

A new species of blue poppy

THE DISTINCTIVE members of subgenus *Discogyne* are amongst the most fascinating and beautiful of all *Meconopsis*. With their attractive, rather dense, leaf rosettes and racemes of flowers ranging in colour from yellow to blue, purple and crimson, they are plants of the higher zones of the Himalaya. Undoubtedly, they would make eye-catching plants for the rock garden or choice specimens for alpine house culture. However, seed is rarely available and, being monocarpic, the species are tricky to keep in cultivation if seed fails to be produced.

Subgenus *Discogyne*

Subgenus *Discogyne* consists, as presently defined, of six species all native to the northern Himalaya and Tibetan hinterland, reaching north as far as the Lhasa region. They are all monocarpic herbs forming a solitary rosette of leaves that builds up over a number of years until flowering takes place. All the species of the subgenus bear barbellate hairs (soft, finely barbed bristles). The flowers are borne in simple racemes, of which only the lowermost are bracteate, and generally have 4, sometimes 5–6 (exceptionally 8), petals. The single most distinctive feature of the subgenus is the presence of a flattened, toothed or lobed, often reddish or purplish, disk

The new species, *Meconopsis bhutanica*, up to now confused with *M. discigera*

TOSHIO YOSHIDA and CHRISTOPHER GREY-WILSON describe a new *Meconopsis* species from west Bhutan which has long been known under a different name

that sits immediately on top of the fruit capsule. This disk is not like the stylar disk found in the genus *Papaver*, but is derived from an expansion of the base of the style; it is not found in any other members of the *Papaveraceae*.

Discovery of the new species

One of the authors (Yoshida) explored the Nepalese side of the Kangchenjunga Himal during two months in the summer of 1998. He observed many plants of pale-yellow-flowered *M. discigera* growing on rock-ledges or among moraine boulders beside the Yalung Glacier, the glacier that flows southwest from the main peak of Mount Kangchenjunga.

Meconopsis discigera was first described from plants collected on Gucha La (Gocha La), today a well-known trekking destination on the Sikkim side of the Kangchenjunga Himal. Although it has long since been a mystery as to the flower colour of the type specimens, it is now generally agreed that they would have had yellow petals. This is primarily because Gucha La is located just 10km east of the site where pale-yellow-flowered plants grow along the Yalung Glacier in east Nepal; both areas share a common climate and the plants are very similar in overall morphological characters.

Taking pictures of these plants beside the Yalung Glacier proved to be quite laborious work because the valley was covered all day in mist and rain cloud carried by the southwest monsoon, making photography very tricky. However, it does emphasize the conditions in which these plants have evolved, that of dry springs and autumns, very wet summers and winters blanketed in a protective layer of snow. In addition, many of the plants grew at inaccessible

heights on perpendicular rock walls. By this time, late July, the petals had fallen from the upper flowers and the dark red fruit disks characteristic of this and related species were very conspicuous.

Two years later in early July, Yoshida explored the Jaljale and Lumbasamba Himal to the west of the Kangchenjunga massif in east Nepal. Here he came upon familiar plants of *M. discigera* with their fresh, pale-yellow flowers, scattered on stony alpine slopes close to Umbak La on the Nepal-Tibet border: these plants looked very similar to those of Kangchenjunga Himal in most respects.

In mid August 1995, Yoshida followed the Chomolhari (Jhomolhari) Trek in west Bhutan as a leader of a trek and found plants of *Meconopsis* belonging to subgenus *Discogyne* with a typical dark red stylar appendage but with some fallen blue-purple petals. These plants were found in the vicinity of Tso Phu lake growing on unstable screes, together with some plants of the bristly *M. horridula* aggregate. The climate around Tso Phu appears to be drier and sunnier than that of Yalung Glacier or Umbak La. Grierson & Long (1984) allocated earlier collections of these blue-purple-flowered plants to *M. discigera*, following the revision of the species by Taylor (1934), despite the difference in flower colour. Differences in fruit capsule shape and size were also noted.

One of members of the trek revisited the area around Tso Phu in July the following year and took photos of the plants in flower. Since then, many other trekkers have followed the Chomolhari Trek observing en route this strange and attractive blue poppy. Numerous photographs of this charming species are now available, although

sadly, little additional herbarium material. By examining many photos of the plants taken by trekkers, more differences between those of east Nepal and west Bhutan were recognized. This has been in spite of the current restriction on the collection of plant material in Bhutan.

Related species

One of the authors (Grey-Wilson) revised subgenus *Discogyne* in 2006. This was the first attempt since Taylor (1934) who enumerated only two species within the subgenus: *M. discigera* and the Tibetan *M. torquata*. During his travels in east Nepal in 1979, Grey-Wilson had a chance to observe *M. discigera* in early fruit above Topke Gola, where it is locally common in boulder fields and on moraines. In the subgenus, Grey-Wilson (2006) included *M. pimatifida* (found on both sides of the Nepal-Tibet border zone) and two new species that he described, *M. simikotensis* (from west Nepal) and *M. tibetica*. The latter was based on plants collected and photographed by the Alpine Garden Society trek to Kangshung, a northeastern valley of Mount Everest (Chomolungma), in 2005. However, at the time of his revision Grey-Wilson did not have enough material of either the eastern Nepalese or Bhutanese plants of the *M. discigera* aggregate to distinguish these two populations definitively. In addition to these, a further species, *M. manasluensis*, was recently described from the Manaslu region of central Nepal (Egan 2011). This has entire leaves, but also scarlet flowers borne uniquely in the subgenus on multiple, few-flowered racemes.

A distinct species

We have examined the details of the Bhutanese plants recently photographed by Japanese and European tourists and compared ➤

DESCRIPTION

Meconopsis bhutanica

Tosh. Yoshida & Grey-Wilson, sp. nov.

Meconopsis discigera D. Prain affinis sed floribus purpureo-azureis, patelliformibus vel cyathiformibus, capsulisque obconice cylindricis differt.

Type: West Bhutan, Paro Chu, Kumathang, foot of Pangte La (Bhonte La), 3,800–4,000m, end of June 1949, *Ludlow, Sherriff & Hicks 17471* (holotype BM, isotypes BM).

[*M. discigera* sensu Taylor, pro parte in Taylor (1934) p108].

Similar to *M. discigera*, but differs from the latter in the blue-purple, not pale yellow, dish- or cup-shaped, not bell-shaped, flowers, and also in the obconic-cylindric, not barrel-shaped, fruit capsule.

Plant monocarpic, 22–50cm tall in flower, to 65cm tall in fruit, covered for the most part by 3–7mm long, whitish or fawn-coloured barbellate hairs, usually with a felted mat of old leaves forming a thick wadge at the base of the living leaf rosette, especially in older plants which may be a number of years old before flowering, these generally beset with stiff, fawn-coloured hairs.

Taproot elongate, 12–30cm long or more, 7–12mm diameter at the top, gradually narrowed to the tip.

Stem erect, usually weakly ridged, 7–20mm diameter at the base, yellowish green, sometimes suffused with red-purple. **Leaves**

mostly clustered at or near the base, the cauline leaves few, gradually reduced in size upwards; the lowermost leaves spreading to somewhat recurved, the middle and upper leaves ascending to erect; lamina oblanceolate, 3–10cm long, (0.8–)1.2–3.1cm wide, with a cuneate base formed by the attenuate lamina running down the petiole, the apex subacute to obtuse, the margin with (3–)5–7 coarse, somewhat oblique, subobtuse teeth towards the apex, the upper-surface rather pale or yellowish green, somewhat rugose with depressed lateral-veins, the lower surface paler; petioles of lowermost leaves to 8cm long, narrowly winged, expanded towards the base and half-sheathing. **Bracts** only present at the lowermost flowers, sessile, leaf-like but smaller, elliptic-oblong, with a broad, somewhat decurrent base and an entire to trilobed apex. **Inflorescence** racemose, ebracteate except for the lowermost flowers, bearing 6–19, saucer- to cup-shaped, half-nodding, but occasionally erect (terminal flower) flowers. **Buds** oval, nodding to half-nodding; sepals 13–22mm long, patent-bristly, greenish, often suffused with red-purple. **Pedicels** 12–32mm long in flower, elongating to 30–92mm long in fruit. **Petals** 4, rarely 5 in the terminal flower, blue-purple, occasionally reddish purple; broad-ovate to orbicular, 40–

60mm long, 30–55mm wide, the apex subobtuse to rounded, the margin flat, not recurved, entire or somewhat erose. **Stamens** numerous, about one quarter the length of the petals, with filaments similar in colour to, but darker than, the petals; anthers yellow to orange-yellow, browning with age. **Ovary** oblong-ovoidal, pale green, densely covered with erecto-appressed bristles; style 2–4mm long, broadening at the base into an ovary-wide dark purple, somewhat lobed disk; stigma short-clavate, 2–3.5mm long, pale green to purple, equal to or slightly exceeding beyond the boss of anthers. **Fruit capsule** obconic-cylindric, 18–26mm long, 12–16mm diameter, surmounted by the disc-like appendage with spreading, toothed margin, 15–22mm diameter.

Flowering in late June and July, occasionally later. Habitat is unstable scree slopes, talus slopes, moraines and streamside gravels at valley heads, at altitudes of 3,800–4,400m. Known only from the region around the northern watershed between the catchments of the two rivers Paro Chu and Thimpu Chu in west Bhutan.

Specimens examined: *RE Cooper 1990* (BM, E), 2944 (BM, E); *PC Gardner 672* (BM); *Ludlow, Sherriff & Hicks 16279* (BM), 16399 (BM); 17455 (BM, E), 17456 (BM), 17471 (BM, E); *Bowes-Lyon 15045* (E).

them with Nepalese plants of *M. discigera*. We conclude that the two populations are distinguishable as different species, naming the Bhutanese plants with blue-purple flowers *M. bhutanica* (see panel above).

Historical collections

Meconopsis bhutanica was first collected by Roland E Cooper on 27 July 1914 in flower (Cooper 1990) and on 28 September in fruit (Cooper 2944), near the head of Thimpu Chu above Parshong (Barshong) at an altitude of 4,000m. These specimens

were, however, ill-preserved and it proved very difficult to examine the details of flowers and leaves.

The famous four-member British team that explored Bhutan in 1949 (Frank Ludlow, George & Betty Sherriff and JH Hicks) collected the species four times at different stages.



Tim Leaver

The basal leaves of *Meconopsis bhutanica*

In mid May specimens were collected prior to flowering (L, S & H 16279) on the south slope of Pangte La (Bhonte La on recent maps, and now on the well-trodden Chomolhari Trek) at 4,000m. They then collected pre-flowering specimens at the end of May (L, S & H 16399) on

the south slope of Yale La, probably the same area as the Cooper collections referred to above. They then collected flowering specimens at the end of June (L, S & H 17471) on the north side of Pangte La near the Tso Phu. And finally, specimens with mature fruit were collected in

mid October (L, S & H 17455), also from the north side of Pangte La.

Original records of *M. discigera*

The first description of *M. discigera* (Prain 1906) was based on fruiting specimens collected in 1905 by GH Cave on Gucha La in west Sikkim. Similar plants, this time with flowers, were collected from the type locality by a native collector on behalf of Cave including those in 1913 (Cave 6628), although the petals have been removed from these specimens and there is no record of the colour. Prain (1907) revised his original description and added that the flowers were yellow; however, he subsequently corrected the colour to blue (Prain 1923). Taylor (1934) followed Prain's last description and excluded yellow from the flower colour of the species, recording them as 'dark-crimson, red, purple, or pale-blue'. This clearly resulted from a mix up with the Bhutanese material that had come to light in the intervening years.

The name of the type locality Gucha La was corrected to Guicha La on the Cave 6628 specimen, but it is recorded as Gocha La on recently published maps of the region. Gocha La is located at the head of Onglaktang Glacier, southeast of the main peak of Mount Kangchenjunga. The altitude of the type locality was recorded as 11,000–12,000ft on the original type specimens, but the Cave 6628 specimen collected at the same locality in 1913 has a record of 15,000ft. Yoshida measured an altitude of 4,500m (14,764ft) at the foot of Gocha La beside the glacier, without finding any plants of *M. discigera* there in the summer of 1995. In reality we have no reliable records of the flower colour of the plants collected at the type location, indeed plants may no longer exist at that particular locality. ➤



Tim Leary



Toshio Yoshida

Meconopsis bhutanica (left) and *M. discigera* (right). Apart from the flower colour, note the difference in leaf tothing

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THE MAIN CHARACTERISTICS SEPARATING <i>MECONOPSIS BHUTANICA</i> FROM <i>M. DISCIGERA</i>		
	<i>Meconopsis bhutanica</i>	<i>Meconopsis discigera</i>
Petal colour	blue-purple	pale yellow
Petal shape	broad-ovate to orbicular; apex subobtusely rounded; margin flat, entire to slightly erose	obovate to orbicular; apex rounded to truncate; margin recurved in the upper third, strongly erose
Flower shape	dish- to cup-shaped	broadly bowl-shaped
Flower posture	half-nodding, occasionally the terminal one erect	nodding to half-nodding
Fruit capsule	obconic-cylindric	broadly to narrowly barrel-shaped
Stigma	short-clavate, 2–3.5mm long, almost unchanged after flowering	clavate, 3.5–7mm long, elongating to 12mm long and somewhat free after flowering
Disk-like appendage of style	dark purple from the opening of the flower, broader than fruit capsule in diameter	pale green or yellowish at first, dark-red after flowering, similar to or slightly larger than fruit capsule in diameter
Stamen length	about a quarter of the petal length	about a fifth of the petal length
Anther colour	yellow to orange-yellow	dull orange to brownish yellow
Leaf shape	usually 5–7-toothed toward apex, with broadly winged petioles	usually 3-toothed at apex, with narrowly winged petioles
Leaf posture	ascending to erect, except basal ones	spreading to ascending
Upper surface of leaves	pale or yellowish green, somewhat rugose with depressed secondary veins	deep green, flat, the secondary veins obscure
Stem	usually weakly ridged	weakly to strongly ridged
Hairs	usually whitish, shorter, less dense	usually yellowish, longer, denser
Basal leaf mat	densely matted at the base, but never very thick, or scarcely present at all	densely matted at the base, to 10cm or more in thickness
Habitat	unstable scree slopes, streamside gravels in valley heads; favouring drier conditions, often shrouded in drifting mists, but sometimes exposed to strong summer sunshine	rock ledges, among boulders, on stable stony slopes of high alpine hills covered with rocks and sandy earth; favouring wetter conditions, shrouded in drifting summer mists most of the day

Horticultural potential

From a horticultural point of view, members of subgenus *Discogyne* have great potential. However, like so many high Himalayan alpine they require exacting conditions in cultivation. Primarily they need cool moist summers and dry winters. In

the wild, plants are protected under a deep layer of snow during winter months, while in summer the atmosphere is kept moist by the monsoon which suppresses temperatures, especially at altitude.

Although seed of *M. discigera*, and incidentally probably also *M. bhutanica*, has been introduced on a number of occasions over the years, plants have not persisted in cultivation for any length of time.

Both species are monocarpic and take several years to reach flowering maturity. Seed is set only under ideal conditions, and plants can be easily lost if they fail to set seed if one

unfavourable season follows another.

However, gardeners find these types of plants a challenge and will try to perfect their cultivation whenever seed is available. Many Himalayan *Primula* and *Gentiana* species are equally demanding. What is certain is that these high altitude species of *Meconopsis* are among the most beautiful alpine to be found anywhere in the world.

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