

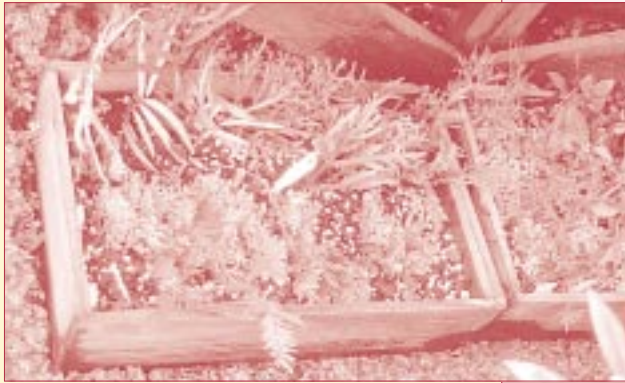
Leaflet

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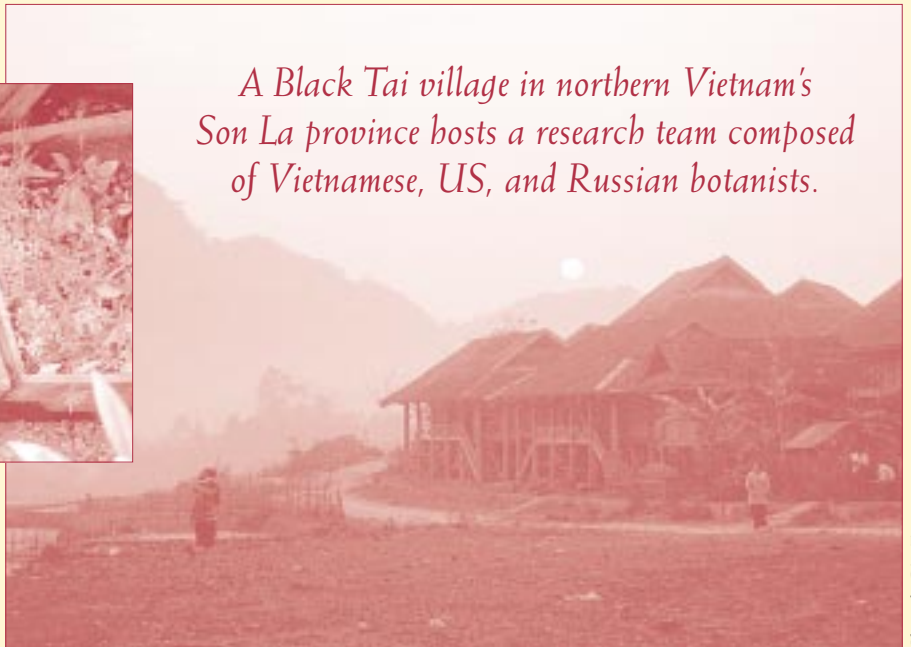
Strybing Arboretum & Botanical Gardens

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These Strybing Nursery cutting trays contain rare conifers from northern Vietnam, including *Calocedrus* (cypress family) and *Amentotaxus* (yew family). The cuttings were brought to Strybing by Plant Collections Manager Bian Tan after his February visit to Vietnam.

A Black Tai village in northern Vietnam's Son La province hosts a research team composed of Vietnamese, US, and Russian botanists.



Photos by Bian Tan

Reflections on Cloud Forest in Vietnam

Bian Tan, Strybing Plant Collections Manager

Due to a mild, fog-influenced climate, Strybing Arboretum & Botanical Gardens is home to unique plants from the tropical mountains of the world. The term “cloud forest” refers to a type of mountain forest where temperatures are cool and the vegetation is regularly bathed in mist and fog. The Mesoamerican Cloud Forest at Strybing consists of plants from Mexico, Central America, and the tropical Andes. Species from New Guinea, Malaysia, Indonesia, the Philippines, and, most recently, Vietnam comprise the Southeast Asian Cloud Forest.

The Missouri Botanical Gardens in St. Louis (MBG) has collaborated since 1994 with the Institute of Ecology and Bioresources (IEBR) in Hanoi. Their joint project—the Vietnam Botanical Conservation Project—is based on the Convention on Biodiversity, an international law advocating biodiversity conservation (CBD, www.biodiv.org; see *Leaflet*, Vol 23, No. 1, Winter 2000, p. 5). MBG underwrites the cost of fieldwork such as transportation, meals, and accommodations, and sponsors Vietnamese botanists to the United States to pursue higher academic degrees.

Under this agreement, MBG brings additional foreign researchers to Vietnam to assist the project. As Strybing’s plant collections manager, I was able to participate in a plant exploration expedition last February to the remote Phu Luong mountains of northern Vietnam.

First on my agenda upon arrival in Hanoi was a meeting with Dr. Le Xuan Canh, deputy director of the IEBR. Dr. Canh welcomes collaborative projects, and would like to see one develop between IEBR’s ethnobotany department and Strybing Arboretum & Botanical Gardens. He introduced me to Dr. Luu Dam Cu, head of the ethnobotany department (see sidebar on p. 5).

In a lengthy discussion with Dr. Cu and his staff, each of us summarized our work and the areas in which we need assistance. I outlined Strybing’s ongoing collaborations with the Ethnobotanical Conservation Organization for Southeast Asia (Eco-Sea, www.ecosea.org), the Bali Botanic Gardens, and the Philippine National Herbarium. In exchange for collecting cloud forest plants for Strybing’s Southeast Asian Cloud Forest, Eco-Sea

(continued on page 4)

Cloud Forest (continued from page 1)



Nguyen Hieu

(l to r) Botany Professor Dr. Phan Ke Loc, Vietnam National University, the village security officer, Strybing Collections Manager Bian Tan, and botanist Dr. Dan Harder from Missouri Botanical Gardens at the construction site for a new meeting house in the Black Tai village.

and Strybing have brought staff from each institution to California for training and study. Dr. Cu explained that the botanists in his department lack advanced training in ethnobotany. Rather than bring staff to California, they would prefer that Eco-Sea and Strybing bring foreign instructors to Hanoi, thereby benefitting a larger number of staff. This idea has great appeal, allowing a more concrete and direct benefit to accrue in Vietnam.

A day later, I left Hanoi in a Russian-made jeep to meet the research team already in the field, northwest of Hanoi. The journey took about 10 hours, through flat rice fields that soon gave way to undulating hills, then to dramatic karst (steep-sided limestone). At one point, I noticed plum trees interplanted with banana—a strange juxtaposition of temperate and tropical fruits. This would echo the composition of mountain forests that I later explored. Throughout low and middle elevations, native vegetation has been irreversibly replaced over the last 100 years by rice, sugar cane, tea, and plum. I looked forward with great anticipation to seeing intact forest in the mountains.

In Son La province, I met up with Drs. Dan Harder and George Schatz and Ms. Sharon Bodine of MBG. Other essential members of the research team were Dr. Nguyen Tien Hiep, Vietnam Botanical Conservation Project coordinator at the IEBR; Dr. Phan Ke Loc, professor of botany at the Vietnam National University; and Dr. Leonid Averyanov of the Russian Academy of Sciences. Dr. Hiep is a specialist in conifers and cycads. Dr. Loc specializes in ferns, and Dr. Averyanov is an authority on Vietnamese orchids.

Our target field site was about an hour off Highway 6, accessed from a rocky dirt road that made for a bone-rattling ride. Dr. Hiep learned of this site recently from a television documentary that showed villagers cutting the forest for wood. He recognized one of the felled trees as *Calocedrus*, a rare endangered conifer previously unknown from that region. That evening, we set up camp in a Black Tai village—one of many ethnic hill tribes in northern Vietnam—that was to be our home for the next few days. We

learned that this village and its surrounding area were relatively unaffected by the Vietnam War.

Our first day collecting was bright and sunny, and we soon reached the upper limit of agriculture, where the mountains rose steeply. Dr. Averyanov noticed temperate species along the trail, such as *Ranunculus*, *Potentilla*, and *Geranium*. Gauging by their presence, he estimated our elevation to be about 1,000 meters above sea level. GPS readings (Global Positioning System using satellites orbiting the Earth) corroborated his well-practiced estimate.

The entire forest, when seen from a distance, appeared to be of the tropical evergreen variety, even up to the summits. Although Dr. Hiep claimed that he could see conifers along the distant ridges (using binoculars), it was difficult to believe that conifers could occur in such tropical-looking forest and at such low elevation. Approaching the summit, we began to notice needle-clad twigs of the forest floor. Orchids, mosses and other epiphytes were thick on the rocks and trees. More of the limestone was exposed in dramatic vertical formations, and a beautiful, glossy-leaved *Vaccinium* (blueberry relative) was draped over much of the limestone. Species of the orchid genera *Bulbophyllum*, *Dendrobium*, and *Cymbidium* were growing either epiphytically on larger plants or trees, on rocks, or in soil pockets. Along the trek up, and especially near the summit, the research team collected voucher specimens for herbaria in Missouri, Hanoi, and St. Petersburg. I collected seeds and cuttings for Strybing, in addition to assisting my colleagues locate, collect, and identify material for herbarium specimens.

After each day's collecting, we spent most of the evening processing, pressing, and documenting each plant. Detailed notes about the ecology, morphology, and site conditions were noted, and each specimen was given a unique number, just as museums catalog and scientifically document their collections. Dr. Averyanov's orchid collections included numerous species unfamiliar to him, and he remarked that many would most likely turn out to be new species after further scrutiny.

We saved the highest mountain for the last day. It was located near a Hmong village and took four hours of steep climbing to reach the summit. Again, we were in dense tropical forest, hiking along a path in dim shade when suddenly, bright flashes of red and orange on the ground caught my attention. These were freshly fallen maple leaves in glorious fall color. Looking upwards, I picked out a sparse sprinkling of deciduous trees just beginning to bud out against the dark, evergreen backdrop of the tropical forest. We were, after all, on mainland Asia from whence many temperate-deciduous species originate, and it was late February—spring in this part of the world, where some trees hold their leaves through the mild winter, then drop them just before the spring flush. Soon we were picking out *Cephalotaxus* seedlings (another conifer) near the summit, and seeing a great increase in mosses and orchids. New types of plants appeared, such as rhododendrons. As on other mountain summits, the limestone rock became conspicuously exposed, dripping with orchids and *Vaccinium* species.

Shrubby temperate rhododendrons were common. Deciduous trees, such as hickory relatives (*Platycarya*), hornbeam (*Carpinus*), and maple (*Acer*), were numerous, although mixed with tropical elements such as *Guilhaia* palms, epiphytic orchids, and gesneriads (African violet relatives).

The crests of the ridges held an unexpected wonder—gnarled and ancient pines (*Pinus kwangtungensis*) that were as picturesque as a Chinese landscape painting. I climbed one to search for seeds, and those few magical minutes were the high point of my whole experience in Vietnam. The view from atop the flat-crowned tree was magnificent. Ridge after ridge of mountains stretched into the distance, each dominated by large pines and *Calocedrus*—the lords of the forest, their branches spreading with grace and majesty over the surrounding forest below. I sat in a botanical wonderland, where temperate and tropical floras mingle in an other-worldly paradise. Here, *Licuala* palms flourish happily with yew trees, and venerable, ancient pines are laden with epiphytic orchids. With a heavy sigh, I reluctantly descended the tree to join the rest of the team.

The cloud forests of Vietnam are quite a contrast to those of Indonesia and the Philippines, where I spent the remainder of my trip. In these countries, much of the cloud forest has been devastated for wood and agriculture. In northern Vietnam, even though much of the lowland has been stripped of native forests, some of the mountain forests are still relatively intact, though by no means safe. Deforestation and habitat destruction is proceeding at a tremendous rate all over the world, ensuring the loss of countless unknown organisms. Contrary to what we may think, only an estimated ten percent of the world's biodiversity has been studied, let alone described or named, according to E.O. Wilson, one of the world's foremost biologists. A strange and wonderful world is quickly disappearing without being explored or studied.



Nguyen Tien Hiep

Strybing Plant Collections Manager Bian Tan searches for seed at the top of a large *Pinus kwangtungensis* and is treated to a panoramic view of the surrounding mountain ridges.

Working with colleagues from other regions of the world has led me to the realization that under all our different colored skins, our different religions, beliefs, and ways of life, we are all citizens of this one Earth; we are all interconnected as one Humankind. Whether we live in a remote village or a metropolitan city such as San Francisco, our lives are completely dependent on the health of the natural environment for clean air, reliable water supplies, new medicines, and stable climate. When we assist our foreign colleagues with their mission of conservation and environmental education, we are at the same time fulfilling Strybing's mission.

Please review the Strybing Mission, which is printed on page 2.

Potential Ethnobotanical Alliance



Bian Tan

The ethnobotanical department at Hanoi's Institute of Ecology and Bioresources is studying the traditional uses of native plants by the many hill tribes in northern Vietnam, represented here by this Hmong woman and her children.

The mission of the ethnobotany department at Hanoi's Institute of Ecology and Bioresources (IEBR) is to: (a) research, document, and conserve ethnobotany in Vietnam; and (b) carry out contact, exchange, and international cooperation in the field of ethnobotany (the study of how cultures use plants).

The department is involved in many projects, with particular emphasis on traditional methods of treating cancer, developing a database of Vietnamese traditional knowledge, and producing interpretive kits for use in teaching ethnobotany. It is a dream of Department Head Dr. Luu Dam Cu and his staff to establish an ethnobotanical museum for conserving and disseminating information on traditional plant uses.

Since much of Vietnam's traditional knowledge lies with the numerous cultures of ethnic hill tribes, ethnobotany department staff make regular research trips to the mountains. Therein lies the common ground between our respective programs. Future joint collecting expeditions between Strybing and IEBR will benefit both institutions—providing new species for Strybing's Southeast Asian Cloud Forest while assisting IEBR in documenting traditional plant use among the hill tribes in Vietnam. This basic idea has proven a successful model for collaborations with the Bali Botanic Gardens and the Philippine National Herbarium.

Dr. Cu and his staff need help to secure funds to bring foreign ethnobotanists to Hanoi to train local staff. The directors and associates of Eco-Sea (Ethnobotanical Conservation Organization for Southeast Asia, www.ecosea.org) have had substantial experience in organizing training courses for collaborators in Indonesia. Some of them already have great interest and considerable experience in Vietnam, and feel that this could be an exciting joint project between Strybing, Eco-Sea, and IEBR.