

# STUDY TRIP REPORT FOR THE MERLIN TRUST

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**THE WILD FLORA OF YUNNAN, CHINA**

**JULY-AUGUST 2011**

Plate a) Faye Steer with *Meconopsis horridula*, Langdu Mountain, Yunnan (4492m)

## Introduction:

As the bus gradually climbed up the steep mountain track, we watched the landscape change from birch and oak woodland, to hemlock forest carpeted in lush moss. The trees became larger and gnarled, roots growing over mossy rocks and branches draped in cobweb-like lichens. The air was still and the mist hung like a veil. 'Now,' I thought, 'I'm in China.' It was mystical and staggeringly beautiful, just how I had always imagined the mountains would be – like an elegant watercolour. As we continued, the mist grew thicker, the vegetation sparser. The trees were replaced by twisted Rhododendrons, a few ice-pink flowers still hanging on, followed by rocky scree with scrappy plants dotted about. By now the mist was so thick all we could see was the steep scree slope rising above us, and the sheer drop to the other. One of our party called out 'Ting Cher' ('stop please' in Mandarin) and we all immediately saw why – shining out of the slate grey rock was a single flash of turquoise blue. It was what we had been longing to see – the legendary blue poppy.

This species was *Meconopsis horridula*, so named because every part of the plant is covered in spines. The blue poppy – *Meconopsis betonicifolia*, first described by Pere Delavey and later introduced to Europe by Frank Kingdon Ward (Badger et al, 2008), was one of the plants I had wanted to see ever since I had learnt about the vast diversity of flora in China, and Yunnan in particular. As a teenager I had fallen in love with a beautiful blue *Meconopsis* in the local garden centre and proudly planted it in my parents' garden in Devon. Within 2 days the whole thing had been eaten by slugs. I was sorely disappointed and never tried again. However, that one heartbreak didn't stifle my love of plants, learnt from my Father and Grandmother, and when I left school I sought to make horticulture my career.

## Overview:

At college I developed a deep passion for plants from mountainous regions – woodland plants from China and North America, South America and Australia. Pretty much all the things I had seen in the gardens of Cornwall, West Scotland and Ireland. That coupled with a lifelong fascination for all things oriental, and given the opportunity to travel - by the Percy Thrower Bursary (Institute of Horticulture Young Horticulturist of the Year Competition) and the Merlin Trust – China was the obvious choice. The recent BBC series 'Wild China' had shown me the rich diversity of Yunnan, in particular the Gaoligongshan in the far West, where 10% of the world's flora is found here alone (Badger et al, 2008).

The group I travelled with was organised by Prof. Sun Weibang of Kunming Botanic Garden and Duncan Coombs from Pershore College, and was made up of students, friends of Duncan's, myself and Colin Steer – my Dad! An experienced horticulturist, he taught me so much about plants. So I was thrilled when he could join me. We planned to travel in late July-August and spend two weeks in the west of Yunnan, visiting several different habitat types, gradually climbing in altitude. Heading west from Kunming to the Hengduan mountain ranges, north to the Tibetan plateau, and then east, finally reaching the Yulong Mountain at nearly 5000m above sea level.

I had particularly wanted to visit the Hengduan Shan ranges, famous for the incredible richness of plant diversity due to the deepness of the valleys. Approximately 700 flowering plant species are endemic to the area (Badger et al., 2008). The plant diversity varies dramatically with relatively small changes in altitude (Wharton, Hine and Justice, 2005), from lush, tropical valley floors, rising to warm temperate forest and then to alpine forest and, above the treeline – alpine scree slopes.

## Kunming to Liuku:

We had a few problems getting to China (missed flights, lost luggage) but get there we did, and in Kunming met our guides; Dr Dao and Dr Jo – botanists from the Kunming Botanic Institute. We stayed in a very comfortable hotel and began our trip with a visit to Kunming Botanical Gardens, where we met David Paterson, Director of Horticulture, previously of RBG Edinburgh and an expert on the flora of the Yulong Mountain. The gardens were beautifully maintained, with an important collection of *Michelia* - now included in *Magnolia* – (of debate with Prof. Weibang), and *Camellia reticulata*. Unfortunately the display glasshouses were closed for a big renovation project taking place – hopefully next time I go back I shall see them then. An interesting display of the Yunnanese flora, with ethnobotanical references was probably more interesting with an English translation – but did show what we might see in the wild.

Leaving Kunming (most of us with our suitcases), we headed west to Liuku in SW Yunnan, passing through Xiaguan. Most of the route was motorway, but the scenery was interesting. We passed villages of ethnic Bai people and their fields of rice, maize, tobacco and *Eucalyptus* trees, which although invasive, produce valuable oil. We had to stop for our first lily, followed by an excited scramble up the mountain track to see the beautiful specimens of a white *Lilium*, similar to *L. regale*.

Liuku itself was a stark white, neon city perched on the steep valley side, overlooking the Nu Jiang (Salween) river. Thankfully the area we were to visit was more picturesque.

Our first proper botanising began the next day. We drove north-west to Pianma, on the border with Myanmar. Quickly gaining altitude we left the tropical crops in the valley and into *Pinus yunnanense*, *Cassia siamea* and *Toona ciliata* trees. We saw *Corararia nepalensis* and purple flowered *Buddleja davidii*.



Plate 1. *Lilium primulinum* (2000m)

At 1500m we came into humid evergreen broadleaved forest, with *Alnus nepalensis*, and *Betula* sp. At 2000m we saw another lily, *Lilium primulinum* – custard yellow with maroon streaks; several beautiful multi-flowered specimens, at just the right height to photograph from the roadside. Sadly its fragrance didn't match its beauty. Here were also *Phytolacca* and several species of *Rubus*. 200m higher we came across a vast stand of *Hedychium yunnanense* or *H. spicatum* on a rocky slope, along with another orange-flowered species similar to *H. densiflorum*. Also nearby were few *Urtica* sp., used for their fibre. When I asked about these the conversation went thus.

Me 'Urtica? as in stinging nettle?'

Dr Dao 'Yes'

'Does it sting?'

'Yes'

'Like in England?'

'Yes'

'Worse?'

'Oh yes'

Right. Better watch out for that one. Shame I didn't warn my Dad, who put his hand right on one.

Climbing higher we found dense forest of mainly *Dipertotum sinicus* and *Tetrarsepum sinensis*, with *Acer*, *Magnolia* and seedlings of *Rhododendron sino-grande*. On a fallen log was a beautiful white *Coelogyne* orchid and red *Aeschylanthus* growing on it. Nearby were *Crawfordia* (Gentianaceae) with pink flowers. I was pleased to see a *Helwingia* with its epiphyllous fruits growing in the middle of its glossy green leaves (Wharton, Hine and Justice, 2005), rather a botanical novelty. It had red fruits which suggest that it could be *H. himalaica* (Hinkley, 2009b). We also found a huge (2m tall) yellow orchid, with no visible leaves, a mycotrophic genus called *Galeola* (Flora of China, online) and within metres a tiny epiphytic orchid (4cm across) clinging to a fallen branch. Another highlight was an unusually coloured purple-red *Meconopsis wilsonii* subsp. *Australis* a recently described subsp. (Flora of China online). There was a surprising lack of big trees on this mountain range. Most of what we had seen lower down was secondary regrowth of not more than 40-50cm diameter, clearly felled for timber. We did see timber lorries coming out from Myanmar laden with enormous boles of hardwood, and these stacked up in the yards in Pianma. All witness to the destruction of the Myanmese mountainous forest, destined for luxury furnishings and construction in China.



Plate 2. *Hedychium* sp. (possibly *H. yunnanense* or *H. spicatum*) (2200m)



Plate 3. *Helwingia* (possibly *H. himalaica*) (2200m)

## Liuku to Jianchun:

We travelled north to Jianchun, via Dali for a spot of shopping to replace Dad's lost clothes (in his suitcase, sitting in Kunming airport). It's tricky getting clothes and shoes to fit when you're much taller than the average local man, but it was very entertaining for the shop assistants.

On the road, I'm sure I catch a glimpse of a paper mulberry *Broussonetti papyifera* in a village garden, before short diversion along a track leading to a known site for *Cardiocrinum*. We pass a plantation of Pacific Yew *Taxus brevifolia*, for producing anti-cancer drugs. At Madingley Hall we collect the clipping from our own yew hedges for the same reason, so it's good to find some similarities. Along the track we find *Sarcococca*, *Viburnum*, and a distant *Decaisnea insignis* (Hinkley, 2009b) (another one ticked off my must-see list) yellow *Mimulus*, pink and white *Impatiens* and a beautiful maroon and white *Cirsium bolocephalum*. We come across an orchard of another must-see; the Sichuan pepper bush *Zanthoxylum piperitum* (Madison, 2008). Similar to *Zanthoxylum americanum*; the North American 'toothache tree', this Rutaceae member has berries which when eaten produce an analgesic effect, causing numbness and tingling in the mouth. A strange taste, but a favourite in Sichuan cookery where it is often combined with chilli peppers for a 'numbing and hot' flavour combination.



Plate 4. Sichuan pepper *Zanthoxylum piperitum*

The road to 99-Dragon Pool Mountain (Lijuan Mountain) was a little worrying, even though the upper reaches were paved with rough cobbles. In the lower valley I spot a patch of bright purple *Roscoeas* on a steep bank by the road, along with some lovely white and purple orchids – possibly *Habernaria flabellata*. Nearby are *Thalictrum delaveyi*, *Coralocarpus*, *Leopodium*, *Indigofera*, *Hypericum*, and a shrubby *Smilax*.

At 2750m, we see a single flower of *Lilium ducharteri* white with maroon flecks, next to a small *Acer davidii*, *Silene yunnanensis* and lots more purple *Roscoeas*. We reach a bubbling mountain stream at 2970m, with *Acers* and *Sorbus microphylla* in fruit, *Tsuga* and *Rhododendrons*; all clothed in streamers of lichens. Pink patches of *Primula poissonii* were near the water with *Parnassia wightiana*, *Geranium yunnanense*, *Pedicularis rupicola* and *P. rhinanthoides*, *Ligularia* and a beautiful dark maroon-flowered *Impatiens*.



Plate 6. *Parnassia wightiana* (2970m)

We stop at 3700m, where a well-made but rather empty hotel has been built near a lake. It is rather cold here, so I can see why less-adventurous visitors than ourselves have stayed away. The woody patches of *Tsugas* and *Rhododendrons* surrounding the lake are packed with botanical gems, all slightly strange and unusual-looking. Under the trees we find pale pink bells of *Lloydia ixioleoides*, purple *Primula deflexa*, the alien-looking *Pleurospermum yunnanense*, and a strange composite with campanulate yellow flowers. Having been told that there are blue poppies growing up here we start to follow the paved track through the trees. This at least keeps most people off the fragile plants growing in the thick moss. It appears that not all visitors are as environmentally-conscious as us, due to the amount of picnic rubbish strewn around. This is in contrast to the cities, where armies of women are employed to constantly sweep the paths and roads with bamboo brushes. Perhaps people think that the same will happen out here? The altitude causes noticeable effects here, making me breathless and having to walk at a much slower pace than normal. We don't have time to make it to the poppies, but do see some bright blue and yellow *Corydalis*, *Megacodon*, *Ligularia stylophorus* and a pink *Notholirion bulbiferum*. I'm also fascinated by the diversity of fungi – brown, green and mauve mushrooms, just here. This area must be a great place for mycologists as well as botanists.

Plate 7. *Primula deflexa* (3700m)



## Jianchun to Zhongdian:

After leaving Jianchun we then travelled to Zhongdian on the Tibetan Plateau, firstly stopping at some yak meadows at 3300m. The patches of colour on an otherwise dull-looking patch of grassland tell us of what awaits. It is wet and boggy, swathed in mist. Many of the plants here have mechanisms to cope with the low-nutrient level in the soil – caused by the acidity and leaching by water of key minerals. There are *Spiranthes* sp. orchids, which have symbiotic relationships with fungi; the many species of *Pedicularis* are parasitic on the grasses; and *Drosera* sp. are insectivorous.

In a scrubby slope by the road we find several pink *Lilium* amid the prickly *Quercus* bushes – where the yak cannot reach to graze. With them are *Geranium yunnanense*, *Adenophora capillaris* or *A. jasionifolia*, *Pedicularis monbeigniana*, and possibly *P. siponantha*. On the level, boggy area are yellow *Trollius yunnanensis*, *Halenia elliptica* – which we will see much more of, purple orchids and vetches, and a beautiful white *Dipsacus*.

The Tibetan houses were huge, built to survive the rain and winter cold. They are trapezoid in shape, with sloped roofs, and open to one side with painted and carved wood. Traditionally the livestock would be housed on the ground floor with the family living above, and wood for fuel stored in the open attic. Potatoes, mustards and barley are farmed, restricted by the short growing season. Barley straw is hung to dry on rustic, picturesque wooden racks in the fields. The city of Zhongdian has been 're-branded' as Shangri-La, and developed with the intention of attracting Chinese tourists. The new buildings are in the 'Tibetan style' and investment is evident. However, we're here to see the plants –not just the dried and preserved ones sold by the medicinal herbalists in the town. This day unfortunately one of our party falls ill with altitude sickness and is hospitalised before being taken to Lijiang at lower altitude.

The rest of us visit Langdu Mountain, which turns out to be our best day – although sadly without a very disappointed Duncan. We begin in a yak-grazed valley, which vaguely resembles English moorland. There are *Pinus yunnanensis*, small *Betula* sp., and a spiny understory *Quercus* – which from a distance could be gorse. Among the *Quercus*, we find multi-flowered white *Lilium ducharteri*, yellow *Primula grandiflorum* and two medicinal plants *Podophyllum hexandrum* and *Triosteum himalayanum* – which often share a habitat (Hinkey, 2009a). By the stream were stands of hot-pink *Primula yunnanensis*, with *Arisaema* sp. and *Ligularia langcombegensis*.



Plate 7. *Primula yunnanensis*

We intend to reach the top of the mountain first and then botanise the lower slopes on the way back down, so it's tantalizing seeing meadows full of *Primula* and *Iris* but disappointing to see the destruction caused by mine-workings we pass. At 4430m, in conifer and *Rhododendron* forest, is a stunning *Notholirion bulbiferum* with *Primula scandiflora* and *Megacodon stylophorus*. It's on the scree slopes at 4492m that we find the aforementioned blue poppy *Meconopsis horridula*. The alpine plants growing here were in bright jewel shades of turquoise, electric blue, hot pink, purple, salmon, and lime green; almost designed to stand out from the wet slate-grey of the rock. Along with the blue species, there was also a purple *Meconopsis* (possibly *M. prattii*), *Gentiana*, *Corydalis* ssp. of yellow, blue and orange, and various *Saxifraga*. Slightly higher and in a more sheltered aspect were *Gentiana* just beginning to open, small pink *Primula*, and a dark red/black composite with drooping flowers and leaves similar to a *Ligularia*, which I have yet to identify.



Plate 8. *Meconopsis* (possibly *M. prattii*) (4492m)

A wide, shallow stream on the descent yielded some interesting finds; yellow *Pedicularis*, pale yellow and blue prostrate *Gentiana*, blue harebell-like plants and a striking *Corydalis* growing in the shallow water.

Our planned itinerary became thwarted further when it turns out that the member of our party who was taken ill also lost her passport and all her money. Because of this we spend longer here and cancel the planned few days further north in Deqin and Benzilan. We have time for an afternoon trip, primarily to find the *Lilium* again that Duncan missed the day before. We find it eventually, but firstly visit a stream with *Primula poissonii* and *P. floridae*, and a

*Codonopsis*. There are dozens of butterflies and the scene is idyllic, but I imagine that this habitat is harsh and unforgiving in the long winters. Our next stop is a nature reserve by a lake. This initially looks like grass pasture with no other vegetation, but once we look closer, we find some surprising specimens. *Leopodium*, *Drosera*, *Salvia*, and a prostrate *Cotoneaster*. Several orchid genera are present, *Spiranthes* and a beautiful, pale green butterfly shaped orchid about 25cm tall with 4-5 flowers on a single spike, with two basal cordate leaves. We also see a hoopoe bird *Upopa epops*. After several wrong (but picturesque) turns, we find Duncan's lily. It's *Lilium ducharteri* and he's glad we went back, especially when we find another lily about 600m away. This time it's *Lilium taliense* - a great specimen, safely tucked amid a bush of prickly *Quercus* which has to be negotiated in order to take a photograph.



Plate 9. *Lilium taliense*

## Zhongdian to Lijiang:

The next day we travel to Lijiang via a trip to Lake Tianchi – a mountain lake. However, this is halted by a blocked road half way up the mountain, but we have an enjoyable time studying the flora of the route back down. Under the *Abies* I'm delighted to find some incredible fungi, including huge *Amanita* sp., and come across a local lady collecting fungi in a basket on her back. This is a subsistence income for the local people, who are yak-herders, spending the summer months grazing the yak at higher altitude pasture. Along the road are bamboo, *Betula*, *Salix*, *Viburnum*, *Berberis* and various ssp. of *Rubus*. We see a single specimen of *Rodgersia*, and a climbing *Schisandra* in fruit. I also find a blue-flowered plant similar to a *Gentiana*, and a *Polygonatum* nearby. At the bottom of the valley, among *Betula*, *Populus* and *Pinus*, we find yellow flowered *Clematis*, and large specimens of *Lilium ducharteri* and *taliense* again. So far that's four species of *Lilium* in one trip, which makes for a very happy trip leader!

Our group is reunited in Lijiang, and after dinner and a good night's sleep, we are recharged enough to take on the Yulong Mountain – also poetically called the Green Jade Dragon Snow Mountain. It reaches 6000m, and RBG Edinburgh has a research station on it. We are delayed setting off due to continuing problems caused by the lost passport. We drive as high as possible in the bus, and then we have to walk the rest of the route up the mountain. The intention is to reach the research station, which involves a climb of 1000m. The route is paved with stone steps but as we climb it's clear that most people don't make it very far, judging by the increasing vegetation over the path. At the lower regions are *Berberis*, *Verbascum*, *Buddleja davidii* covered in butterflies, just like in Britain. We also find *Clematis ranunculoides* var. *ranunculoides* climbing through other plants, another recent introduction (Wharton, Hine and Justice, 2005).



Plate 9. *Clematis ranunculoides* var. *ranunculoides*

As we climb the path, the increasing altitude makes the exertion more difficult. It's warm and the rain becomes heavier the further we climb. I'm leading the party and we decide to turn back as we run out of time. Unfortunately we didn't make it to the research station, and without the GPS it wasn't possible to know how close we got. There was plenty of plant life to view anyway; *Parthenocissus* and *Tetrastigma* climbers; red flowered mistletoes in the trees; *Rodgersia* and *Arisaema*; and another *Lilium primulinum*.

### **Lijiang to Kunming:**

After a morning spent in Lijiang Old Town - a UNESCO world heritage site, and the Black Dragon Pool Park which is overlooked by the Yulong Mountain, we flew back to Kunming. The next day we were supposed to be flying home, but were delayed yet again. This time a typhoon had closed Shanghai airport. So, a rescheduled flight and an extra day meant that we could explore Kunming city further. It was worth the walk to the park, where vast lakes of sacred lotus (*Nelumbo nucifera*) (Phillips and Rix, 1998) were a spectacular sight and regularly attract many visitors.



Plate 10. *Nelumbo nucifera* – sacred lotus

An evening walk and meal with Prof. Weibang of Kunming BG, gave us the opportunity to learn about the street trees in the city. An often-used tree is *Firmiana simplex* – which has unusual flowers with large green bracts. He also showed us a large specimen of *Pistacia chinensis* which he had lifted from the wild with a (huge) tree spade and replanted in the city. It was doing very well, and he was clearly pleased with its success. It was a beautiful city and I would have liked to see more of it, and to visit the Western Hills nearby, famed for their flora.

**Summary:**

The experience of visiting such diverse landscapes in only one small area of China has given me a greater appreciation for the effect that topography and conditions have on the flora. I had wanted to see the plants which I was familiar with in cultivation, and to learn more about their interactions with other plants in the same habitat. As a practical horticulturist, seeing the conditions in which they naturally grow, will help me know best how to cultivate them.

I was unprepared for the sheer diversity that we saw; even in small areas, so many families were represented, and so many species present. If I had the opportunity to return I should like to concentrate my studies on fewer groups of plants. For example, just in the genus *Rubus*, we must have seen at least 20 distinct species, many of which could be worthy of cultivation in the UK. In particular, I should like to spend more time in the Gaoligongshan range, and to learn more of the ethnobotanical uses of wild plants. Dr Dao, our guide from KGBI is an expert in that particular field, and showed me many interesting plants. I would also like to return in the Spring, to see the *Magnolia* and *Rhododendron* in full flower. I thought this trip would have satiated my desire to travel to China, but I feel that it may have just have whetted my appetite for more.

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