

537. IMPATIENS NAMCHABARWENSIS

Balsaminaceae

Raymond J. Morgan, Yuan Yong-Ming and Ge Xue-Jun

Summary. *Impatiens namchabarwensis*, a new species of *Impatiens* found in Tibet, is described together with its taxonomy, distribution, ecology and notes on cultivation.

The river Yarlung or Tsangpo in Tibet is by far the highest river in the world, with an average altitude of 3000 metres above sea level. The source of the river is the Jima Yangzong Glacier, on the northern slopes of the Himalaya. The melt waters converge to form the river, gathering more water from many tributaries as it crosses the southern Tibet plateau for a distance of 2000 kilometres, before it turns south through the Himalayas, flowing on into India, where it is known as the Brahmaputra.

As the river traverses Tibet, it passes the highest point in the eastern Himalaya, Mt Namchabarwa, which rises to 7782 metres high. At this point it makes a U-turn and its rapid fall in altitude has carved out the deepest canyon in the world, (to a depth of 5382 metres and a length of around 500 kilometers), more than twice as deep as the Grand Canyon of the Colorado river. The extent of this canyon was unknown until as recently as 1994, when it was studied by a team of American and Chinese geographers.

The river passes through many climatic zones, from glaciers to rain forest, eventually coming into contact with the moisture laden winds blowing up from the Indian plains. The result is a perfect, undisturbed, wet and green ecosystem, home to thousands of plants, many of them unique, many unknown to the western world. The great Namchabarwa canyon as it is known, runs through an area of 17 000 square kilometers of uninhabited country, with no major road within 100 kilometers, so access is only possible on foot.

In the summer of 2003 Yuan Yong-Ming and Ge Xue-Jun made a field trip to the area taking them five days to reach the canyon near Lengduo, in the Medog county. There they found a new species of *Impatiens*, growing about 200 m from the river, on the southeast side of the highest peak of the eastern Himalaya, Namchabarwa, 29° 28.774' N, 95° 26.777' E, growing at an altitude

of 930 m in a very limited area, in the deep canyon in open shrubland, near the margins of a broad-leaved forest. The only other *Impatiens* species in the area was *I. arguta* Hook. f. & Th., which was growing some distance away, at both higher and lower altitudes. *I. arguta* is a very widespread species across the Himalaya and SW China, NE India and N Thailand. The new species has many characters in common with *I. arguta* but is quite different in other respects. The plant grows to 40 to 50 cm high and is quite floriferous, with bright ultramarine-blue flowers, a colour unique in the *Balsaminaceae*. They are open-faced, with a small, white central flush and a yellow throat. The new species is similar to *I. arguta* in having the flowers that are somewhat compressed laterally but differs in having a more infundibular lower sepal, gradually tapering into a recurved, upturned spur. *I. arguta* has a very saccate lower sepal, which is constricted abruptly into a narrow incurved spur. Unlike *I. arguta*, the dorsal petal has a pronounced forward point on the dorsal keel or crest. The plant was seen to be pollinated by a species of hawk moth.

CULTIVATION. Wild collected seed was sent to the National Collection in Port-Talbot, where it germinated quite well. The plants soon developed to flowering size, flowering throughout the summer months, providing a wealth of blooms and seed capsules. It seems to be a plant with considerable horticultural potential and should be quite hardy in most of the country, overwintering by thick, fleshy roots.

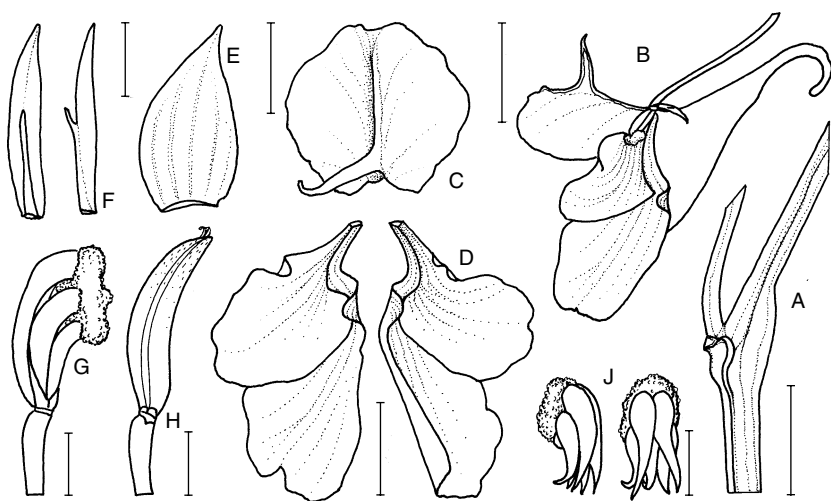
Impatiens namchabarwensis Morgan, R., Yuan, Y.-M. & Ge, X.-J. **sp. nov.** *I. arguta* Hook. f. & Th. similis, sed calcare longe acuminato, sursum arcuato praecipue differt. Herba erecta, basi decumbens; caulis 40–50 cm alta, ramosa, glaberrima. *Folia* alterna, ovata, margine dentata, submembranacea; petiola glandulis globosis basi laminae induta. *Flores* saepe geminati, 3–4 cm lati, caerulei; bracteae minimae; *sepala* *lateralia* 4; sepalum inferius infundibulare, 2–3.5 cm longum, 2 cm latum, intus pallide caeruleum et luteum, haematitico pictum; in calcar arcuatum haematiticum, c. 18 mm longum, angustatum; *petalum* *dorsale* 1.5 × 1.5 cm, orbiculare, retusum, dorso prominente, calcariforme crista, 4–6 mm alta indutum; *petala* *lateralia* connata, superiora ovata, apice retusa, 1.5 cm longa et lata; inferiora oblonga, 2 cm longa, 1 cm lata, apice biloba, auricula minima ornata. *Capsula* anguste fusiformis, 3–4 cm longa.

Type: China, Xizang, Lengduo, Medog; along the margin of broad-leaved forest, alt. 930 m. 29° 28.774' N, 95° 26.777' E; 29.9.2003, *Yuan Y.-M. & Ge X.-J.* CN2003-70 (**holotype:** NEU).



Impatiens namcharwensis

DEBORAH LAMBKIN



***Impatiens namchabarwensis*.** A, stem, showing swollen node; B, flower in side view, showing lower sepal and spur; C, dorsal petal from above; D, lateral-united-petals, side view; E, lower lateral sepal; F, upper lateral sepal; G, ovary surrounded by stamens; H, developing ovary; J, stamen clusters. Scale bars: A = 7.5 mm; B = 10 mm; C, D = 9 mm; E, F, G, H, J = 2 mm. Drawn by Deborah Lambkin.

DESCRIPTION. *Glabrous perennial*, 40–50 cm tall, with a thick, fleshy, root-stock. *Stems* much-branched, narrow, slightly woody at base; lower stems decumbent, often rooting at nodes. *Leaves* alternate, papery, pale green, ovate, 6–8 cm long, 3–4 cm wide, the apex sharply acuminate, the base attenuate; margin shallowly serrate, with 7–8 pairs of prominent lateral veins. *Petiole* 2.5 cm long, with a gland on each side. *Flowers* in pairs, sometimes solitary, bright ultramarine blue, with a small white markings at the centre and yellow in the throat. *Peduncle* 3–4 mm long, with very small lanceolate bracts *c.* 1 mm long; *pedicels* 3–4 cm long. *Lateral sepals* 4, in 2 pairs, spotted maroon-red; the upper pair, linear, small, 3–5 mm long, with a spur-like lobe near the apex; the lower pair, ovate, acuminate, 3–7 mm long. *Lower sepal* pale blue, yellow inside, with maroon streaks, 2 cm wide, 2.5–3 cm long, infundibular, gradually narrowing into an upturned, incurving maroon spur *c.* 18 mm long. *Dorsal petal* semi-cucullate, orbicular, 1.5 × 1.5 cm, retuse, with a very prominent high, forward pointing, dorsal, spur-like reddish crest, 4–6 mm high. *Lateral united-petals* 2.5–2.8 cm long; upper petal of each pair ovate, 1.5 cm long, 1 cm wide, retuse; lower petal of each pair oblong, *c.* 2 cm long, 1 cm wide, bilobed at end, with a small brown-striped auricle, *c.* 2 mm long, curling into the centre of the flower. *Stamens* with filaments 2 mm long. Capsule, narrow-fusiform, linear-lanceolate in outline, 3–4 cm long. Seeds *c.* 1 mm long, brown when ripe.

DISTRIBUTION. China, SE Xizang. Medog county. Known only from the type location and its vicinity. Nevertheless it is not rare for a distance of *c.* 20 km (96 km to 113 km along the road from Zhamu to Medog) in the valley of the Galongqu river, near the type location.

HABITAT. On the margins of wet, broad-leaved forest, 930 m.

ACKNOWLEDGEMENTS. The authors would like to thank C. Grey-Wilson for his help with this article. The field trip was supported financially by the Swiss National Science Foundation, 3100A0-102165, granted to Y.-M. Yuan, and the Key Project of the Chinese Academy Sciences (CAS)(KSCX2-SW-106), granted to X.-J. Ge.



Fig. 1. The Namchabarwa canyon on the Tsangpo river, habitat of *Impatiens namchabarwensis*.