



The genus *Viburnum* L. in Sikkim Himalaya

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Abstract

Viburnum L. (Family- Caprifoliaceae) with 10 species comprises about 59% representative of this Indian members of the genus growing in Sikkim. The present communication highlights the extraordinary diversity of the genus within this tiny Himalayan state. Details of the protologue, synonyms, phenological data and both global and Indian distributional data are presented here. An artificial key to the species of *Viburnum* found in Sikkim is also provided for the ease of identification.

Keywords: Biodiversity, Phenology, Sikkim Himalaya, *Viburnum*

Introduction

Sikkim is the tiniest state of northeastern region of India with the geographical area of 7096 sq. km. The state is surrounded by Nepal in the West, Bhutan in the East, Tibet in the North and North-East, the Darjeeling district of West Bengal in the South. Covering only 0.2% of the total geographical areas of the country, this little Himalayan state shelters about 32% of the flowering plants of India (Maity, 2021). Due to varied climatic conditions, rich floral diversity and existence of many endemic and rare taxa, the state, rightly called as the “Botanist’s Paradise” and has been identified as part of one of the Global Hotspots.

The genus *Viburnum* L. (Caprifoliaceae) includes 180 species of small trees and shrubs which are widely distributed in temperate and subtropical regions of Europe, North Africa, Asia, and the Americas (Mabberley, 2017). Species of *Viburnum* are easily differentiated from others with their small trees and shrub-like habit; opposite (rarely whorled) simple, petiolate leaves; paniculate or umbellate inflorescences, sometimes having marginal sterile flowers; and single stoned drupes, red to purple-black in colour when ripen (Donoghue *et al.*, 2003). Some species of *Viburnum* are often cultivated as ornamentals for their showy, fragrant flowers and as source of medicine also (Mabberley, 2017; Choi & Oh, 2019).

Though the Angiosperm Phylogeny Group (APG) system recognizes *Viburnum* as a member of Adoxaceae (Angiosperm Phylogeny Group, 2016), here in this article the genus is treated under the family Caprifoliaceae as conventionally classified by Bentham and Hooker (1862-1883) for easy approach.

In India, *Viburnum* L. is represented by 17 species (Gangopadhyay *et al.*, 2020), of which 8 species (plus one infraspecies) are reported from Sikkim until now (Singh *et al.*, 2019; Gogoi *et al.*, 2021). Rigorous field survey, herbarium study and extensive literature search have resulted in the count of about 10 species of *Viburnum* in Sikkim. The present account deals with the diversity of the genus in Sikkim, along with their detailed distributional records (both Indian and global) and phenological information. Additionally, the key to all the taxa found in Sikkim Himalaya is also provided

to aid easy recognition and correct identity. Correct accepted names are also provided along with synonyms and basionym, if any, for each species.

Materials and Methods

This interpretation is based on extensive field surveys for last two decades as well as herbarium consultation. Majority of the specimens are directly examined both in the fields and in different repositories like CAL, BSHC, CUH, SSFH, etc. In many instances, old depositions are also included from worldwide herbaria like K, E, PE, G, GH, BM, etc. All relevant literatures are scrutinized and important informations are assimilated. Photographs of few flowers and fruits are provided (Fig. 1). The altitudinal ranges of distribution within the state are also given. The occurrence of species within India and the world are also shown with the help of maps (Map 1 & 2).

Results

Enumeration of *Viburnum* L. in Sikkim (arranged in alphabetical order)

1. *Viburnum colebrookeanum* Wall. ex DC., Prodr. 4: 325. 1830.

Viburnum lutesceus Hook.f. & Thomson

Fl. & Fr.: January-April.

Distribution: INDIA: Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim, West Bengal; BANGLADESH; BHUTAN; MAYANMAR; NEPAL [610-2134 m amsl].

2. *Viburnum corylifolium* Hook.f. & Thomson, J. Proc. Linn. Soc., Bot. 2: 174. 1858.

Viburnum barbigerum H.Lév.; *V. dunnianum* H.Lév.

Fl. & Fr.: March-September.

Distribution: INDIA: Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand; CHINA; TIBET [2000-3100 m amsl].

3. *Viburnum cotinifolium* D.Don, Prodr. Fl. Nepal. 141. 1825.

Fl. & Fr.: April-June.

Distribution: INDIA: Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal; AFGHANISTAN; BHUTAN; CHINA; NEPAL [2300-2600].

4. *Viburnum cylindricum* Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 142. 1825.

Viburnum capitellatum Wight & Arn.; *V. crassifolium* Rehder

Fl. & Fr.: June-December.

Distribution: INDIA: Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal; BHUTAN; CHINA; INDONESIA; MYANMAR; NEPAL; PAKISTAN; THAILAND; VIETNAM [500-3300 m amsl].

5. *Viburnum erubescens* Wall. ex DC., Prodr. 4: 329. 1830.

Solenotinus erubescens (Wall. ex DC.) Oerst.; *Viburnum botryoideum* H.Lév.; *V. burmanicum* (Rehder) C.Y.Wu; *V. burmanicum* var. *motoense* P.S.Hsu; *V. erubescens* var. *parvum* P.S.Hsu & S.C.Hsu; *V. prattii* Graebn.; *V. pubigerum* Wight & Arn.; *V. thibeticum* C.Y.Wu & Y.F.Huang; *V. wightianum* Wall.

Fl. & Fr.: March-December.

Distribution: INDIA: Arunachal Pradesh, Kerala, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand, West Bengal; BHUTAN; CHINA; MYANMAR; NEPAL [1400-4000 m amsl].

6. *Viburnum foetidum* Wall., Pl. Asiat. Rar. 1: 49. 1830.

Fl. & Fr.: June.

Distribution: INDIA: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim; BANGLADESH; BHUTAN; CHINA; LAOS; MYANMAR; THAILAND [600-3100 m amsl].

7. *Viburnum grandiflorum* Wall. ex DC., Prodr. 4: 329. 1830.

Solenotinus foetens (Decne.) Oerst.; *Viburnum foetens* Decne.; *V. grandiflorum* f. *foetens* (Decne.) N.P.Taylor & Zappi

Fl. & Fr.: March-September.

Distribution: INDIA: Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand; BHUTAN; CHINA; NEPAL; PAKISTAN [2800-4300 m amsl].

8. *Viburnum mullaha* Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 141. 1825.

Viburnum cuttingianum Merr.; *V. involucratum* Wall. ex DC.; *V. mullaha* var. *involucratum* (Wall. ex DC.) H.O.Saxena; *V. stellulatum* Wall. ex DC.; *V. stellulatum* var. *glabrescens* C.B.Clarke; *V. stellulatum* var. *involucratum* (Wall. ex DC.) C.B.Clarke; *V. thaiyongense* W.W.Sm.

Fl. & Fr.: July-November.

Distribution: INDIA: Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Sikkim, Uttarakhand, West Bengal; BHUTAN; CHINA; NEPAL [1500-4000 m amsl].

9. *Viburnum nervosum* D.Don, Prodr. Fl. Nepal. 141. 1825.

Solenotinus nervosus Oerst.; *Viburnum cordifolium* Wall. ex DC.; *V. nervosum* var. *hypsophilum* (Hand.-Mazz.) H.W.Li

Fl. & Fr.: March-October.

Distribution: INDIA: Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal; BHUTAN; CHINA; MYANMAR; NEPAL; VIETNAM [2100-4500 m amsl].

10. *Viburnum punctatum* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 142. 1825.

Fl. & Fr.: March-October.

Distribution: INDIA: Sikkim, Uttarakhand; BHUTAN; CAMBODIA; CHINA; INDONESIA; MYANMAR; NEPAL; THAILAND; VIETNAM [300-1900 m amsl].

Key to the species of *Viburnum* of Sikkim:

1. Plants with paniculate cymes 2
- Plants with corymbose or umbellate cymes 3
2. Plants flowering with leaves; stamens inserted at upper part

- of corolla tube; stigmas capitate **V. erubescens**
- Plants flowering before leaves; stamens inserted at middle or above middle of corolla tube; stigmas discoid, 2-lobed **V. grandiflorum**
3. Plants evergreen; leaf margin entire sometimes irregularly dentate along margin in upper part, glabrous or simple hairy; corolla tube twice or longer than lobes 4
- Plants deciduous; leaf margin serrate-dentate along margin, stellate pubescent beneath; corolla tube as long as lobes 5
4. Peduncles 1-6 cm long; corolla campanulate; stamens longer than corolla **V. cylindricum**
- Peduncles absent or shorter; corolla rotate; stamens subequal to corolla **V. punctatum**
5. Corolla funnel-form to campanulate **V. cotinifolium**
- Corolla rotate 6
6. Flowers in umbel-like cymes 7
- Flowers in corymb-like cymes 8
7. Branchlets of current year stellate-pubescent; petioles reddish purple; leaves with 2-4-jugate lateral veins, subentire or large dentation along margin **V. foetidum**
- Branchlets of current year bristly hairy; petioles green; leaves with 6-8-jugate lateral veins, serrate along margin **V. corylifolium**
8. Leaves cordate at base; corymbs sessile **V. nervosum**
- Leaves rounded to cuneate at base; corymbs usually stalked 9
9. Leaves ovate, long acuminate at apex; drupes globose **V. mullaha**
- Leaves oblong-elliptic, short acuminate at apex; drupes ellipsoid **V. colebrookeanum**

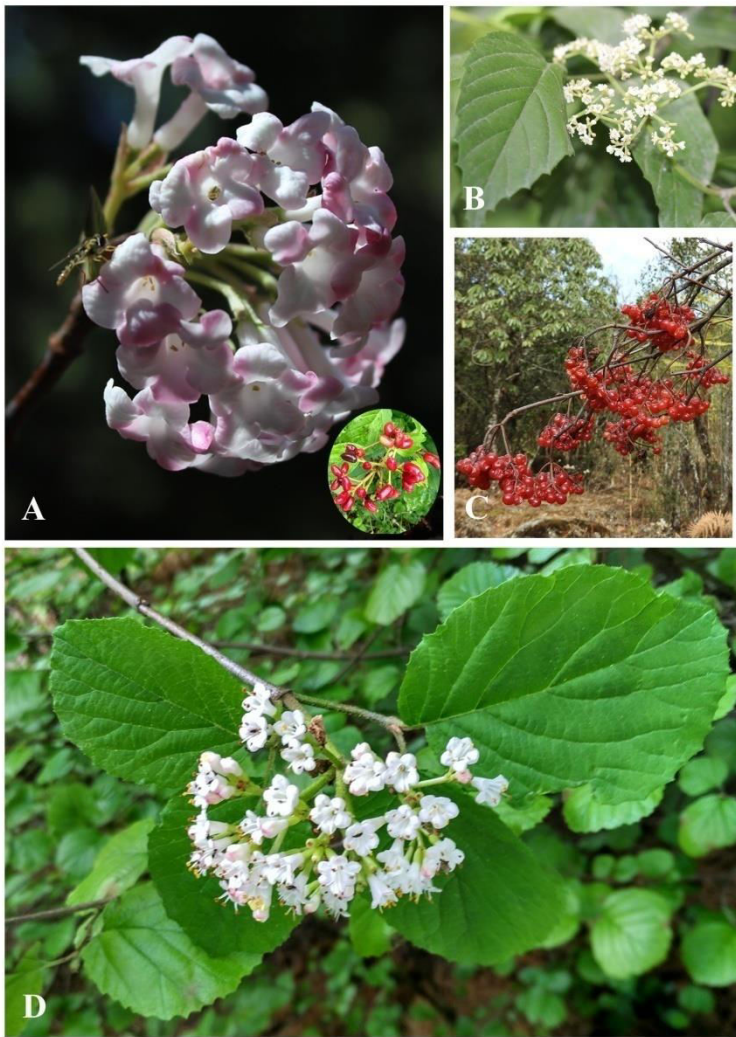


Fig. 1: Flowers and fruits of *Viburnum*. **A.** flowers of *V. grandiflorum* with fruits in inset; **B.** flowers of *V. mullaha*; **C.** fruits of *V. mullaha*; **D.** flowers of *V. cotinifolium*

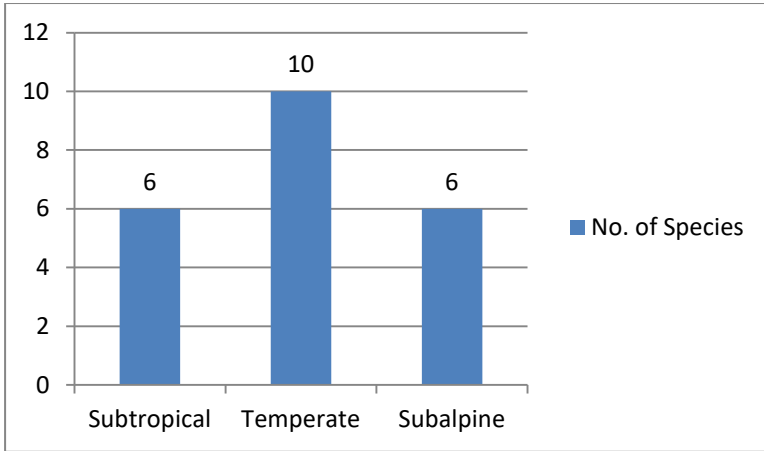
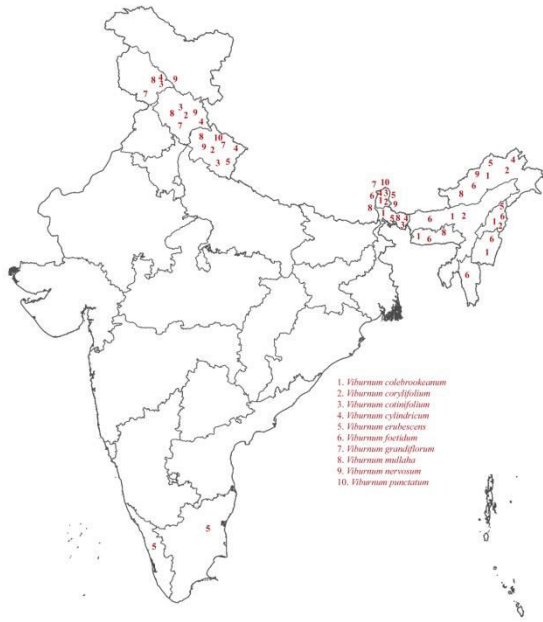
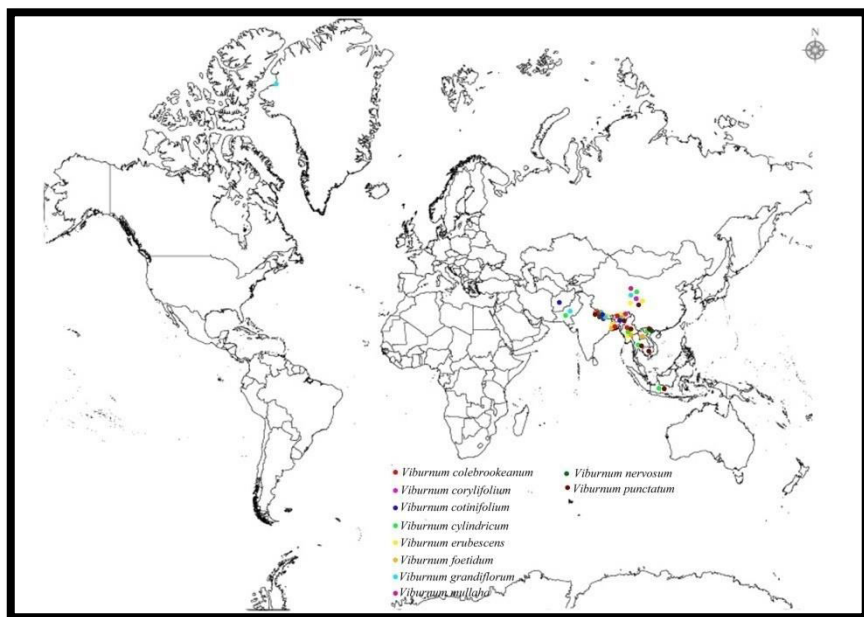


Fig. 2: Altitudinal distribution (no. of common species in different forest types)



Map 1: Indian distribution of *Viburnum* species found in Sikkim



Map 2: World distribution of *Viburnum* species found in Sikkim

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