

Botanical Exploration on the Yunnan-Myanmar (Burma) Border

The Dulong Jiang-Gaoligongshan Expedition to Yunnan September 20th-October 19th 2001

I recently returned from a successful five-week expedition to China (PRC), during which I visited several remote and botanically rich regions of the Gaoligongshan Mountains where Yunnan, Tibet and Myanmar (Burma) meet. The expedition was organized by the Rhododendron Species Botanical Garden (RSBG), Federal Way, Washington, in collaboration with the Kunming Institute of Botany (KIB), Kunming, Yunnan.

I flew from Vancouver to Hong Kong on September 20th and then on to the impressive new airport at Kunming, the capital of Yunnan Province. I was met by my friend and the expedition leader, Zhou Zhekun, deputy head of the Department of Plant Taxonomy and professor of phytotaxonomy and phytogeography, KIB. Zhou is a world authority on evergreen members of the Fagaceae (the beech family, including oaks) of China and southeastern Asia.

The following day I spent at the Kunming Botanical Garden (affiliated with the KIB) and enjoyed their extensive living collections, notably of evergreen Fagaceae and Magnoliaceae. This 44 hectare garden includes 1.3 ha devoted to 90 species of Magnoliaceae, a number of which are rare and endangered. Many members of this family are threatened in China due to deforestation and the systematic stripping of bark from mature trees to produce the herbal “gui pi,” a product that is used extensively as a general remedy and a tonic for treating fevers. Other notable collections were ferns, including several species of the primitive and endangered *Angiopteris*, and flowering plants, including *Begonia*, Hypoxidaceae and Liliaceae. Several of our group visited the extensive herbarium. I took the opportunity to look at their collections of taxa within the Aceraceae and Styracaceae, both of which are particularly numerous and diverse in Yunnan.

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We flew from Kunming to Baoshan and then traveled by road through increasingly spectacular country to the Zibenshan, a divide between the Lancang (Mekong) and Nu Jiang (Salween) rivers. We drove down into the dry, sub-tropical Salween Valley on a road that hugged the turbulent river and passed numerous massive rock/debris slides that were evidence of monsoon rains and recent road construction. Our journey north towards Gongshan, in the extreme northwest of Yunnan, was particularly memorable for the number of spectacular waterfalls and near-vertical mountainsides.

On September 26th we flew to Gongshan, which was to be the base for our initial field exploration. Our main purpose was to explore the remote Dulong Valley in Yunnan which is part of the upper Irrawaddy drainage. We drove part way up the recently constructed Gongshan-Kongdan Road which was built three years ago to provide a direct link to the rest of Yunnan, but which is often cut by massive landslides during the monsoon season. This day was an introduction to the region's stunning flora: massive evergreen oaks festooned with epiphytes; *Agapetes*, *Photinia*, *Rhododendron*, *Sorbus*, *Vaccinium*; orchids and other herbaceous species; graceful, free-standing maples; and autumn-flowering, scopolophilic (rock-loving) *Pleione saxicolum*. The area is part of the Gaoligongshan Conservation Area (GCA), a region that extends from the Tibetan border 600 kilometers south along the Yunnan/Myanmar border. Intensive biotic surveys of this region, which is regarded as a biodiversity hotspot, are being undertaken by the KIB, the Kunming Institute of Zoology and the California Academy of Sciences, USA.

The following day we drove over the Gaoligongshan Mountains through pristine old growth forest, which was warm temperate at the base and became a superb temperate rainforest dominated by vast *Quercus lamellosa*, *Pinus bhutanica* and *Tsuga dumosa* as we climbed from 2500 m to 2700 m. A stop in the Dulong Pass at 3095 m allowed us to sample rhododendrons and other diverse subalpine vegetation. We descended through the narrow subtropical valley of the Dulong Jiang to Kongdan, a muddy, frontier town, which was our trailhead for the 40 km journey up the Dulong Valley towards Tibet.

Accompanied by a train of ponies and pestered by leeches, we spent nine days hiking north in wet weather over rough trails beside the Dulong Jiang. This region was partially investigated in the early 19th century by famous plant collectors, including Frank Kingdon-Ward, George Forrest and Heinrich Handel-Mazzetti, but we discovered that it remains relatively untouched. The

old trade routes and hunting trails to Myanmar and Tibet are now overgrown and impassable, even with the assistance of guides. Nevertheless, we gathered valuable collections and information. Pre-expedition trail clearing will be required if the upper forests of this region are to be documented in the future. This spectacular area is tectonically active, with landslides, mass-debris flows, impressive waterfalls and almost near vertical mountainsides to 4900 m. The whole area is covered by dense primeval forest above 2000 m. There is talk of linking the GCA to a recently protected contiguous area in northern Myanmar. This would be a big step towards conserving a region of outstanding biodiversity.

We returned to Gongshan to prepare for our second major objective, a 4-day field exploration of the Qiqi Pass. The Qiqi is famous for the presence of the rare and endangered conifer *Taiwania flousiana*, a close relative of the Sierra redwood. It occurs in small, scattered stands within dense broad-leaved forests at 2000-2200 m. Mature trees rise to over 60 m and tower above the surrounding forest. We saw life zones from sub-tropical to sub-alpine, all of which impressed me with their extraordinary floristic diversity. Massive trees of *Rhododendron protistum* and *R. sinogrande* grow to over 20 m in some localities. Again, I was heartened by the knowledge that these priceless forests are revered and are to be conserved for posterity.

We continued south from Gongshan along the Salween to the city of Liuku, close to the Myanmar border. The following day we drove through magnificent mixed forests of *Pinus yunnanensis* (Yunnan pine), evergreen oaks, *Schima sericea* (a camellia relative), *Tsuga dumosa* and finally, an elfin rhododendron forest on the Pianma Pass at 3300 m. Much of the southern Gaoligongshan is protected on the Chinese side, in sharp contrast to the massive “logging shows” on the Myanmar side of the border (this area generally corresponds to the west-facing lower slopes of the Gaoligongshan). Since the 1998 ban on logging in the upper reaches of the Yangtze, much of the logging industry in China has moved to these border areas in Myanmar. We made substantial collections in this area, with the large arborescent magnolia *Magnolia campbellii* subsp. *mollicomata* being a particular triumph.

Two days driving brought us back to Kunming, where we cleaned and processed all our collections and collated field data. Zhou Zhekun has invited me to Yunnan in 2003 to visit several intact forest areas on the Vietnam and Myanmar borders with southwestern Yunnan, which are rich in

members of the Fagaceae, Lauraceae, Magnoliaceae and Styracaceae.

This was a very successful exploration trip. The itinerary and field work were planned and executed in a thoroughly professional manner. Most of our collection and all of our exploration objectives were realized. We saw 87 rhododendron species in the field and collected seed of 55. We established an excellent personal and professional rapport with our hosts.

It is clear that UBC has opportunities for a wide range of collaborative research programs with the KIB. I have had informal discussions with the director, Guan Kaiyun, to discuss a joint cooperative agreement between our respective institutions. The Kunming Institute of Botany is perhaps the leading botanical research institution in China. They have a number of active international collaborators, including the Royal Botanic Garden, Edinburgh, UK and the Missouri Botanical Garden, USA, which are also editorial centres for the Flora of China Project (FCP). Yunnan is home to over 18 000 species of higher plants. Many of the more than 100 scientists who work at the Institute are actively seeking international opportunities to learn new methods and assess new approaches to research.

Three areas of potential cooperation with both the UBC Faculty of Agricultural Sciences and the Botanical Garden and Centre for Plant Research (BGCPR) are:

- Exchange of graduate and post-graduate researchers.
- Collaborative research programs in many areas of botanical science, including traditional taxonomy/plant exploration that supports FCP objectives, conservation-biodiversity issues and plant breeding-biotechnology-plant propagation research relating to the growing Chinese nursery industry and traditional medicinal and culinary investigations.
- A continuing program of joint field expeditions to Yunnan and other central-southern provinces of PRC to support shared institutional research goals. The benefits for UBC include the collection of new germplasm for the BGCPR, field training and research, increased personal and professional knowledge bases for future research programs and the enhancement of our East Asian herbarium collections.



Top: (from left to right) Jens Nielsen (Glendoick Nursery, Scotland); Don Selcer (USA); Bob Zimmerman (USA); Peter Wharton (UBCBG, Canada); and Steve Hootman (Rhododendron Species BG, USA). Kongdan, Dulong Valley, Yunnan.

Bottom: Map of Yunnan - Myanmar region.



Photo: Peter Wharton

Torrent by 12 Bridge Camp, Qiqi Pass, 2700 m. *Picea brachtyla*, *Tsuga dumosa* and *Acer pectinatum* subsp. *forrestii* forest.



Top: *Lycoris aurea*. Nujiang, Fugong, northwest Yunnan.

Bottom: *Rhododendron cinnabarinum* subsp. *xanthocodon* (Concatenens Group). Qiqi Pass, 3350 m.



Rhododendron arizelum and *Larix speciosa*. Qiqi Pass, 3200 m, Gongshan County, northwest Yunnan.