



सत्यमेव जयते

GOVT. OF SIKKIM

FLORA OF SIKKIM

A Pictorial Guide

ABOUT THE BOOK

Sikkim with its array of floral diversity is a microcosm of floristic wealth of the Indian Himalayas. It has about 5068 taxa constituting almost 45% of the flora of the Himalayas. The Sikkim Himalaya is a part of 36 global biodiversity hotspots and 22 agrobiodiversity hotspots in India. Khangchendzonga, the third highest peak of the world is located on the western border of Sikkim and has a special place for the people and the culture of the State. Together with its varied topography, the tiny state has an incredible kaleidoscope of flowering plants. The book "*Flora of Sikkim-A Pictorial Guide*" provides the floristic account of 5068 taxa (including 152 cultivated taxa), belonging to 1491 genera and 209 angiosperm families that are occurring in the state of Sikkim with updated nomenclature and distribution with photographs of 1300 plus plants species. This book will fill a crucial knowledge gap in understanding the flowering plants of the Sikkim Himalaya in a single compendium.



FLORA OF SIKKIM

A Pictorial Guide



JICA assisted Sikkim Biodiversity Conservation & Forest Management Project

FOREST & ENVIRONMENT DEPARTMENT
Government of Sikkim

BOTANICAL SURVEY OF INDIA
Ministry of Environment, Forest & Climate Change
Government of India



भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA

2021



Khangchendzonga range seen from Namchi, South Sikkim



Cyananthus lobatus Wall. ex Benth.



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FLORA OF SIKKIM

A Pictorial Guide

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(Botanical Survey of India, SHRC, Gangtok, Sikkim &
¹BSI Headquarters, Kolkata)



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Flora of Sikkim

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January, 2021

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Forest & Environment Department, Government of Sikkim

&

Botanical Survey of India, Government of India

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Front: Yumthang Valley

Back : Gurudongmar Lake

1. *Aster sikkimensis*
2. *Astragalus sikkimensis*
3. *Begonia sikkimensis*
4. *Caulokaempferia sikkimensis*
5. *Saxifraga sikkimensis*
6. *Hedysarum sikkimense*
7. *Impatiens sikkimensis*
8. *Wrightia sikkimensis*

This book is dedicated to the people of Sikkim



© B. S. Kholia

Rhododendron niveum Hook.f.
State Tree of Sikkim



© A. A. Mao

Rhododendron cinnabarinum Hook.f.



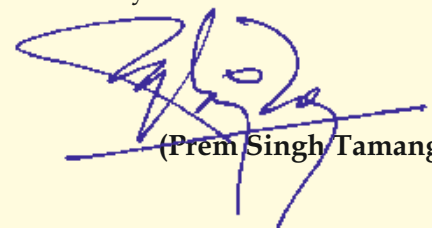
PREM SINGH TAMANG (GOLAY)
CHIEF MINISTER
SIKKIM



MESSAGE

The Indian Himalayan Region is one of the global biodiversity hot spots, with diverse ecosystems evolved over millions of years, that supports high diversity of flora. This region is now recognised as the third pole of the earth which provides a wide range of ecosystem services, including an important role in global atmospheric circulation, the hydrological cycle, food security and economic activities of the people of Indian subcontinent.

Sikkim, one of the Himalayan states of India having an area about 7096 sq.km is a naturalist's paradise. Sikkim provides a wide variety of habitats that supports and sustains rich flora and fauna. The vegetation ranges from tropical to subtropical to temperate, sub-alpine and alpine. Sikkim probably harbours the highest density of floristic elements per unit area in the world. This intense array of floral biodiversity of the state needs to be properly documented for harnessing its value and also imparting conservation measures. I am happy to know that, Botanical Survey of India, the apex research organization in the country on floristic inventorization and documentation is publishing the book "*Flora of Sikkim: A Pictorial Guide*" in collaboration with Forest & Environment Department, Government of Sikkim. I am also delighted to know that, this book is the outcome of the taxonomic research in the region since J.D. Hooker in 1849 and more specifically by the Botanical Survey of India since its inception in Sikkim from 1979. The book contains an exhaustive checklist of 5068 taxa (including 152 cultivated taxa), belonging to 1491 genera and 209 angiosperm families that are occurring in Sikkim with updated nomenclature and distribution. The book details the geography, ecology, vegetation pattern and forest types of Sikkim. A good number of photographic representations of the plants is a delight for the stakeholders to identify and conserve the precious floral diversity and also to further promote tourism in the state of Sikkim. I congratulate the entire team of authors and both the departments for bringing out this important book. I believe this book will be useful to all stakeholders including students, academicians, researchers, environmentalists, policy makers and the overseas botanical fraternity to know about the plant wealth of this Himalayan state with staggering biodiversity.



(Prem Singh Tamang)

Date : 18.01.2021
Place : Gangtok



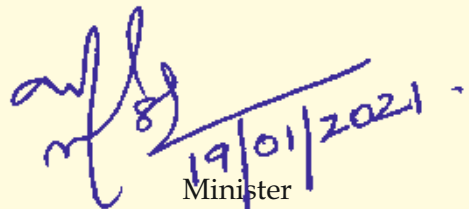
GOVERNMENT OF SIKKIM



SHRI KARMA LODAY BHUTIA,
MINISTER
Forest and Environment Department
Government of Sikkim
Sikkim

MESSAGE

Sikkim as a state and culture always strives to conserve its nature and natural resources. These innate qualities have endeared to many visitors primarily interested in its unique natural beauty with lush green forests, lofty snow capped mountains, glaciers, pristine alpine meadows, and wide valleys full of colourful wild flowers, snow fed rivers, springs and alpine lakes. Studies emanating from the scientific community reveal that the entire Himalayan ecosystem is adversely affected due to natural and man-made interventions, including climate change, and Sikkim is also vulnerable to it. To understand these impacts, knowledge on the plant diversity is crucial. Botanical Survey of India (BSI) has been studying floral diversity in Sikkim and documenting its composition for several decades now. It is a matter of great delight and satisfaction that BSI in collaboration with Forest & Environment Department, Govt. of Sikkim is publishing pictorial guide of flowering plants of entire state of Sikkim which is first of its kind. This publication, "*Flora of Sikkim - A Pictorial Guide*" enumerates correct botanical names of 5068 taxa (including 152 cultivated taxa), belonging to 1491 genera and 209 angiosperm families with a good number of photographic representations of the species. I congratulate the relentless efforts of Director, BSI and his team of Scientists in bringing out the information of Sikkim plants, otherwise scattered in sporadic publications. This book while appealing to a wide range of stakeholders, will specifically be useful to the personnel of the Sikkim Forest Department as a field guide in identifying and thereby conserving flowering plants of Sikkim. To document the biodiversity of the state is first step towards its conservation and I am happy that JICA assisted Sikkim Biodiversity Conservation and Forest Management Project (SBFP) of Forest & Environment Department is concerned with such documentation and this book brought under its auspices should serve the forest department and other stakeholders to conserve the bewildering floral diversity of Sikkim.



19/01/2021

Minister

Forest & Env. and Mines & Geology
Science & Technology Departments
Government of Sikkim



GOVERNMENT OF SIKKIM

Mr. Y. P. Gurung, IFS
SECRETARY,
Forest and Environment Department
Government of Sikkim



MESSAGE

The fruitful collaboration between the Botanical Survey of India and Forest & Environment Department, Government of Sikkim has yielded the enormously popular books like '*Mushrooms of Sikkim*', '*Fern and Fern Allies of Sikkim, I & II*'. In this illustrious lineage, I am delighted that BSI has documented and updated the entire flowering plants of Sikkim and is bringing out in a pioneering publication "*Flora of Sikkim - A Pictorial Guide*". That this book is brought out in collaboration with JICA assisted Sikkim Biodiversity Conservation and Forest Management Project (SBFP) of the Forest & Environment Department, Government of Sikkim is an added feather in the conservation cap of the Sikkim Government. This pictorial inventory of the floristic wealth of the state would certainly boost the conservation efforts.

This book enumerates 5068 taxa (including 152 cultivated taxa), belonging to 1491 genera and 209 angiosperm families with a good photographic representation of plants and would definitely update our knowledge on the floral diversity of Sikkim. It is certain that such a monumental work would have been possible only as a result of dedication and hard work of the Scientists of Botanical Survey of India. I congratulate all of them for this accomplishment.

Date : 19.01.2021

Place : Gangtok

Secretary

Forest and Environment Department
Government of Sikkim



डॉ ए. ए. माओ
निदेशक

Dr. A. A. Mao
Director



सत्यमेव जयते



भारतीय वनस्पति सर्वेक्षण
Botanical Survey of India



FOREWORD

As a premier research organisation on plant taxonomy, the Botanical Survey of India has been engaged in documenting the floral diversity from diverse ecosystems of our country. Through continuous, extensive survey and exploration in different phytogeographic zones, this organization has assembled enormous information on occurrence and distribution of plant species of our country. Many of the publication of BSI have been recognized as the integral referral taxonomic literatures. The Sikkim Himalaya Regional Centre of BSI was established in 1979 for survey, exploration and documentation of floristic wealth of Sikkim region. In this lineage, BSI gathered ca. 55000 plants specimens in its herbarium at Gangtok from the state consisting of more than 5000 species of flowering plants. BSI is publishing "*Flora of Sikkim - A Pictorial Guide*" based on data collected from the last 40 years in collaboration with Forest & Environment Department, Government of Sikkim. This book with enumeration of 5068 taxa (including 152 cultivated taxa) in 1491 genera and 209 families is a valuable addition to understand the biodiversity of the state and the entire Indian Himalayan Region. It would also act as a ready reckoner and field guide for different stakeholders and nature enthusiasts. The floral biodiversity in Sikkim can be gauged by the fact that it has 45% of the taxa present in the entire Indian Himalayan region.

This exhaustive information on flowering plants of Sikkim would indeed serve as a valuable baseline data for researchers, policy makers and other stake holders which will enhance our knowledge on the flowering plants of Sikkim and thereby protect and conserve this amazing floristic wealth. I congratulate the authors for their dedicated effort to bring out this book.

12th January, 2021

A. A. Mao

PREFACE

Sikkim distinguishes itself as one of the smallest states in India, yet one of the most diverse in terms of biodiversity, eco-climatic conditions, altitudinal features, with the imposing Mt. Khangchendzonga looming in its western side. The biodiversity of Sikkim has always been held in high admiration in the scientific community, especially that of flowering plants, with explorers being enthralled by the vibrant array of mesmerising plant diversity of Sikkim. Nevertheless, a comprehensive account of all the flowering plants of Sikkim in a single compendium was elusive and its need was acutely felt in these times of rapid climate change. Botanical Survey of India has data of flowering plants of Sikkim stretching almost two centuries. This book, “Flora of Sikkim - A Pictorial Guide” gives an up-to-date data available with BSI and other published records on the flowering plants of Sikkim.

This book draws upon the illustrious pioneers of botanical exploration, chief among them, Sir Joseph Dalton Hooker, who blazed a trail in plant exploration of Sikkim. Floristic accounts were given by C.B. Clarke (1877, 1886), Griffith (1847), J.D. Hooker (1854, 1872-1897), T. Anderson (1869), King & Pantling (1898), Gammie (1894a, 1894b), Smith & Cave (1911), Bruhl (1926), Rao (1964), Mehra & Bir (1964), Biswas (1967), Hara (1966, 1971), Ohashi (1975), Grierson & Long (1983, 1984, 1987, 1991, 1999, 2001), Pradhan & Lachungpa (1990), Pradhan (1990), Srivastava (1993, 1996, 1998), Rai & Rai (1994), Noltie (1994, 2000), Dash & Singh (1996, 1998a,b,c, 1999, 2011), Singh & Chauhan (1997), Dash & Chauhan (2002), Maity (2005), Chhetri & al. (2007, 2008, 2009), Lucksom (2007), Tambe & Rawat (2008), Chhetri (2010), Arrawatia & Tambe (2011), Rawat & Tambe (2011), Pradhan (2015, 2018), Mao & al. (2017), Gogoi & al. (2018), Maity & al. (2018), Singh & al. (2019a), Singh & al. (2019b), Sinha & al. (2019) and others. Various publications, herbarium specimens were consulted to compile this inventory.

In the present endeavour, we have documented the flowering plant diversity of Sikkim with updated nomenclature and detailed distribution. Gammie (1894) in his assessment stated that the number of flowering plants in Sikkim to be about 4000 species. In over a century since, the number increased to 4450–4600 taxa. The current inventory includes 5068 taxa in 1491 genera belonging to 209 families which are reported for the first time in this book in a comprehensive manner. The book also provides a detailed introduction on the geography, ecology, vegetation pattern of Sikkim.

All the families are arranged alphabetically. The accepted names are given in bold while the basionyms or synonyms are given in italics. The checklist divided into dicotyledons and monocotyledons, families within groups, genera within families and species and infra-specific taxa within genera are arranged alphabetically for the sake of convenience; at the end of the enumeration, an index to the family and generic names is also included. All the taxa are provided with their distribution in Sikkim. Digital images of over 1300 species of plants are given.

We hope, the book will be useful to the general public, national and international botanical fraternity, policy makers and foresters of not only Sikkim but also throughout the Himalaya.

The checklist in the book contains 5068 taxa including 152 cultivated taxa. Many of the cultivated taxa has economic importance as floricultural, horticultural, ornamental or as edibles and medicinal plants, hence they are also presented herewith coloured images for easy identification by different stakeholders.

Authors



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Koenigia campanulata (Hook.f.) T.M.Schust. & Reveal

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Dinesh Kumar Agrawala
Sundar Kumar Rai
Sudhansu Sekhar Dash**



Agapetes serpens (Wight) Sleumer

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Jacobaea raphanifolia (Wall. ex DC.) B.Nord.



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Dinetus grandiflorus (Wall.) Staples

INTRODUCTION

The mighty Himalayas is a biodiversity hotspot stretching in an arc over 3000 kilometres of northern Pakistan, Nepal, Bhutan and the northwestern and northeastern states of India, the Himalaya hotspot includes all of the world's mountain peaks higher than 8000 meters and covers 7,50,000 km². This massive mountain range is divided into two regions: The Eastern Himalaya, which covers parts of Nepal, Bhutan, the northeast Indian states, southeast Tibet, and northern Myanmar; and the Western Himalaya, covering Kumaon-Gharwal, northwest Kashmir and northern Pakistan (Anon., 2020). The Eastern Himalayan region covers an area of 5,24,190 km² stretching from Eastern Nepal to Yunnan in China, of which 52.03% of the areas lies in India (Sikkim, Arunachal Pradesh, Assam, Darjeeling-West Bengal, Meghalaya, Nagaland, Mizoram, Manipur, Tripura). Eastern Himalayas have inherited multiple biogeographic origins being at the intersection of Indo-Malayan Realm, Palearctic Realm and the Sino-Japanese Region (Sharma & al., 2008).

Sikkim, is one of the tiniest Indian State, nestled in a wedge between Nepal and Bhutan, and loomed over by the tableland of Tibet. This tiny state harbours an incredible array of biodiversity and is indeed 'the microcosm of the Himalayas' as succinctly observed by the legendary Sir Joseph Dalton Hooker (Gammie, 1894; O'Brien, 2017). Since the pioneering exploration by Sir. J.D. Hooker in 1848–49, many explorers have often trodden this array of diversity, making it one of the most explored regions of the Himalayas. The number of taxa reported in the Indian Himalayan Region ranges from 10503 (Rana & Rawat, 2017) to 11157 (Singh & al., 2019). Sikkim has about 5068 taxa, almost 45% of the entire plant diversity of the Indian Himalayan region, ensconced in so miniscule a region.

The Indian State of Sikkim with a total area of 7096 km² extends approximately 115 kms from north to south and 65 kms from east to west, has no open valley and no plains but carries elevations ranging from 300 to 8598 m above mean sea level consisting of lower, middle and higher hills, alpine zones and snow bound land, the highest elevation 8598m, being the top of the Mt. Khangchendzonga itself. This third highest mountain of the world lies on the border with Nepal and is the guardian deity to Sikkimese and venerated as the holiest. Tista and Rangit are two main rivers which flow in a north to south direction through gorges and valleys. The state is the major catchment of river Tista that originates from Tso Lhamo lake in the north. The Tso Lhamo or the Sikkim plateau lies in the Trans-Himalayan region covering an area about 400 km² and probably representing India's smallest biogeographic province (Rawat & Tambe, 2011) and supports populations of four of the eight ungulate species of the Tibetan plateau (Chanchani & al., 2010). Sikkim's fauna is diverse, including 150 species of mammals, 550 species of birds, and 48 species of fishes, in addition to many reptiles, amphibians and insects. Amongst endangered or rare mammal species are Red Panda, Snow Leopard, Musk Deer, Tibetan wolf, Red fox, Indian wild dog, Hog Badger, Tibetan Sheep, Serow, Goral, Tibetan Wild Ass (Kiang), etc. For the richness of avian diversity, Sikkim has been placed within the Eastern Himalaya Endemic Bird Area. The faunal components are further enriched by the presence of over 627 species of butterflies and insects (Anon., 2012).

The state of Sikkim exhibits a contiguity of habitats from sub-tropical of Sal (*Shorea robusta*) to cold deserts within a distance of less than 100 kms, owing to a wide altitudinal gradient and fairly high degree of slopes. These habitats are cloven along the two main rivers, the Tista and Rangit and their numerous tributaries. Sikkim encompasses the lesser Himalaya, Central Himalaya, and the Tethys Himalaya. It has also the steepest landscape in the country since the width of the Himalaya across its entire length is narrowest here. Slopes are on an average of 45° representing one of the steepest altitude gradients anywhere in the world (Anon., 2014). The mountain system as whole trends towards east-west direction while the ridges, run in a north-south direction like the Singalila and Chola ridge, with another ridge separating Rangit valley from the Tista valley. It is estimated that about 84 glaciers are available in Sikkim covering an area of 440 km². The glaciers are found as low as 3700 msl near Khangchendzonga, but generally are present at 4000 msl. Of the prominent glaciers, Tista Khangse is the origin of the river Tista. The melt waters of the glacier often accumulate in tarns and the spill waters of tarns forms streams and rivulets. The spill waters of lake Tso Lhamo and a series of small lakes ultimately forms the headwaters of river Tista. The Lhonak glacier gives rise to Lhonak/Goma Chu, an important sub-tributary of river Tista. From Zemu glacier originates the Zemu Chu, one of the chief feeders of Tista. Another important river, the Rathong Chu in West Sikkim originates from Rathong glaciers and contributes to Rangit, the largest of Tista tributaries (Choudhary, 2006). Sikkim also consists of 534 lakes

Syzygium claviflorum (Roxb.) Wall. ex Steud.
Eugenia claviflora Roxb.
East Sikkim: Melli.

Syzygium cumini (L.) Skeels
Eugenia gambolana Lam.
Myrtus cumini L.
South Sikkim: Melli.

Syzygium formosum (Wall.) Mason
Eugenia formosa Wall.
South Sikkim: Melli.

Syzygium jambos (L.) Alston [Nep. *Aambake*]
Eugenia jambos L.
Sikkim.

Syzygium kurzii (Duthie) N.P.Balacr. [Nep. *Aambake*]
Eugenia kurzii Duthie
East Sikkim: Pangthang.

Syzygium nervosum A.Cunn. ex DC.
Sikkim.

Syzygium ramosissimum (Blume) N.P.Balacr.
Clavimyrthus ramosissima Blume
Sikkim: Rangit Valley.

Syzygium praecox (Roxb.) Rathakr. & N.C.Nair
Eugenia praecox Roxb.
South Sikkim: Kitam.

Syzygium tetragonum (Wight) Wall. ex Walp.
Eugenia tetragona Wight
Sikkim.

Syzygium toddalioides (Wight) Walp.
Eugenia toddalioides Wight
Sikkim.

Syzygium venosum DC.
Sikkim.

NYCTAGINACEAE

2 genera; 2 species

Boerhavia Vaill. ex L.

Boerhavia diffusa L.

East Sikkim: Rangpo, Ranipool.

Bougainvillea Comm. ex Juss.

Bougainvillea spectabilis Willd

Cultivated.

NYMPHAEEACEAE

1 genus; 1 species

Nymphaea L.

Nymphaea nouchali Burm.f.

South Sikkim: Jorethang, Melli

OCHNACEAE

1 genus; 1 variety

Ochna L.

Ochna obtusata DC.

var. **pumila** (Buch.-Ham. ex DC.) Kanis

O. pumila Buch.-Ham. ex DC.

Sikkim.

OLACACEAE

1 genus; 1 species

Erythralum Blume

Erythralum scandens Blume

Modacopsis vaga Griff.

East Sikkim: Ranipool, Gangtok.

OLEACEAE

9 genera; 18 species

Chionanthus L.

Chionanthus ramiflorus Roxb.

Linociera marcophylla Wall. ex G.Don

South Sikkim: Melli, Kitam.

Chrysojasminum Banfi

Chrysojasminum humile (L.) Banfi

Jasminum humile L.

North Sikkim: Lachung, Lhonak.

Fraxinus Tourn. ex L.

Fraxinus floribunda Wall. [Nep. *Lakunree*]

Sikkim.

Fraxinus suaveolens W.W.Sm.

F. sikkimensis (Lingelsh.) Hand.-Mazz.

North Sikkim: Lachen.

Jasminum L.

Jasminum arborescens Roxb.

J. latifolium Roxb.

Sikkim.

Jasminum dispernum Wall.

West Sikkim: Yuksom.

Jasminum elongatum (P.J.Bergius) Willd.

J. amplexicaule Buch.-Ham. ex G.Don

Nyctanthes elongata P.J.Bergius

Sikkim: Tista Valley.

Jasminum mesnyi Hance

Cultivated.

Jasminum nepalense Spreng.

J. glandulosum Wall. ex G.Don.

East Sikkim: Rongli.

Jasminum nervosum Lour.

J. subtriplinerve Blume

West Sikkim: Sombaria.

Ligustrum L.

Ligustrum compactum (Wall. ex G.Don) Hook.f. &

Thomson ex Brandis

Olea compacta Wall. ex G.Don

West Sikkim: Dentam.



Ardisia macrocarpa Wall.



Embelia ribes Burm.f.



Maesa indica (Roxb.) Sweet



Maesa chisia D. Don



Maesa macrophylla (Wall.) A. DC.



Psidium guajava L.



Syzygium kurzii (Duthie) N.P.Balacr.



Boerhavia diffusa L.



Myrsine semiserrata Wall.



Maesa rugosa C.B. Clarke



Bougainvillea spectabilis Willd.



Jasminum mesnyi Hance

Ligustrum confusum Decne
Sikkim.

Myxopyrum Blume

Myxopyrum smilacifolium (Wall.) Blume
Chionanthus smilacifolius Wall.
Sikkim: Rangit Valley.

Nyctanthes L.

Nyctanthes arbor-tristis L. [Nep. *Parijat*]
East Sikkim: Assam Lingzey, Singtam.

Olea L.

Olea dioica Roxb.
South Sikkim: Jorethang.

Olea gamblei C.B.Clarke
Sikkim.

Osmanthus Lour.

Osmanthus fragrans Lour.
Olea acuminata Wall. ex G.Don. var. *longifolia* DC.
West Sikkim: Bhareng to Gorkhey, Uttaray.

Osmanthus suavis King ex C.B.Clarke [Nep. *Silingay*]
Siphonosmanthus suavis (King ex C.B.Clarke) Stapf
East Sikkim: Phusum; West Sikkim: Singalila.

ONAGRACEAE

5 genera; 29 taxa (27 species, 2 sub-species)

Circaea L.

Circaea alpina L.
subsp. **micrantha** (Skvortsov) Boufford
C. micrantha Skvortsov
North Sikkim: Yumthang.

Circaea alpina L.
subsp. **imaicola** (Asch. & Magnus) Kitam.
C. alpina L. var. *imaicola* Asch. & Magnus
West Sikkim: Bakhim, Dzungri.

Circaea repens Wall. ex Asch. & Magnus
North Sikkim: Lachung.

Epilobium L.

Epilobium amurense Hausskn.
E. amurense Hausskn. subsp. *laetum* (Wall. ex Hausskn.) P.H.Raven
East Sikkim: Menmechu lake, Tamze, Tsomgo.

Epilobium angustifolium L.
Sikkim.

Epilobium clarkeanum Hausskn.
North Sikkim: Lachen; West Sikkim: Dzungri.

Epilobium conspersum Hausskn.
E. reticulatum C.B.Clarke
North Sikkim: Zukophyak.

Epilobium cylindricum D.Don
North Sikkim: Lachen, Zema-I.

Epilobium gouldii P.H.Raven
North Sikkim: Kishong.

Epilobium laxum Royle
East Sikkim: Tamze, Tsomgo.

Epilobium leiophyllum Hausskn.
East Sikkim: Chamnago.

Epilobium roseum Schreb.
North Sikkim: Zemu Valley; East Sikkim: Tsomgo.

Epilobium royleanum Hausskn.
North Sikkim: Zemu.

Epilobium sikkimense Hausskn.
E. sikkimensis Hausskn.
subsp. *ludlowianum* P.H.Raven
North Sikkim: Zukophyak.

Epilobium tibetanum Hausskn.
E. pseudo-obscurum Hausskn.
West Sikkim: Dzungri.

Epilobium trichophyllum Hausskn.
North Sikkim: Lachen, Zema-I.

Epilobium wallichianum Hausskn.
E. tanguticum Hausskn.
East Sikkim: Gangtok 2nd Mile, 3rd Mile.

Epilobium walliamsii P.H.Raven
East Sikkim: Thegu, Kupup;
North Sikkim: Yumthang.

Fuchsia Plum. ex L.

Fuchsia boliviana Carrière
Cultivated.

Fuchsia hybrida Hort. ex Siebert & Voss.
Cultivated.

Fuchsia triphylla L.
Cultivated.

Ludwigia L.

Ludwigia adscendens (L.) H.Hara
Jussiaea adscendens L.
Sikkim.

Ludwigia hyssopifolia (G.Don) Exell.
Jussiaea hyssopifolia G.Don
East Sikkim: Pakyong, Rangpo;
South Sikkim: Namchi.

Ludwigia octovalvis (Jacq.) P.H.Raven
Oenothera octovalvis Jacq.
Sikkim.

Ludwigia perennis L.
L. parviflora Roxb.
Sikkim.

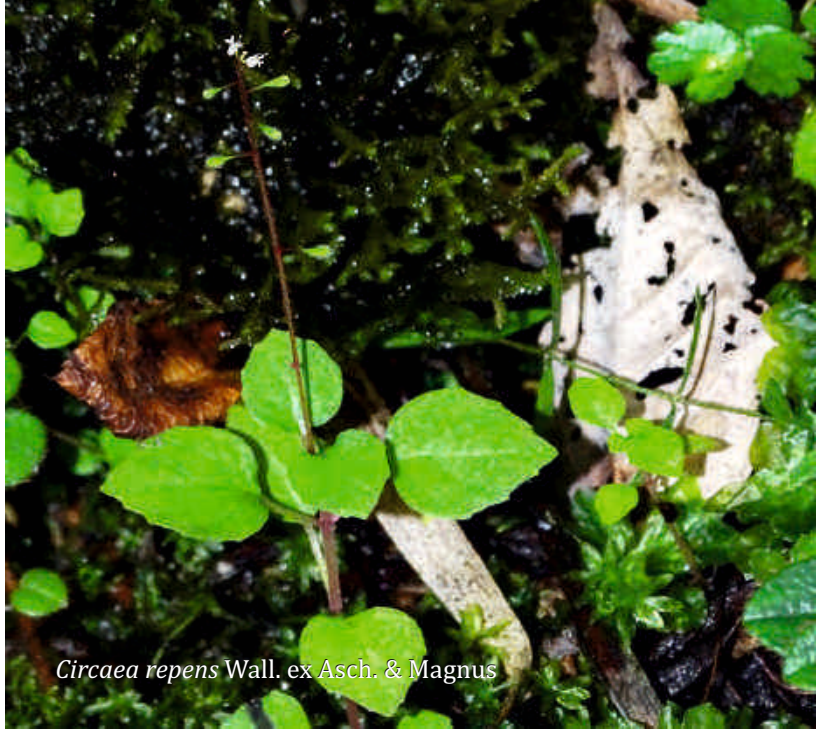
Ludwigia prostrata Roxb.
East Sikkim: Rishikhola.

Oenothera L.

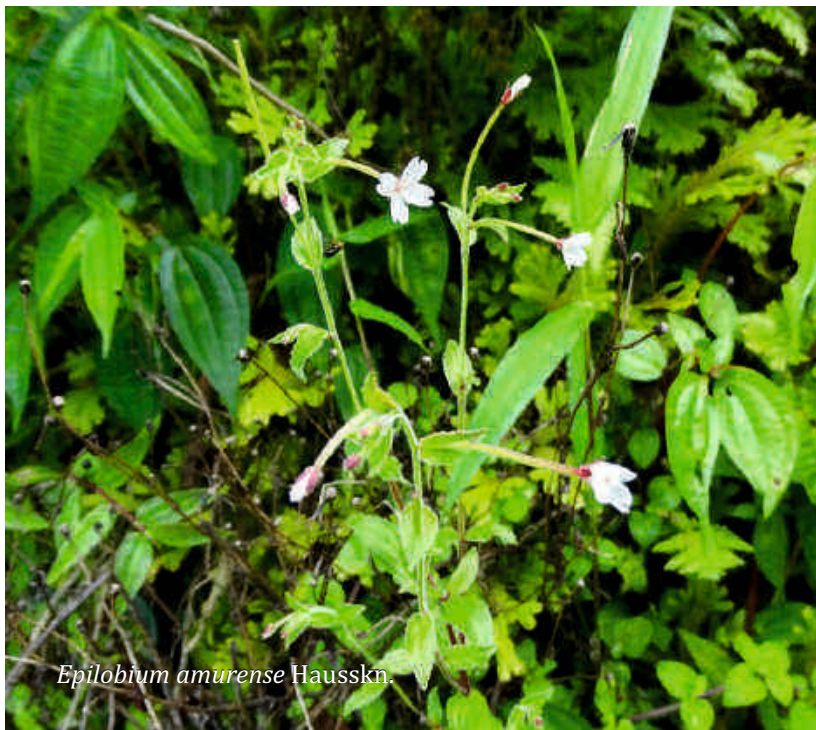
Oenothera biennis L.
Sikkim.



Circaea alpina L. subsp. *micrantha* (Skvortsov) Boufford



Circaea repens Wall. ex Asch. & Magnus



Epilobium amurense Hausskn.



Epilobium laxum Royle



Epilobium conspersum Hausskn.



Epilobium conspersum Hausskn.



Epilobium sikkimense Hausskn.



Fuchsia boliviana Carrière



Aeginetia indica L.



Epilobium wallichianum Hausskn.



Xylanche himalaica
(Hook.f & Thomson) Beck

Oenothera drummondii Hook.
West Sikkim: Pemayangtse.

Oenothera rosea L'Hér. ex Aiton
Sikkim.

OPILIACEAE

1 genus, 1 species

Lepionurus Blume

Lepionurus sylvestris Blume
L. oblongifolius (Griff.) Mast.
South Sikkim: Jorethang.

OROBANCHACEAE

5 genera; 7 species

Aeginetia L.

Aeginetia indica L.

East Sikkim: Machong.

Aeginetia acaulis (Roxb.) Walp.

A. pedunculata Wall.
Orobanche acaulis Roxb.
Sikkim.

Christisonia Gardner

Christisonia hookeri C.B. Clarke ex Hook.f.
Sikkim: Rangit Valley.

Lathraea L.

Lathraea purpurea H.A. Cummins ex King
West Sikkim: Singalila.

Lathraea squamaria L.

Sikkim.

Orobanche L.

Orobanche cernua Loefl.
Sikkim.

Xylanche Beck

Xylanche himalaica (Hook.f. & Thomson) Beck

Boschniakia himalaica Hook.f. & Thomson.
East Sikkim: Tukla.

OXALIDACEAE

3 genera; 7 species

Biophytum DC.

Biophytum reinwardtii (Zucc.) Klotzsch

Oxalis reinwardtii Zucc.
South Sikkim: Jorethang.

Averrhoa L.

Averrhoa carambola L. [Nep. *Kantra*]
South Sikkim: Jorethang.

Oxalis L.

Oxalis corniculata L. [Nep. *Chari Amilo*]

East Sikkim: Gangtok.

Oxalis corymbosa DC.

O. debilis Kunth
East Sikkim: Gangtok, Bhushuk.

Oxalis latifolia Kunth

East Sikkim: Gangtok, Bhushuk.

Oxalis leucolepis Diels

O. acetosella Hook f.
North Sikkim: Yumthang.

Oxalis griffithii Edgew. & Hook.f.

North Sikkim: Lachung.

PAPAVERACEAE

2 genera; 14 species

Argemone L.

Argemone mexicana L. [Nep. *Satyanaasi*]
Sikkim: Tista Valley.

Papaver L.

Papaver bellum (Prain) Christenh. & Byng
Meconopsis bella Prain
West Sikkim: Dzungri.

Papaver cathcartia Christenh. & Byng

Cathcartia villosa Hook.f.
Meconopsis villosa (Hook.f.) G. Taylor
North Sikkim: Muguthang;
East Sikkim: Cho-la, Thegu.

Papaver discigerum (Prain) Christenh. & Byng

Meconopsis discigera Prain
West Sikkim: Goche-La.

Papaver grande (Prain) Christenh. & Byng

Meconopsis grandis Prain
West Sikkim: Dzungri.

Papaver guilelmi-waldemarii (Klotzsch) Christenh. & Byng

Meconopsis aculeata Royle
M. guilelmi-waldemarii Klotzsch
Sikkim.

Papaver horridulum (Hook.f. & Thomson)

Christenh. & Byng
Meconopsis horridula Hook.f. & Thomson
North Sikkim: Lhonak Valley, Tankra-La.

Papaver lyratum (H.A. Cummins & Prain)

Christenh. & Byng
Cathcartia lyrata H.A. Cummins & Prain
Meconopsis lyrata (H.A. Cummins & Prain) Fedde
West Sikkim: Singalila.

Papaver napaulense (DC.) Christenh. & Byng

Meconopsis napaulensis DC.
South Sikkim: Maenam; West Sikkim: Singalila.

Papaver paniculatum D. Don

Meconopsis paniculata (D. Don) Prain
North Sikkim: Zukophyak; South Sikkim: Maenam.



Biophytum reinwardtii (Zucc.) Klotzsch



Oxalis corymbosa DC.



Oxalis corniculata L.



Oxalis latifolia Kunth



Oxalis leucolepis Diels.



Oxalis griffithii Edgew. & Hook.f.

Androcorys monophylla (D.Don) Agrawala & H.J.Chowdhery
Herminium monophyllum (D.Don) P.F.Hunt & Summerh.
Neottia monophylla D. Don
West Sikkim: Legship.

Androcorys pugioniformis (Lindl. ex Hook.f.) K.Y.Lang
Herminium pugioniforme Lindl. ex Hook.f.
North Sikkim: Yumesamdong.

Ania Lindl.

Ania penangiana (Hook.f.) Summerh.
Tainia hookeriana King & Pantl.
T. penangiana Hook.f.
East Sikkim: Rumtek, Andheri, Pakyong.

Anoectochilus Blume

Anoectochilus brevilabris Lindl.
A. sikkimensis King & Pantl.
East Sikkim: Rorathang, Rhenok, Rongli.

Anoectochilus roxburghii (Wall.) Lindl.
Chrysobaphus roxburghii Wall.
Sikkim: Tista Valley.

Anthogonium Wall. ex Lindl.

Anthogonium gracile Wall. ex Lindl.
East Sikkim: Gangtok 3rd Mile, Bhushuk.

Aphyllorchis Blume

Aphyllorchis alpina King & Pantl.
North Sikkim: Lachung to Katao.

Aphyllorchis montana (Thw.) Reichb.f.
A. prainii Hook.f.
Apaturia montana Thw.
East Sikkim: Rhenock, Rongli, Rigchu.

Apostasia Blume

Apostasia wallichii R.Br.
Sikkim: Tista Valley.

Appendicula Blume

Appendicula cornuta Blume.
Dendrobium bifarium Lindl.
Sikkim: Tista Valley.

Arachnis Blume.

Arachnis labrosa (Lindl. & Paxton) Rchb.f.
Arhynchium labrosum Lindl. & Paxton
West Sikkim: Rishi.

Arundina Blume

Arundina graminifolia (D.Don) Hochr.
A. bambusifolia Lindl.
Bletia graminifolia D.Don
East Sikkim: Majhitara, Rhenock; North Sikkim: Tung.

Ascocentrum Schltr.

Ascocentrum ampullaceum (Roxb.) Schltr.
Aerides ampullaceum Roxb.
Vanda ampullacea (Roxb.) L.M.Gardiner
South Sikkim: Kamrang, Sirisay.

Bhutanthera Renz.

Bhutanthera albomarginata (King) Renz
Habenaria albomarginata King
Herminium albomarginatum (King) X.H.Jin, Schuit., Raskoti & Lu Q.Huang
East Sikkim: Gnathang, Tsomgo.

Bhutanthera alpina (Hand.-Mazz.) Renz
Habenaria alpina Hand.-Mazz.
Herminium handelii X.H.Jin, Schuit., Raskoti & Lu Q.Huang
West Sikkim: Bikhbari.

Biermannia King & Pantl.

Biermannia bimaculata (King & Pantl.) King & Pantl.
Sarcochilus bimaculatus King & Pantl.
Sikkim: Tista Valley.

Bulbophyllum Thouars

Bulbophyllum affine Wall. ex Lindl.
East Sikkim: Samdong, Ranipool, Gangtok.

Bulbophyllum andersonii (Hook.f.) J.J.Sm.
Cirrhopetalum andersonii Hook.f.
East Sikkim: Tista Valley; West Sikkim: Daramdeen.

Bulbophyllum apodum Hook.f.
B. ebulbum King & Pantl.
Sikkim: Tista Valley, Rangit Valley.

Bulbophyllum appendiculatum (Rolfe) J.J.Sm.
B. putidum (Teijsm. & Binn.) J.J.Sm.
Sikkim.

Bulbophyllum bifurcatoflorens (Fukuy.) J.J.Verm., Schuit. & de Vogel
Ione andersonii King & Pantl.
I. bifurcatoflorens Fukuy.
North Sikkim: Chungthang, Menshithang.

Bulbophyllum bisetum Lindl.
East Sikkim: Penangla, Rataychu.

Bulbophyllum careyanum (Hook.) Spreng.
B. careyanum (Hook.) Spreng. var. *sikkimense* Lucksom
Anisopetalon careyanum Hook.
East Sikkim: Rangpo, Samdong.

Bulbophyllum cariniflorum Rchb.f.
B. densiflorum Rolfe
B. pantlingii Lucksom
North Sikkim: Chungthang, Tung;

Bulbophyllum caudatum Lindl.
East Sikkim: Assam Lingzey, Pasangding.

Bulbophyllum cauliflorum Hook.f.
B. cauliflorum Hook.f. var. *sikkimense* N.Pearce & P.J.Cribb
East Sikkim: Samdong.

Bulbophyllum cornu-cervi King
Sikkim: Rangit Valley.

Bulbophyllum crabro (C.S.P.Parish & Rchb.f.) J.J.Verm., Schuit. & de Vogel
Monomeria barbata Lindl.
M. crabro C.S.P.Parish & Rchb.f.
East Sikkim: Rumtek.



Bulbophyllum affine Wall. ex Lindl.



Bulbophyllum careyanum (Hook.) Spreng.



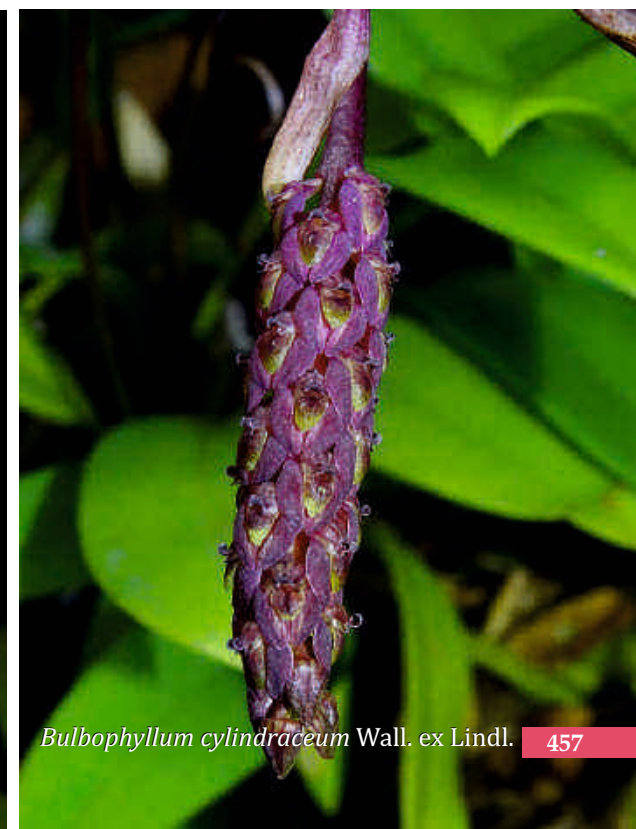
Bulbophyllum caudatum Lindl.



Bulbophyllum cauliflorum Hook.f.



Bulbophyllum guttulatum (Hook.f.) N.P.Balacr.



Bulbophyllum cylindraceum Wall. ex Lindl.