

From subtropical forests to alpine meadows, a journey through Yunnan's diversity

Travel scholarship report



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Foreword

I first heard about southwest China's incredible biodiversity at a lecture given at my Horticultural College in France last year. The lecturer had made several trips to Sichuan, Yunnan and Tibet and his talk (and photographs) of the plants growing there and the diversity of habitats made a great impression on me. During the summer of that same year I worked (as an apprentice) in Jardin d'altitude du Haut Chitelet (Haut Chitelet Altitude Garden).

This wonderful alpine garden, a satellite of Nancy Botanical Garden, has an extensive collection of Chinese alpine flora. While working there, I became more familiar with these plants and more interested in their natural habitats and the rest of the local flora.

Then working at Kew as botanical horticulturist apprentice I encountered more of these plants, especially in the woodland section of the Gardens but also in the Arboretum. I realised how horticultural history was tied to this part of China when I learned about E. Wilson, G. Forrest, J-M. Delavay, A. David and how these plant hunters shaped our horticultural landscape.

When I was offered the possibility of a travel scholarship during my apprenticeship, I immediately thought about going to Yunnan. I wanted to see this amazing plant diversity and explore different habitats to try to grasp an understanding of what makes this part of Asia so special.

And finally, China had attracted for a long time, even before my horticulture career. The landscapes, the culture but, even more, the way of life and the atmosphere attracted me.

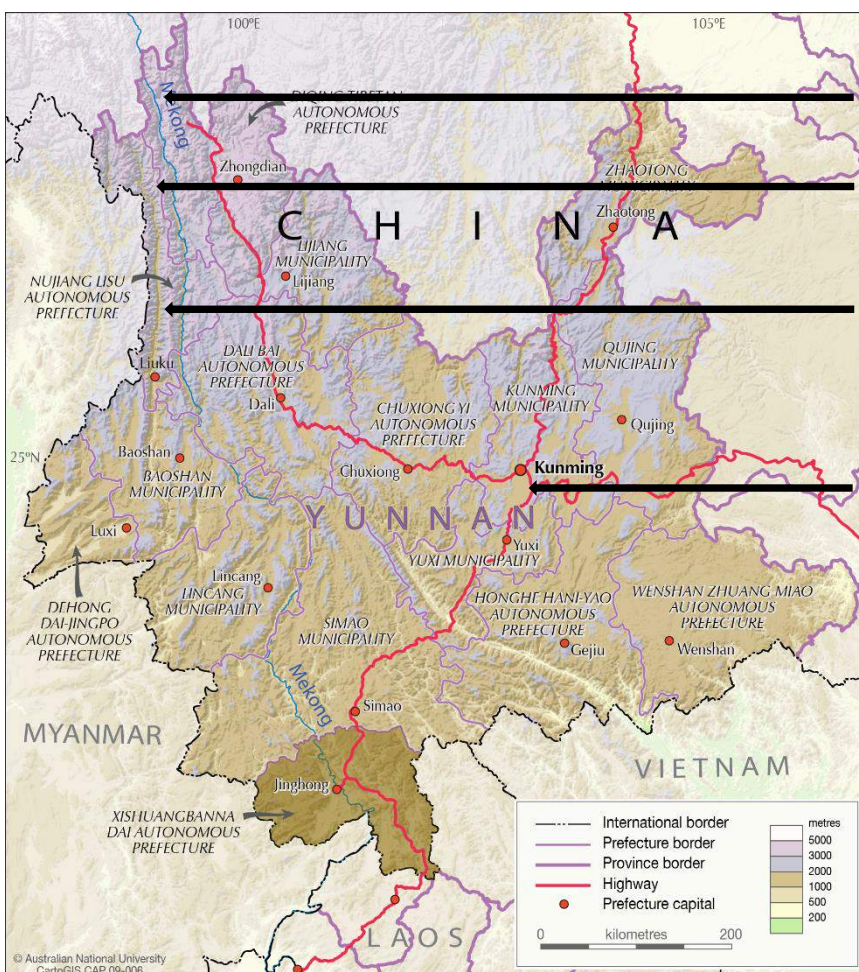
Yunnan geographic situation in East Asia and China and itinerary.

Southwest China, and particularly Sichuan, Yunnan and East Tibet, bears the highest diversity of temperate flora on the planet. With 12000 species and 3500 being endemic (according to CEPF) this region is a hotspot of biodiversity and often the centre of origin of numerous genera. The main factors responsible for this are:



- The transition situation from the Qinghai-Tibet plateau (north west) to the tropical and subtropical forests of south china and Indochina (South and South east);
- The influence of the summer monsoon coming from the south China sea and the Bay of Bengal;
- The pronounced altitude gradient (from c. 100m to c. 6500m above sea level) and other topography features like deeply cut valleys and extensive plateaux;
- An extended latitude gradient resulting in climatic variations;
- The North/South nature of the mountain ranges allowing travel and crossing of species;
- The fact that these regions were free from the influence of the quaternary glaciations, which resulted in the preservation of an ancient temperate flora.

Itinerary:



Day 18 to 21: Kawa Karpou National Park

Day 10 to 17: Dimaluo and Nu Mountains

Day 6 to 9: Fugong

Day 1 to 5: Kunming Botanical Gardens

1 Kunming Botanical Gardens



Kunming Botanical Gardens had to be my starting point for this trip. The gardens are part of the Kunming Institute of Botany which is an important institution of research, conservation and education on the flora of South West China. They have one of the major herbaria of China and the "Southwest China Germplasm Bank of Wild Species" (seed bank). The Institute was founded in 1938 and the botanical garden has always benefitted from their collaboration. It supports the research with large living collections and is a great place for public education. It is also a very beautiful garden with interesting collections and garden design.

I wanted to start my travel there for a few reasons. First it was an obvious starting point from its location in the capital city of the province and that gave me some time to settle before going in the wild. Secondly, I wanted to visit a Chinese garden and look at the horticulture side of it. And finally, I was curious to see how a botanical institution works in China and how different it would be compared to Kew.

When I was organising this visit, staff from the garden were not very keen to let me work with the horticulture team. It was probably related to visa issues and maybe they wanted to preserve me from the hard-working conditions and language barriers. Consequently, I spent most of the five days at the garden with the interpretation and education team. They gave me as much time as I needed to visit the gardens which are fairly large (40 hectares), most often guiding me through the different sections.

The garden is designed as a large park with different sections. It is in a residential area in the north of the town and is visited by local residents. Because of the age of the garden and the local climate (warm and moist) most of the trees are mature and parts of the arboretum look like a forest.

The part of the arboretum that struck me the most was the Magnoliaceae collection. In western Europe we are used to seeing deciduous Magnolia in our gardens or the evergreen *Magnolia grandiflora*. They are usually used as specimen trees but here they created a forest-like area of Magnolia and related genera (now all in Magnolia). These are evergreen magnolia from subtropical China, planted quite close to each other and reaching 10 to 15 m. They were unfortunately not flowering when I visited but I was told that the flowers are usually scarce and high in the canopy. Most of the species were unknown to me and threatened in various ways. *Magnolia zenii* and *Magnolia sinica* (syn *Manglietastrum sinicum*) are for instance both critically endangered.



The planting of the understorey was quite clever. Because of the area covered by this part of the garden, I think that the gardeners decided to keep it simple and planted easy to maintain, rapidly spreading, ground cover evergreen perennials, like dwarf bamboo, *Ophiopogon* spp. and ferns. This planting gives a semi-natural feel to the area and works very well in this part of the garden.



Another area called the Liquidambar Avenue was really impressive. It is a long tree avenue taking visitors from the arboretum to the new glasshouse. It is planted of *Liquidambar acalcyna*, a Chinese relative of the more common American *L. styraciflua*. I could only imagine the colour show it must be in autumn and it was the first of the many times I thought that I should stay from spring to autumn in Yunnan!

The Camellia garden is the oldest part of the garden. It has one of the most extensive collection of Camellia species and cultivars. Again, I was told that the spectacle is amazing at a time of the year I was not there. Nonetheless, the collection was beautiful, and I loved how they managed the understorey planting. As in the arboretum, they opted for a work reducing solution. But here the ground was covered by *Oxalis* species. I do not know which one it was, but it was something similar to *O. acetosella*, light green and very lush, contrasting well with the dark green foliage of Camelias.



The Liquidambar avenue in autumn, courtesy of KBG



The camellia garden in bloom earlier in the year. Unfortunately, no oxalis undercover here. Photo T. Barnes

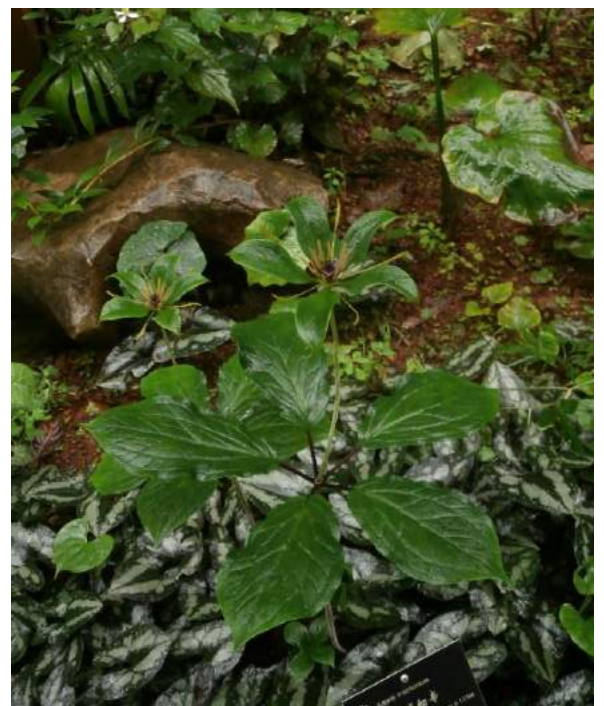
A central collection of the garden is the medicinal plant garden. It is organised around traditional Chinese medicine and the 50 essential plants that are used for it. It is designed as a sort of walled garden with traditional Chinese architecture and design. I had a walkabout in this part of the garden with two member of the interpretation team, one of whom was doing her master's degree on traditional medicine. I was told about many plants and their use in medicine. I was impressed by the number of plants and plant associations you could use in traditional medicine.



The entrance of the medicinal garden, a call back to traditional Chinese gardens



*Under this pergola were growing *Panax giseng* and *Panax quinquefolius*, fundamental plants in traditional Chinese medicine*



*Another famous medicinal herb, *Paris polyphylla**



There were a lot of interpretation signs for the public. Under a pergola, used for shading visitors and more delicate plants, a reproduction of an apothecary cabinet was displayed, with many small drawers that were used to store herbs. This part of the garden was very lush, with a lot of herbs and vines. The design and the atmosphere conveyed was very pleasing. Some parts seemed a bit overgrown and plants were happily intertwining each other. Nonetheless, this area was very interesting and one of my favourites of the garden.



The strange looking flowers of Stemona tuberosa

The newly built glasshouse was quite impressive. It looks a bit like a snail's shell and the size of the structure is striking. The plants were mainly from the southern and more tropical part of the province but also from other part of the world. They had big ambitions for the design and brought fully grown trees rescued from road works. However, some of them failed to establish and died. The infrastructure had some maintenance issue when I visited it and the pests and disease management was a bit subpar. But they had great plants and some design ideas were very well thought out. For instance, there was a hanging pathway encircling the trees, with a *Parashorea chinensis* growing through the middle of the path.



View from the inside of the tropical zone of the glasshouse

PESP

This area of the garden is perhaps not the most interesting visually, but this is where the *ex situ* conservation work of the KIB is done. The acronym stands for Plants of Extremely Small Populations. All the plants here are endangered and some are reduced to a population of less than ten individuals in the wild. Even if most species are insignificant from a horticultural point of view, this part of the garden is essential for conservation and future reintroductions of the threatened flora of China. This area embodies the way KIB and the botanical garden work hand in hand and the role they are playing in Yunnan's plant research and conservation.



Young trees of the critically endangered *Magnolia omeiensis*



I was very happy to see the critically endangered *Glyptostrobus pensilis*, one of the few deciduous conifers and the one to which the more common *Metasequoia glyptostroboides* is related by name and similar aspect.



Carpinus putoensis, CR



Neolitsea sericea, CR

Interpretation

Whilst staying with the interpretation and education team I had an overview of the different projects they were working on. They had had to update and renew all the labels in the garden, and they added QR codes containing more information for the public. I had worked in a botanical garden that had similar thoughts, but in China the use of QR code is much more developed than in Europe and is part of everyday life.



Label with QR code



Example of an Interpretation sign



Simple and effective visual interpretation sign in the medicinal garden

I had a good insight into the relationship the garden is building with school students when I visited a neighbouring school where grade 6 students had had an herbarium project in collaboration with the garden and the institute. The idea was to sensitise children to the flora of their area and the works of the institute. They had to collect their own specimens and press and dry them, then mount them on herbarium sheets. Chen told me that he was hoping to wake up the scientific interest of these children and maybe give them an interest in botany or ecology. This was the first year this collaboration was implemented; both the garden and the school were documenting it.



Staff from the herbarium mounting specimens. School children were taught these techniques for their project.

Similarly, two other members of the interpretation team were starting a project on plant/animal relationships. They were working on seed dispersal by ants (myrmecochory) and focused on *Stemona tuberosa* which is studied by scientists of KIB and is also a local traditional medicinal plant. We met with Master's Degree students working on ants who showed us how to identify ant species, how to collect and showcase specimens. We also tried to set up a possible workshop in the garden where children could witness seed dispersal by ants, using *Stemona tuberosa* seeds. The results were good but needed more practice and improvement to be applicable to a group of children.

Finally, I was asked to give a short presentation on how interpretation and education is done at Kew. I spoke of the school of Horticulture and the various courses Kew offers. I also described briefly Kew's education and interpretation strategy.

My visit of Kunming Botanical Garden and Kunming Institute of Botany was a great start to this journey. Everyone was very welcoming and made everything possible to make this visit interesting and enjoyable. It was a good and necessary introduction to Yunnan's flora and the perfect opportunity to visit a Chinese garden. I really liked some parts of the garden but could not help noticing areas where more maintenance was needed. But considering the size of the garden compared to the number of staff employed, this is understandable.

As for science and education, I found a lot of similarities with Kew's missions and strategies. It was a bit surprising to see that both gardens were trying to accomplish the same goals towards the conservation of endangered flora and public education. It does make sense in a way because every botanical garden shares common objectives (stated by BGCI) but I would not have thought it would be so similar. Where Kew has the resources and experience, Kunming Botanical Garden and KIB are developing well thought out and advanced projects.



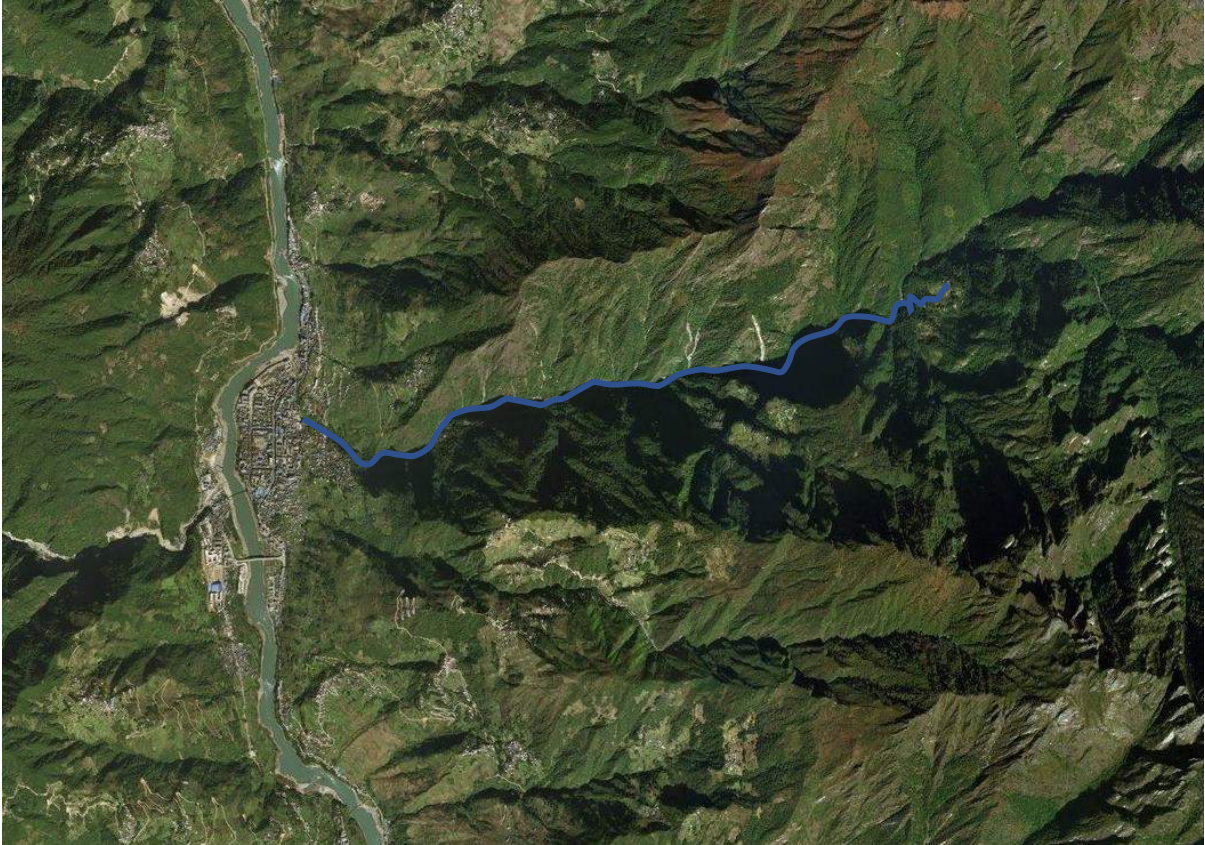
2 Subtropical broadleaved forests of the Nujiang valley



After Kunming I headed to the Nujiang valley, about 500 km West of the Province's capital city. The landscape changed drastically from the plateaux of Kunming to the Salween river cutting through the steep slopes of the Hengduan Mountains. This part of Yunnan caught my attention when planning my journey for its high biodiversity and its National Nature Reserve. It is a relatively undeveloped part of the province and there was not a lot of tourism activities going on, which attracted me as well.

From the riversides of the valley to the peaks of the mountains, a succession of habitats can be observed. I spent about a week in the area, staying two days in the town of Fugong and then heading North up the valley to the higher village of Dimaluo. There I met my guide Aluo who took me in the surrounding mountains and crossed with me the high pass to the Mekong valley. During my stay in the Nujiang valley I focused on subtropical evergreen broad-leaved forest and higher altitude coniferous broad-leaved mixed forest.

Fugong, day 1



My itinerary on the first day in Fugong

In Fugong I met with Lu, a friend of a contact from Kunming Botanical Garden. Although she was not a botanist, she spoke English which is quite rare in the area. She was also from Fugong and knew the region very well. She showed me a bit of the town on my arrival and took me to a small village in the mountains for my first day of botanising.



Fugong, between river and mountains



Lu and her friend, both teaching English in school, and my guides for the day

On both days at Fugong, I explored side valleys of the Nujiang. Fugong is actually at a lower elevation than Kunming, sitting at 1200m. It meant that the lower parts of the valleys were subtropical evergreen broadleaved forests.



Habitat and forest observed on my first day in the Nujiang

In those forests, I observed mainly disturbed habitats along roads or paths with these types of vegetation. However, it didn't prevent me from seeing very nice plants. The first one I identified was a beautiful *Impatiens* (*I. xanthina*) growing under a cascade.



Impatiens xanthina

I observed typical plants of disturbed grounds like *Persicaria capitata*, *Thailandia cordifolia*, *Houttunia cordata*, *Fagopyrum* sp.



Houttunia cordata



Fagopyrum sp.

I also spotted a strange looking twining herb called *Trichosanthes* that I had already seen at Kunming Botanical Garden. I also saw ferns, like *Asplenium nidus*, tree ferns (Cyatheaceae), *Selaginella* (not strictly speaking a fern).



Selaginella sp.



Trichosanthes sp.

I was quite lost about trees, a feeling that would stay with me for my whole time in the Nujiang. A pendulous shrub caught my attention and I identified it as *Schizomussaenda henryi*. The showy white bract-like parts are actually a modified sepal called calycophyll.



Schizomussaenda henryi and a tree fern (Cyatheaceae)

On that first day we did not push very high, but enough to see conifers starting to dot the forest. We crossed a cultivated area where the locals were growing Zingiberaceae, cabbage, corn and *Zanthoxylum*, the famous Sichuan pepper. To keep on the edible-side, I saw *Rubus* sp. and a beautiful patch of white strawberries and a peach tree. On the slopes, before reaching a village of the Lisu ethnical minority, I noticed a very interesting plant called *Stemona*, that I am still trying to identify to the species level, without much success.



Zanthoxylum sp.



Stemona sp.

At the village, after lunch break at Lu's student family home, the children showed me some orchids growing in a tree nearby. Next to the house, *Paris* sp. was growing and Lu told me that families were using the plant for medicine and were also eating *Houttunia cordata* roots for cooking. And in someone's garden I saw a beautiful Lily, probably *Lilium longiflorum*, showing that even there, people were trying to get nice flowers in their gardens.



Looking for orchids with the children



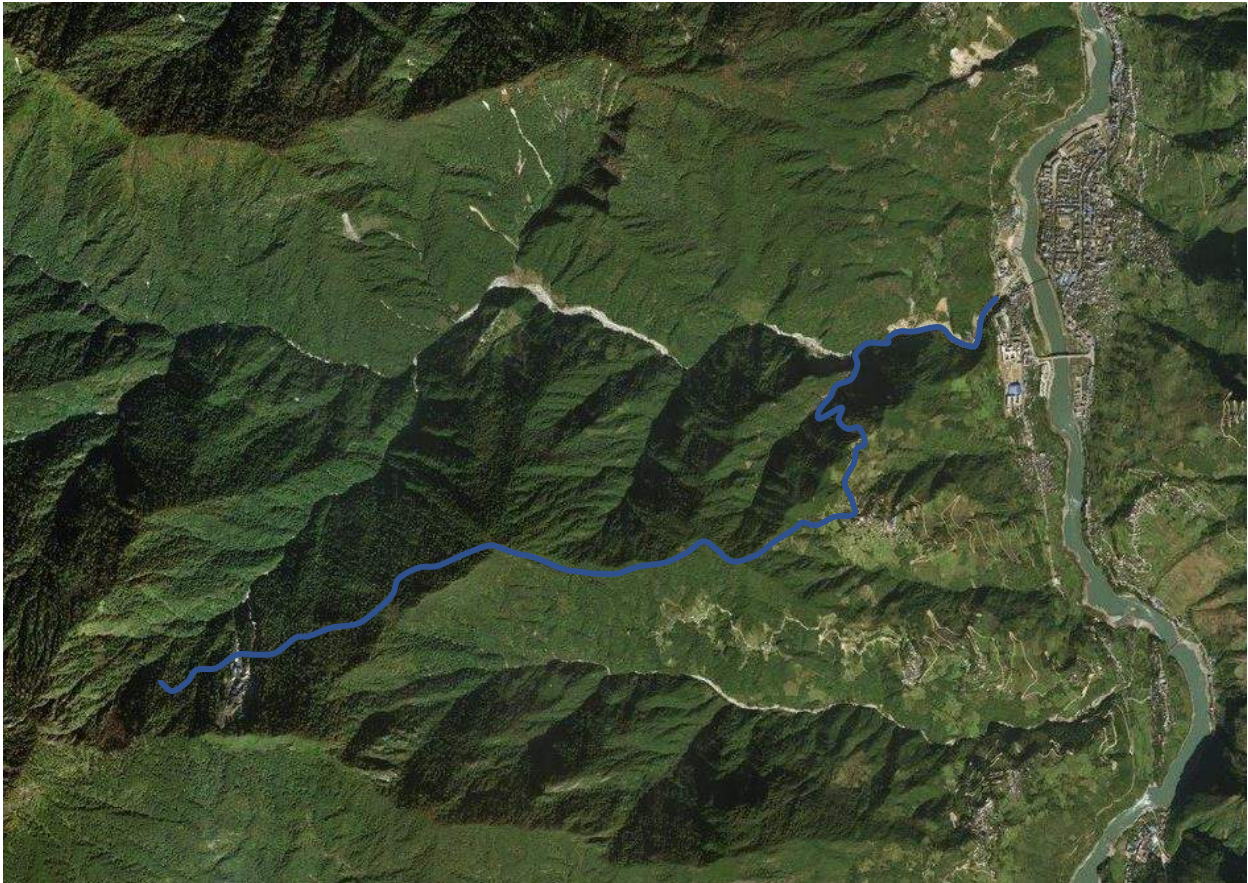
Cymbidium possibly



Lilium longiflorum and *Paris* cf. *polyphylla*, two garden plants of the village

Fugong, day 2

On the next day Lu was working so I was on my own. She had shown me a road to follow on the opposite side of the valley, that would lead me to a path going higher into the mountains. I was quite happy to have a GPS with me as there were no maps of the area available.



My itinerary on the second day, pushing a bit higher to reach circa 2800m

Around 2000m of altitude, I could see a change in the vegetation. More conifers and arborescent rhododendron started to appear. I began to see plants that I was a bit more used to, like *Hydrangea*, *Philadelphus*, *Arisaema yunnanense*, *Cornus capitata*, *Hypericum* sp.



Cornus capitata



Hypericum sp.



Philadelphus sp.



Arisaema yunnanense

It was a strange and pleasing feeling to see in the wild genera so common in cultivation. The moment when I felt this weird feeling the most was when I noticed a magnolia bearing one bright white flower, probably *Magnolia delavayi*, but I also found some less well-known plants like *Gaultheria* sp., *Polygala arilliata*, *Schisandra*, *Lobelia nummularia*.



Lobelia nummularia

Polygala arillata



Schisandra sp.



Magnolia delavayi

As I went further up the path, the vegetation became denser and started to change again. I started to see epiphytic plants on trees and rocks. Trunks of trees were covered by mosses and lichens but also ferns and orchids. Thickets of dwarf bamboos were occasionally showing in the understorey. The trees were still mostly broadleaf evergreens with a few conifers, usually quite tall. Rhododendrons were also very present but not the sole understorey shrubs. I started to feel slightly overwhelmed by the number of different plants around me. I could see a new kind of tree every few metres and had no idea of their genus or family for most of them. I spotted several different orchids, one quite big with a very long seed pod; a small terrestrial

one from the genus *Oreorchis*, possibly *O. micrantha* which is present in North Myanmar and Tibet but not reported in Yunnan. I also noticed a strange looking plant in Liliaceae, possibly *Tupistra* or *Campylandra*.



View of the understory and epiphytes on trees



Cymbidium sp.



Oreorchis cf. *micrantha*

I kept walking on a narrowing path until I reached circa 2700m, where I had to turn back to be home before dark. On the way I saw *Mimulus szechuanensis*, *Begonia* sp., *Viola* sp., *Arisaema yunnanense*, *Ophiopogon bodinieri*, *Streptopus simplex*, *Meehania fargesii*, *Impatiens* sp., *Deutzia purpurascens*, *Berberis* sp., *Beesia calthifolia*. In a clearing, made by the frequent mudslides, I saw the first clematis of my trip which was *Clematis montana*.



Ophiopogon bodinieri



Meehania fargesii



Tupistra or *Campylandra*



Beesia calthifolia



Trying to illustrate the tree diversity



Streptopus simplex



The diverse and dense understorey



Identifying *Clematis montana* on the field



Deutzia purpurascens

That day really put me in the front line of the huge diversity of Yunnan and I felt a bit overwhelmed by it, but at the same time very happy to experience it. I was also very excited to have seen the mountainous, humid, evergreen broadleaved forest, or cloud forest, full of lichens and epiphytes, the one habitat I was the most eager to explore.



Looking through the canopy

Dimaluo, day 1

The next day I took a collective taxi to the small village of Dimaluo, 150km north up the valley, to meet my guide for the following week, Aluo. Aluo is a Tibetan farmer who learnt English speaking to western travellers and decided to open a guesthouse in his village and guide people in his mountains. On my first day with him we drove with his car to reach a higher elevation and have a look at the subalpine forest, more precisely the coniferous broadleaved mixed forest dominated by *Tsuga dumosa*, mapples and *Betula*.



Our itinerary through the forest. The effects of the new road construction works are clearly visible.

After parking the car in a small farming village, we went straight into the forest, Aluo not seeing the practicality of following a path. Quickly we ended up under a cover of conifers, maples, birches and rhododendrons. We were still in a mixed broadleaved and conifer forest but higher in altitude than my last hike, between 2800m and 3200m. The atmosphere and vegetation were very different. Large *Tsuga* and *Acer* were shadowing us. Broadleaved evergreens were dominating the understorey, mainly *Rhododendron* with other Ericaceae, like *Enkianthus deflexus*, *Gaultheria* sp. Small trees in Lauraceae family, young *Acer* and *Betula* were completing the picture. On the herbaceous side there were some ferns on the ground and on trees, *Maianthemum* sp., *Viola cameleo*, *Paris* sp., and more unidentified ones. I had the chance to see for the first time the famous giant Himalayan lily (*Cardiocrinum giganteum*) in a clearing, but it was unfortunately still in bud. On the other hand, most of the rhododendrons had already flowered.



Here trees were still mainly deciduous



Giant Himalayan lilies in habitat



Enkianthus deflexus



Paris sp.



Betula cf. utilis



Viola cameleo



Gaultheria sp., flowers and caudex at the base of this small epiphyte





Unidentified maple and its leaf



Rhododendrons in the understory

We went back to the village for lunch at Aluo's friend's house and then went downhill to see large trees he knew in the area. These were immense *Picea cf. likiangensis*, probably 40 metres tall. On the way to these trees we saw several *Pterocarya cf. macroptera*. I was really happy to see these trees that I like a lot in gardens and to see them in their natural habitat was a great feeling. At this point we were lower in altitude and in a more disturbed environment. The forest was more of a broadleaved deciduous type, with Fagaceae species. We also noticed a strange hemi-parasitic plant growing on a tree called *Taxillus delavayi*. Another tree was covered with flowering orchids identified as *Coelogyne taronensis*. It was a beautiful end to great day in this forest.



Pterocarya cf. macroptera



Picea cf. likiangensis from below



My guide, Aluo, investigating a bird nest

Coelogyne taronensis growing on a tree with epiphytic ferns and *Gaultheria* sp.



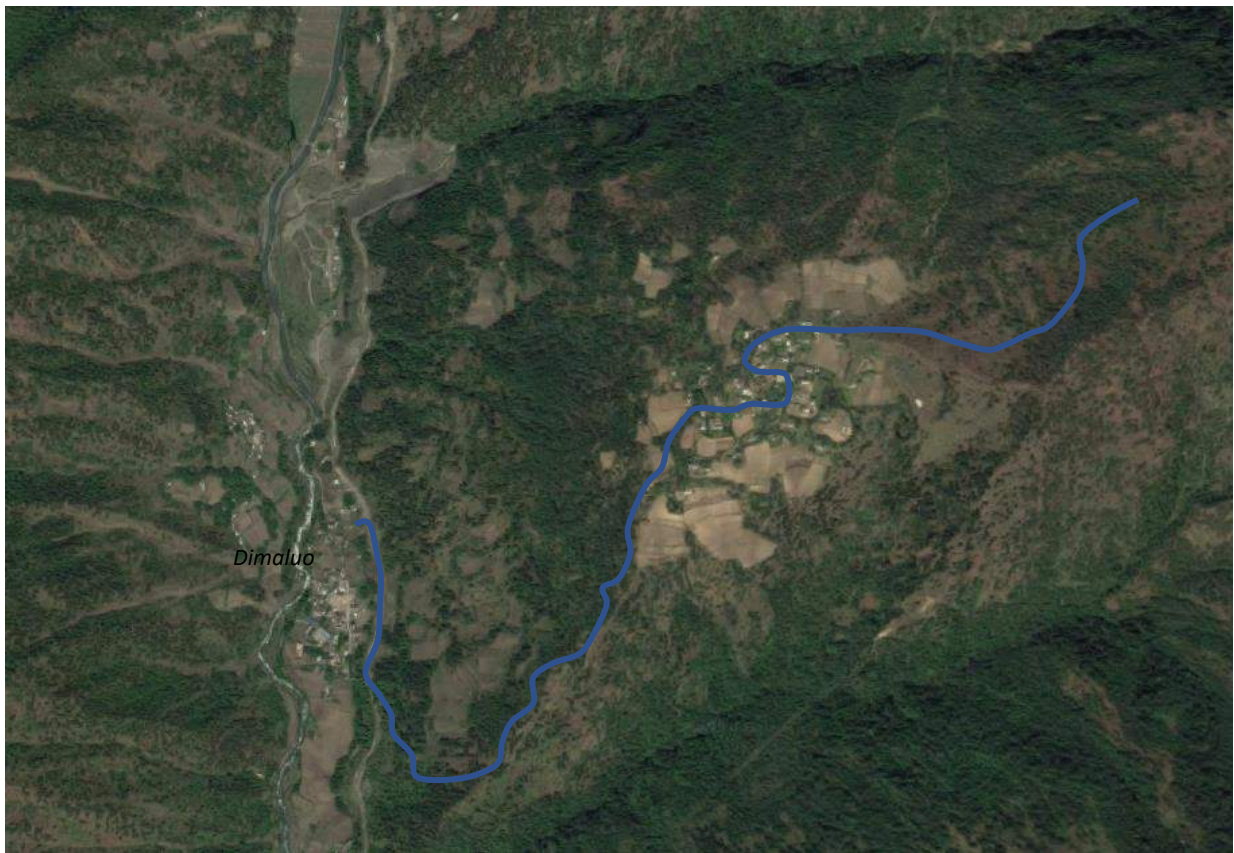
Close-up of the beautiful flower of Coelogyne taronensis



Taxillus delavayi

Dimaluo, day 2

On the next day, Aluo had to attend his daughter's graduation ceremony so I did a bit of exploration of the slopes above the village. He gave me directions for a path that should lead me to the forest, but I ended taking the wrong one. It led me through open and disturbed slopes to a small village and then to a large gully with more tree cover.



My itinerary through an area of more open vegetation on this shorter day

During the first half of the hike, the scrubby open slopes were dotted with small trees like *Pinus sp.*, *Alnus nepalensis* and *Lyonia ovalifolia* and bracken growing in dense patches. Amongst those I saw the pretty and widely distributed in East Asia *Hypoxis aurea*, *Arisaema consanguineum*, *Indigofera balfouriana* and *Anemone cf. demissa*. I also found the first edelweiss of the trip, *Leontopodium dedekensii*. Even if this is not the prettiest edelweiss, I was very happy to see it, even more so because I was not expecting to see any at the relatively low altitude of 2200m; wrongly so.



Alnus nepalensis, a tree common to open slopes tree in this area



The type of habitat I was exploring



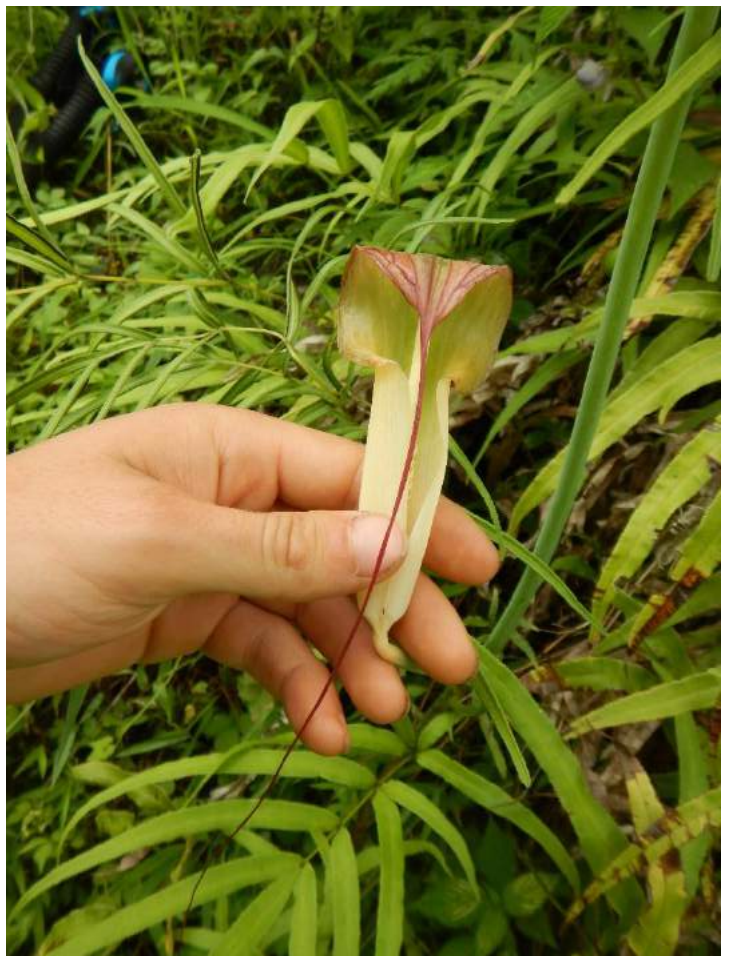
Lyonia ovalifolia



Leontopodium dedekensii



Hypoxis aurea



Arisaema consanguineum

Reaching the forest margin, I walked next to a blooming *Deutzia compactum* and a few metres further ahead *Rosa cf. brunonii*. Within the cover of the broadleaved deciduous forest I saw *Thalictrum sp.* and yet again several giant Himalayan lilies, still in bud. On the other hand, I spotted a terrestrial orchid with just one flower left on its stalk, half withered, which fell when I touched the plant. It is a pity because this orchid, called *Calanthe tricarnata*, is absolutely beautiful. This ended the rather short day, which allowed me to rest a little bit in the afternoon.



Deutzia compacta



Thalictrum sp.



Calanthe tricarnata

From Dimaluo to Bingzhongluo

I had spoken with Aluo of the plants I wanted to see, and he had told me that he knew a place where large conifer, possibly *Taiwania cryptomerioides*, could be seen. Also called the coffin tree, this monotypic genus can be found in Taiwan, Vietnam and in few places of continental China, mainly Yunnan and Sichuan. But to reach those trees we first had to hike our way to the small town of Bingzhongluo and spend the night there.



Third day in Dimaluo hike



Magnolia delavayi overlooking the valley

This rather easy but long hike allowed me to see another conifer: *Torreya fargesii* var. *fargesii*. I also saw flowering Rhododendron for the first time, a white flowered and scented *R. nuttallii* in an open pine forest. Near a small village overlooking the valley we saw large *Magnolia delavayi* growing on the cultivated slopes of the mountain.



Leaves of *Magnolia delavayi*



Torreya fargesii var. *fargesii*



Rhododendron nuttallii



Secondary vegetation probably after a clearing by locals

During our descent to the other side of the valley to reach the Nu river we walked past *Pyracantha angustifolia*, a genus widely used for defensive hedges. I was very glad to be able to see it in its natural habitat. I was also quite lucky to be able to see the famous Chinese *Cypripediums*, even if not in flower. Because of that it was quite hard to identify the species accurately, but it was probably *Cypripedium margaritaceum* or *C. lichiangense*. It was a bit frustrating to be there slightly too early to witness the amazing flowers, but I was nonetheless extremely happy to see them in the wild. There is a threat to the slipper orchid in this part of China from the orchid collectors, as well as the threat of loss of habitat.



Cypripedium margaritaceum or lichiangense



Pyracantha angustifolia

We also saw the weirdly and beautiful *Arisaema franchetianum* and a vine that gave me headaches for weeks to identify. I had trouble at identifying which family until I saw the flowers of the genus *Manettia* back at Kew, the corn candy vine. The flower shape was very similar, and I managed to look through Rubiaceae family to find this mysterious plant, *Paederia foetida*, which is ironically very common throughout Asia and a simple search on Google for vine, pink and stinky will give you its name immediately. The plant was growing in the trees near the Salween river and our arrival to Bingzhongluo involved a dramatic suspended bridge crossing over that very river. The landscape was grandiose and was an indication of what was to come the next day.



Arisaema franchetianum



Paederia foetida

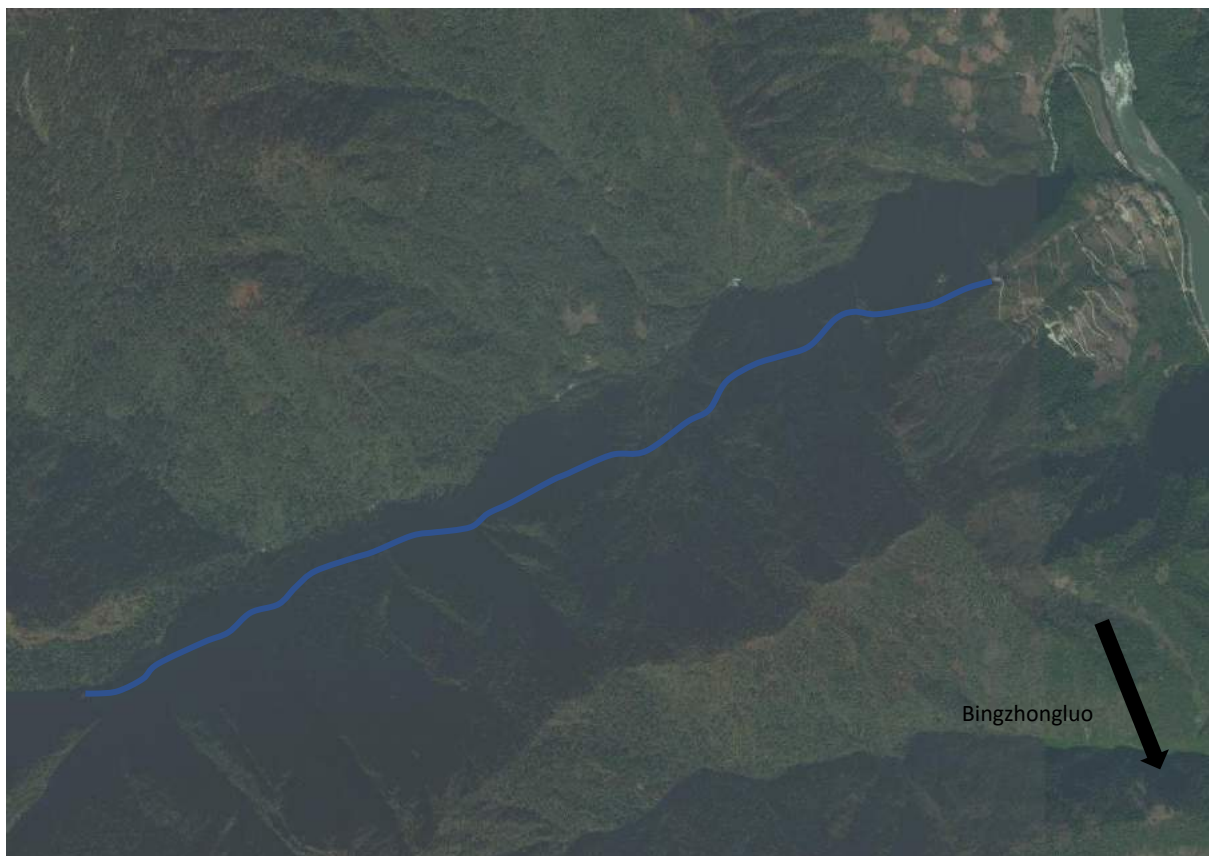




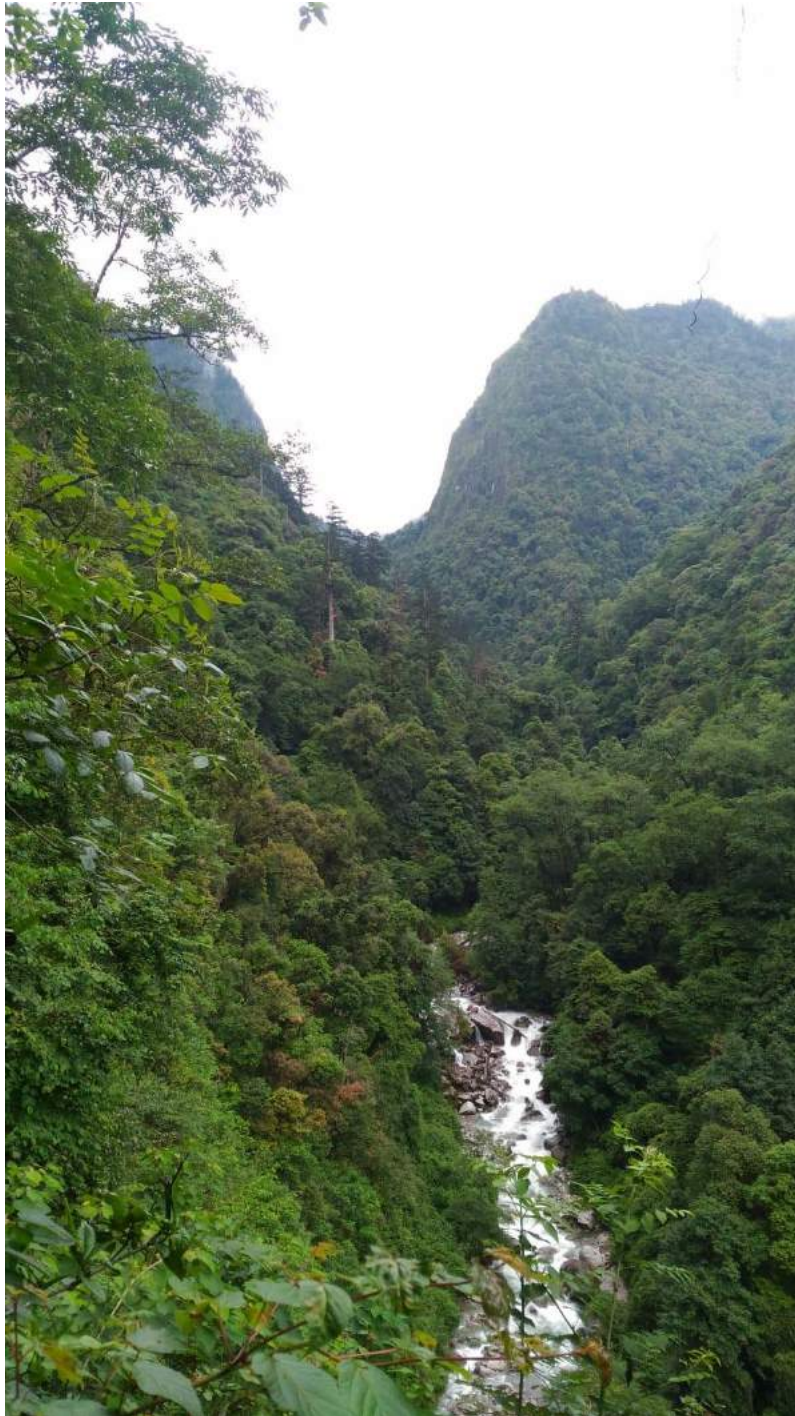
The Nu river seen from a suspended bridge

The Nianwaluo valley

From Bingzhongluo, where we stayed for the night in a friendly hostel with Chinese cyclists travelling to Tibet, we had a short car ride to a narrowing part of the valley, a few miles from Tibet's border. After an impressive bend of the river under a massive vertical cliff face, we took a dirt road to a unit of a hydropower station. These stations are dotting the Nujiang valley and bring electricity and new roads to the smaller villages. The water sourcing can raise some concerns for local environment preservation. From there we followed a path on the slopes of the Nianwaluo valley.



Our hike along the Nianwaluo valley

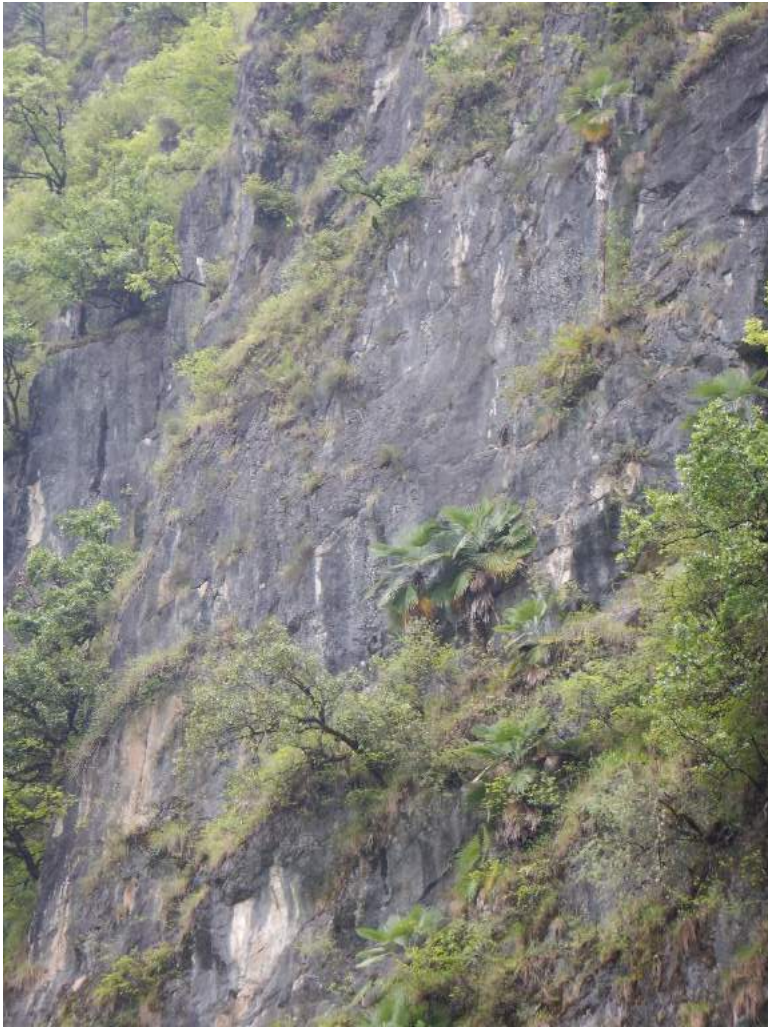


The Nianwaluo valley

The weather was sunny which was quite unusual for the season and the landscape was amazing. The path was on the side of this narrow and steep valley, with a roaring river a hundred metres below us. Old tortuous trees were growing on rocky spurs on the other side of the valley and we could see a few wooden houses below. We stayed relatively low in elevation, around 2000m, which allowed us to save some energy and see more great plants of the evergreen broadleaved forests.



The first interesting plant I noticed was a group of palm trees growing on a cliff above us. I found that quite unusual at this altitude and Aluo was equally surprised. However, cliff faces can have a special micro-climate, allowing different vegetation types according to their exposure. After a bit of research, it appeared that these palms were quite special. They looked a lot like *Trachycarpus fortunei*, the Chinese windmill palm, but the cliff face habitat kept intriguing me. I finally found out that these trees were a recently (1995) described species, named *Trachycarpus princeps* and endemic to this very specific area of the Nujiang valley. They are only found on cliff faces of the area and I was consequently very lucky to see them.

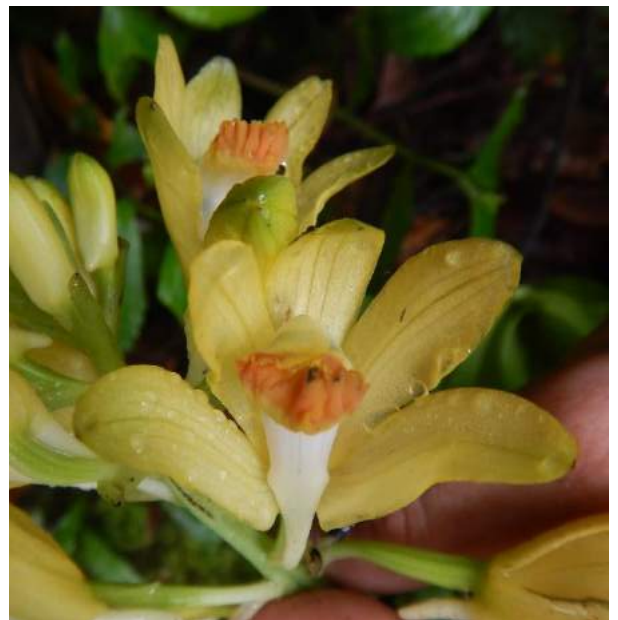


Trachycarpus princeps, a micro endemic palm tree

Amongst the various trees and ferns, we saw a lot of epiphytic orchids (in leaf only) and an interesting terrestrial one with spotted leaves, *Phaius flavus*, but the orchid of the day was definitely *Galeola lindleyana*. This orchid is mycotrophic, which means that it feeds on fungi and therefore does not need leaves. The tall erect brown stem bearing the waxy yellow flowers are the sole visible part of the plant. These stems were between 1.50m and 2m, which was quite impressive. Other notable plants were *Hypericum* sp., a climbing Araceae (*Raphidophora* cf. *pepla* or *hookerii*), *Begonia* spp. and a lot of trees and shrubs that I cannot put a name to.



Epiphytic orchids growing on a tree from the Fagaceae family, a common and characteristic view from these forests

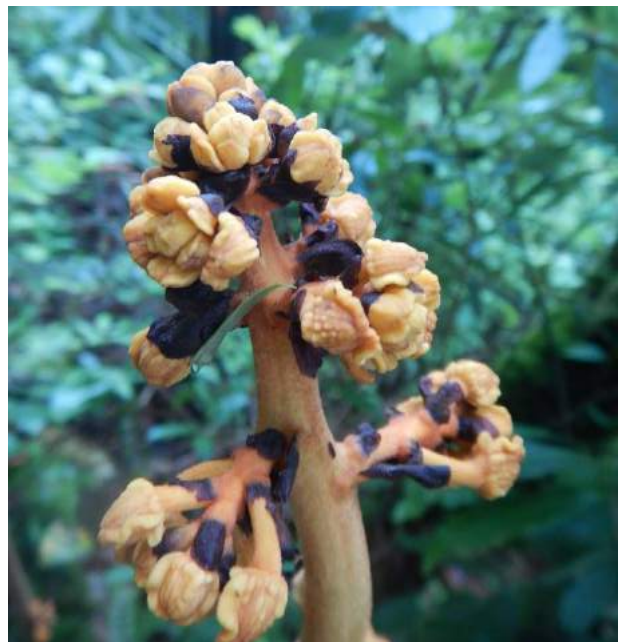


Phaius flavus, flower detail and in context (above)

A Raphidophora climbing on a tree



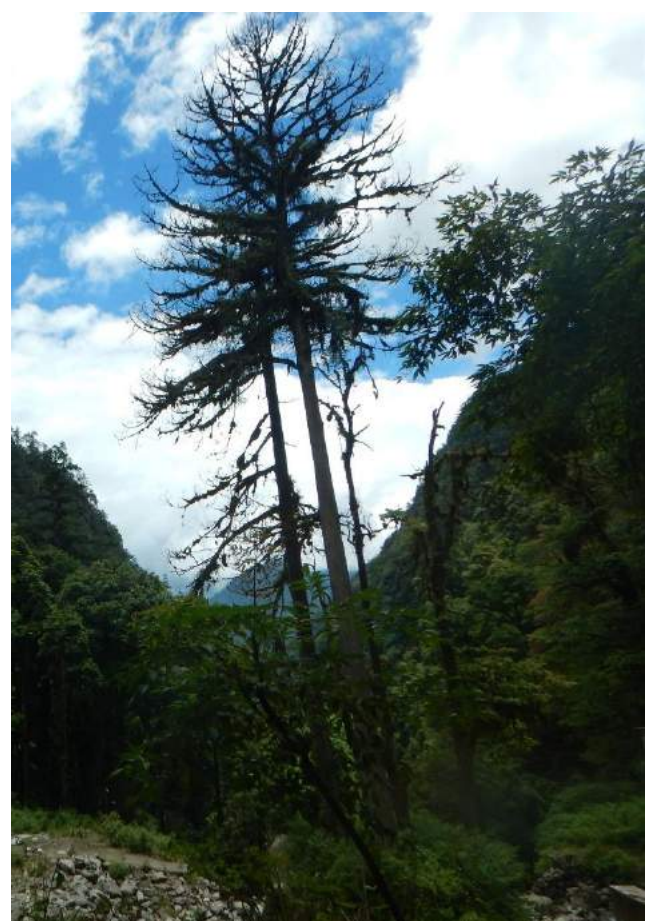
*The surprising
orchid Galeola
lindleyana*



As we hiked deeper into the valley, we could see tall conifers emerging from the canopy. I was thrilled to recognise on one the very distinct leaves of *Taiwania cryptomerioides*. This tree was impressively tall, and we started seeing more of them.

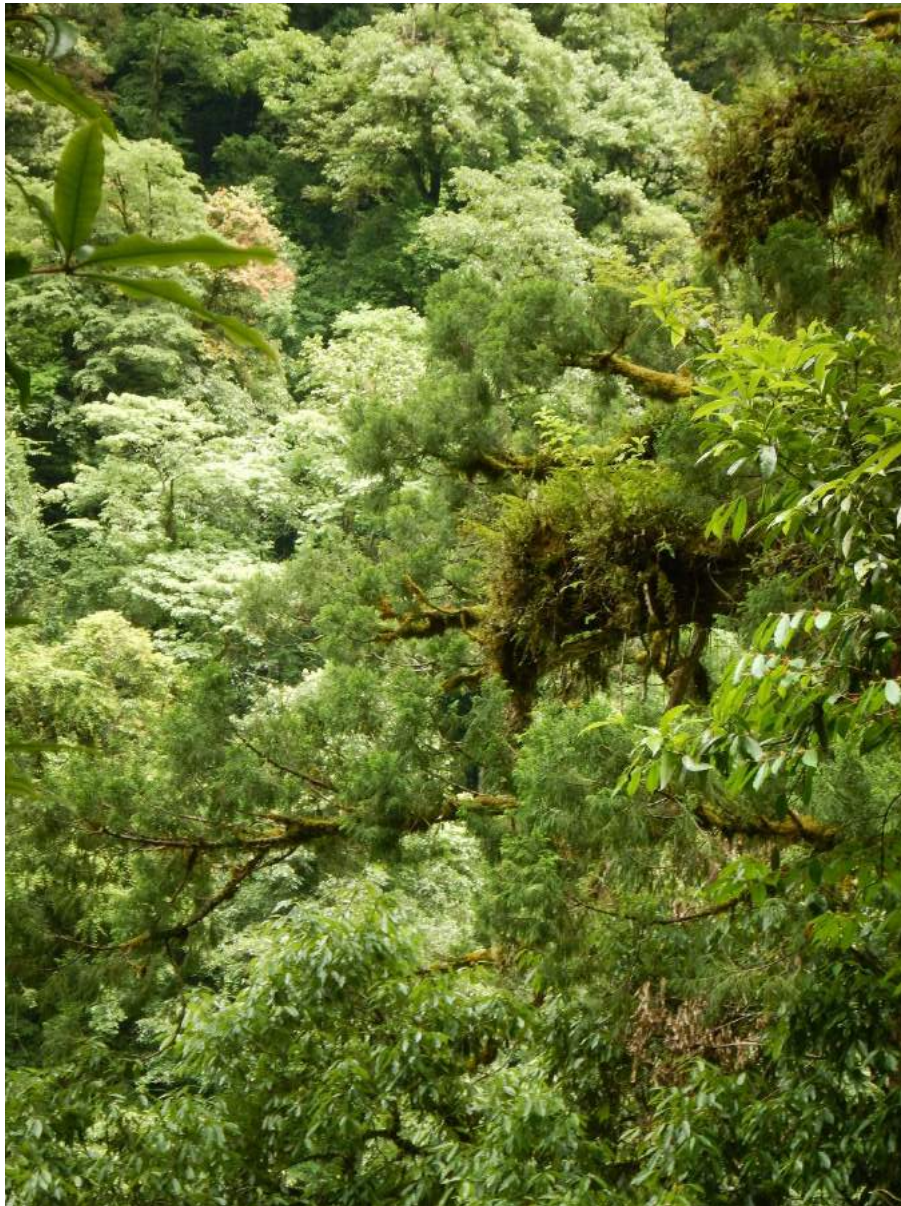


We finally arrived at the place where the path met with the valley's river and where the water was sourced for the hydropower station. They had built a small dam where several *Taiwania* were growing. It seemed like they had tried to preserve the trees, but it was blatant that they had failed. Concrete was poured just next to the base and some had died already. It was quite a sad feeling to see these huge, and probably very old trees, struggling and slowly dying. This touched Aluo too, who took a piece of coal from a fireplace and wrote in Chinese on the wall of the power station how these trees were basically dying because of the local energy policies. I was surprised and impressed by Aluo's gesture in repressive China, even more so knowing how the Xi Jinping government deals with ethnic minorities. I was also touched by Aluo's feelings concerning the trees and his region's flora. I feel this also created a deeper bond between us and Aluo then started to speak more openly about his thoughts on being Tibetan in China.



Taiwania cryptomerioides. The trees on the right are probably tilted as a result of the dam works.

I was quite eager to continue the hike because of the beauty of the valley but we needed to preserve our energy for the next three days as we had planned to cross the Nu mountain range to reach the Mekong valley. On the way home we saw monkeys in the trees above the entrance of the Nianwaluo valley.



Typical vegetation composition of the lower part of the valley

The way back to Dimaluo had a surprise for us. We took a shared taxi that should have taken us from Bingzhongluo to Dimaluo, but a few miles after leaving the town we were told that the road was blocked by a landslide. This was actually part of the roadwork and it would take hours for the construction team to clear the road. So, we had to cross the Salween by foot and walk past the landslide, cross back over the river and wait to be picked up by Aluo's son.

3 The subalpine and alpine flora of Yunnan

Crossing the Nu mountains and Exploring Kawa Karpo National Park.



Yunnan's alpines are famous throughout the world. In these mountains (and also in Sichuan and Tibet) originated many plants, as any alpine lover knows; Gentians, primroses, Meconopsis, Corydalis, dwarf rhododendrons, lilies, etc. I could not go to Yunnan without seeing these plants and their habitats. It was also logical, after having explored the subtropical and montane forests, to see how habitats and vegetation changes with altitude.

When I planned the whole trip, I knew that reaching alpine habitats from the Nujiang would probably be quite difficult. So I would have to go to another area to see these. But I also knew that Dimaluo was geographically quite close to Deqin and the Kawa Karpo National Park, which was where I finally decided to go after the Nujiang. I had told Aluo this when I met him and he answered that I could either pay to ride across the mountains on a newly built dirt road or do the hike with him. The hike would be three days long and would take us to a pass at circa 4200m of altitude. The latter option seemed more interesting and I have to admit that crossing the Nu mountain range by foot was very attractive to me. It would of course be a great opportunity to botanise during this hike.



The 3 day itinerary through the Nu mountains

Dimaluo to Cizhong, day 1

The next day was the start of our crossing of the Nu mountains. We started the hike already quite high with the help of Aluo's son who took us by car to literally the end of the road above Dimaluo. From there we followed a path into a side valley, where Maples, deciduous shrubs, rhododendrons and *Tsuga dumosa* were growing. One of the first plants I sighted that day was a *Cardiocrinium giganteum*, which was in flower, finally! And then *Calanthe tricarnata*, also in full bloom.



Cardiocrinium giganteum (left) and
Calanthe tricarnata (above)

It was like I was having my revenge on the day when I had seen those two plants but not in the right conditions. As we kept walking the forest cover became denser and the understory was overgrown by evergreen shrubs similar to *Sarcococca*. I also saw a *Berberis* in fruit that I could not identify, *Ophiopogon bodineri*, *Rodgersia pinnata*. We also passed next to a lovely honeysuckle. When we arrived at the high pastures tall *Cotoneaster* sps were arching their branches above us. We arrived at a small hut, that Aluo had built in the past, where we had dinner and slept on the floor by the fire, resting for tomorrow.



The forest we were hiking through



Cotoneaster sp. in the pasture



Detail of a honeysuckle flowers



The lovely corymbs of the Cotoneaster above

Dimaluo to Cizhong, day 2

We started the day early under a cold drizzle that quickly stopped but left the mountains shrouded in the clouds. The valley was narrowing between the steep slopes dotted with only a few trees and shrubs. The meadows we were crossing were showing signs of grazing, at first with a small plant diversity. The prevailing herbs were *Anemone demissa* and *Anaphalis nepalensis* var. *nepalensis*.



Meadow with *Anaphalis nepalensis* (left) and *Anemone demissa* (right)

As we went further, I noticed a small and rocky gully that I swiftly investigated. As it seemed from afar that it was the perfect place for alpinists, being protected from the livestock by the steep rocky slope. There, I found were blooming multitudes of coloured herbaceous and small shrubs. Amongst the rock were *Rodgersia pinnata* and the first Himalayan Poppy of my trip, the tall and pale yellow *Meconopsis sulphurea*. I also got my first glance of the Chinese primroses. The quite common *Primula sikkimensis* was dotting the area, with patches of small *Gentiana* sp. (not in bloom yet) and *Fragaria* sp. There I also saw *Pedicularis rhinanthoides* and a pink *Primula* in section *Cortusoides*, possibly *Primula septemloba*, and the beautiful *Aquilegia rockii*.



Aquilegia rockii, *Gentiana* sp. and *Fragaria* sp.



Meconopsis sulphurea growing with *Rodgersia pinnata*

Continuing further up, probably around 3700m, we started to see a tiny plant that I really wanted to see during the trip: *Cassiope* cf. *pectinata*. This clubmoss-looking plant, with nodding white flowers, was growing in dense patches on the slopes of the mountain. Shortly after that, we crossed another area with a multitude of noteworthy plants. We saw our first dwarf Rhododendron, the yellow variation of *Rhododendron rupicola* (*R. rupicola* var. *chryseum*) and *Potentilla glabra* var. *glabra*, closely related to the famous Asian shrubby cinquefoils *Potentilla fruticosa*. Another yellow flowered Rhododendron was sitting a few metres further, *R. mekongense*.



Cassiope cf. *pectinata*



Potentilla glabra (with flower detail) and *Clematis montana*.



Rhododendron rupicola var. *chryseum*

At this point the variety of herbaceous alpine was fully disclosed to my eyes. A cover of *Potentilla peduncularis* subsp. *peduncularis* was starting to bloom, with the pale blue buds of delicate *Gentiana* and the ever-present primroses. Added to *Primula sikkimensis* were now the white fringed *Primula serratifolia* and the low growing purple *Primula bella*. Some of the gentians' flowers were open, which allowed me to scratch my head trying to identify them, coming to the uncertain conclusion that they could be *G. leucomelanea* or *G. asparagoides*. It was rather easy, however, to put a name to the beautiful yellow and brown racemes of *Corydalis yunnanensis* and to the weird nodding spikes of *Bistorta griffithii*. Another

Chinese endemic I was eager to see was *Arenaria polytrichoides*, of which I had a glimpse of a non-flowering mat. Next to a lovely little *Androsace brachystegia* and *Bergenia purpurascens* was a nice specimen of *Primula* cf. *pinnatifida*, from the delicate section Muscarioides to which belongs the famous *Primula vialii*.



Bistorta griffithii



Gentiana cf. *asparagoides* or *leucomelanea*



Detail of the flower of *Primula bella*



The (blurry) raceme of *Corydalis yunnanensis* and the nodding flowers of *Primula serratifolia*



Detail of the corolla of Primula serratifolia

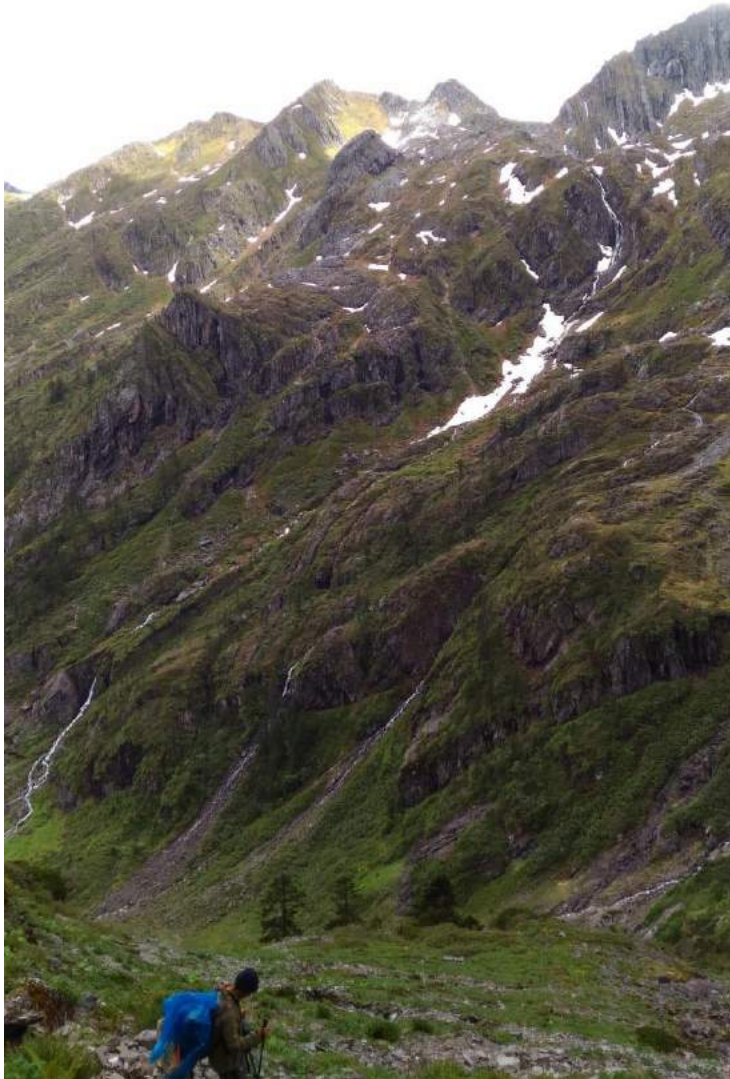
Primula cf. pinnatifida with P. serratifolia in the background

It is at this point that my camera decided to run out of battery. It was so frustrating to see these landscapes and flowers without being able to document them. In addition, I could not really sit down and identify plants on the way as we had a long day ahead and did not want to finish at night. I snapped a few photos with my phone but that one too was on the verge of



Primula sikkimensis carpeting the slopes of the mountains

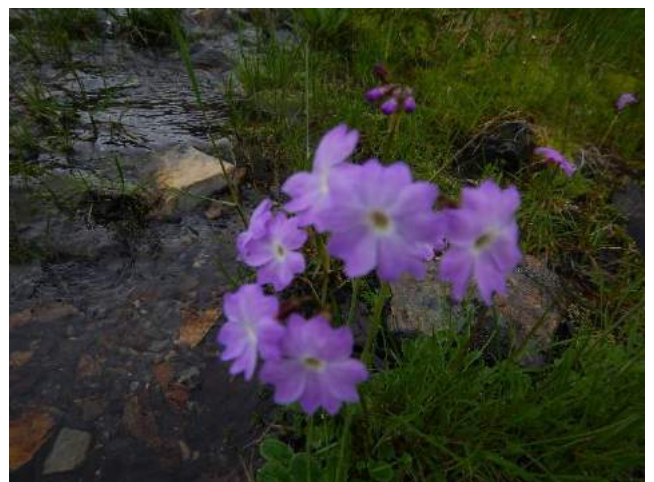
dying. After a few hours of hiking in colourful slopes, and being at the mercy of thirsty leeches, we reached the small pass that led us to the Mekong valley. Right between the naked rocks of that breach in the mountain ridge, I saw a beautiful specimen of *Meconopsis* cf. *speciosa*, still in bud but with droplets of dew on its hairs. That was an amazing vision, even if I was too early to see the electric blue flowers of this incredible plant. This confirmed to me even more that I would certainly have to come back later in the season to see all the flowers I had missed...



Meconopsis cf. *speciosa*

Going down after crossing the pass

On the way down we crossed a stream colonised by a white flowered endemic Brassicaceae named *Pegaeophyton scapiflorum*, with the delicate purple touch of *Primula involunrata* subsp. *yargongensis*. In the scrubs of dwarf Rhododendron, that were more present on this side of the mountain, I remember seeing dark coloured *Lilium* possibly *L. souliei* and an intriguing dwarf Rhododendron with minute, almost black, flowers.

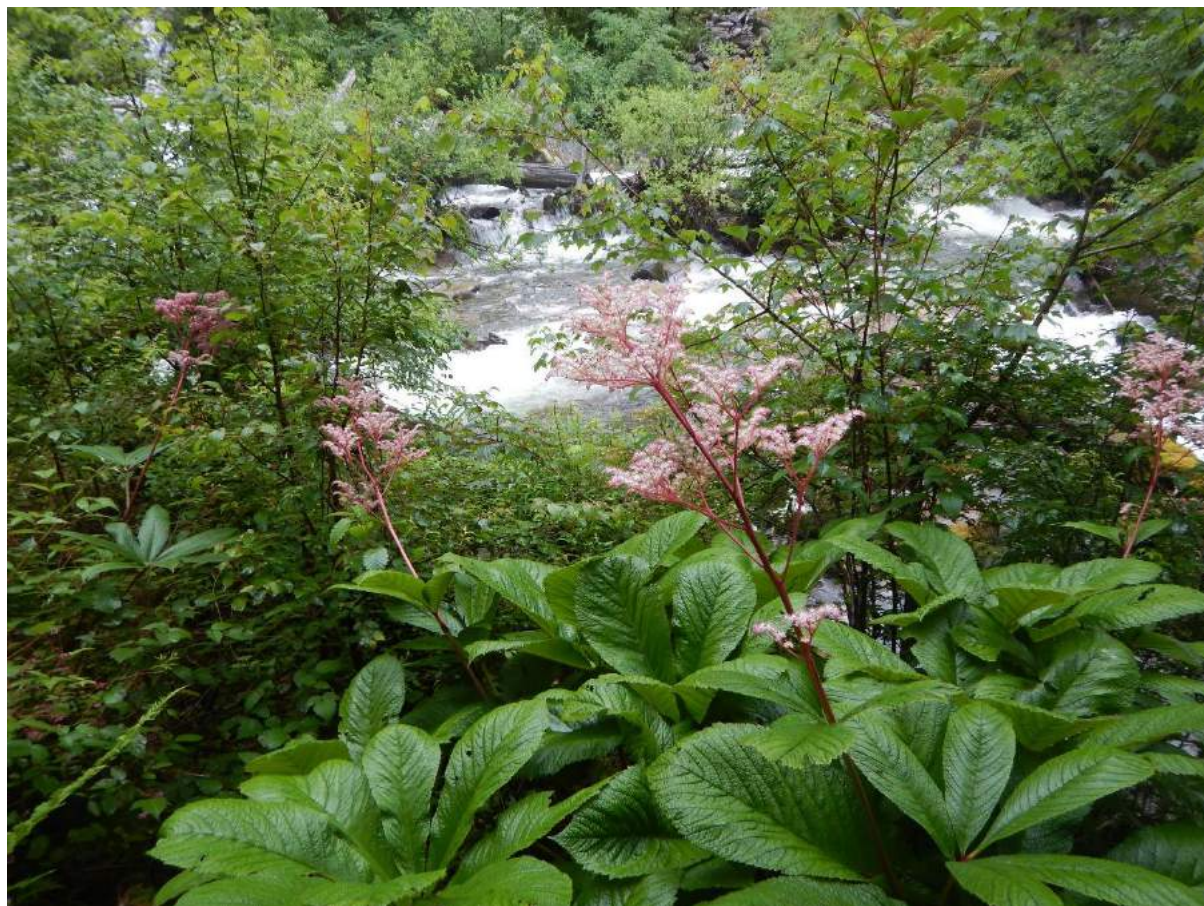


Vegetation of streams and bogs, *Pagaeophyton scapiflorum* and *Primula involunrata* subsp. *yargongensis*

We finally arrived in grazed pastures where we met with locals and their cattle. We were invited to spend the night in one of their summer huts where we had a typical Tibetan dinner made of bread, yak butter tea and a paste made of highland barley flour.

Dimaluo to Cizhong, day 3

On the next day we kept hiking down towards the Mekong valley. On the road we saw more *Rodgersias* growing on the banks of a torrent and *Arisaema franchetianum* in the conifer forest understorey. I was happy to see *Adiantum venustum*, the Himalayan maidenhair fern, growing on the side of the path. It is quite often used in horticulture and is a friend of mine's favourite fern, so it was exciting to see it in the wild. I also saw a beautiful unidentified *Schisandra* and a very nice specimen of the parasitic *Taxillus delavayi*.



Rodgersia pinnata (above), *Adiantum venustum* (left) and *Schisandra* (right)



Taxillus delavayi

At some point it became clear that the vegetation was slightly different to that in the Nujiang valley. The forest composition had different pine trees and, below a certain altitude, the dry climate of this side of the Nu mountains was evident. We were now leaving the lush altitude forests and in a more open and scrubbier habitat.



The drier type of habitat and its vegetation

Shaded by a kind of hazel was growing *Helwingia chinensis*, an elegant shrub or small tree from its own monotypic family. The flowers are borne on the midvein of the leaves and these plants are fairly new in general cultivation. There was also a *Viburnum cylindricum* in bloom and the widely distributed, and well known by gardeners, *Chamerion angustifolium*, the willowherb.



Helwingia chinensis with detail of fruit inserted on the leaf midrib

After a few turns, the Mekong valley appeared before our eyes. I was struck by the beauty of the landscape, but also by its contrast with the Nujiang. The deeper we went into the valley, the drier the landscape became. Around the small town of Cizhong, our destination, the landscape could only be described as arid. These places of Yunnan make up the dry valley habitats, typical of parts of the Mekong and Yangtse valleys. This local microclimate is due to the topography of these valleys in relation to the surrounding mountain ranges and atmospheric patterns. It is another example of Yunnan's incredible diversity of landscapes and habitats, and thus of its flora. Even though I knew about these habitats, the change was still very sudden and surprising. I knew I would only be crossing this landscape to reach my next destination and I immediately regretted not being able to stay longer. We finally arrived to Cizhong where we had lunch and jumped into a small bus to the town of Deqin, the Gateway to the Kawa Karpo national Park.



The dry valley of the higher Mekong viewed from the bus to Deqin

Kawa Karpo National Park, day 1

After a very welcome night in a real bed, but alas without being fully rested, I said goodbye to Aluo and took a shared taxi to the entrance of the national park. My cheerful guide would take one for his village, a 6-hour drive away. For me it was much shorter and after 40 minutes we were at the bottom of a deep dry valley. From there I would hike my way to the small village of Yubeng, through a beautiful fir forest.



- Day 1, hike to Yubeng —————
- Day 2, hike to the glacial lake —————
- Day 3, hike to Lake of God —————
- Day 4, hike back from Yubeng —————

For the first time I was into a more touristy area of Yunnan but because it was the rainy season, I was one of the few non-Chinese persons visiting the national park. In the taxi and on the path to Yubeng I met a lot of very friendly, and sometimes intrigued, Chinese from all parts of the country, most often going to Tibet after Yubeng.



The start of the hike to Yubeng

There was a very clear tree line delimiting the high end of the dry habitat and the start of the *Pinus densata* forest. The taxi had dropped us too high to have a look at the sclerophytic shrubs and herbs. In the forest I saw some very nice specimens of *Betula utilis*, conifers and *Rhododendron*, but also an interesting shrub from the pea family, *Caragana franchetiana*. I also witnessed the famous *Rosa omeiensis* var. *petracantha* and its bright red spines.

This forest was of a rather dry type and rhododendrons were dominating the understory but were very different from the ones I could see the week before. The path edges had few flowering plants, but after passing the 3400m pass, filled with Tibetan prayer flags, I noticed a pink flowering shrub that appeared to be *Leptodermis* cf. *forestii*, in Rubiaceae. I finally arrived to Yubeng, a tiny village in a deep valley, at circa 3000 m of altitude. Right in front of

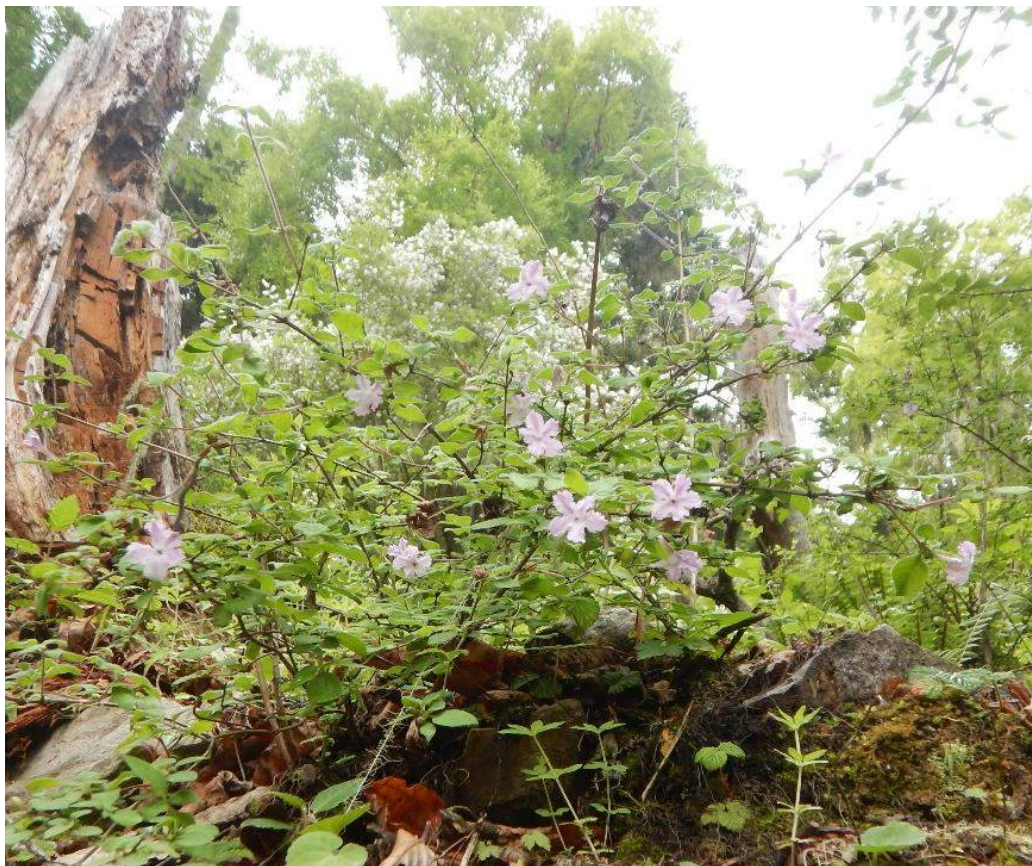


The striking prickles of Rosa omeiensis var. petracantha

me, but shrouded in clouds, were standing 6000m and 7000m peaks of the Kawa Karpo, the sacred mountains for Tibetans.



Caragana franchetiana (above) and *Picea likiangensis* (right), a dominant tree in this region's forests



Leptodermis cf. forrestii



The Tibetan influence was very noticeable in the area



A view of the small village of Yubeng through pines and rhododendrons

Kawa Karpo National Park, day 2

From Yubeng, my hiking options were quite limited. The valley ends in front of hanging glaciers and Chinese authorities like to have control of people's movement, especially in national parks. There were three hikes possible from the village and that day I chose to go for a rather easy one which would take me to a glacial lake at circa 3800m.

The day started by walking below several sacred sea buckthorn (*Hippophae rhamnoides*) and passing by a Tibetan ceremony. In the woodland I saw a beautiful bell-flowered Clematis (*C. pseudopogonandra*), *Arisaema*, anemones, aquilegias (*A. rockii*) and a strange plant called *Moneses uniflora*. By a stream I found a patch of *Primula watsonii*, with deep purple corolla and white farina. After a while, the forest gave way to grazed meadows with shrubs and a few flowers.



Clematis pseudopogonandra and *Primula watsonii*, (above) two plants from the subalpine woodlands and meadows (and *Hippophae rhamnoides* (left), sacred trees in Yubeng

Once the terrain became a bit steeper, the vegetation diversity improved greatly. Small *Abies* and *Larix* were standing above broadleaved shrubs like *Berberis cf. mouillacana*, *Lonicera syringata*, and *Rosa sericea*. The herbaceous stratum was dominated by *Aster souliei*, salvias, low growing Fabaceae species and the strange, but widely spread, *Pyrola rotundifolia*. Furthermore, I was very happy to be walking past large colonies of the terrestrial orchid *Oreorchis erythrochrysea*. This lovely yellow orchid was populating large areas of the coniferous scrub.





Lonicera syringata (left) and *Berberis cf. mouillacana* (right)



Pyrola rotundifolia (left) and *Oreorchis erythrochrysea* (right and bottom)



I then finally reached the glacial lake and explored its gravelly shores. I could see patches of *Potentilla cuneata*, *Juncus allioides* and *Myricaria rosea* which is a succulent shrub in Tamaricaceae growing on mountains slopes and by water. There were also present small willows and sea buckthorn, *Primula sikkimensis*, *Oxyria digyna*, *Pedicularis* cf. *rupicola*, *Astragalus* sp., *Aster souliei*.



The impressive setting of the glacial lake. *Aster souliei* growing with *Oxyria digyna*, *Pedicularis* cf. *rupicola* and *Astragalus* sp.



The lake's shore, with *Myricaria rosea* (pink), *Juncus allioides* (white) and a closer look at *Potentilla cuneata* (above)

After a nice coffee break with an Israeli couple I'd met at the lake, I decided to go down by the other side of the torrent flowing from the lake. Making my way through the dense scrubby vegetation, I reached more open ground where I saw *Cotoneaster cochleatus* (or *C. microphyllus* var. *cochleatus*), a quite common garden plant native of the Himalayas, which is always nice to see in its natural habitat. Amongst a cover of *Bistorta* was growing the beautiful *Leontopodium stracheyi*, another Chinese edelweiss. A very elegant *Pedicularis* was growing nearby: *P. densispica*, but the impressive pink flowers of *Nomocharis saluenensis* caught my attention. This genus from eastern Himalaya is closely related to *Lilium* (some authors consider it as part of *Lilium*) and I was eager to see it in the wild. I was also surprised by the beauty of the seed cones of *Larix griffithii* var. *speciosa*, the Yunnan larch.



Nomocharis saluenensis (left) and the immature seed cone of *Larix griffithii* var. *speciosa* (right)



Cotoneaster cochleatus



Leontopodium stracheyi growing amongst *Bistorta* sp., *Potentilla* cf. *cuneata* and *Larix griffithii* var. *speciosa*

While continuing to hike down and back to the woodland, I explored a small cliff base with low ledges. On these were growing another plant I really wanted to see, the azure flowered *Corydalis oxypetala*. This part of China is well known for its blue flowered *Corydalis* and I was very happy to see one of these. Nearby was growing another edelweiss, *Leontopodium* cf. *calocephalum* and two regional endemics, *Acanthocalyx alba* and *Acanthocalyx nepalensis* subsp. *delavayi*. These were the last plants of the day as it was getting dark. I was happy with the plants I had seen during the day and excited by what I was expecting for tomorrow.



Corydalis oxypetala (left) and *Leontopodium* cf. *calocephalum* (right)



Acanthocalyx alba (left) and the very close *Acanthocalyx nepalensis* subsp. *delavayi* (right)

Kawa Karpo National Park, day 3

This was my last day of proper botanising; the next day would be the hike back from Yubeng, carrying all my belongings in a 15kg backpack and trying not to miss the taxis to Shangri-La city. Based on what I had seen during the past few days, I knew I had yet one last habitat to explore on which I had set my eyes; alpine and subnival habitats. However, to achieve this I would have to hike higher than before. I had a glimpse of these habitats and their flora with Aluo a few days ago, but we could not stay in the area for long and look at a lot of plants. Now, here I was on my own and could allow myself as much time as possible to botanise. My plan was to hike to another lake called the Lake of God, at an altitude of 4300m. Hopefully I would encounter plants like *Saussurea*, *Meconopsis*, at this elevation.

I left early in the morning and started the steep hike in mixed broadleaved and coniferous forest. I was walking with the couple I had met the day before and we encountered some of the Chinese tourists I had met in the hostel and on the way to Yubeng. In the forest I saw a terrestrial orchid called *Goodyera* that was only in leaf, possibly *G. repens* or *G. bomiensis*. Hiking up I passed bamboo thickets and the forest became populated by conifers only, mainly *Abies georgei* and arborescent rhododendrons. Then the trees became smaller and tortured with the altitude, arborescent rhododendron became dwarf rhododendron (*probably R. rupicola* var. *chryseum*) and patches of *Cassiope pectinata* appeared. Amongst these I spotted a lovely *Maianthemum purpureum*, *Gentiana phyllocalyx* and a strange parasitic plant similar to an *Orobanche*, *Boshniakia himalaica*, which is parasitic on rhododendrons.



Maianthemum purpureum growing amongst *Cassiope* cf. *pectinata*.

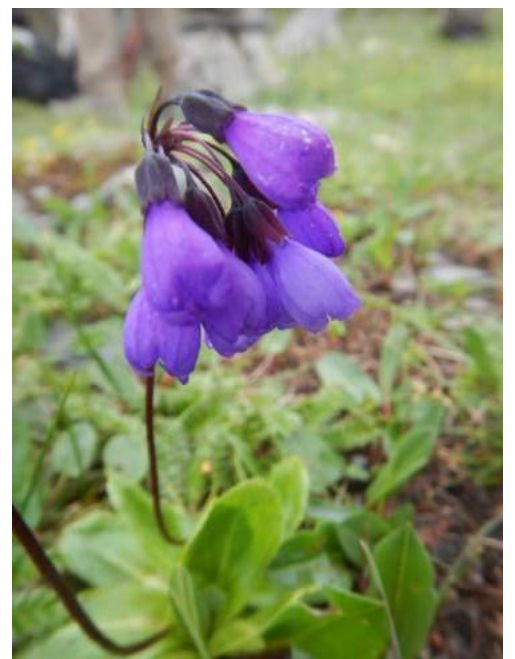


Finally, we came out of this amazing dwarf forest to walk through a scrubby slope full of dwarf rhododendrons and *Cassiope pectinata*. Dotting this scrub were the small flowers of *Aster* cf. *souliei* and *Potentilla peduncularis*. After a last effort we arrived at the truly beautiful and atmospheric Lake of God. We had lunch on its shore and my companions headed down, leaving me to my alpine plants.



Boshniakia himalaica (top right)
and *Gentiana phyllocalyx* (right)

The area was an explosion of colours, with dwarf rhododendrons (*R. rupicola* and others) in bloom in every direction. The white flowered *Anemone demissa* and the bright yellow *Potentilla stenophylla* were dominating the herbaceous vegetation, with non-flowering *Bistorta* species and the beautiful *Primula amethystina* subsp. *brevifolia*.



The alpine rhododendron scrub with different species of Rhododendron, Cassiope cf. peccinata, Aster cf. souliei, Bistorta sp. Potentilla stenophylla, Potentilla glabra and Primula amethystina subsp. brevifolia (right)

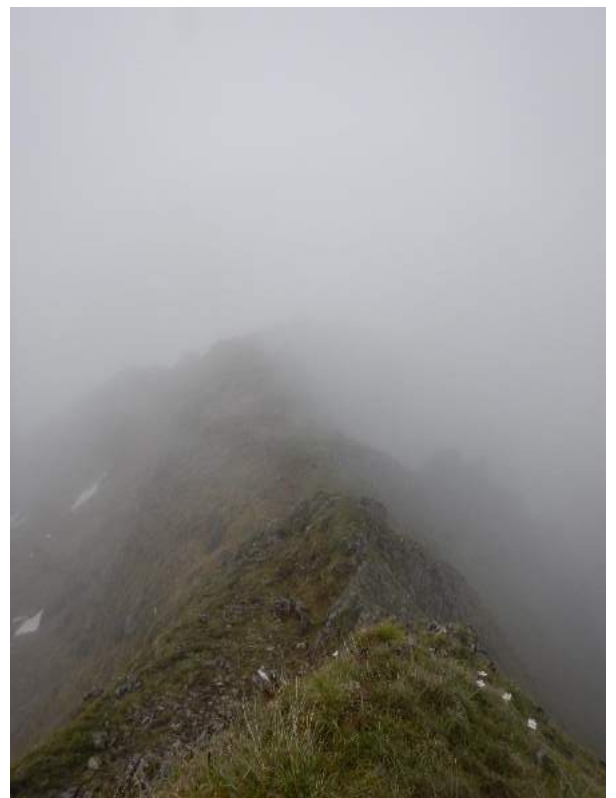


Transition zone from the rhododendron scrub to the alpine meadow around 4200m. Herbaceous perennials become more dominant, with the almost ever-present *Anemona demissa* (in white)

However, even at this altitude, the flora composition was still belonging to the alpine rhododendron scrub. I needed to reach higher altitude or more exposed grounds to see Yunnan's subnival plants.

And this is exactly what took me to a small ridge starting just above the lake and rising to an impressive height of around 4600m in altitude. The steeper terrain, the presence of large rocks and crevices and the wind exposure were the perfect environment for the plants I was looking for.

Hence, I rapidly saw cushions of *Diapensia purpurea* or *D. himalaica*, *Androsace delavayi*, *Arenaria polytrichoides* (in bloom this time). Growing in rock crevices or on small ledges were the elegant *Paraquilegia microphylla*. I also saw my first species of *Rhodiola*, a caudex forming alpine succulent, *R.* cf. *atuntsuensis*, the red flowered *R. crenulata* and possibly *R. bupleuroides*.



The ridge I went to investigate. The atmosphere was grandiose



Rhodiola cf. atuntsuensis



Paraquilegia microphylla



Diapensia purpurea or *himalaica*, in their pink and white forms



Androsace delavayi growing with *Diapensia*



Rhodiola cf. bupleroides



Arenaria polytrichoides

In a small breach in the rocky ridge I saw one of the most striking primroses of my journey, *Primula chionantha* subsp. *sinopurpurea*. Then I noticed, growing next to the yellow flowered *Pedicularis oederi*, a *Saussurea* that I unfortunately could not identify due to the lack of flower. Similarly, a bristly leaved *Meconopsis* stayed unidentified for the same reason. These genera have most of their species flowering in July and August, so that was not really a surprise, but I was thrilled to see them nonetheless. I was also lucky to see dwarf lilies, *Lilium nanum* and its yellow variety *L. nanum* var. *flavidum*. I saw plants that I had encountered in the previous days, like *Primula bella* and *Corydalis oxypetala*, as well as completely new ones like *Draba* cf. *juncunda*, *Pedicularis* cf. *cephalantha*, *Arenaria* sp. and *Rhododendron* cf. *primuliflorum* var. *primuliflorum*. There were of course more species of rhododendrons covering the slopes with their evergreen foliage.



Primula chionantha subsp. *sinopurpurea*



Saussurea sp.



Pedicularis oederi



Rhododendron cf. *primuliflorum* var. *primuliflorum*



Lilium. *nanum* var. *flavidum* (top right) and
Draba cf. *juncunda* (bottom right)



Rhododendron rupicola var. *rupicola* (pink flowers) and *Rhodiola* sp. (red flowers behind) overlooking the Lake of God

I was starting to feel the effects of the altitude when I noticed the great flowers of the tiny *Lagotis alutacea* var. *alutacea*, a South-Central China endemic that was unknown to me. I was amazed by the delicate flowers and the colours, but I also felt that it was time for me to head back.



Lagotis alutacea var. *alutacea*





More rhododendrons

On the way down, amongst *Cassiope selaginoides*, *Primula amethystyna*, *Bergenia purpurascens*, and *Potentilla stenophylla*, was growing the only Himalayan blue poppy in bloom I saw during this trip: *Meconopsis* cf. *impedita*. Not too far away was *Fritillaria unibracteata* and an elegant *Aconitum* cf. *tongolense* with a long raceme of dark purple flowers. Further down was *Polygonatum* cf. *cirrhifolium*, which is a fairly common garden plant. The long trek down through the forest took all the energy I had left; I was exhausted but fulfilled by the day when I arrived with the night at my hostel.



Cassiope selaginoides (white) and *Primula bella* (purple)



Fritillaria unibracteata



Meconopsis cf. impedita with *Potentilla sp.* and *Bistorta sp.* on the sides and *Rhododendron cf. rupicola* behind



Polygonatum cf. cirrhifolium



Aconitum cf. tongolense

Kawa Karpo National Park, day 4

My last day of botanising was quite short as we had to be back to the dry valley around noon to catch a taxi to Shangri-la city, from where I would fly to Kunming and then to London on the next day. I still had the chance to see two interesting plants in the lower and drier part of the hike. First, I saw a nice specimen of *Cupressus duclouxiana*, which is endemic and has very reduced populations because of intensive logging. Further down, on a rocky face I noticed a spinescent and small leaved shrub which had a *Clematis* growing within. When I looked closer, I found out that the shrub was actually the *Clematis*. I was very surprised to see a sclerophyllous *Clematis*, and a spiny one! But considering the conditions and the habitat it made sense. After a bit of research, I was able to identify it as *Clematis delavayi* var. *spinescens*.



Cupressus duclouxiana



Looking at *Clematis delavayi* var. *spinescens* growing over a traditional irrigation system

And this was the end of my botanical journey. The taxi took me and a Chinese family I befriended to Shangri-la, crossing the Baima Shan, a famous mountain range for Chinese plant enthusiasts. The next day I flew back to Kunming. On the way to the airport I was able to get a glimpse of the widely spread meadow plant *Stellera chamaejasme* var. *chrysantha*. I spent the afternoon with people from Kunming Botanical Garden, telling them about my trip and sharing pictures and stories. After a last goodbye, and the promise to return, I flew back to London, already planning the next trip to this amazing part of the world.



Detail of the *Clematis* flower

Conclusion

Looking back at this journey, this was an amazing opportunity to experience a different way of travelling and to be completely focused on plants and horticulture. I learnt a lot in Kunming Botanical Gardens on the problems and challenges a botanical garden can encounter in China. It was also very interesting to realise that many common goals and methods were shared by Kew and Kunming and it was a great inside look at Chinese garden design and horticulture skills.

Going in the wild and look at native flora was of course exciting but also quite overwhelming. It really emphasised what I had read and heard about Yunnan. The number of plants and the diversity was incredible and I realised how botanising there was difficult. But I could only be amazed by that and it became obvious why Yunnan's flora was so rich and diverse and why it had attracted so many plant hunters. I was not expecting to be so thrilled to see commonly used garden plants in their natural habitat and that was a great part of the trip. Moreover, seeing all these different habitats and landscapes was mind blowing and all the people I met were the kindest. I was lucky to meet people from different ethnicities and cultures, some of whom helped me a lot during this journey.

Finally, I will remember this trip for a long time and I know it will certainly have a profound effect on my future horticultural career.

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References

- Efloras.org. (2019). *Flora of China @ efloras.org*. [online] Available at: http://www.efloras.org/flora_page.aspx?flora_id=2
- Fang, Z. (1993). *The wild flowers in Hengduan mountains in Yunnan China*. Kunming: Yunnan people's publishing house.
- Grey-Wilson, C. and Cribb, P. (2011). *Guide to the flowers of western China*. Richmond, Surrey: Kew Publishing.
- Vegetation ecological landscapes of Yunnan*. (1994). [Beijing]: [Kunming Institute of Ecology, Chinese Academy of Sciences (CAS)].
- Wilford, R. (2010). *Alpines from Mountains to Garden*. Richmond, Surrey: Royal Botanic Gardens, Kew.
- Wu, Q. (1999). *Wild flowers of Yunnan in China*. Beijing: Forestry Publishing House.
- Xu, B., Li, Z. and Sun, H. (2014). *Seed plants of the alpine subnival belt from the Hengduan mountains, SW China*. Beijing, Science Press.