

The Meconopsis Group

Report of talks by Toshio Yoshida at The Royal Botanic Garden Edinburgh on 8th May 2010

Talk 2

Quest for *Meconopsis* in Sichuan, 2009

(written up by Toshio Yoshida and lightly edited by Evelyn Stevens)

Slide show of the exploration to Yele Nature Reserve, Mianning Xian, southern Sichuan

To start, the locality of exploration was shown with Google Earth images.

The speaker visited this area between 3 – 6 Aug., 2009, in order to observe *Meconopsis wilsonii* subsp. *wilsonii*. This species was published only very recently (2006) as a new species by C. Grey-Wilson. The type specimen had been collected in 1908 by E. H. Wilson in a mountain near Baoxing (Moupin), western Sichuan. Then, the same species was collected again in 2005 by a joint team led by David Boufford, Harvard University Herbaria, and Hang Sun, Kunming Institute of Botany, in the Yele Nature Reserve, Mianning Xian, southwestern Sichuan, after nearly 100 years from the first collection.

There, in the Yele Nature Reserve, the speaker observed *M. wilsonii* subsp. *wilsonii* at the end of its flowering among sub-alpine forests. He then climbed a metalliferous mountain in the northern part of this region where iron ore is extracted from several mines. He there encountered two unknown species of *Meconopsis* growing on alpine stony slopes. He is convinced these are new species, although they are as yet unpublished.

He has named one plant *M. pulchella* because of the beautiful flowers and also its resemblance in colour to the flowers of *Primula pulchella*. This species is related to *M. impedita*, but differs from the latter in having 4 petals (not 5-8 as in the latter) which are magenta in color (not blue-purple) and also in its leaves being always entire (never lobed). The plant is covered in bristles that are up to 6 mm long, sometimes with thick and blackish bases, unlike in *M. impedita*.

He has named the second plant *M. heterandra* because of its possession of dimorphous stamens. This plant is related to *M. rudis* and *M. racemosa*, but is clearly different from them in that its inner filaments are inflated with an air-filled cavity and are inward-curved, thus covering the ovary. The leaf-blade of the plant is rhombic-elliptic to oblanceolate, to 10 cm long, the margin coarsely serrate with 2-4 pairs of teeth, otherwise sinuate or entire, both surfaces are glaucous green. The plant roots deeply among rocks or into rock fissures on southwest facing steep slopes exposed to wet up-currents in summer.

There followed a section of comparative studies, carried out by means of an extensive series of paired photographs to substantiate Toshio's taxonomic conclusions.

1. Differences between two sub-species of *Meconopsis wilsonii* Grey-Wilson, subsp. *wilsonii* and subsp. *australis* Grey-Wilson.

Subsp. *australis* is usually larger than subsp. *wilsonii* in the lower leaves and the flowers. The lower leaves of the former have 5 to 7 pairs of larger lobes, while those of the latter have more than 7 pairs of smaller lobes. The fruits capsules of both subspecies are similar in shape and hairiness.

2. Differences between *Meconopsis heterandra* (unpublished) and *M. rudis* (Prain) Prain

Beside the clear difference in the filaments, in *M. heterandra* the raceme has a shorter rachis than in *M. rudis*; the leaf blades of *M. heterandra* are often elliptic with 2 – 4 pairs of teeth in the margin unlike the latter, but the colour of the leaves is similar; the spiny hairs of *M. heterandra* are shorter and weaker than those of *M. rudis*, and the raised blackish bases of the hairs of *M. heterandra* are not so prominent as in *M. rudis*.

3. The spiny racemose blue poppy growing around Balang Shan, Xiaojin Xian, western Sichuan

In the past this plant has been often identified as *Meconopsis rudis* or *M. racemosa*. But examination of enlarged photos of this plant, however, show inflated filaments as in *heterandra*, which do not occur in *rudis* or *racemosa*. Because of the resemblances, by virtue of the inflated filaments and other characters, this Balang Shan plant is believed to be a variant of *M. heterandra* or a hybrid between *M. heterandra* and *M. rudis*. Further field research in and around this region and acquisition of good quality specimens, especially to show the stamens, are necessary before the identity and distribution of the plant can be settled.

4. Differences between *Meconopsis heterandra* (unpublished) and *M. racemosa* Maxim. including *M. prattii* (Prain) Prain

Besides the clear difference in the filaments, in *M. heterandra* the raceme has a shorter rachis than in *M. racemosa* (including *M. prattii*), the leaf blades of *M. heterandra* are often elliptic with 2 – 4 pairs of teeth on the margin unlike in the latter; the spiny hairs of *M. heterandra* are shorter and weaker than the large hairs of the latter, which has many tiny hairs as well.

5. *Meconopsis racemosa* Maxim. as an old polymorphic species widespread in the Sino-Himalayan region (from Qinghai and Kansu to Nepal)

The speaker showed many photos of various local forms of *M. racemosa* sensu lato including those taken around type locality of *M. prattii*, which seem quite difficult to distinguish from *M. racemosa* sensu stricto.

A local form of *M. racemosa* in northern Sichuan, near the type locality of this species in Kansu, is characterized by the long upright pedicels in the lower half of raceme and the narrower leaves. A local form of *M. racemosa* growing on calcareous lands around Xiangelila (Zhongdian), Yunnan, is characterized by the long, cylindrical raceme with a thick rachis and short pedicels, and by the somewhat glaucous appearance. The plants of this form grow vigorously even in cultivated fields or collapsing slopes such as shoulder steeps of newly constructed roads as in the manner of pioneer plants. A local form in western Bhutan often has blackish bases to the spiny hairs. Many plants with intermediate forms between *M. racemosa* and *M. horridula* sensu stricto are observed in the northern Bhutan.

6. Differences between *Meconopsis pulchella* (unpublished) and *M. impedita* Prain

Meconopsis pulchella is related to *M. impedita* but differs from the latter in petal number (4, not 5-9 as in the latter), and color (magenta or reddish purple, not bluish purple as in the latter), and also in the entire leaves, which are lobed in the latter.

7. A small blue poppy resembling *M. pulchella*, growing around Balang Shan, Xiaojin Xian, western Sichuan

Although this small blue poppy has been often identified as *Meconopsis lancifolia* in the past, the plant is different from *M. lancifolia* sensu stricto as indicated by the short rachis and long pedicels.

8. Differences between *Meconopsis pulchella* (unpublished) and the plant mentioned above (*M. aff. pulchella* growing around Balang Shan)

Meconopsis pulchella

- a. Scapose plant without a stem exposed above ground nor a peduncle.
- b. Petals 4.
- c. Hairs more or less uniform with raised bases that are often tinged with black.

Meconopsis aff. pulchella growing around Balang Shan

- a. Plant with 3-10 scapes that are usually fused at the base, occasionally with a long raceme.
- b. Petals 5-13, rarely 4.
- c. With minute hairs as well as long hairs that are not tinged with black at the base.

9. *Meconopsis lancifolia* (Franch.) Franch.

In *M. lancifolia* sensu stricto, the rachis of the raceme is thick, the pedicels are short and late flowers are borne near the base without a long pedicel. This species occurs within a limited area of northwestern Yunnan and adjacent areas such as Muli in southwestern Sichuan.

10. Differences between *Meconopsis pulchella* (unpublished) and *M. henrici* Bur. & Franch. growing near Kangding

M. pulchella differs from *M. henrici* growing near Kangding by the absence of dilated filaments, which is a unique character of the latter, but sometimes it is not obvious in dwarf plants. *M. pulchella* has 4 petals unlike the latter (5 or more).

There followed a section of comparative studies concerning *M. lyrata* and its related taxa using photographs of herbarium specimens and of living plants.

1. *M. lyrata* (Cummins and Prain) Fedde sensu stricto

M. lyrata should be considered in a narrow sense as having the following features: a weak and flexible stem, stalked leaves, pinnately (irregularly) lobed leaf-blades, often with bulbils in the axils of the lower leaves, and it is distributed around the highest mountains in the world from western Sikkim to central Nepal.

The type locality of *M. lyrata* is in western Sikkim. This is considered, however, to be at the western periphery of the distribution of *M. lyrata* sensu stricto. There, in western Sikkim grow many forms intermediate with a closely related taxon, *M. polygonoides*.

2. *Meconopsis compacta* Prain

This species was first collected by a local collector of George Forrest's somewhere on a northwestern slope (Tibetan side) of Meili Xueshan above the warm valley called Tsawarong (Chawalong in modern Chinese, Sarong according to George Forrest). It was included in *M. lyrata* by George Taylor. *M. compacta*, however, seems to be distinguishable from the latter as follows.

In contrast to *M. lyrata* sensu stricto, *M. compacta* usually has a single flower at the top of the stem without any buds in the axils of the leaves; the leaves are aggregated near the base of plant, are always stalked, even the uppermost one; and the stem is not so weak and flexible as in the *M. lyrata*.

M. compacta occurs on the western slopes of Meili Xueshan and some adjacent areas such as northern Biluo Xueshan and Gaoligong Shan. Ludlow & Sherriff collected specimens resembling this species near Doshong La, southeastern Tibet, which is far away from Meili Xueshan.

3. *Meconopsis exilis* (provisional name)

M. exilis was collected on the western slopes of the southernmost Biluo Xueshan within Bijiang region by the speaker and provisionally named by him.

Besides having a flower at the top of the stem, *M. exilis* bears flower-buds in the axils of the upper leaves and an undeveloped shoot with a flower-bud in the axil of the lower leaves. Flowers are nodding downward with 4, occasionally 5, pale mauve petals.

M. exilis resembles *M. lyrata* sensu stricto in the flower, the short napiform taproot, and the soft bristles. But it differs from the latter, however, in its thicker stem rising upright from the base and it has sessile upper leaves half-clasping the stem; the leaf-blades are entire or repand, usually never lobed. The upper 3 leaves sometimes form a pseudo-whorl like *M. baileyi*.

M. exilis grows in the northern part of the same range as *M. compacta*, but it differs in having a flower-bud or a shoot in the axil of the leaves and the upper leaves are sessile and half-clasping.

M. exilis is distributed on the western slopes of the southern Biluo Xueshan and on the western slopes (Burmese side) around Chimili pass of Gaoligong Shan.

Stainton, Sykes and Williams collected specimens similar to *M. exilis* in Lamjung Himal, central Nepal, very far from Bijiang which is the locale for *M. exilis*. The only difference from the Stainton, Sykes and Williams' collections is the absence of a pseudo-whorl of the uppermost leaves.

4. *M. polygonoides* (Prain) Prain

This species was first collected in Chumbi, southern Tibet, situated between Sikkim and Bhutan, and later included in *M. lyrata* by George Taylor. A Chinese team collected specimens very similar to *M. polygonoides* at Jilong, or Kyirong, southern Tibet, north of central Nepal. David and Margaret Thorne photographed similar plants to *M. polygonoides* in northwestern Bhutan.

Differing from *M. lyrata* sensu stricto, *M. polygonoides* has a single flower at the top without any flower-bud or shoot in the axils of the leaves, the upper leaves are sessile and the leaf-blades are entire or repand (not lobed), somewhat resembling those of *Polygonum*.

M. polygonoides is considered to be a different species from *M. lyrata* as D. Prain mentioned, and also from *M. compacta*.

5. Supposed status of *M. exilis* among related taxa

If *M. exilis* differs from *M. lyrata* sensu stricto, the following two questions were finally posed:

- a. Should *M. exilis* be included in the old polymorphic species *M. polygonoides*?
- b. Is *M. exilis* a distinct species with a disjunct distribution ranging from Yunnan to central Nepal in the same way as occurs in *Androsace zambalensis*, *Astragalus yunnanensis*, *Oxytropis yunnanensis* and *Incarvillea arguta*.