DAVIS EXPEDITION FUND

REPORT ON EXPEDITION / PROJECT

Expedition/Project Title: Darchula (Nepal) 2012

Travel Dates: 3rd of July to the 1st of August 2012

Location: Darchula, Far Western Region Nepal

Group Members: Alan Elliott

Aims: To collect *Clematis* specimens for DNA and floristic work as part of my PhD project.
Gain fieldwork experience from working in Nepal

Outcome (not less than 300 words):-

Please see attached report

Darchula Expedition 2012
3rd July to 1st August 2012

SOCIETY OF HIMALAYAN BOTANY,

ROYAL BOTANIC GARDEN EDINBURGH

&

DEPARTMENT OF PLANT RESOURCES

MINISTRY OF FORESTS AND SOIL CONSERVATION

GOVERNMENT OF NEPAL

CONTENTS

Title page image is of Joge Tal with the snow covered peak of Api to the right.

INTRODUCTION

The expedition to Darchula was led by the Society of Himalayan Botany, Japan with members from the Royal Botanic Garden Edinburgh (RBGE) and two members of staff from the Department of Plant Resources (DPR) who went to receive appropriate training in field collection techniques and protocols.

The main purpose of the expedition was to collect herbarium specimens and associated wood samples, cytological samples and silica gel dried samples from the Darchula District of Far Western Nepal. Darchula was identified as one of the least visited Districts in Nepal, and it was hoped that a programme of wide scale plant collecting within the District would be likely to yield many species not previously recorded in the area. The specimens and information gathered on the expedition will directly benefit the work of the Flora of Nepal Project, a priority within the *Nepal Biodiversity Strategy* 2002 and the *Nepal Biodiversity Strategy Implementation Plan* 2006.

EXPEDITION PARTICIPANTS

Prof. Hiroshi Ikeda (leader), The University of Tokyo, Japan
Dr. Shuichi Noshiro, Forestry and Forest Products Research Institute, Japan
Dr. Koji Yonekura, Tohoku University, Japan
Mr. Kensei Akai, Fukui Prefectural University, Japan
Dr. Okihito Yano, The University of Tokyo, Japan
Dr. Nobuko Yamamoto, Okayama Univerisity of Science, Japan
Dr. Colin A. Pendry, RBGE
Mr. Alan Elliott, University of Edinburgh and RBGE
Mr Ganga Dutt, DPR
Mr Mitra Pathak, DPR

EXPEDITION ITINERARY

The route set out in the Proposal was found to be over ambitious and unrealistic and had to be modified to suit the conditions encountered. The topography of the District is very rugged and the road travel is very slow, 13 hours to travel circa 150 km, so it took longer than anticipated to reach the start of the trek, delaying the fieldwork. Along the route there were few facilities for trekking groups. Camp was made wherever there was enough flat ground to accommodate us and a relatively close supply of fresh water. Some of the trails were found to be in poor condition, further slowing progress and reducing the distances which could be covered.

It was decided that the priority of the expedition should be to reach as high as possible on Api Himal, so the revised route followed the course of the Chamilaya Nadi from Dethala to the southern slopes of Api Himal and returned by the same route.

The expedition visited the following localities.

Table 1: Date and Locality information.

Day	Date	Details
1	3 July	Arrive Kathmandu
2	4 July	Kathmandu – Preperations
3	5 July	Kathmandu, fly to Dhanghadi
4	6 July	Dhanghadi to Dethala
5	7 July	Dethala to Bitale
6	8 July	Bitale to Pari Bagar
7	9 July	Pari Bagar to Magarigath
8	10 July	Magarigath to below Lithi
9	11 July	below Lithi to Khayekot
10	12 July	Khayekot to Simar Kharka
11	13 July	Simar Kharka to Dhaulo Odar
12	14 July	Dhaulo Odar to Joge Tal
13	15 July	Joge Tal
14	16 July	Joge Tal
15	17 July	Joge Tal
16	18 July	Joge Tal to Simar Kharka
17	19 July	Simar Kharka to Khayekot
18	20 July	Khayekot to Lithi
19	21 July	Lithi to Okhal
20	22 July	Okhal to Bitale
21	23 July	Bitale to Dhanghadi
22	24 July	Dhangadi fly to Kathmandu
23	25 July	Kathmandu – rest day.
24	26 July	Kathmandu – DPR to secure export permit. Splitting duplicate sets
25	27 July	Kathmandu – Splitting duplicate sets
26	28 July	Kathmandu - Returning gear to RBGE store
27	29 July	Kathmandu – Visit to National Herbarium Nepal (KATH) to work with *Clematis* specimens
28	30 July	Kathmandu – Inventory of RBGE store
29	31 July	Kathmandu - visit to Tribhuvan University. Fly to Edinburgh
30	1 August	Arrive Edinburgh

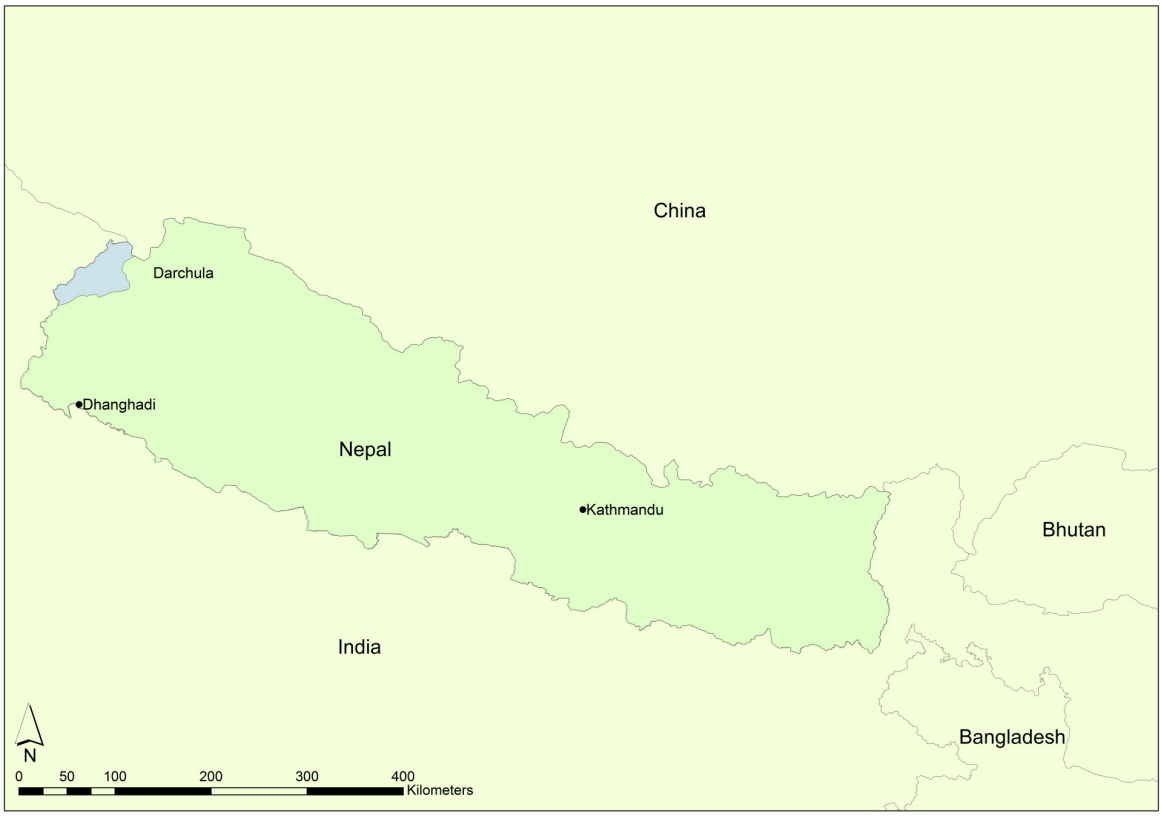
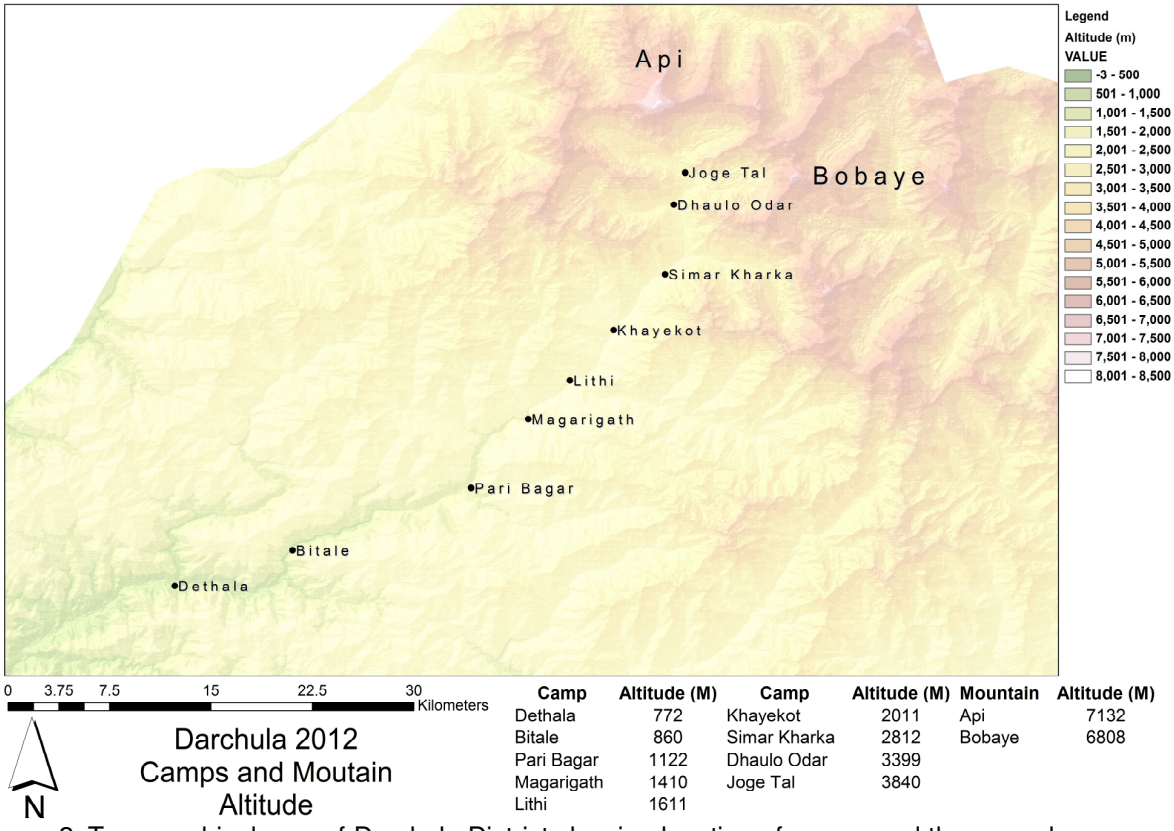


Figure 1: Political Map of Nepal and surrounding countries. Kathmandhu, Dhanghadi and Darchula district highlighted.



Camp	Altitude (M)	Camp	Altitude (M)	Mountain	Altitude (M)
Dethala	772	Khayekot	2011	Api	7132
Bitale	860	Simar Kharka	2812	Bobaye	6808
Pari Bagar	1122	Dhaulo Odar	3399		
Magarigath	1410	Joge Tal	3840		
Lithi	1611				

Figure 2: Topographical map of Darchula District showing location of camps and the named mountains. The altitudes of camps and mountains are given in legend.

METHODS

Vascular plants, including ferns, were collected if found to be suitable condition to be made into herbarium specimens. Different plant families were allocated to the individual team members, with the result that very comprehensive collections were made. Ideally seven duplicates of each collection were made, so that specimens could be distributed to the herbaria at Godavari (KATH), University of Tokyo (TI), the Royal Botanic Garden Edinburgh (E), Tribhuvan University (TUCH), the Natural History Museum London (BM), Harvard University Herbaria (A) with the final set available to be split between appropriate specialists for identification. A minimum of 3 duplicates were made of each collection so that each partner on the expedition would receive a specimen. An exception was made for Orchidaceae specimens, whose transfer is restricted under CITES, and only 2 collections of these were made, both of which will remain in Nepal. At the time of collection field notes including altitude, GPS co-ordinates, morphological characters that would not be obvious on the dried specimens, associated plants, habitat characteristics and locality information, were recorded.

At the end of each day the specimens were processed and dried over kerosene stoves. Silica gel dried leaf samples were taken from each collection for use in future phylogenetic studies, and each partner received one set. Wood and cytological samples were collected as appropriate. Field data from the RBGE and DPR members were input to the Flora of Nepal Padme dataset during the fieldwork with the Japanese data compiled into spreadsheet format when back in Kathmandu.

RESULTS

Field identifications were made on collections, where appropriate, based on individual's expertise. However, many samples remain "unknown" and identifications will take some time due to the number of collections made during the expedition. In total the expedition made 1179 collections, with 121 wood samples and 150 cytological samples.

Based on the most recent determinations the expedition collected 339 genera from 116 families. There are still 96 collections unknown to family and 269 collections unknown to genus.

Herbarium based determinations of collections are now underway at RBGE; determinations have been done on my collections with the *Corydalis* sent on loan for identification. The bulk of the determinations will be done by SHB during one of their All these data from the expedition, including the most recent determinations of collections and KATH specimen data (see below) will be incorporated into the Flora of Nepal database and accessible via the Flora of Nepal website www.floraofnepal.org.

My allocated the families were Ranunculaceae, Papaveraceae and Fabaceae. This allowed me to collect *Clematis* samples, the main focus of my PhD project and other genera relevant to the meta-analysis part of the study. However, ad-hoc collections of taxa from other families were made in areas where other member of the team had not been. Several of the Ranunculaceae specimens including *Clematis* had root tips collected for cytological studies by the Japanese and will provide the opportunity for collaborative research.

Nine *Clematis* collections were made and include: two samples of *Clematis barbellata*, a Nepalese endemic previously unsampled in phylogenetic studies; as well as additional samples of *Clematis montana*, *Clematis buchananiana* and *Clematis connata*.

Table 2: 10 largest families and genera in terms of collections

Family	Number of Collections	Genus	Number of Collections
Poaceae	80	*Rhododendron*	30
Asteraceae	74	*Carex*	27
Rosaceae	69	*Potentilla*	19
Cyperaceae	49	*Salix*	18
Polygonaceae	41	*Rhodiola*	16
Ranunculaceae	40	*Galium*	16
Ericaceae	37	*Pedicularis*	15
Orchidaceae	36	*Corydalis*	14
Fabaceae	34	*Alnus*	13
Saxifragaceae	26	*Impatiens*	12

The visit to KATH allowed me to photograph 630 Clematis herbarium specimens from Nepal. These specimens are invaluable as they contain many collections from localities, especially the mid hills that do not have duplicates in UK institutions. These specimens will be databased, if possible georeferenced and the specimen image linked to the record.

Also my time in the field allowed me to gain invaluable fieldwork skills, chiefly from Dr. Colin Pendry but also the Japanese members of the team. I have also made valuable contacts within Nepal at DPR and also with the Japanese members of the team that will be useful for future work on my PhD.

FINANCE

Table 3: Finances

Item	Cost £		Grants	
Flight to Nepal	667	137,000 LKR	Davis	£2,500
Tourist Visa	25	40 USD	SRGC	£1,000
Trek Cost incl. Internal flight	2000	2000 GBP		
2 nights Tibet Guest house pre-trek	40	60 USD		
9 nights Tibet Guest House post-trek	180	280 USD		
12 days expense in Kathmandu	405	37650 NPR		
Replacement Gear	30	4200 NPR		
Map	7	995 NPR	**Total**	£3,500
Taxi from Edinburgh Airport	37	37 GBP	**Costs**	£3,391.00
Total	**£3,391**		**Remaining**	**£109.00**

ACKNOWLEDGMENT

I would like to sincerely thank the Davis Expedition Fund and the Scottish Rock Garden Club for financial help in funding my part in this expedition to support of my PhD project at Edinburgh University and Royal Botanic Garden Edinburgh.