

## Repatriation of historical and type specimen data for Nepal

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The Himalayan kingdom of Nepal has always been a centre of attraction for naturalists, tourists and mountaineers due to its biodiversity-rich ecosystems, unique phytogeography and tremendous altitudinal range. Its amazing floristic diversity was explored and documented as early as 1802 by Hamilton, followed by Wallich (1820-21). Since then the country has played host to numerous explorers and botanists who have collected large numbers of botanical specimens from different parts of the country. Nepalese plant specimens are now housed in international herbaria in the U.K., Japan, France, India, the U.S.A., etc. In Nepal itself the National Herbarium (KATH) houses over 150, 000 specimens (Shakya et al. 1997).

It is estimated that approximately 60,000 Nepalese specimens are currently held within the collections of The Natural History Museum, the Royal Botanic Gardens Kew and the Royal Botanic Gardens Edinburgh. Significantly these holdings also contain many type specimens. These collections formed the basis of *An Enumeration of the Flowering Plants of Nepal* (Hara et al. 1978, 1979, 1982), and will hopefully also prove invaluable in the production of a Flora of Nepal. Nepalese botanists are anxious to document the vast floristic diversity, an aim dependent on unlimited access to these collections previously unavailable in the country itself (Shrestha & Shrestha 1995).

Japanese botanists have been compiling large amounts of information on both flowering and non-flowering plants of Nepal in recent decades. They are also preparing a 'Flora of Nepal Database', based on the conversion of '*Enumeration*', with additional names and references, and are documenting the specimens housed at TI and other important herbaria in Japan (Koba et al. 1994; Koba 1997).

Under the aegis of the UK government's *Darwin Initiative*, The Natural History Museum (London) and Tribhuvan University (Kathmandu) have joined forces to undertake a project to repatriate plant information and technology for Nepal. Building on long-established British/ Nepalese links, this project will not only repatriate floristic data from specimens but also train Nepalese researchers. It is intended to achieve this aim by producing various sets of databases. A CD-ROM of types and other representative specimens will also be produced, together with a database version of *An Enumeration of the Flowering Plants of Nepal*.

A planning workshop of the project was held on October 27-28, 1997 with participants including S. Blackmore and J.R. Press (U.K.), D. Bajracharya and K.K. Shrestha (Nepal), and H. Ohba and S. Akiyama (Japan). Since then, Dr. K.K. Shrestha, Tribhuvan University Nepal, has been coordinating the project as Darwin Fellow and will work till the end of the project, i.e. October 1999. Two Darwin scholars from Nepal joined the project on October 5, 1998 for three months training in London and two more trainees will join the project in April 1999. A Nepalese node of the project will be established in March 1999 at the Central Department of Botany, Tribhuvan University with computer equipments funded by the Darwin Initiative. A final workshop is planned in Kathmandu by the end of October 1999 to hand over copies of all of the databases on CD-ROM as well as hard copy to Tribhuvan University and the Government of Nepal.

### Objectives

- To repatriate data on types and other historical collections.
- To make available existing baseline floristic data (*Enumeration of the Flowering Plants of Nepal*, published by the Museum in the 1970s and 1980s, in database format with the help of Japanese colleagues).
- To facilitate further studies by providing a bibliography of post-*Enumeration* works covering Nepalese taxa.
- To provide a core of Nepalese researchers trained in capturing specimen data.

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## Outputs

- Database of Nepalese types and other representative specimens currently held in UK herbaria.
- Digital image library: a reference collection of high resolution images of types and representative specimens.
- Bibliography database of floristic works relevant to Nepal.
- Database of Nepalese Gazetteer (collection localities in Nepal).
- Baseline floristic database of Nepalese plants (*Enumeration of Flowering Plants of Nepal* in database format).
- Training for five Nepalese botanists in the UK (the Darwin Fellow and Nepalese co-ordinator for a period of two years; and four post-graduate Darwin Scholars for a period of 3 months each).

## NEPALESE PLANT DATABASE (NPD)

The main objective of the Darwin project is to prepare the Nepalese Plant Database (NPD), with latest information on flowering plants of Nepal. The updated information on "Enumeration of Flowering Plants of Nepal (1978-1982)" has been included in the present version. The database contains information on ca. 13,000 taxa of flowering plants (including accepted names and synonyms) with type specimens of ca. 1600 species.

## DIGITAL IMAGES

Most of the Nepalese type specimens are housed in the United Kingdom (BM, K/K-W, E) and Japan (TI, KYO). Access to these type specimens is always a major problem for Nepalese botanists and preparing digital images of Nepalese type specimens is a major focus of the project. These will be available on CD-ROM as a digital image library. So far about 200 types have been processed.

1. Holotype of *Silene helleboriflora* Exell & Bocquet; K.N. Sharma E66, Mulmuley Khola (C. Nepal), 17.8.1931 (**BM!**).

2. Holotype of *Allium hypsistum* Stearn; Polunin, Sykes & Williams 8, Saldang Gaon (W. Nepal), 26.6.1952 (**BM!**).

## NEPALESE GAZETTEER DATABASE

About 1000 locality names (based on specimens and literature) have been recorded in the Nepalese Gazetteer. The Gazetteer includes district level information, latitude, longitude and elevation ranges. Modern place names are linked with old and superceded names. Sources are cited for all information.

## BIBLIOGRAPHY DATABASE

Lack of ready access to taxonomic literature is one of the major limitations to Nepalese researchers. The Bibliography database is prepared in the ENDNOTE 2 Plus version. As well as the usual bibliographic details, entries include an abstract whenever possible. This additional information is especially important to researchers when library resources are restricted. Of 750 references processed so far, ca. 500 references relate to the Nepal Flora. An example from the database is shown below.

**Reference Type:** Journal Article

**Record Number:** 685

**Author:** Stearn, W.T.

**Year:** 1960

**Title:** *Allium* and *Milula* in the Central and Eastern Himalaya

**Journal:** Bull. Brit. nat. Hist. Mus. (Bot.)

**Volume:** 2

**Issue:** 6

**Pages:** 161-191 + Plates 9-11

**Keywords:** Allium, Milula, Alliaceae, revision, new species, Nepal, Himalaya

**Abstract:**

The paper gives a key to the species of *Allium* now known for the area extending eastward from the western frontier of Nepal to the region of the Tsangpo Gorges (to about 96° E.), including Skkim; it also lists the specimens of this genus and of the closely related *Milula* which are available in the herbaria of the British Museum (Natural History) and the Royal Botanic Gardens, Kew. Three new Himalayan species and one from Burma are described; nine hitherto accepted names are reduced to synonymy. Notes on related Chinese species are included. Altogether 18 species of *Allium* (including one indeterminate species) and one species of *Milula* are mentioned. 10 species of *Allium* are recognized from Nepal including one new species: *Allium hypsistum* Stearn (sp. nov., from C Nepal); and one indeterminate species: *Allium* sp. (unidentified sp., from C Nepal).

## PROTOLOGUE TEXT

Wherever possible, the original protologue for a species is included in the database. Those of about 110 species of flowering plants first described from Nepal have been processed so far. An example is shown below.

***Allium hypsistum*** Stearn, sp. nov.

*Herba* bulbis confertim aggregatis caespites formans; bulbus cylindricus, elongatus, angustus, c. 1 cm. diam., rhizomati brevi insidens, tunicis exterioribus, c. 8-9.5 cm. longis in fibras reticulatus brunneas dissolutis; caulis gracilis, teres, 19-21 cm. Altus, c. 2 mm. Diam., glaber. *Folia* 4-6, subbasalia, scapo paulo breviora, linearia, plana, 10-16 cm. longa, 2-5 mm. lata, apice obtusa. *Spatha* persistens, bi- vel tri-partita vel raro indivisa, rubra, c. 8-10 mm. longa, valvis ovatis acutis umbella vix brevioribus; umbella densa, hemisphaerica, multiflora (floribus 12-40), c. 1.5-2 [-3] cm.diam.; pedicelli c. 2 [-6] mm. longi, perianthio multo breviores, basi nudi. *Perianthium* campanulatum; tepala erecta, apice acuta vel obtusa leviter dentata, rosea nervo medio rubro percursa, exteriora elliptica c. 6.5 [-8.5] mm. longa et 2.8-3 [-3.5] mm. lata, interiora anguste oblonga c. 7 [-10] mm. longa et 2.4-2.6 [-3] mm. lata. *Stamina* inclusa, c. 4.5-5 [-6.5] mm. longa; filamenta simplicia, subulata, alba, inferne gradatim dilatata et basi inter se in anulum vix 0.5 mm. altum connata; antherae flavae, c. 1 mm. longae. *Ovarium* laeve, ellipsoideum; ovula in quoque loculo 2; stylus subulatus, c. 2.5 mm. longus, apice indivisus.

CENTRAL NEPAL: About 4 miles S.W. of Saldangaon, 29° 18' N., 83° 05' E., c. 5,500 m., 26 June 1952, *Ponulin, Sykes & Williams* 8 (**holotype** in Herb. Brit. Mus.). Without precise locality, 1956, *Snellgrove*.

[Stearn, W.T. 1960. *Allium* and *Milula* in the Central and eastern Himalaya. Bull. Brit. Nat. Hist. Mus. (Bot.) 2 (6): 188].

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