

Flora study trip to Nepal

Project report

Misako Kasahara
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Introduction

This report documents a two-week trip to Kathmandu Valley and Langtang National Park in Nepal in November 2023. The trip was proposed and undertaken by the author, Misako Kasahara, who has been Head Gardener at Riverhill Himalayan Gardens since November 2021.

Riverhill Himalayan Gardens are in the grounds of Riverhill House, owned by the sixth generation of the Rogers family, situated just south of Sevenoaks, Kent. There is a historical collection of original Victorian introduction plants, and the gardens are open to paying visitors from March to October, 5 days a week.

The main focus of the trip was a 9-day trek in Langtang National Park, but it also included a visit to National Botanical Garden of Nepal and other cultural sites in Kathmandu valley.

Objectives

The author to gain better knowledge of plants in Nepal, especially in the Himalayan region, in order to include either suitable plants or inspiration into future planting schemes at Riverhill Gardens. Initiate and maintain new connections with other horticulturists, botanists and conservation specialists, both in the UK and in Nepal, in order to widen author's and garden's future collaboration possibilities. The author also hopes to help other people in the industry to make connections to Nepal.

Itinerary of the trip

Date	Places / activities	accommodation	Other information
Friday 3/11/23	Flight Qatar Airways via Doha	Flight	
Saturday 4/11/23	Arrived at Kathmandu Airport, transport by trekking company to Hotel Ganesh Himal	Hotel Ganesh Himal	Obtained visa at the airport. Unpacked and rested at the hotel
Sunday 5/11/23	Visit cultural sites in Kathmandu, including Durbar Square, Asan Bazaar, Swayambhu	Hotel Ganesh Himal	

Monday 6/11/23	Day trip to Bhaktapur, a Newari ancient city (UNESCO World Heritage Site). Visit to Baudhha and Garden of Dreams in Kathmandu	Hotel Ganesh Himal	Return taxi to Bhaktapur
Tuesday 7 to Wednesday 15/11/23	Langtang national Park trekking. (7 th and 15 th transport from Kathmandu to Syabrubesi and back)	Langtang National Park various accommodations. 15 th Newa Chen Guest House in Patan	(Tihar festival 10 th to 14 th)
Thursday 16/11/23	Visit Patan Darbar Square and explore the area	Newa Chen Guest House	
Friday 17/11/23	Day trip to Godawari National Botanical Garden and the Herbarium	Newa Chen Guest House	Bus from Lagankhel bus station and back
Saturday 18/11/23	Visit Ichangu Narayan area (west of Kathmandu Valley). Flight to Hong Kong (Cathay Pacific)	Flight (on to Japan)	The end of trip to Nepal

Note: In the proposal, the dates were suggested to be 11th to 25th November 2023. However, the author was encouraged to move the dates as early as possible to see more plants before they became dormant / died down and the dates were changed to 4th to 18th November 2023. The author planned a holiday to Japan immediately after this trip, therefore the flight out to Hong Kong concluded the trip to Nepal. For this reason, only a one way flight from London to Kathmandu is included in the cost breakdown.

Expeditions

Kathmandu and Patan

Kathmandu was my introduction to Nepal. Three nights were spent in downtown Kathmandu and three nights in Patan (a city south of Kathmandu). Even though the primary aim of the trip wasn't to see cultural or historical sites, the author was fascinated by the culture and history, as well as the use of plants by the people (horticulture and ethnobotany) (figures 1 and 2). The visits included Durbar Square (both in Kathmandu and Patan), numerous Hindu and Buddhist temples, bazaars, a day trip to Bhaktapur (a Newari, one of the indigenous ethnic groups of Kathmandu Valley, ancient city) and Patan Museum.



Figure 1 Sal tree leaves (*Shorea robusta*) are used to make plates. Durbar Square, Kathmandu



Figure 2 Marigold (*Tagetes*) and globe amaranth (*Gomphrena globosa*) garlands are frequently seen sold on streets. Kathmandu city centre

Garden of Dreams

This is a historic neo-classical garden built in early 20th century, situated in central Kathmandu, originally created for an aristocratic family. The garden fell into disrepair but has been restored in recent years and is now open to fee-paying visitors. The author's observation is that private ornamental gardens or public parks with ornamental planting are not very common in the centre of Kathmandu, and this might explain the popularity of places such as this Garden of Dreams by the local population. It was a well kept garden and very atmospheric in the dusk (figure 3). The climate is mild enough for *Caryota* palm to grow and mature (figure 4).



Figure 3 Formal layout of the garden with *Chrysanthemum* bedding plants



Figure 4 A mature specimen of *Caryota urens*

Langtang National Park

The trekking in the National Park was the main opportunity for the author to observe plants in natural surroundings and to experience the Himalayan region's environments in order to gain inspiration for the Himalayan theme at Riverhill Gardens.

Langtang National Park lies approximately 32km directly north of Kathmandu (Figures 5 and 6) and is known for its stunning landscapes, high mountain peaks and diverse flora and fauna. The trek follows the valley by Langtang Kohla (river) up to Kyanjin and back, but an alternative detour was taken between Rimche and Syabrubesi, through the village of Sharpagoan on return (Figure 7).



Figure 5 A map showing location of Kathmandu (sauce – google map)

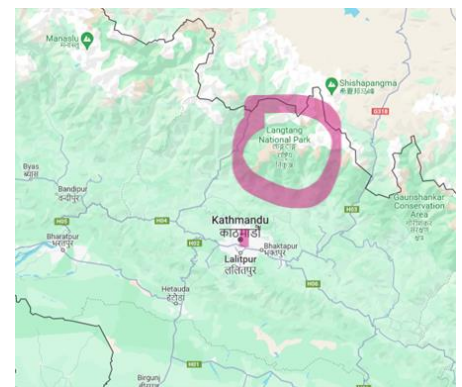


Figure 6 Location of Langtang National Park (sauce – google map)



Figure 7 Trekking route

Kathmandu (altitude 1400m) – Syabrubesi (1500m)

Vehicle transport from Kathmandu to the start of the trek, Syabrubesi. This 6 to 8 hour journey gives the total gain of only 100m (from 1400m to 1500m) in altitude, but a total ascent of 2,600m due to the terrain – it goes down and up a deep valley. The journey is about 100km in distance, through many villages and a few National Park checkpoints.

The vegetation changes from sub-tropical to warm temperate, and iconic terraced agricultural land were seen along the way (figures 8 and 9).



Figure 8 Terraced rice or wheat field after harvest



Figure 9 Narrow terraces on steep hillside with a range of crops

Syabrubesi (1500m) - Bamboo (2000m) - Lama Hotel (2500m)

This range of altitudes are typically described as lower to middle cloud forest belt and very rich in species diversity. “Lower cloud forest typically consists of canopy layer made of evergreen Fagaceae and deciduous trees (*Betula*, *Acer*, *Rhus* spp.), with evergreen Lauraceae, other evergreen shrubs and bamboo as middle layer. The herb layer is largely ferns, *Urticaceae* and *Zingiberaceae*”. (Miehe et al., 2015) One of the plants seen at the very beginning of the trek was *Girardinia diversifolia* (Himalayan nettle) which looks very painful, but is used by people to extract fibre and as animal fodder (Figure 10). The vegetation is a mixture of hardy and non-hardy plants in the UK and the author felt that most of the plants would belong to temperate glasshouses in the UK. However, some familiar garden plants such as *Sarcococca* sp. (Figure 11) and *Daphne bholua* (Figure 12) were seen in flower. Other plants observed include *Acer campbellii*, *Berberis aristata*, *Piptanthus nepalensis* (Figure 13), *Zanthoxylum armatum* and *Leycesteria formosa*.



Figure 10 *Girardinia diversifolia*



Figure 11 *Sarcococca* sp.



Figure 12 *Daphne bholua* with pure white flowers



Figure 13 *Piptanthus nepalensis*

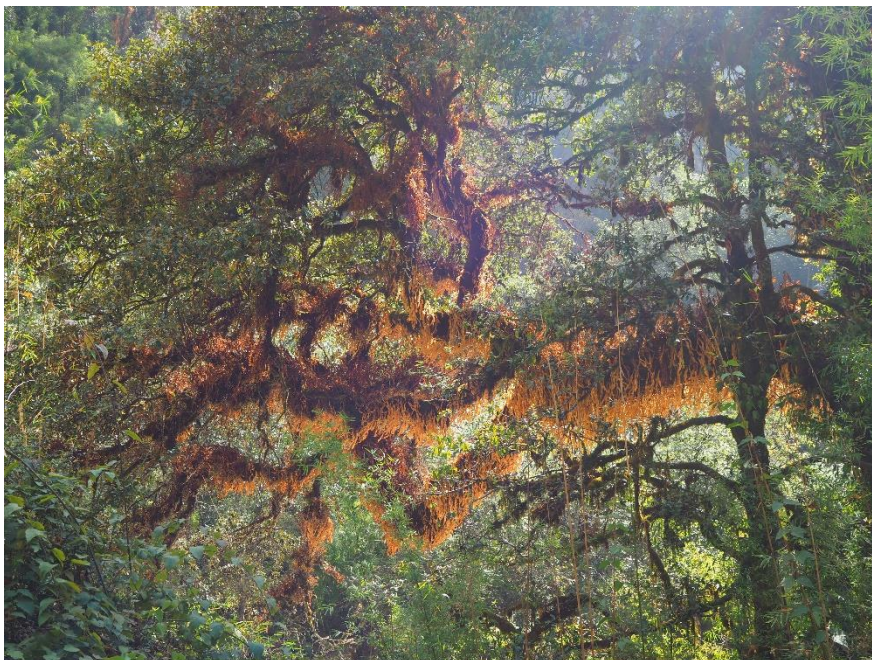


Figure 14 Epiphytic ferns colonising tree branches

Also noticeable was the abundance of epiphytic plants, due to the summer monsoon season and warm climate (Figure 14).

The famous Rhododendron forests belong to this zone. Red- flowered *Rhododendron arboreum* subsp. *arboreum* (Figures 15 and 16) is called Lali gurans in Nepali and it is the national flower of Nepal. This Rhododendron were seen frequently in this zone, along with *R. arboreum* subsp. *cinnamomeum* (Figure 17). Another species observed here was *R. barbatum* (Figure 18) with its characteristic barbed (bristly) petioles.

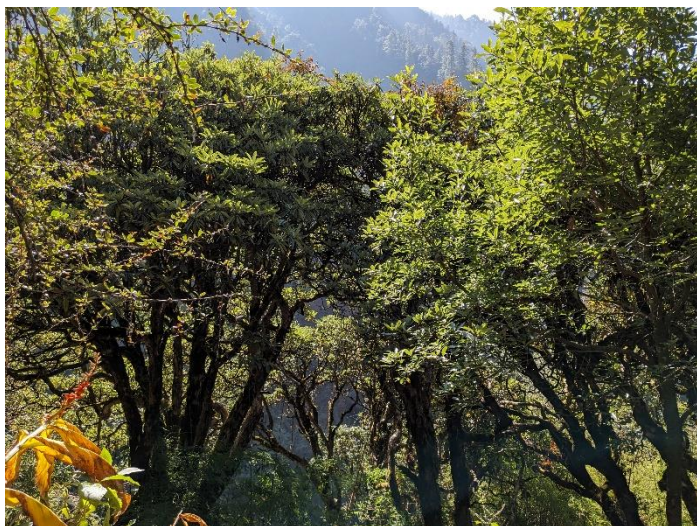


Figure 15 *Rhododendron arboreum* subsp. *arboreum* – the national flower of Nepal



Figure 16 *Rhododendron arboreum* subsp. *arboreum* close up



Figure 17 *Rhododendron arboreum* subsp. *cinnamomeum* with visible indumentum



Figure 18 *Rhododendron barbatum*

Lama Hotel (2500m) – Langtang Village (3450m)

This ascent traverses the upper cloud forest belt with *Abies densa* canopy, *Rhododendron arboreum* becoming sparse, and eventually giving way to the alpine belt where no trees are seen. It feels much more open and rather barren at this time of the year, and the air was very dry. *Hippophae rhamnoides* (sea buckthorn) (Figure 19) were seen continuously from lower altitude up to this altitude range. It was surprising to learn that the shrub's native range expands to Nepal. Juice from the berries were seen to be sold at many tea houses (lodges and eateries) here.

Plants observed in this leg included *Rosa sericea* (Figure 20), *Pieris formosa* (Figure 21), *Pyrus pashia* (Himalayan pear) (Figure 22), *Rhododendron lepidotum* (Figure 23), *Acer campbellii*, *Cotoneaster* sp., *Clematis* sp., and *Rumex* sp..



Figure 19 *Hippophae rhamnoides*

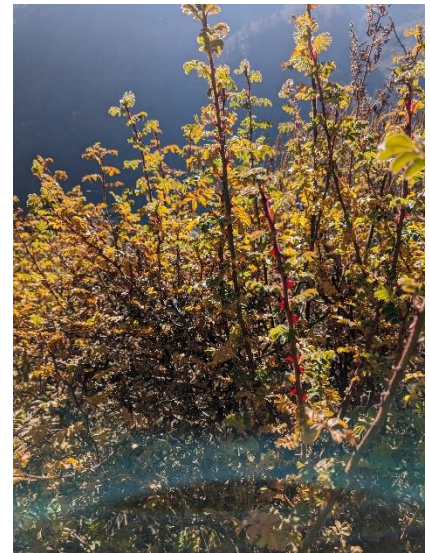


Figure 20

Rosa sericea with large red thorns



Figure 21 *Pieris formosa* with flower buds and unseasonal new foliage

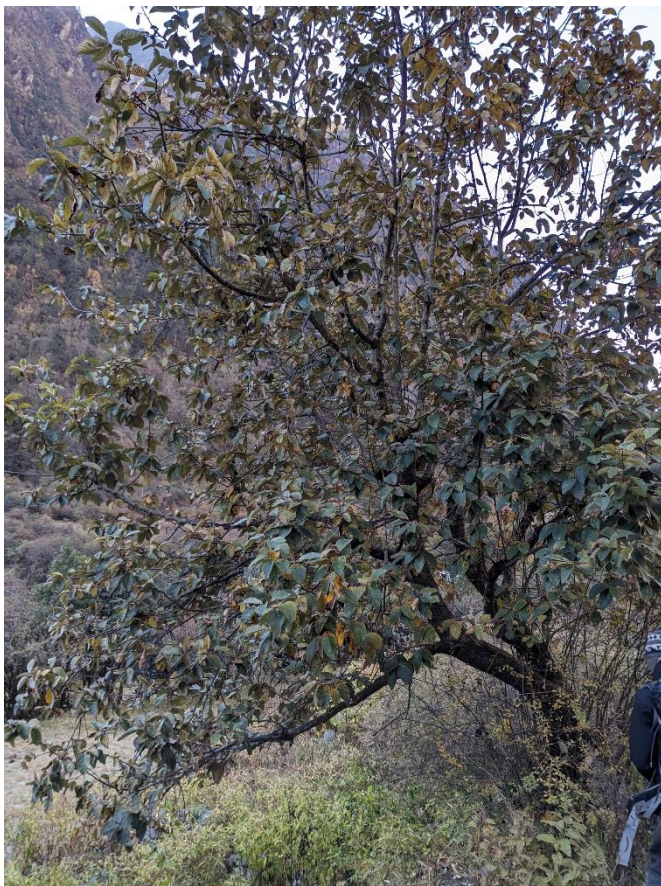


Figure 22 *Pyrus pashia* tree and fruits



Figure 23 *Rhododendron lepidotum*, a very variable species. An unseasonal flower was found

Langtang Village (3450m) - Kyanjin Gompa (3860m)

As the altitude further increases in this alpine belt zone, the drop of temperature was clearly felt. Some shrubs and herbaceous plants had brilliant autumn colours in the previous section, the same plants now looked more dormant. We have come across some yaks grazing here (figure 24). Deciduous shrubs (*Berberis* spp. *Salix* spp. and many more unidentified shrubs) were either leafless or retained brown leaves. Among them, evergreen shrubs were *Rhododendron campanulatum* (figure 25), *Cotoneaster* spp. with bright red berries, *Juniperus* spp. (figure 26) and many more unidentified were seen. Here, the most pleasant find was *Gentiana depressa* with clear blue flowers with dark speckles, one of the famously very ornamental gentians (figure 27).



Figure 24 grazing yaks



Figure 25 *Rhododendron campanulatum*



Figure 26 *Juniperus* sp.



Figure 27 *Gentiana depressa*

Kyanjin Gompa was quite a large settlement (figure28), it was assumed this is partly owing to the nearby hydropower station. It was said that the previous night was very cold, and temperature dropped to -10°C . The air was certainly thin and walking normally took much more breathing than usual.



Figure 28 Kyanjin Gomba - The highest settlement on this trekking route

Kyanjin Ri (4600m)

With Kyanjin Gomba hotel as a base, a hike to a peak Kyanjin Ri marked the highest place visited on the trek. It was the first overcast day and it also snowed later in the day. Vegetation here was fully alpine and no plants were taller than 30cm. *Polygonum vacciniifolium* was showing bright autumn colour (figure 29) and three species of *Rhododendron* were seen – *R. setosum*, *R. anthopogon* ssp. *hypenanthum* (figure 30) and another species possibly *R. lepidotum*. These dwarf Rhododendrons are very fragrant plants and according to our guide, they are burnt as incense. There happened to be a group of people with a monk performing a ceremony of blessing at the peak, and they were burning these Rhododendron branches. These Rhododendron grew sparsely on the sunny side of the peak, but a carpet of them were seen on the shady side (figure 31).



Figure 29 *Polygonum vacciniifolium* giving autumn colour and growing together with *Rhododendron* sp. (possibly *lepidotum*), with the background of glacier and mountain peaks



Figure 30 *Rhododendron setosum* and *R. anthopogon* ssp. *hypananthum* growing together



Figure 31 Carpet of *Rhododendron*

Other plants found on this trek included *Cassiope* sp. (possibly *C. fastigiata*) (figure 32), *Gaultheria trichophylla* (figure 33) and *Gaultheria sinensis*. Alpine cushion plants grew hugging rocks (figure 34) on the sunny side and *Gentiana depressa* were seen again here.



Figure 32 *Cassiope* sp.



Figure 33 *Gaultheria trichophylla* with berries



Figure 34 Cushion plants colonising around rocks

Rimche (2500m) – Sharpagaon (2600m) – Syabrubesi (1500m)

On the descent, a slightly different route was chosen from Rimche back to Syabrubesi. This route came off the river Kohla and snaked through the sunny side of steep mountainside. The tree canopy has already returned by reaching Rimche, and on this hillside trek, it felt the season was slightly later (warmer) than at the bottom of the valley, even though the altitude was a little higher. This may be because of the longer light the area gets due to the south facing slope.

Between Rimche and Sharpagaon, tall *Rhododendron arboreum* returns along with *Abies densa*, *Pinus wallichiana*, *Tsuga dumosa*, and other deciduous and evergreen broadleaf trees. The canopy was not completely closed off, but enough to have a shrub layer and herb layer. In the shrub layer, *Rubus* spp. (figures 35 and 36), *Hypericum* sp., *Pieris formosa*, *Berberis* spp., *Cornus capitata* were among many others. The guide informed the author that *Rubus* species are useful source of food (berries) for the locals. Also, the young stem of *Rubus ellipticus* is stripped and chewed as a medicine for sore throats.



Figure 35 *Rubus biflorus* with white stem and autumn colour



Figure 36 *Rubus ellipticus*

At these altitudes, as well as on the ascent, fern species were very often seen. Rajihandary (2015) states that 'Nepal has over 4% of global diversity of pteridophytes, compared with less than 3% of global angiosperm diversity.', meaning that the fern species diversity in Nepal is particularly rich. Many species of ferns were photographed (figure 37). However, regrettably, the identification of these were difficult with limited knowledge of the author. The effort will continue to identify these species from the photographs after the completion of this report.

Between Sharpagaon and Suyabrubesi, the trek took us through many terraced cultivated lands. Potatoes were already harvested, and wheat and a type of radish were grown (figure 38). A farmer we met also kept a beehive (figure 39) and collected Nepalese pepper (*Zanthoxylum armatum*) for sale (figure 40). *Prunus cerasoides* (wild Himalayan cherry) were seen flowering, giving the autumn sky a beautiful light pink accent (figure 41). The descent in this section of the trek was very steep and another *Pinus* species, *P. roxburghii* (figure 42) were seen along with *P. wallichiana*.

With a safe return to Suyabrubesi and a drive back to Kathmandu the next day the expedition to Langtang National Park was concluded.



Figure 37 Collection of ferns seen on the trek



Figure 38 Crops were grown on terraced land



Figure 39 A beehive set out on the outer wall of the house

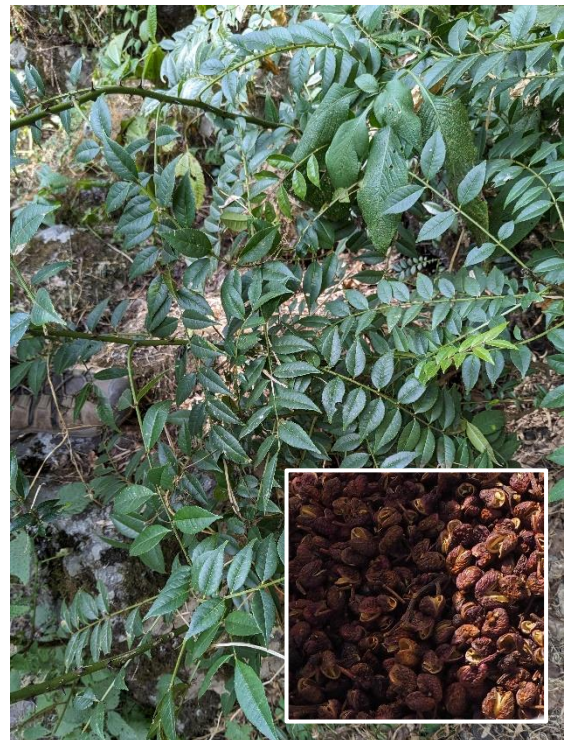


Figure 40 Zanthoxylum armatum and collected seeds as a spice



Figure 41 *Prunus cerasoides* in flower



Figure 42 *Pinus roxburghii* and its cone

National Botanical Garden

The National Botanical Garden of Nepal is located in Godawari, Laitpur in Kathmandu Valley. It covers approximately 82 hectares and hosts around 500 species of plants (Figures 43 and 44). The gardens host many features such as Physic Garden, Rock Garden, Fern Garden and Tropical House to name a few and it was well visited by locals, many with picnics to spend a day out. Biodiversity Garden was divided into Alpine zone, Temperate zone and Tropical zone and plants representing these areas were cultivated. Interpretation boards were written both in Nepali and in English, giving information about featured plants. It was an enjoyable and useful day to get to know some of the plants the author came across on the trek and learn about diversity of flora and threats they face.



Figure 43 The view from Orchid House

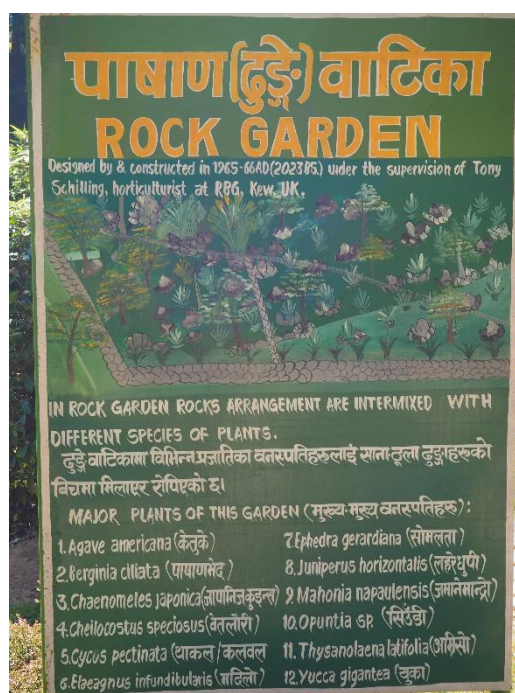


Figure 44 Interpretation board for the Rock Garden, commemorating Tony Schilling, who designed and constructed this section of the garden

The National Herbarium and Plant Laboratories are located adjacent to the gardens and are where the herbarium specimens are kept. The prior arrangement was made to access these buildings which are closed to the public with Mr Paudel, one of scientific officers who kindly arranged a tour of the herbarium (figures 45 and 46). It was exciting to imagine past botanists collecting materials for these specimens and to see Nepal's effort in managing these scientific and historic records.



Figure 45 Author and Mr Paudel in front of his office

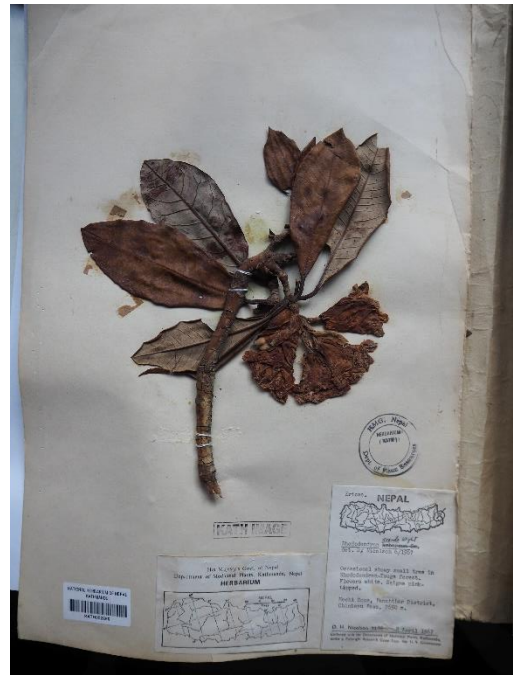


Figure 46 A herbarium specimen of *Rhododendron grande*

Overall summary and conclusion

The author successfully immersed herself into this beautiful country with its rich flora and culture. Seeing plants in Langtang National Park was an exceptional experience and it was very valuable for her future work at Riverhill Himalayan Gardens. Many Nepalese plants are already successful garden plants in the UK and the genus *Rhododendron* in particular has been very important in many gardens over the last century. However, the climate change and other environmental issues bring us to consider and choose carefully for the future of ornamental gardens. This includes reviewing Riverhill's current plant collection and choosing suitable plants to cope with the forecast of climate change. Sadly, some of existing plants may no longer have a bright future. Having travelled to Nepal and visited the Himalayan region will help the author to plan, grow and successfully implement the Himalayan theme at Riverhill for the future. This is not limited to growing plants from the Himalayas – the better understanding of the culture, plant communities and atmosphere of the region can be implemented in many more flexible ways. The author looks forward to utilising all the knowledge and inspiration gained from this trip when planning for the future development of Riverhill Gardens.

Future plans and recommendations

There is currently no plan to re-visit Nepal or other Himalayan regions in the foreseeable future. The author recommends anyone who is planning a similar trip to the area to visit in September or October which she was unable to, due to work commitments. At high altitude, winter arrives early and plants go dormant early. However, it is believed that visits in autumn have a merit over the more obvious time of visiting in spring, as many plant collecting expeditions were made in spring previously and observations in autumn would bring further knowledge to the botanical and horticultural world.

Final budget Breakdown

Expenditure

Due to the difficulty in obtaining receipts in Nepal, the small sums (food, bus fare etc) are estimated from ATM money withdrawal. This is under-estimated so as not to include any non-essential spending. Author is prepared to provide receipts for larger fees such as flights and accommodations, on request.

Item	Cost in £	note
Flight London to Kathmandu (see note below *1)	1114.41	Heathrow – Doha – Kathmandu, by Qatar Airways
Trekking fee	980.21	
Tips for the guides and porters	89.11	
Trekking clothes, gear	164.70	See note *2 for list of items
Water bottle with filter	70	
Backpacks (Large and day-bag)	139	
Medicine, plasters, first aid kit	25.57	
Travel insurance	45	Add-on to author's existing travel insurance
Passport photo	9	For visa and sim card
Train to Heathrow Airport	23.50	
Taxi from central London to Heathrow airport	67	Due to Underground and train shutdown during travel to Heathrow airport
Visa (Nepal tourist 14days)	26.73	
Sim card (Nepal)	3.68	
Hotel Ganesh Himal	48.11	3 nights
Newa Chen Guest House	88.21	3 nights

Other expenditure	156	Food for 7 days, bus fees, taxi fees to Bhaktapur and to airport
TOTAL	3050.23	

Exchange rate is calculated at £1 = US\$1.1222 = NPR162.72 (November 10th 2023)

*1 Due to holiday in Japan immediately after the trip to Nepal, only one-way flight London to Kathmandu is included in the expenditure.

*2 Trekking Clothes (layers, hats, trekking poles, sunglasses, high altitude sun cream and lip balm)

Funding

Funding source	Amount in £
Hardy Plant Society (Kenneth Black Bursary Scheme)	750
RHS Bursaries	425
THE STANLEY SMITH (UK) HORTICULTURAL TRUST	425
Author's own funding	1450.23
Total	3050.23

The author declares this breakdown of budget is accurate and true to her knowledge.

Misako Kasahara (5th February 2024)

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