

Distribution: East Himalaya (Nepal to Bhutan)

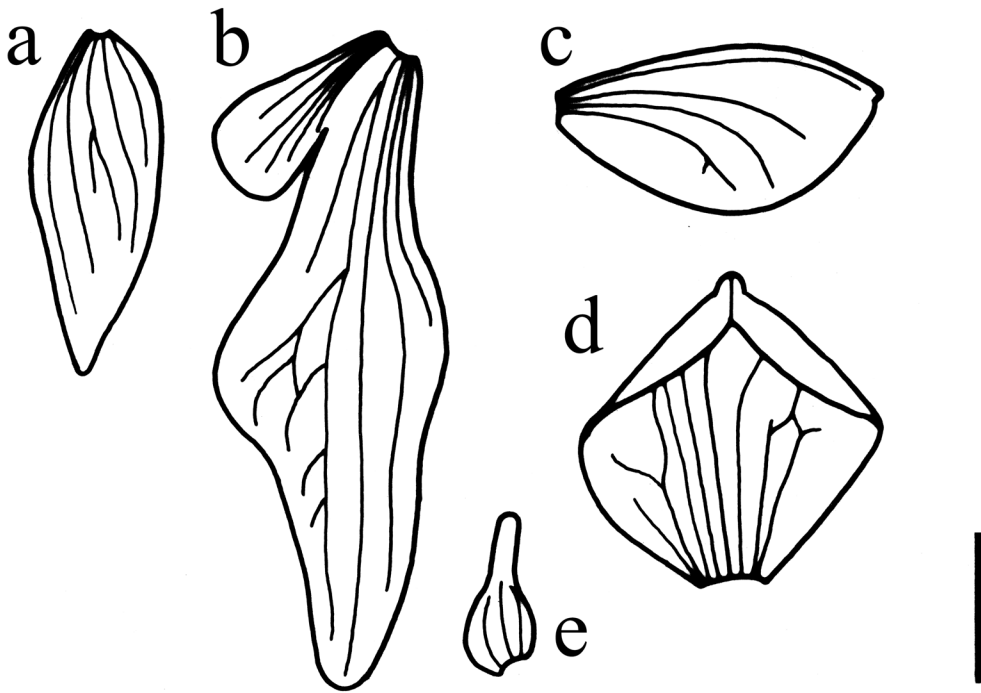


Fig. 2. *Impatiens radiata* var. *mindatensis* (S. Akiyama *et al.* MY2884, TNS). a: Lower sepal. b: Lateral united petals. c and d: Dorsal petal, lateral view, folded (c) and flattened (d). e: Lateral sepal. Bar indicates 2 mm.

and Myanmar.

Specimens examined (see Akiyama, 2017).

var. *mindatensis* S.Akiyama, var. nov.

(Figs. 1, 2 and 3)

Type: Myanmar. Chin State, Mindat Township, Mindat District, Natma Taung National Park, Pan Sakan, 39–40 miles from Mindat, N21°33'52", E93°47'29", 2400 m alt. (S. Akiyama, N. Tanaka, M. M. Aung, Aung Kyaw Thu MY2884, 27 Nov. 2017, TNS-holo and iso, RAF-iso).

*Impatiens radiata* var. *mindatensis* is distinguished from var. *radiata* by the lower sepal without a spur.

Plants 60–80 cm tall. Stem branched, glabrous. Leaves alternate, somewhat aggregated at the apical part, petiolate or sessile; petiole to 2 cm long, usually with glands at base; blade oblong-ovate to widely lanceolate, 6–14 × 2–6 cm, base attenuate, margin crenate, apex acuminate, both surfaces nearly glabrous. Inflorescences in axils of apical leaves, interrupted racemes, ascending,

to 4 cm long, 5 or 6(–8)-flowered. Peduncle to 2 cm long, glabrous; pedicels fascicled or whorled, ca. 10–15 mm long, nearly glabrous, with a bract at base. Bracts persistent, ovate, 2–5 mm long (including an awn), apex acuminate, awned.

Flowers pale pink or white, with red flush and/or dots, ca. 10 mm long, ca. 2 mm deep. Lateral sepals 2, ca. 2.2 mm long (including awn), ovate, asymmetric, apex acuminate, awned. Lower sepal white, without reddish veins and dots, ca. 4.6 mm long, ca. 1.8 mm deep, navicular without a spur. Dorsal petal pale pink or white with or without red flush on outside, compressed elliptic, ca. 4.4 mm long, ca. 4 mm wide when flattened, cucullate, apex obtuse, midvein slightly thickened on outside and minutely projected near apex, without a crest-like appendage. Lateral united petals pale pink or white, with red dots near base, ca. 8.7 mm long; basal lobe widely ovate, ca. 2.8 mm long, ca. 1.3 mm wide, apex rounded; distal lobe bilobed, ca. 7.4 mm long, ca.



Fig. 3. Holotype of *Impatiens radiata* Hook. f. var. *mindatensis* S. Akiyama. (S. Akiyama *et al.* MY2884, TNS).

3.5 mm wide, apex obtuse; appendage indistinct. Stamens 5; filaments linear; anthers ovoid, connective glabrous, without appendages. Ovary linear. Fruit ca. 2 cm long, linear. Seeds ovoid, ca.

4 mm long. Flowers and fruit in November.

Habit: In semi-shade in forests on wet soil.

Distribution: Myanmar. Chin State, Mindat District, Natma Taung National Park (known

only from the type locality).

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