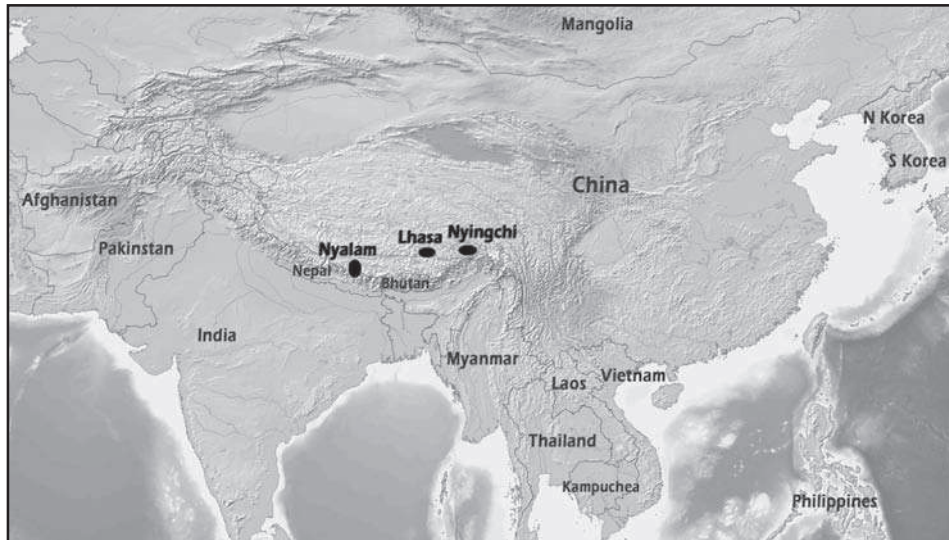


Botanical Collecting and Capacity Building in Himalayan Tibet, China

By Jun Wen

The mountains of southern Tibet (Xizang Autonomous Region), China, form the eastern extent of the Himalayan range. Across this rugged landscape, high ridges uplifted from the collision of India with Asia shift from an east-west orientation to run primarily north-south; to the northwest, they give way to the highest plateau on Earth. It is a region of extreme elevational ranges compressed in short distances, with a corresponding diversity of habitats ranging from nearly untouched lowland subtropical forests (with tree ferns) in the Yarlongtsangpo River Valley, to montane tree *Rhododendron* cloud forests, to areas of alpine and cold desert vegetation at the highest elevations.

The flora of southern Tibet is rich and contains many endemic species. However, biodiversity in this region has in general been little studied and poorly documented. Historically this politically sensitive, geographically remote region has received few non-Chinese biologists. A paucity of botanical collections exists in western herbaria, and those tend to be over sixty years old, made primarily by W. Griffith, J. Rock, and F. Kingdon-Ward in the early part of last century. A basic flora



Map of South Asia showing three collection sites in eastern Tibet.

of the Xizang region has been published (*Flora of Xizang*, vols. 1-4; 1983-87), but this is neither intended, nor sufficiently detailed, for conservation purposes.

In terms of biodiversity conservation, southern Tibet is perhaps the most enigmatic region in the Himalaya. The geographic distribution, abundance, habitat needs, and overall conservation

status of most plants and fungi in Tibet have not been studied.

Jun Wen and colleagues Rick Ree and Greg Mueller (Field Museum of Natural History) received a grant from the MacArthur Foundation to collect baseline data on biodiversity in southern Tibet, emphasizing vascular plants and fungi. The project also intends to increase the capacity of young colleagues to conduct biodiversity research and education, with a strong orientation toward floristic conservation. The project is conducted in collaboration with Chinese colleagues in Kunming to build capacity in Tibet for research and conservation. Their primary collaborator in Kunming is Hang Sun, the Deputy Director of the Kunming Institute of Botany (KIB) of the Chinese Academy of Sciences (CAS).

The first expedition occurred in September 2006, with a team consisting of five botanists from the U.S. (Wen, **Vicki Funk**, **Deborah Bell**, Ree and Mueller), three senior botanists from Kunming (Hang Sun, Songgong Wu and Zhekun Zhou), four graduate students from Kunming (Zelong Nie, Ying Meng, Liang, and Jipei Yue), one graduate student Yunjuan Zuo from Beijing, and two Tibetan colleagues, Zhen Yang and Sang Ge, from Xizang Plateau Institute of Biology. The team started the 3-week field trip in late August with a one-day preparation stay in Kunming Institute of



The botanical expedition team, in eastern Tibet on the way from Nyingchi to Lulang: (Back row, L-R) Vicki Funk, Greg Mueller, Rick Ree, Jun Wen, Sugong Wu, Jun-Feng Liang, and Jipei Xue; (Front row, L-R) Zhen Yang, Zelong Nie, Deborah Bell, Yunjuan Zuo, Ying Meng, and Song Ge. (Photo by driver "Turkey")

Botany, the Chinese Academy of Sciences. Then the team set out for Lhasa, Tibet.

The expedition team had four vehicles and collected in three major areas. The first area was around Lhasa within 200 km from Lhasa. The second site was about 400 km east of Lhasa near Nyingchi (Linzi) and Lulang. The third area was in Zham (or Zhangmu) and Nyalam (or Nyelamu), ca. 600 km southwest of Lhasa near the border with Nepal. The team collected about 1000 collection numbers with several duplicates in three major vegetational zones: the dry plateau area near Lhasa, the eastern forest and alpine area near Linzi and Lulang, and the eastern Himalayan forests in Zhangmu and Nyalam. They also collected in transitional zones in the alpine areas between Lhasa and Nyingchi. Several collections were made between Nyalam and Lhasa, where they covered some areas with the Tibetan Steppe floristic area, which represents the eastern end of the Central Asian floristic zone.

The main focus of the project was to collect vascular plants and fungi. These groups play critical roles as primary producers and nutrient recyclers of terrestrial ecosystems, and are thus natural choices for conservation research. The specimens collected as a result of this program are used to develop a research database of the biodiversity of southern Tibet. They also hope the collections will help enrich the small



Saussurea stella in the Lhasa area of Tibet. (Photo by Jun Wen)

local herbarium in Xizang Plateau Institute of Biology, one of the partner institutions in Tibet.

The alpine and subalpine areas near and east of Lhasa were still covered with various flowers in September. It was especially rich in gentians and close relatives, various Asteraceae such as *Saussurea*, Campanulaceae, Apiaceae. The Lulang-Nyingchi area shows the transition between the Himalayan flora and the western Chinese flora. There are lots of *Pedicularis* with short or extremely long floral tubes (e.g., *Pedicularis longiflora*), *Panax bipinnatifidus*, and

many species of *Saxifraga*, *Saussurea*, and *Meconopsis*. The dominant trees are *Pinus griffithii*, *Abies forrestii*, and *Picea likiangiensis*, along with various *Betula* species. The southern area bordering Nepal was typical Himalayan. The Zhangmu-Nyalam area was fascinating in that within 40 km, they crossed several zones from alpine to warm temperate montane forests. In the high Nyalam area, it was dry and alpine; yet in the Zhangmu area it is wet and warm with excellent development of the cloud forests.

Wen's team anticipates that the four-year project will achieve the following: 1) train a group of about 20 highly knowledgeable specialists in various aspects of biodiversity research and management; 2) establish a database of plants and fungi with photographs, drawings, and information about their ecology, habitats, and associated species; 3) make collections of plants and fungi that will assist in further training and research within Tibet; 4) produce a field identification guide of plants, and 5) develop long-term collaboration that will provide benefits to all those involved for years to come. The development of baseline data today and the development of local expertise for the future will be instrumental for the continued existence of that biological heritage for future generations.



Saussurea obvallata (Photo by Jun Wen)

