FLORAL EXPLORATION OF SW YUNNAN CHINA June 23-July 6 2018  PART 1
Generously supported by Songtsam [www.Songtsam.com](http://www.Songtsam.com) and Mr Baima Dorje

Meili Snow Mountains from Meili Songtsam Lodge, Deqen County

Kawaigebo, 6740 meters (22,110 feet) almost as high as Mt Denali, highest peak in N America and Alaska

Mt Mianzumu 6054 meters (19,862 feet) on the southern edge of the Meili Snow Mountains
Yunnan, meaning “South of the Clouds” located just south of the Tibetan Plateau at the eastern edge of the 4000 km (2400 miles) long Himalayan Mountain Range, is a land with some of the most diverse cultures, varied ecology, and steep mountainous terrain in China. In NW Yunnan the Hengduan Mountain Range at the edge of the Tibetan plateau bends south, breaking into steep glaciated north-south mountain ranges separated by a series of over 2,000m deep gorges of the upper Yangtze (Jinsha Jiang), the Mekong (Lancang Jiang) and the Salween (Nu Jiang) that run parallel for over 300 km. All three originate far to the north on the Tibetan plateau in Qinghai Province in Sanjiangyuan National Park: 三江源, but reach the sea thousands of miles apart, in eastern China, Vietnam, and further west in Burma, respectively. These three rivers effectively separate lowlands in northern Myanmar from the lowlands of the Sichuan Basin and are recognized today as the Three Parallel Rivers UNESCO World Heritage Site.

The Three Parallel Rivers are within deep, low river valleys that allow tropical monsoons to penetrate north into the Tibetan plateau, separated by spectacular glacier and snow-capped mountain ranges that extend from the north south into tropical forests. Yunnan holds the greatest temperate diversity of flora and fauna in the world long that has inspired both explorers and botanists into its spectacular mountainous topography. The rugged mountains of Yunnan have historically isolated ethnic groups of people preserving the region’s unique minority cultures, and created refuges for an amazing variety of plants, birds and mammals.

Top: Lacang Jiang (Mekong River) near Meil, one of three rivers in the Three Parallels Rivers Unesco World Heritage Site. Bottom: Nu Jiang (Sawleen River) above Bingzhongluo near the Tibet and Myanmar border north Gaoligong
Jinsha Jiang (Yangtze River) Tiger leaping Gorge which is 3696 m (12,245 feet) deep between Yulong Snow Mountain at 5596 m and the elevation of the Yangtze at 1900m, making it one of the deepest canyons in China.

Three Parallel Rivers Protected area in squares that contains an outstanding diversity of landscapes and the richest temperate flora and fauna in the world.

Located in the mountainous north-west of Yunnan Province in China, the Three Parallel Rivers of Yunnan Protected Areas contains an outstanding diversity of landscapes that include deep-incised river gorges, luxuriant forests, towering snow-clad mountains, glaciers, and alpine karst, reddish sandstone landforms (Danxia), lakes and meadows over vast vistas. The upper reaches of three of the great rivers of Asia: the Yangtze (Jinsha), Mekong (Lacang) and Salween (Nu) run nearly parallel north to south for over 90 km (54 miles) through steep gorges which, in places, are 3,000m (9940 feet) deep and are bordered by glaciated peaks more than 6,000 m (19880 ft) high. From the western border of Gaoligong on the Myanmar border east to Meili to Sichuan extension of the Hengduan Range, Yunnan is a diverse landscape of immense topographic, geologic and climatic variety, scenic beauty and unparalleled biological diversity, the richest among temperate ecosystems of the world.
There are 118 peaks over 5,000 meters high, glaciers, waterfalls, hundreds of small lakes and extensive alpine meadows and forests where the tree line is the highest in the world. Owing to its range of elevations, its location on the boundaries of three major bio-geographical realms: east Asia, southeastern Asia and the Tibetan plateau, and its north-south topography of mountain ranges and deep river valleys act as an ecological corridor extending alpine Palearctic temperate biomes south and southern sub-tropical forests north. Being located in the convergent regions of the three world’s major biogeographic realms, the area is an epicenter of Chinese biodiversity with over 6000 species, possibly up to 10,000 species of plants for all of
Hengduan Shan range. There are more than 18,000 high plant species (51.6% of China’s total) and 1,836 vertebrate species (54.8% of China's total) living in Yunnan on a land area only 4.1% of China's total. Among 15,000 seed plants found in Yunnan, there are 151 rare and endangered plant species (42.6% of China's protected plants). Out of 335 China priority protected wild animals, Yunnan has 243 species, accounting for 72.5% of China's total, 15% of which are species endemic to Yunnan. However, Yunnan's biodiversity is faced with the menace of excessive exploitation of resources and changes in environmental conditions caused by the activities of expanding human development and increasing population.

I returned to Yunnan in June of 2018 to document the plant diversity of Gaoligongshan mountains bordering Myanmar and Yunnan between the Dulong (Irawaddy) and Nu (Salween) Rivers, and the flora of Meili Mountain Range east above the Mekong River. I would explore the Sinong Glacier near the base of Kawagebo 6740 meters (22112 feet) just west of the Mekong River, then drive 300 km south near Cizhong and explore Nanjiluo alpine area again west of the Mekong, and finally Pu Jing la near the Baima Snow mountain area and lying between the Mekong and Yangtze Rivers. The two-week itinerary was created in part with my input, Songtsam staff through Songtsam Boutique lodges founded by Mr. Baima Dorje, and Dr Fa Sheng Pan, a botanist from the University of Kunming who has written a book on flowers of Yunnan entitled *The Wild ornamental plants in the Three Parallel Rivers*. We would explore montane and alpine ecosystems 2500-5000 meters (8282-16,565 feet), and the deeper dry ecostystem canyons of the Mekong. The Yangtze River forms at Tiger leaping gorge the deepest in the three parallel rivers area, at 3696 m (12245 feet) from the summit of Yulong Snow Mountain 5596 m (18540 feet) to the Jinsha Jiang (Yangtze River) at Hu tiao xia at 1900m (6295 feet). Ecological zones are well defined by both elevation and precipitation, some valleys lie in rain shadows.

*Powerpoint presentation David Boufford, Harvard University*
VEGETATION The area covered by the World Heritage site is claimed to be the most biodiverse and least disturbed temperate ecosystems in the world. It supports the richest diversity of higher plants in China with a wide range of fungi and lichens, is an epicenter of Chinese endemic species and a natural gene pool of great richness. Owing to its wide variety of rock and soil substrates, altitudinal range and its position in a climatic corridor between north and south, it includes the equivalents of seven climatic zones: southern, central and northern subtropical with dry hot valleys, warm, cool and cold temperate, and cold zones. Because it was a refuge during the last ice age and its location is near the boundaries of three major biogeographical realms, east Asia, southeastern Asia and the Tibetan plateau. These comprise 6,000 species, over 20% of China’s higher plants. 2,700 of these are endemic to China. The range of vegetation types of the area includes: Evergreen broadleaved forests: monsoon, humid, semi-humid, higher humid; Sclerophyllous evergreen broadleaf forests: cold temperate mountains, hot dry valleys; Deciduous broadleaf forests of Quercus and Alnus spp. Warm coniferous forests: warm-hot, warm temperate, coniferous-broadleaf forests; Temperate coniferous forests: temperate cool Picea + temperate cold Abies forests; Savanna shrublands: dry hot savanna; Shrublands, dry warm valleys, cold temperate; Meadows, sub-alpine, alpine; Alpine debris-flow scrub; Alpine lacustrine: emergent, floating-leaf, submerged.

Evergreen broadleaved forests Monsoon forest occurs in the lower reaches of Dulong and Nujiang Rivers while semi-humid evergreen broadleaved forest occurs in the lower reaches of Lancang and Jinsha Rivers. Middle subtropical humid evergreen broadleaved forests are found on the mid-slopes of Gaoligong Shan and Biluo Xueshan. Subtropical sclerophyllous evergreen forest along the middle reaches of the Lancang and Jinsha rivers are dominated by Quercus species. The Nu and Lancang river gorges have tropical scrub fringed by mixed coniferous and broadleaf forest, which is especially rich in mid-elevation temperate conifers, some endemic to
Monsoon Evergreen broadleaved forest in the lower elevation 2200 m of southern Gaoligongshan near Baihualing. This forest has a subtropical mix of oaks, ash, hickory, dogwood, orchids, rhododendrons, legumes known in subtropical forests of Myanmar and Thailand. Elevation towards the summits are temperate Coniferous the gorges. These include Chinese cypress *Cupressus duclouxiana* (EN), *Taiwania cryptomeroides* (VU), hemlock *Tsuga dumosa*, and *Juniperus spp.* Other endemic or locally common rare conifers are from the genera *Keteleeria, Pseudotsuga, Platycladus* and *Cunninghamia. Nu River Canyon from mid-altitude forest*

Deciduous broadleaf forests Temperate deciduous broadleaved forest occurs at an altitude of 3,000-3,500m. Warm to cool coniferous forest grows at an altitude of 2,800-3,300m and cold temperature coniferous forest at 3,300-4,100m. In the cloud forests, trees are draped abundantly with the lichen *Usnea longissima.* Broadleaf forests are often dominated by the subalpine oak *Quercus aquifolioides.* On the mountains to the east of them, forests of Likiang spruce *Picea likangensis* and *P. brachytyla* from 3,100-3,500m and Chinese fir *Abies georgei* and *A. delavayi* from 3,500-4,000m predominate, associated
with Chinese larch *Larix potanini* and *Pinus densata* on cleared or disturbed ground. The whole area is characterized by isolated ridge top and valley bottom habitats. The drier plateau of the Hongshan in the east is dominated by Yunnan pine and alpine meadows, and the rain-shadowed Yangtse valley by sparse dryland scrub.

**Savanna shrublands** A dry-hot savanna-like ecosystem appears in river valley areas of the lower reaches of the Lancang and Jinsha rivers, while a microphyllous shrubland (desert) ecosystem of dry-warm river valleys occurs in the upper reaches of the Lancang and Jinsha rivers. There is a remnant old growth forest of giant Chinese cypress *Cupressus duclouxiana* (EN) near the bridge crossing the Lancang near the village of Beng on the left bank by the Meili Snow Mountain Park gate, and on the right bank across the river Sinongcun and Mingyong.

**Meadows** Alpine meadows predominate above the tree line around 3,500 to 4,000m. In Gaoligongshan, Nushan and Yunlingshan mountains these are interspersed by Alpine shrublands (4,000-4,500m) dominated by many rhododendron species.

There are 226 species of rhododendrons, 37 of them discovered in the area, over 300 species of timber trees, more than 100 species of gentians and primulas, many species of lily and orchid, and some 500 species of medicinal plants. Well known endemic plants include gingko *Gingko biloba* (EN) and davidia (handkerchief tree) *Davidia involucrata*, four species of the blue poppy *Mecanopsis*, and two species of *Cycas*. There are also ancient relict species such as *Taiwania cryptomerioides* (VU), the Yunnan yew *Taxus yunnanensis*, *Magnolia rostrata* (VU), *Nouelia insignis* and *Kingdonia uniflora* among many others.
Top: A Powerpoint presentation David Boufford, Harvard University; Below: sample of flowers from the tremendous plant diversity of SW Yunnan that includes rhododendrons, primulas and lilies, orchids and trees.
The Songtsam Lodge circuit originated from the award-winning film director Mr Baima Duoji, who integrated a series of luxury Songtsam Tibetan-style lodges along the Tea-Horse in the fabled Shangri-La region of Yunnan. He has now extended the circuit of new lodge from Yunnan west to Lhasa, bringing the traveler through the scenic, wild and rugged mountains and forests of eastern Kham in the Tibetan Autonomous Region at the eastern edge of the Himalayas. Each hotel showcases the tranquil scenery, culture and spirituality of its location, presenting a rounded picture of this renowned region with each location and its staff welcoming guests. Itineraries are available that vary from nature and day trekking to integration into the Tibetan culture and its Buddhists traditions. Their website is WWW.SONGTSAM.COM. Travel to the southeastern tip of the Tibetan Plateau to discover this collection of exquisite world-class retreats that blend harmoniously into their surroundings. Rise with the sun to a view of Yunnan's tallest and holiest summit. Practice yoga amidst fertile mountain valleys and immerse yourself in rich Tibetan culture as you taste local cuisine and chant sutras with a Lama.