

A new species of *Meconopsis*

The opening of an area of Bhutan to tourists has resulted in the discovery of a new blue poppy. TOSHIO YOSHIDA, RINCHEN YANGZOM and DAVID LONG describe their research and name it as a new species.

HAA DISTRICT, located in the far west of Bhutan, was opened to foreign travellers at the end of 2001. A Japanese tour group was permitted to visit the western highlands of the district in the summer of 2006. Hideo Takahashi, a member of that group, photographed some plants of *Meconopsis*, including *M. superba*. These photographs showed that this species was still surviving in Haa, 57 years since Frank Ludlow and George Sherriff collected the plant in the same area in 1949.

Since then, many tour groups from Japan and other countries have visited the highlands of Haa and photographed plants of *Meconopsis*, as well as many other plants. Although normally white-flowered, some of the photographs showed *M. superba* with pinkish, or rarely deep pinkish, flowers. They also showed hybrids between *M. superba* and *M. paniculata* growing in the southern habitats of *M. superba*; these have pale yellow flowers

Meconopsis elongata growing at 4,050m on Tsabjo La in Bhutan, its type locality

All photographs by Toshio Yoshida



and intermediate-shaped leaves and fruits. More interestingly, an unknown species of a prickly blue poppy with long racemes and five or more petals was found in and around the northern habitats of *M. superba*.

Field studies

We began field studies of this prickly blue poppy in the summer of 2013, as a collaboration between the Blue Poppy Society, Japan, and the National Biodiversity Center, Bhutan. These field studies had been preceded by studies of photographs taken by travellers in the region.

Magnified images revealed a very curious feature of the plant; the stamens had strikingly bicoloured filaments. In each filament the lower 5–10mm is straight, thick and dark purple in colour, and the upper 1–2mm is often curved, slender and white, consisting only of a narrow string of elongate vascular bundles



Top left: An upturned flower of *Meconopsis elongata* at the end of flowering with recurved strings of elongate vascular bundles protruded from the filaments.

Above: *Meconopsis elongata* with petals removed showing bicoloured filaments.

Right: *Meconopsis elongata* at 3,750m on Chele La at the boundary between Haa and Paro districts.



DESCRIPTION

***Meconopsis elongata* Tosh.
Yoshida, R. Yangzom & D.G.
Long, sp. nov.**

Type: Western Bhutan, Haa district, west of Tsubjo La, 4,123 m, 27°22'29"N, 89°12'47"E, 11 July 2013, R. Yangzom, R. Dorji & S. Gyeltshen 628 (holotype THIM; isotypes E, TD).

DIAGNOSIS

Meconopsis horridulae Hook. f. & Thoms. affinis, sed recemis longis, capsulis longioribus et subcylindricis, atque vascularibus fasciculis filamentorum elongatis et expositis differt.

Meconopsis elongata is related to *Meconopsis horridula* Hook. f. & Thoms., but differs from the latter in its long racemes, the longer and sub-cylindrical fruit capsules, and the existence of elongate and exposed vascular bundles in the filaments.

DESCRIPTION

Herb, usually monocarpic, occasionally semi-polycarpic, 35–80cm tall. Taproot elongate, 10–20cm long, 7–10mm broad, sometimes branched near head. Stem 1–10cm long, 6–13mm across, occasionally few branched near base. Entire plant covered with patent spine-like hairs; hairs pale straw-coloured, unequal in length, to 5.5mm long, rather thin but hard, base of larger hairs

slightly raised and usually tinged black to an irregular degree. Leaves crowded near base of stem; petiole broadly linear, 2–6cm long, 1.5–3.5mm wide; lamina elliptic, oblong or oblanceolate, 5–23cm long, 1.7–3.2cm wide, base cuneate or attenuate, margin subentire, often shallowly sinuate and wavy, occasionally coarsely toothed or incised, apex obtuse or acute, both surfaces yellowish green and covered with patent spine-like hairs. Upper leaves (bracts) shortly petiolate or sessile; lamina similar to that of basal leaves but smaller. Inflorescence racemose, rachis elongate, often comprising most of plant above ground; flowers in upper one third to two thirds of inflorescence ebracteate; pedicels erect or ascending, 2–8cm long in flower, to 12cm long in fruit, swollen at base of calyx. Flowers 9–20 per individual, usually semi- or fully-nodding and bowl-shaped, occasionally laterally-facing and widely open in strong sunshine, 4–5.5cm across; calyx 1.2–2cm long; petals 5–7(–9), pale blue-purple or pink, darker toward base, obovate, broadly obovate, rounded or elliptic, 2.2–3.3cm long, 1.2–2.7cm wide; stamens numerous, filaments thick except near apex, 5–10mm long, 0.3–0.8mm across, darker than petals, with upper 1–2mm protruding as a slender elongate string of whitish

vascular bundles from which dangles the anther; anthers 1.5–2.8mm long, 0.5–0.7mm across, thecae orange-yellow; ovary ovoid or ellipsoid, 5–10mm long, densely covered with ascending spine-like hairs; style 4–7mm long in flower, to 13mm long in fruit; stigma ovoid or clavate, 1.5–2.2mm across, divided into 4–6 lobes, lobes oblong, 2.5–3.5mm long. Fruit capsules cylindrically ellipsoid, 1.5–3cm long, covered with patent spine-like hairs; seeds blackish, 1.5–1.8mm long.

DISTRIBUTION

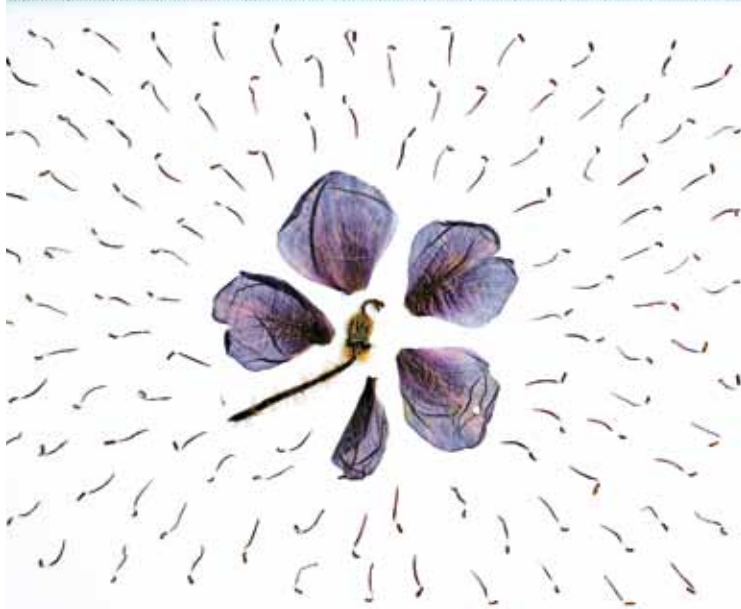
Haa district and its adjacent Paro and Thimphu districts (except their northern portions), western Bhutan; 3,750–4,300m in elevation.

HABITAT

West- or south-facing rocky slopes, stony open gulleys or rock fissures above tree-line exposed to wet summer monsoon rains; rooting among rocks or gravel with scanty soil.

SPECIMENS EXAMINED

G. Dorji s.n. 2013 (THIM); R. Yangzom, R. Dorji & S. Gyeltshen 628 (E, THIM, TD); R. Yangzom, T. Dorji & C. Wangmo 629 (THIM); R. Yangzom & C. Wangmo 574 (THIM), 579 (THIM); T. Yoshida 4432 (TD), 4467 (TD)



A dissected and pressed flower of *Meconopsis elongata* collected at its type locality

from which dangles a longish, yellow anther.

The field studies in western Bhutan confirmed that the white, string-like portion of the filament is observed consistently in every flower of this prickly blue poppy with five or more petals. They grow on the alpine, rocky slopes of Haa and the adjacent Paro and Thimphu districts, although not in their northern regions.

Another curious feature observed in the field is the occasional branching of the flower stem near ➤

its base, so that a single plant can appear to be tufted with several flowering stems. The plant is usually monocarpic, even if branched near the base of stem. However, it is suspected that the plant can occasionally be semipolycarpic due to the production of occasional side shoots bearing rosette leaves. Other features of this plant are its long racemes, subcylindrical fruit capsules, and yellowish-green leaves that are occasionally coarsely toothed or incised, usually with irregularly sized black marks at the

base of larger, spiny hairs.

Meconopsis contains 76 species (Grey-Wilson 2014) and the genus is distinguished from *Papaver* by its floral characters of two caducous (easily detached and shed early) sepals, 4–13 thinly membranous and variously coloured petals, numerous stamens, and a pistil with a style. The simple stem is another common character of the genus, except in very rare cases of some branching at the base, and this character separates it from the closely related *Catbcartia* (in part) and *Parameconopsis*.

The prickly blue poppy we found in the highlands of Haa and adjacent regions shows the typical characters of the genus, but with exception of occasional branching at the base of stem and the bicoloured filaments with a narrow portion.

Closely related species

Meconopsis horridula is the only species of prickly blue poppy with five or more petals occurring in Bhutan (Grierson & Long 1984, Grey-Wilson 2014). Descriptions of *M. horridula* in these publications

Meconopsis elongata at its type locality in Bhutan



make no mention of bicoloured filaments.

We consider *M. horridula* subsp. *drukyulensis* to be the taxon most closely related to the new plant, because of its racemose inflorescences, flower colour from blue to pink, and its often coarsely toothed or incised, yellowish-green leaves. However, our plant differs from subsp. *drukyulensis* in its longer racemes, smaller flowers, thicker and darker filaments (except at apex), and longer, subcylindrical fruit capsules, in contrast to those of *M. horridula* that are shorter and more or less ellipsoid. Most distinctively, our plant has the slender, white, string-like, elongate vascular bundles at the upper part of the filaments, which have not been reported, or observed by ourselves,

in *M. horridula* or its subsp. *drukyulensis*.

In our opinion, these very significant differences are conclusive evidence that our prickly blue poppy cannot be included in *M. horridula*, but is a new species (described on p179) as *M. elongata*.

Series placement

The branching near the base of the stem in *M. elongata* is a character probably shared only with *M. manasluensis* (Egan 2011) within the racemose species of *Meconopsis*. However, *M. manasluensis* is quite unrelated to *M. elongata* and belongs to subgenus *Discogyne*, characterized by disk-like appendages borne at the base of style. The bicoloured filaments with exposed white strings of vascular bundles in *M. elongata*, a unique character in the racemose species of the genus, are observed not only in this species but also in the two species of series *Heterandrae*, namely *M. heterandra* (Yoshida *et al.* 2010) and *M. balangensis* (Yoshida *et al.* 2011). However, the white strings of these species are very short and inconspicuous, and not always observed in all populations.

Section *Racemosae* comprises two series, *Racemosae* and *Heterandrae*

(Grey-Wilson 2014). Although *M. elongata* has its closest relationship with *M. horridula* subsp. *drukyulensis* in series *Racemosae*, as mentioned above, the characteristics of bicoloured filaments with darker and thicker filaments and white strings of elongate vascular bundles are somewhat shared by *M. balangensis* and *M. heterandra* in series *Heterandrae*. Therefore, *M. elongata* is best placed in series *Heterandrae*.

Cultivation

Meconopsis elongata is likely to be easier to cultivate than *M. horridula*, and much easier than *M. bhutanica* (Yoshida & Grey-Wilson 2012), because of the milder conditions of its native habitat. We hope that it will be a welcome newcomer to blue poppy cultivation, with its unique and interesting characters such as dangling anthers, branching at the base of stem, and flower colour changing from blue to pink.

Its eventual introduction to cultivation should help fulfil one of the aims of The Meconopsis Group, stated by co-founder Evelyn Stevens, to be: 'The work of The Meconopsis Group is now moving more towards the species, especially the rarer and more difficult species to grow, now that the primary aim of sorting out the big blue poppies in cultivation has been largely achieved'.

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