THE MAGAZINE OF THE NATIONAL BOTANIC GARDENS OF SCOTLAND IN ASSOCIATION WITH ITS MEMBERS | ISSUE 11 | WINTER 2002/2003

THE Botanics

River Deep, Mountain High
Botanising in the remote Gaoligong Shan

The Johannesburg Summit
What did it mean for plant conservation?

A Tale Well Told
Storytelling in the Garden

A Lift for Local Plants
New funding for Scottish flora research

The Nu Jiang (Salween) charges round the steep-sided oxbow bend north of Gongshan. A subsistence farmer grows small fields of maize in the centre. PHOTO: DAVID KNOTT

River Deep, Mountain High

RBGE plant hunters Mark Watson and David Knott returned this autumn from a six-week expedition to one of China's most remote areas. This was the start of a huge project that aims to inventory the diversity of flora and fauna in the region. Anna Levin reports.

The Gaoligong Shan is a remote mountain range that stretches 600km along the border between China and Myanmar (formerly Burma). It is one of a series of high ridges that form a raw and dramatic landscape in western Yunnan Province. Deep river valleys cut parallel lines through the huge, jagged mountains as icy water from the Tibetan plateau rushes through in rocky torrents, forming three of the world's major rivers: the Salween, Mekong and Yangtze. This rugged and remote region is so rich in life that it is described as one of the 'hottest' of the world's biodiversity hotspots.

The biological wealth is partly due to the extensive north-south reach of the range, which provided escape routes from advancing glaciers during the ice ages, and now links temperate and tropical floras. With mountains rising to peaks of over 6,000m, the range of altitudes also creates diverse habitats, from the subtropical forests of the lowlands to the high mountain meadows. But what makes the Gaoligong Shan so special is the pristine state of its forest cover. Unlike so much of the surrounding areas, the forests have remained largely intact because of their remote location. There are very few roads, and the steep mountains and torrential rivers make the area so inaccessible that it has been secluded from outsiders, and especially from loggers. The region's isolation has also meant that the fauna and flora of the area have been poorly documented. Together with scientists from the California Academy of Sciences (CAS) and the Kunming Institutes of Botany and Zoology, RBGE botanists have been working on surveys of the area over the past six years.

These first explorations laid the foundation for a new project: a five-year, $2.4million multidisciplinary study funded by the US National Science Foundation. 'The Biotic Survey of the Gaoligong Shan', launched in April 2002, is the first and largest project of its kind. It hopes to document a significant proportion of the biodiversity of the area: the botany, including all lower plants such as mosses and fungi, and the zoology – all mammals, birds, reptiles, fish and insects.

The strength of the project is in the breadth of collaboration – between scientific disciplines and between countries. The three lead partners are CAS and the two Kunming Institutes, with RBGE and two other institutes in China as collaborators. Anthropologists are also involved, studying early human settlement in the area.

RBGE botanists will be taking part in ten expeditions over the next five years, covering as much of the region as possible. They will be collecting material of all available flowering plants, ferns, mosses and liverworts from specific

Autumn colours and fruit of a *Sorbus* species on the col at the Dulong pass. PHOTO: MARK WATSON

The new project hopes to document all plant and animal life in this rugged, remote region.

fieldwork areas on both sides of the mountain ridge. In the course of these expeditions, the botanists are hoping to discover new species, and new distributions of known species. The Garden is particularly interested in its specialist groups – conifers, gesneriads, rhododendrons, rosaceous shrubs, and umbellifers – and plants of the sub-alpine areas that would be hardy in the UK.

While the botanists are busy collecting and pressing specimens, the entomologists will be beating bushes to catch insects, the ichthyologists wading deep into streams to trap fish, the herpetologists searching for frogs along the river banks, and the mammalogists tracking bears and monkeys through the forests. All these data will then be pulled together at the California Academy of Sciences to create a near-complete inventory of life in the Gaoligong Shan. This information will be freely available on the Internet and will provide the foundation for more specific environmental studies, and for sound management to protect the ecosystems of this spectacular region.

The first expedition

The first expedition of the project was a visit to the far northern region near Ka Gar Pu, around Gongshan, in October 2002. In many ways this was an explorative trip to develop working procedures, train local people in collecting techniques, test ecological recording methods in the field and foster relations with local officials. David Knott, Curator of Dawyck Botanic Garden, and Mark Watson, RBGE's Flora of China expert, offer a peek into their travel diary.

From the field diary...

14 September – Kunming

Arrived hot and grimy in Yunnan's capital Kunming after 24 hours' travel. Met staff from the California Academy of Sciences (CAS) who appeared through customs pushing four carts piled high with luggage. This made our five cases look good, but then they were laden with collecting equipment, including two portable generators. Staff of the Kunming Institute of Botany (KIB) met us and drove us on a hot and dusty ride through the suburbs to the KIB campus and guest house.

17 September – Kunming

Our days in Kunming are warm, with clear skies and bright sunshine, but much of the time is spent indoors discussing the logistics of this and later expeditions. The cool start to the day, and the breathless ten-minute walk up to the Herbarium, remind us that we are at an altitude of 2000m. The stay in Kunming is helping us acclimatise for higher elevations later.

19 September – Liuku

Two days' drive along deteriorating roads has brought us to Liuku, a sprawling city on the Nu Jiang (Salween river), at the heart of the Gaoligong Shan project area. Liuku is at 900m and subtropical – surrounded by fields of banana, sugar cane, rice and taro. This evening's dinner was a formal banquet with local government dignitaries and senior officials from the Nu Jiang Nature Reserve. Issues regarding permissions were resolved and we are happy hear there is genuine local backing for our project.

21 September – Gongshan

Arrived at the Gongshan Hotel at midnight after a gruelling drive along 200km of road under construction. The hotel is our main base and five drying frames were set up to dry the plant specimens. The plan is to have a small group stay in Gongshan (1500m), making local collecting trips and processing specimens, while the main party treks to high elevations, sending back specimens every two days for drying.

27 September – Dabadi Camp

Six days of continuous rain have caused flooding and landslides. We had to abandon our planned trek because the little-used trail would be too dangerous. The alternative plan was to drive up the new road into the Dulong valley and camp at 3000m in a valley called Dabadi. Today we took the three vehicles up to Dabadi. Those on the driver's side had a spectacular, if unnerving, view down the near vertical drop as the bus negotiated the narrow road.

30 September – Dabadi Camp

Another fitful night's sleep as feral Dulong cattle stomped around our camp. The rain is still drumming down on our

Right: Mark Watson, David Knott and Dao Zhiling from the Kunming Institute of Botany press *Gentiana* specimens under the awning at Dabadi Camp. PHOTO: DONG LIN

tents, and low cloud shrouds the hillsides. Everything is cold and damp. We live in one set of clothes that gets wet during the day and is dried (to a fashion) around the smoky campfire in the evening.

But what a place. Dabadi valley is mixed woodland, rich with many species of *Acer*, *Enkianthus*, *Malus*, *Sorbus* and *Rhododendron* overtopped by spires of *Abies*, *Picea* and *Tsuga*. Autumn colour is starting to show; trees and shrubs are laden with fruit.

2 October – Dulong pass

Rain is beginning to ease off. Today we battled through dripping bamboo thickets to reach the col at 3550m. Here we found an amazing mosaic of water-logged areas with primulas; rocky hummocks covered with prostrate rhododendrons, *Vacciniums*, *Gaultherias*, a *Cassiope* and a dwarf *Sorbus*. Groves of tall scrub held rhododendrons and *Sorbus* mixed with *Viburnum* and bamboo. However, the weather closed in and we had to descend down a steep path.

After a long day in the field, we returned to camp, wet and cold but elated. Dinner was the usual ham and cabbage soup, spicy potatoes and rice. Mark produced some dry roasted peanuts as a treat – eagerly consumed by the Laowei ('foreigners'), but treated with suspicion by the locals.

5 October – the high point

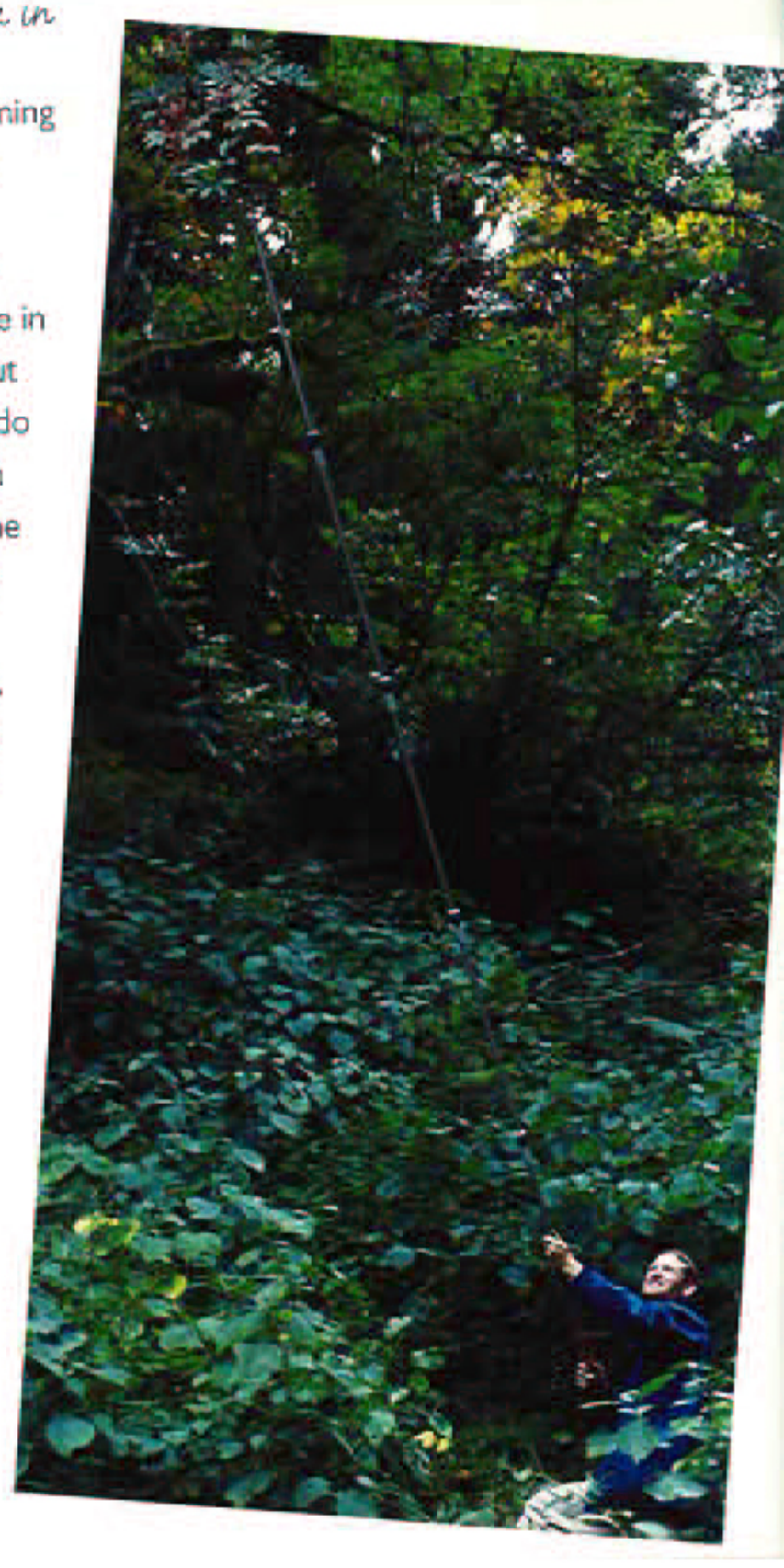
We were blessed today with glorious blue skies for our last full day in the field. With sun on our backs we tackled a steep ascent following a boulder chute up to the ridge at 3800m. After two hours' scramble, we emerged into low bamboo, juniper and dwarf rhododendron scrub on the knife-edge ridge. The panoramic views were stunning, from the ice-clad massif of Ka Gur Pu to the north, round past high corrie lakes to the forested mountain ridges in Burma running far into the distance.

6 October – return to Gongshan

The fine weather held as we decamped. On the descent we found a magnificent stand of *Rhododendron sinogrande* with young plants growing alongside their stately parents. Another huge-leafed rhododendron, *R. protistum*, was found at lower elevation, heavy with fruit. On our return to Gongshan we celebrated with cold beers!

17 October – back in Kunming

Returned to Kunming late this evening, having stopped overnight in Dali. Our flights out are in five days' time, but there is much to do in sorting through equipment and the 1,200 collections before we exchange the dry, warm weather in Kunming for the wet, cool conditions of Scotland. ◦



Top: David Knott collects ground-hugging *Rhododendron forrestii* on the col at the Dulong pass. In the foreground, dwarf *Sorbus reducta* shows autumn colour. PHOTO: MARK WATSON

Top right: Spectacular view west from the ridge crest over the Dulong valley, with dwarf rhododendron and juniper scrub in the foreground. PHOTO: MARK WATSON

Above: David Knott clutching hard-won specimens of *Rhododendron protistum*. A personal highlight of the expedition. PHOTO: MARK WATSON

Right: Mark Watson uses pole pruners to collect *Sorbus insignis*, an epiphytic shrub growing on *Lithocarpus* in broadleaf evergreen forest. *Sorbus* is a specialist group of the RBGE, with extensive collections at Dawyck Botanic Garden. PHOTO: DONG LIN