INVENTORY OF THREATENED PLANTS OF BANGLADESH AND THEIR CONSERVATION MANAGEMENT

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Abstract
The study aimed at inventorying of threatened plant species of Bangladesh to determine their status of occurrence for emphasizing the setting-up of national conservation strategies and sustainable management. Complete inventory of two families, the Apocynaceae and Vitaceae, has been made and recognized 28 threatened species facing environmental threats, and need sustainable conservation management. The study was based on long-term field investigation, survey of relevant floristic literature and examination of herbarium specimens. An enumeration of threatened taxa is prepared with updated field data on conservation status to include into Red Data Book of Bangladesh.

Key words: Inventory, threatened plant species, conservation, management, Bangladesh.

Introduction
Global biodiversity is depleting at an alarming rate due to human interferences and environmental degradation, causing high risk of extinction. Human impact on nature has reached at such a high proportion that the world is today witnessing an unprecedented rate of species loss. Many more species are disappearing from the nature before their discovery and determination. The 1997 IUCN Red List of Threatened Plants revealed that 12.5% or c.34,000 of the world’s vascular plant species are at risk of extinction, including 7% of family
Apocynaceae and 5% of Vitaceae (Walter & Gillett, 1998). Later, the 2004 IUCN Red List includes 11,824 species of plants, of which 8,321 are threatened. However, only about 4% of the described plant species were evaluated so far, of which about 3% are threatened (Baillie et al., 2004). The IUCN’s Threatened Plants Unit at the Royal Botanic Gardens, Kew, has produced a global data of 50,000 plant species, of which around 20,000 species fall under threatened categories. A conservative estimate of IUCN’s Threatened Plants Unit shows that about 60,000 plant species (25%) would become either extinct or nearly extinct by the year 2050 (Uberoi, 2010). Around 50% of world’s flora might be threatened at risk of extinction, if an appropriate assessment is made following IUCN’s criteria (Pitman and Jorgensen, 2002). In the current wave of multiple threats, humans are unable to predict the impact and consequences of plant extinctions. According to USDA (1993), extinction of even a single plant species may result in the disappearance of 30 associated species of plants and wildlife. Hence, biodiversity conservation has become a global concern, and almost all developed countries have adopted and implemented National Conservation Strategies.

Bangladesh is enriched with high plant diversity, since it lies in a transition of two mega-biodiversity hot spots, viz., Indo-Himalayas and Indo-Chinese. Historically, Bangladesh forests are highly vulnerable to anthropogenic disturbances and climate change (Khan, 2003). It has been estimated that out of c.5000 angiosperm species, at least 8-10% are facing threats to extinction due to habitat loss, population pressure and over-exploitation of natural resources in Bangladesh (Khan, 1991; Rahman et al., 2010). Nevertheless, there have been no concrete steps taken to arrest the process (Khan et al. 2001). It has been, therefore emphasized by Khan et al. (2001) and Rahman et al. (2010) that the first and foremost step in this direction is to make complete inventory of the threatened species with assessment of their conservation status in the flora in order to produce Red Data Book of Bangladesh for framing and implementing National Conservation Strategies.

The subject of threatened plants in Bangladesh with their importance of inventory was first highlighted by Khan (1991) with a tentative list of 12 threatened vascular plants in Bangladesh. Later, IUCN Red List of Threatened plants included 24 vascular plant species (IUCN, 1997). Khan et al. (2001) produced Red Data Book of Vascular plants of Bangladesh with 106 threatened plants. Later, Rahman (2003) reported 18 threatened plants, and thereafter Rahman et al. (2010) reported 58 species as threatened in the wild with different IUCN-Categories. The inventory of threatened taxa for production of Red Data Book is in progress. In connection with this, the present report endowed with 28 threatened species into two families, Apocynaceae and Vitaceae, which have been inventoried with 46 and 29 species respectively, to be included in the Flora of Bangladesh (Rahman, 2008, 2009).

Materials and Methods

In this study, family Apocynaceae and Vitaceae were considered to make an inventory of threatened plants of Bangladesh. In order to determine the threatened species, major IUCN threatened categories viz., Vulnerable (VU), Endangered (EN), Critically Endangered (CR) and Extinct (EX) (IUCN, 1994) were considered. The assessment of distribution, abundance and status of occurrence of each species has been made through field investigations, literature survey, and consultation of herbarium specimens preserved in regional, national and international herbaria.
Field investigation: Investigations for collection and assessment of status of occurrence of plant species of Apocynaceae and Vitaceae families have been made through repeated field surveys throughout the year in different seasons by an expert team of AU-CU Biodiversity Link Project since 1997. Fertile specimens were collected, identified, characterized, and preserved at Herbarium of Chittagong University (HCU). Conservation status of individual plant species were assessed based on their abundance and distribution.


Herbaria Consulted: In order to study the preserved specimens of the members of Apocynaceae and Vitaceae of Bangladesh, various herbaria were visited like Herbarium of Botanical Survey of India, Eastern Regional Centre, Shillong (ASSAM), Bangladesh Council for Science and Industrial Herbarium at Chittagong (BCSIRH), Bangladesh Forest Research Institute Herbarium at Chittagong (BFRIH), Central National Herbarium, Howrah (CAL), Bangladesh National Herbarium, Dhaka (DACB), Dhaka University Salar Khan Herbarium (DUSH), Royal Botanic Garden Edinburgh Herbarium (E), Herbarium of Chittagong University (HCU) and Kew Herbarium, London (K) following Rahman et al. (2010). The plant specimens were examined, identified and documented along with collection localities.

Enumeration: The threatened plant species belonging to the family Apocynaceae and Vitaceae have been enumerated. Under each family, genera and species are arranged alphabetically. Each species is cited with current nomenclature, basionym, synonyms, local names, habitat, potential values, botanical identification, Flowering and Fruiting time, status of occurrence, threats to the species, conservation status, occurrence in Bangladesh, global distribution, conservation measures taken, conservation measures proposed, and citation of representative specimens.

Results and Discussion

The present study reveals that out of 75 total species of the Apocynacee and Vitaceae, 28 are threatened under different IUCN categories which is about 37%. Individually, about 50% species are found to be threatened in the family Vitaceae while in the Apocynaceae it is about 31% (Table 1). The species which have no reports of occurrence after their first collection from the area of Bangladesh for about 80 to 200 years were presumed Extinct (EX). Extinction rate is found much higher (21%) in the Vitaceae than that of the Apocynaceae (4%). In Vitaceae, six species were found Extinct (EX), these are: Ampelopsis rubifolia
(Wall.) Planch, *Cissus verticillata* (L.) Nicolson & C.E. Jarvis, *C. vitiginea* L., *Cyphostemma auriculatum* (Roxb.) Singh & Shetty, *Tetrastigma rumicispermum* (Laws.) Planch., and *Vitis flexuosa* Thunb. On the other hand, only two apocynads were found Extinct (EX) and these are: *Chonemorpha verrucosa* (Blume) Middleton and *Urceola micrantha* (Wall. ex G. Don) Middleton.

It is found that Extinction rate is much higher in the Vitaceae (21%) than that of the Apocynaceae (4%). Table 1 also revealed that 11 species are endangered in the Apocynaceae and 4 in the Vitaceae which represents 22% and 14% respectively. All these species, as stated in the enumeration are found to be very potential resources of the flora in both economically and environmentally and hence to be emphasized for taking and implementing appropriate conservation management by the concerned department of the government. 10 species (5 in each family) are recognized as medicinally important, which represents about 13% of total species of which, *Cissus verticillata* (L.) Nicolson & C. E. Jarvis of the family Vitaceae has already been Extinct (EX), and *Willoughbeia edulis* Roxb. of the family Apocynaceae is in Vulnerable (VU) condition. Another 8 species are found to be Endangered (EN) in the wild.

**Table 1. Summary of the inventory of plants of Apocynaceae and Vitaceae**

<table>
<thead>
<tr>
<th>Family</th>
<th>No. of specie s</th>
<th>No. of TS</th>
<th>% of TS</th>
<th>IUCN Categories</th>
<th>Potential values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>EX</td>
<td>EN</td>
<td>CR</td>
</tr>
<tr>
<td>Apocynacea</td>
<td>46</td>
<td>14</td>
<td>30.4/3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Vitaceae</td>
<td>29</td>
<td>14</td>
<td>48.2/8</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>28</td>
<td>37</td>
<td>8</td>
<td>14</td>
</tr>
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<td></td>
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</tbody>
</table>

TS = Threatened species; EX= Extinct; EN= Endangered; CR = Critically Endangered; VU= Vulnerable; Md= Medicinal; Tm= Timber; Fe= Fruits edible

**Conclusion**

It has been determined that the flora of Bangladesh is extremely under environmental threat and barge of extinction. The data of these two families indicate that the flora is depleting at a very alarming rate which conforms the report of Rahman (2013) on the family Asclepiadaceae, which is represented in the flora by 51% threatened taxa including 19 Extinct (EX) species. It is revealed that the extinction rate is 28% in the Asclepiadaceae followed by the Vitaceae with 21%. On the other hand, the rate of extinction is much less in the family Apocynaceae (4%). The study also revealed that 10 medicinally important species of these two families representing about 13% of total species are facing threats in various categories. *Cissus verticillata* (L.) Nicolson & C. E. Jarvis belong to the family Vitaceae has already been Extinct (EX), *Willoughbeia edulis* Roxb. of the family Apocynaceae which is in Vulnerable (VU) condition and other are in Endangered. It is, therefore, an urgent need to make complete inventory of threatened species of the flora, and production of Red Data Book of the country for taking and implementing National Conservation Strategies (NCS) and
sustainable management of the environment. Furthermore, public awareness should be created to stop over-exploitation and habitat destruction.

Enumeration of threatened plant taxa
FAMILY: APOCYNACEAE

1. Aganosma marginata (Roxb.) G. Don, Gen Hist. 4: 77 (1837).  
*Fig. 5*

Basionym: *Echites marginata* Roxb. (1832).
Synonym: *Echites acuminata* Roxb. (1832).
Local name(s): *Bara-kaoringia, Chhoto kuruz.*
Habit: Twining shrub.
Habitat: Rain forests.
Potential value: Ornamental plant.
Status of occurrence: Endangered (EN).
Threats to the species: Deforestation and habitat destruction.
Conservation status: Although it had been collected from about ten localities of Chittagong, Cox’s Bazar and Sylhet districts, the present field investigation showed that due to deforestation and felling of old trees, the plant is disappearing from its collection sites.
Occurrence in Bangladesh: Chittagong (*Sitakunda, Deyang Hill*); Cox’s Bazar (*Himchari, Bara Inani, Mehergona, Upper Rezu*) and Sylhet (*Jafflong, Singla*).
Global distributions: Bangladesh, Java, Myanmar, Sumatra and the Philippine Islands.
Conservation measures taken: None.
Conservation measures proposed: *In-situ* conservation management should be taken immediately.

2. Alstonia neriifolia D. Don, Prodr.: 131 (1825).  
*Fig. 1*

Synonym: *Blaberopus neriifolius* A. DC. (1844).
Local name(s): *Chhatim, Chaitan.*
Habit: Small tree.
Habitat: Moist evergreen forests.
Potential value: Timber and Medicinal.
Status of occurrence: Endangered (EN).

Threats to species: Habitat destruction and fire wood collection.

Conservation status: Its occurrence is very rare in a few localities of the forests of Chittagong (Hazarikhil) and Moulvi Bazar (Lawachara National Park) with rapid decrease of population.

Occurrence in Bangladesh: Chittagong (Hazarikhil), Moulvi Bazar (Lawachara National Park).

Global distributions: Bangladesh, Bhutan, India including tropical Himalaya and Nepal.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management to be taken immediately.

Herbarium specimen: Moulvi Bazar, Lawachara forest, 18.06.2009, Rahman et al. s.n. (HCU).


Synonym: Echites grandiflora Roxb. (1820).

Local name: Not available.

Habit: Large woody climber.

Habitat: Evergreen forests.

Potential value: Ornamental.

Botanical identification: Large woody climber. Leaves ovate, oblong or elliptic-oblong, acuminate, sparsely tomentose beneath; lateral nerves 15-20 pairs, sub parallel. Cymes terminal, pedicels pubescent. Flowers white, fragrant, very large. Stamens included, adnate at the mouth of the tube. Follicles divaricate, oblong. Flowering and Fruiting: June-January.

Status of occurrence: Endangered (EN).

Threats to species: Deforestation and habitat destruction.

Conservation status: It was first recorded from Sylhet and Chittagong by Hook. f. (1882) without citing any locality. It has been rediscovered from Kaptai Rampahar forest of Rangamati by Rahman et al. in 2011. No locality in Chittagong and Sylhet districts could be traced yet.

Occurrence in Bangladesh: Chittagong (Ink), Rangamati (Kaptai Rampahar) and Sylhet (Ink).

Global distributions: Bangladesh, India, Myanmar, Nepal, China and Vietnam.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management should be taken immediately.

Herbarium specimen: Rangamati, Kaptai Rampahar forest, 04.05.2011, Rahman et al. 8480 (HCU).


Synonym: Not available.

Local name: Not available.

Habit: Climbing shrub.

Habitat: Evergreen forests.

Potential value: Bark fibre.

Status of occurrence: Endangered (EN).

Threats to species: Deforestation and habitat destruction.

Conservation status: It has been located to only two localities in the forests of Cox’s Bazar and Rangamati. No collection after Rahman *et al.* from Shublong area of Rangamati in 1999, is available.

Occurrence in Bangladesh: Cox’s Bazar (*Paner chara*) and Rangamati (*Shubalong*).

Global distributions: Bangladesh and India.

Conservation measures taken: None.

Conservation measures proposed: Both *in-situ* and *ex-situ* conservation management to be taken immediately.


5. *Chonemorpha griffithii* Hook. f., Fl. Brit. India 3: 662 (1882). Fig. 7

Synonym: Not available.

Local name: Not available.

Habit: Woody climber.

Habitat: Evergreen forests.

Potential value: Wildlife supporting plant.


Status of occurrence: Endangered (EN).

Threats to species: Habitat destruction.

Conservation status: It has been located to Sadhanpur area of Chittagong, Whykeong forest of Cox’s Bazar and Kaptai Sitapahar forest of Rangamati. No collection could be made after Rahman *et al.* from Kaptai Sitapahar in 1999.

Occurrence in Bangladesh: Chittagong (*Sadhanpur*), Cox’s Bazar (*Whykeong*) and Rangamati (*Kaptai Sitapahar*).

Global distributions: Bangladesh and India.

Conservation measures taken: None.

Conservation measures proposed: Both *in-situ* and *ex-situ* conservation management to be taken immediately.


6. *Chonemorpha verrucosa* (Blume) Middleton in Novon 3: 455 (1993). Fig. 3

Basionym: *Tabernaemontana verrucosa* Blume (1826).

Synonym: *Echites elliptica* Wall. (1829).

Local name(s): Not available.
Habit: Twining shrub.
Habitat: Evergreen forests.
Potential value: Bark fibre.
Botanical identification: A large woody twining shrub with profound milky latex. Leaves opposite or alternate, coriaceous, glabrous; elliptic-ovate or elliptic-oblong, acuminate or acute, base cuneate or rounded. Cymes axillary or sub-terminal, lax, panicle, puberulous. Flowers showy, white. Follicles 2, pendulous. Flowering and Fruiting: May-January.
Status of occurrence: Extinct (EX).
Threats to species: Habitat loss; specimens not collected.
Conservation status: It was reported to occur in Sylhet (Wall. 1830) and Chittagong but no locality is traced yet.
Occurrence in Bangladesh: Chittagong (lnk) and Sylhet (lnk).
Global distributions: Bangladesh, Bhutan, China, India, Indonesia Laos, Malaysia, Myanmar, Thailand and Vietnam.
Conservation measures taken: None.
Conservation measures proposed: The plant is to be traced in its collection locality for in-situ or ex-situ conservation management as appropriate.
Herbarium specimen: No specimen is available at any herbaria consulted.

7. Melodinus khasianus Hook. f., Fl. Brit. India 3: 629 (1882). Fig. 11
Synonym: Not available.
Local name: Not available.
Habit: Climbing shrub.
Habitat: Hilly evergreen forests.
Potential value: Wildlife supporting plant.
Status of occurrence: Endangered (EN).
Threats to species: Habitat loss; specimens not collected.
Conservation status: Alam (1988) recorded its distribution in Sylhet without citing any locality. No other report of its collection from elsewhere in Bangladesh is available.
Occurrence in Bangladesh: Sylhet (lnk).
Global distribution: Bangladesh, China and India.
Conservation measures taken: None.
Conservation measures proposed: Location of occurrence is to be determined and then in-situ or ex-situ conservation management to be taken as appropriate.
Herbarium specimen: No specimen is available at any herbaria consulted.

8. Melodinus monogynus Roxb., Fl. Ind. 2: 56 (1832). Fig. 12
Synonyms: Nerium piscidium Roxb. (1832).
Local name(s): Not available.
Habit: Climbing shrub.
Habitat: Hilly evergreen forests.
Potential value: Wildlife supporting plant.

Status of occurrence: Endangered (EN).

Threats to species: Deforestation and habitat loss.

Conservation status: Its location has been traced to a few areas of the forests of Chittagong and Cox’s Bazar. No collection could be made after Rahman et al. from Ramu Upper Rezu reserve forest of Cox’s Bazar in 1997.

Occurrence in Bangladesh: Chittagong (Deyang hill, Baraidhala) & Cox’s Bazar (Ramu Upper Rezu reserve forest).

Global distributions: Bangladesh and India.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management to be taken immediately.

Herbarium specimens: Chittagong: Deyang hill, March-June, 1996, Rahman 152, 172 & 253 (HCU); Baraidhala, 23.06.1993, Mia et al. M.3255 (DACB); Cox’s Bazar: Upper Rezu reserve forest, 13.06.1997, Rahman et al. 1367 (HCU).


Fig. 4

Basionym: Ophioxylon serpentinum L. (1753).

Synonyms: Ophioxylon trifoliatum Gaertn. (1791); Tabernaemontana cylindracea Wall. (1829).

Local name(s): Sarpagradha, Chandra, Choto Chand.

Habit: Herb to small shrub.

Habitat: Mixed forests, plains and foot hills.

Potential value: Medicinal.

Botanical identification: A perennial herb to small shrub. Leaves whorled, elliptic-lanceolate or obovate-lanceolateacute to acuminate, base tapering. Cymes compact, axillary or terminal. Flowers white. Drupes crimson to black when ripen. Flowering and Fruiting: April-October.

Status of occurrence: Endangered (EN).

Threats to species: Habitat destruction and over exploitation.

Conservation status: It is located to a number of localities in several forested areas with one or two individuals in each site. This species is facing threats to high risk of extinction due to habitat destruction and over exploitation.

Occurrence in Bangladesh: Chittagong (Faiz Lake, Mireswari, Sitakund), Cox’s Bazar (Gorak Ghata, Inani), Bandarban (Dudpukoria reserve forest), Rangamati (Gagra) & Khagrachari (Manikchari), Dinajpur (Singra), Mymensingh (Gazni), Moulavibazar (Lawachara).

Global distributions: Bangladesh and India.

Conservation measures taken: Ex-situ conservation has been made in various gardens.
**Conservation measures proposed:** Both in-situ and ex-situ conservation management to be taken immediately.


**Note:** This species, Rauvolfia serpentina Benth. ex Kurz, of the family Apocynaceae has already been included in the Red Data Book of Bangladesh (Khan et al. 2001) as LR (cd).

**Fig. 9**

**Basionym:** Echites micrantha Wall. ex G. Don (1837).

**Synonyms:** Ecdysanthera micrantha (Wall. ex G.Don) A. DC. (1844); Parabarbarium micranthum (Wall. ex G. Don) Pierre (1905).

**Local name:** Not available.

**Habit:** Woody climber.

**Habitat:** Hilly evergreen forests.

**Potential value:** Wildlife supporting plant.

**Botanical identification:** A large woody climber with milky latex. Leaves ovate-oblong or oblong-lanceolate, apex acuminate, base acute or cuneate. Cymes trichotomously branched, paniculate. Flowers small, yellow; calyx pubescent, corolla urceolate, glabrous. Follicles 2, divaricate. *Flowering and Fruiting:* April-December.

**Status of occurrence:** Possibly Extinct (EX).

**Threats to species:** Habitat loss; specimens not collected.

**Conservation status:** Wallich collected it from Sylhet in 1830. Since then it has not been reported from elsewhere in Bangladesh.

**Occurrence in Bangladesh:** Sylhet (lnk).  
**Global distributions:** Bangladesh, Bhutan, Nepal, India, Myanmar, Thailand, Laos, Vietnam, Indonesia, Malaysia, China and Japan.

**Conservation measures taken:** None.

**Conservation measures proposed:** Both in-situ and ex-situ conservation management to be taken as appropriate.

**Herbarium Specimens:** Sylhet: loc. Non cit., Wall. Cat. 1667 (K-W). No specimen is available at DACB, BFRIH, and BCSIRH.

**Fig. 14**

**Basionym:** Pelitanthera solanacea Roth (1821).

**Synonym:** Echites dichotoma Roxb. (1832).
Local name(s): Hadpur, Mali, Hapormali, Agarmoni.

Habit: Scandent shrub.

Habitat: Scrubs or secondary forests.

Potential value: Medicinal.


Status of occurrence: Endangered (EN).

Threats to species: Deforestation and habitat destruction.

Conservation status: It has been collected from only Hazarikhil forest of Chittagong in 1995 and Sasupahar area of Khulna in 2006. Since then no locality of its occurrence could be traced yet.

Occurrence in Bangladesh: Chittagong (Hazarikhil) and Khulna (Sasupahar).

Global distributions: Bangladesh, India, Myanmar, Pakistan and Vietnam.

Conservation measures taken: None.

Conservation measures proposed: Location of this species is to be traced for taking conservation management immediately.

Herbarium specimens: Chittagong: Hazarikhil, 03.05.1995, Rahman 173 (HCU); Khulna: Sasupahar, 09.04.2006, Amina khatun, s.n. (DACB).

12. Willoughbeia edulis Roxb., Pl. Corom. 3:77. t. 280 (1820). Fig. 8

Synonym: Willoughbeia martabanica Wall. (1832).

Local name(s): Lata Aam, Lati Aam.

Habit: Climbing shrub.

Habitat: Evergreen forests.

Potential value: Fruits edible and medicinal.


Status of occurrence: Vulnerable (VU).

Threats to species: Habitat destruction.

Conservation status: It occurs sporadically in some forests of Chittagong, Cox’s Bazar, Rangamati and Greater Sylhet. Its population is decreasing rapidly due to destruction of habitat.

Occurrence in Bangladesh: Chittagong (Bariadhala, Hazarikhil); Cox’s Bazar (Ramu Upper Rezu reserve forest, Ukhia Madhur Chara), Rangamati (Rampahar, Sitapahar) and Habigonj (Satchari).

Global distributions: Bangladesh, Cambodia, India, Laos, Malaysia, Myanmar and Thailand.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management required.

13. Wrightia arborea (Dennst.) Mabb., in Taxon 26:533 (1977). Fig. 10
Basionym: Periploca arborea Dennst. (1818).
Synonyms: Wrightia tomentosa Roem. & Schult. (1819); W. pubescens Roth (1821).
Local name: Not available.
Habit: Medium sized tree.
Habitat: Evergreen forests.
Potential value: Leaves are cooked as vegetable and medicinal.
Status of occurrence: Endangered (EN).
Threats to species: Deforestation and habitat destruction.
Conservation status: It occurs sporadically in some forested areas of Bandarban, Chittagong, Khagrachari, Mymensingh, Rangamati and Sherpur with a fewer number of individuals.
Occurrence in Bangladesh: Bandarban (near Boga Lake, Ruma), Chittagong (Hazarikhil), Khagrachari (Ramghar), Mymensingh (Modupur National Park) and Sherpur (Gajni forest).
Global distributions: Bangladesh, China, India, Myanmar, Sri Lanka and Thailand.
Conservation measures taken: None.
Conservation measures proposed: Both in-situ and ex-situ conservation management required immediately.

14. Wrightia coccinea Sims. in Bot. Mag. 53. t. 2696 (1826). Fig. 13
Synonym: Nerium coccineum Roxb. (1832).
Local name(s): Dudhi, Pallam.
Habit: Medium sized tree.
Habitat: Evergreen forests.
Potential value: Ornamental plant.
**Status of occurrence:** Endangered (EN).

**Threats to species:** Habitat destruction.

**Conservation status:** It has been located to some forests of Chittagong, Moulvi Bazar, Rangamati and Sylhet, Its occurrence is decreasing rapidly due to habitat destruction.

**Occurrence in Bangladesh:** Chittagong (*Keochia*), Dhaka (*Ramna Park*), Moulvi Bazar (*Biyani Bazar*), Rangamati (*Sitapahar, Belai Chari*) and Sylhet (*Jaintapur, Jafflong, Patherkandi, Loobah lake*).

**Global distributions:** Bangladesh, China, India, Myanmar, Pakistan and Thailand.

**Conservation measures taken:** None.

**Conservation measures proposed:** *In-situ* conservation management to be taken immediately.

**Herbarium specimens:** Chittagong: *Keochia*, *Das* 6245 (BFRIH); Dhaka: *Ramna* park, *Montaz Begum* 212 (DACB); Moulvi Bazar: *Biani Bazar*, *Mujibur Rahman* 6614 (BFRIH) and *Alam* 5808 (BFRIH); Rangamati: *Belai Chari*, *Rahman et al.* 4547 (HCU); Sylhet: *Jaintapur*, *Huq et al.* H.6203, H.7858 (DACB); Jafflong, *Huq & Mia* H.6297 (DACB); Patherkandi, *Gupta* 7835 (ASSAM); Loobah lake, *Kanjilal* 4680 (ASSAM).

**FAMILY: VITACEAE**


**Basionym:** *Vitis glandulosa* Wall. *ex* Roxb. (1824).

**Synonym:** *Cissus glandulosa* Roxb. (1814 *num. nud.*).

**Local names:** *Jangli Boroi*.

**Habit:** Climber.

**Habitat:** On the hill slopes.

**Potential value:** Wildlife supporting plant, fruits edible.

**Botanical identification:** A slender branched climber. Tendril 2-3 branched. Leaves simple, pentangular, cordate-ovate, crenate, often 3-5 lobed. Flowers in small dichotomous corymbose cymes, shorter than the leaves. Fruit a berry, small, globose, dark purple. Seed narrowly elliptic. *Flowering and Fruiting:* May-September.

**Status of occurrence:** Endangered (EN).

**Threats to species:** Habitat destruction.

**Conservation status:** Only one specimen was collected from Sherpur (*Runctia Sal forest*) in 2009 by Mr. Ershad Tutul of Dhaka University after Roxburgh from Chittagong in 1832. No other location of its occurrence is traced yet.

**Occurrence in Bangladesh:** Chittagong (*Ink*) and Sherpur (*Runctia Sal Forest*).

**Global distributions:** Bangladesh, China, India, Myanmar, Nepal, Taiwan and the Philippines.

**Conservation measures taken:** None.

**Conservation measures proposed:** Location of its occurrence is to be traced and then *in-situ* and *ex-situ* conservation measures are to be taken as appropriate.


16. **Ampelopsis rubifolia** (Wall.) Planch. in DC., Monogr. Phan. 5(2): 463 (1887).

**Basionym:** *Vitis rubifolia* Wall. (1824).
Local name: Not available.
Habit: Climbing shrub.
Habitat: Over bushes and scrub jungles of the foot hills.
Potential value: Wildlife supporting plant.
Botanical identification: A large climbing shrub with 4-angled slender stem and branches. Leaves 1 or 2 pinnate, usually 3-foliolate, leaflets ovate-elliptic or ovate. Inflorescences umbellate cymes. Flowers small, greenish, anthers elliptic, styles conical. Fruits berry, globose red, turning black when fully ripe. Flowering and Fruiting: August-December.
Status of occurrence: Possibly Extinct (EX).
Threats to species: Habitat loss; specimens not collected.
Conservation status: No report since Hook.f. (1875) recorded from Sylhet without citing any locality.
Occurrence in Bangladesh: Sylhet (lnk).
Global distributions: Bangladesh, China, India and Japan.
Conservation measures taken: None.
Conservation measures proposed: Location of occurrence is to be traced and both in-situ and ex-situ conservation management to be taken as appropriate.
Herbarium Specimens: No specimen is available at any herbaria consulted.

17. Cayratia pedata (Lam.) Juss. ex Gagnep., Notul. Syst. (Paris) 1: 346 (1911). Fig. 16
Basionym: Cissus pedata Lam. (1783).
Synonym: Vitis pedata Wall. ex Wight & Arn. (1834).
Local names: Gwali-lata, Goali-Kata.
Habit: Woody climber.
Habitat: Rainy forest areas.
Potential value: Medicinal and wildlife supporting plant.
Status of occurrence: Near Threatened (nt).
Threats to species: Habitat destruction.
Conservation status: Although it occurs in few localities but with a very poor number of individuals and likely to be decreasing.
Occurrence in Bangladesh: Chittagong (Sitakunda, Bariadhal), Cox’s Bazar (Himchari National Park), Dhaka (Mirpur) and Sylhet (lnk).
Global distributions: Bangladesh, Cambodia, India, Indonesia, Sri Lanka, Malaysia, Myanmar, Thailand and Vietnam.
Conservation measures taken: None.
Conservation measures proposed: Both in-situ and ex-situ conservation management to be taken immediately.
Herbarium Specimens: Chittagong: Sitakunda, Bariadhala, 15.11.1998, Rahman & Rashid 3945 (HCU); Sitakunda, 24.06.1979, Mia & Rahman M.142 (DACB). Cox’s Bazar: Teknaf,

18. Cayratia tenuifolia (Wight & Arn.) Gagnep., Notul. Syst. (Paris) 1: 349 (1911). **Fig. 18**

**Basionym:** Vitis tenuifolia Wight & Arn. (1834).

**Synonyms:** Cissus japonica Willd. (1824) (later homonym); C. tenuifolia (Wight & Arn.) Planch. (1887); C. cymosa Steud. (1841).

**Local name:** Not available.

**Habit:** Climber.

**Habitat:** Rain forests.

**Potential value:** Medicinal and wildlife supporting plant.

**Botanical identification:** Herbaceous climber. Leaves pedate, ovate to elliptic or oblong, base acute to cuneate, apex acute. Disc of flower yellow at anthesis, becoming white after anthesis. Fruit depressed, obpyriform. **Flowering and Fruiting:** May-October.

**Status of occurrence:** Near Threatened (nt).

**Threats to species:** Habitat destruction.

**Conservation status:** Although it occurs in few localities with a very poor number of individuals and likely to be decreasing.

**Occurrence in Bangladesh:** Bandarban (Alikadam), Chittagong (Garjania), Cox’s Bazar (Tekna) and Rangamati (Kaptai, Sitapahar).

**Global distributions:** Bangladesh, India, Indonesia, Japan, Malaysia, Nepal and Taiwan.

**Conservation measures taken:** None.

**Conservation measures proposed:** Both in-situ and ex-situ conservation management to be taken immediately.

**Herbarium specimens:** Bandarban: Alikadam, Guishapjiri, 03.05.1998, Rahman et al. 2881 (HCU); Chittagong division: Garjania, 06.1920, Cowan 717 (E); Cox’s Bazar: Tekna, 23.10.1963, Khan 710 (DUSH); Rangamati: Kaptai, 03.10.1982, Das & Alam 4487 (BFRIH); Sitapahar, 08.10.1998, Rahman et al. 3552 (HCU).

19. Cissus pentagona Roxb., Fl. Ind. 1: 408 (1820). **Fig. 23**

**Synonym:** Vitis pentagona Buch.-Ham. ex Wall. (1831-1832).

**Local name:** Sona-tola.

**Habit:** Woody climber.

**Habitat:** Climbing over bushes and small trees in the hilly forest areas only.

**Potential value:** Medicinal.

**Botanical identification:** A large woody climber with 5-angled stem. Leaves simple, cordate or cordate-ovate or ovate, Inflorescences cymes, peduncle long. Flowers yellowish-red. **Flowering and Fruiting:** September-March.

**Status of occurrence:** Near Threatened (nt).

**Threats to species:** Habitat destruction.

**Conservation status:** It occurs sporadically with a fewer number of individuals in degraded forests of Chittagong, Cox’s Bazar and Moulvi Bazar districts.

**Occurrence in Bangladesh:** Chittagong (Sitakunda, Hazarikhil), Cox’s Bazar (Whykong, Himchari National Park, Chakaria Sundarban, Shilkhali), Moulvi Bazar (Lowachara), (Kengal Chari, Rampahar, Sitapahar).
Global distributions: Bangladesh, India and Myanmar.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management to be taken immediately.


20. Cissus verticillata (L.) Nicolson & C. E. Jarvis, Taxon 33(4): 727 (1984).  Fig. 19

Basionym: Viscum verticillatum L. (1753).

Synonyms: Cissus sicyoides L. (1759); C. glauca Thw. (1858); Vitis sicyoides (L.) Miq. (1857).

Local name: Not available.

Habit: Climber.

Habitat: Primary forests.

Potential value: Medicinal, wildlife supporting plant, fruits edible.

Botanical identification: Evergreen perennial vine. Leaves typically large, simple, alternate, glabrous, and succulent. Inflorescences densely flowered cymes, extended from the leaf axils. Flowers yellow-green, calyx light green, cup-shaped and forms a rim around the ovary. Fruit a berry, black or purple which is similar to a small grape. Flowering and Fruiting: July-December.

Status of occurrence: Extinct (EX).

Threats to species: Habitat loss; specimens not collected.

Conservation status: No report after Roxb. (1832) from Chittagong citing without any locality.

Occurrence in Bangladesh: Chittagong (link).

Global distributions: Argentina, Bangladesh, Bolivia, Brazil, Caribbean, Central America, Chile, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala Honduras, Guyana, India, Maxico, Nicaragua, Panama, Peru, Suriname, U. S. A. and Venezuela.

Conservation measures taken: None.

Conservation measures proposed: Location of occurrence is to be traced and both in-situ and ex-situ conservation management to be taken as appropriate.

Herbarium Specimens: No specimen is available at any herbaria consulted.

21. Cissus vitiginea L., Sp. Pl.: 117 (1753).  Fig. 24

Synonyms: Cissus latifolia Lam. (1783); C. glauca Roxb. (1820); Vitis glauca (Roxb.) Wight & Arn. (1834).

Local name: Guali-lata.

Habit: Climber.

Habitat: Primary rain forests.

Potential value: Not known.
Botanical identification: A large climber. Leaves 5-angled or lobed, cordate-ovate on main shoots. Inflorescences umbellate cyme, leaf-opposed. Flowers whitish-green, copular. Fruit a berry, ovoid. Flowering and Fruiting: July-December.

Status of occurrence: Extinct (EX).

Threats to species: Habitat loss; specimens not collected.

Conservation status: No report after Roxb. (1832) from Chittagong without citing any locality.

Occurrence in Bangladesh: Chittagong (lnk).

Global distributions: Bangladesh, India, Myanmar, Sri Lanka and Thailand.

Conservation measures taken: None.

Conservation measures proposed: Location of occurrence is to be traced, if exists, appropriate conservation management to be taken.

Herbarium Specimens: No specimen is available at any herbaria consulted.

22. Cyphostemma auriculatum (Roxb.) Singh & Shetty, Taxon 35 (3): 596 (1986). Fig. 20

Basionym: Cissus auriculata Roxb. (1824).

Synonym: Vitis auriculata (Roxb.) Wall. (1831).

Local name: Not available.

Habit: Climber.

Habitat: Evergreen forests.

Potential value: Fruits edible, wildlife supporting plant.


Status of occurrence: Possibly Extinct (EX).

Threats to species: Habitat loss; specimens not collected.

Conservation status: No report after Heinig (1925) from Chittagong is available. No locality in Chittagong and Sylhet could be traced yet.

Occurrence in Bangladesh: Chittagong (lnk) and Sylhet (lnk).

Global distributions: Africa, Bangladesh, India, Madagascar and Myanmar.

Conservation measures taken: None.

Conservation measures proposed: Intensive search is to be made to locate this plant, if exists, appropriate conservation management to be taken.

Herbarium Specimens: No specimen is available at any herbaria consulted.

23. Parthenocissus semicordata (Wall. ex Roxb.) Planch. in DC., Monogr. Phan. 5: 451 (1887). Fig. 25

Basionym: Vitis semicordata Wall. ex Roxb. (1824).

Synonyms: Ampelopsis himalayana Royle (1835); Cissus himalayana Walp. (1842); Parthenocissus himalayana (Royle) Planch. (1887).

Local name: Not available.

Habit: Climber.

Habitat: Hill slopes over bushes.

Potential value: Not known.
Botanical identification: A large climber with terete branchlets, sparsely pilose when young, becoming glabrescent; Leaves 3-foliolate, usually nearly sessile, apex mucronate. Cymes up to 3 cm long, compact. Flowers 4-merous. Fruits berry. Flowering and Fruiting: January-June

Status of occurrence: Near Threatened (nt).

Threats to species: Habitat destruction.

Conservation status: It occurs sporadically with a fewer number of individuals in degraded forests of Chittagong, Cox’s Bazar, Moulvi Bazar and Rangamati districts.

Occurrence in Bangladesh: Chittagong (Deyang Hill), Cox’s Bazar (Himchari National Park), Moulvi Bazar (Samanbagh beat), Rangamati, Kaptai (Rampahar, Sitapahar).

Global distributions: Bangladesh, Bhutan, China, India, Indonesia, Malaysia, Myanmar, Nepal, North America, Pakistan, Thailand, Vietnam.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management to be taken immediately.


24. Tetrastigma dubium (Laws.) Planch. in DC., Monogr. Phan. 5(2): 437 (1887). Fig. 26

Basionym: Vitis dubia Laws. (1875).
Synonym: Vitis oxyphylla Wall. ex Prain (1903).
Local name(s): Kuanria.
Habit: Climber.
Habitat: Hilly forests.
Potential value: Medicinal, Fruits edible.
Botanical identification: A large sub-woody climber. Leaves 5-foliolate, ovate or elliptic or lanceolate, acuminate, base rounded. Inflorescences axillary cymes, compact, corymbose. Flowers 4 mm across. Fruits berry, oblong. Flowering and Fruiting: March-August.

Status of occurrence: Endangered (EN).

Threats to species: Habitat destruction.

Conservation status: The last collection of this species has been made from Chunati of Chittagong by MS Khan in 1997 after Deke from Chhatak of Sylhet district in 1941. The first collection of it was made from Kaptai of Rangamati by Lace in 1880. No locality could be traced yet.

Occurrence in Bangladesh: Chittagong (Chunati), Rangamati (Kaptai) and Sylhet (Chhatak).

Global distributions: Bangladesh, Bhutan, China, India and Nepal.

Conservation measures taken: None.

Conservation measures proposed: It is to be located to its collection sites for taking ex-situ conservation management immediately.


Fig. 27

Basionym: Vitis rumicisperma Laws. (1875).

Synonym: Vitis tuberculata Wall. (1831).

Local name: Not available.

Habit: Climber.

Habitat: Evergreen forests.

Potential value: Not known.


Status of occurrence: Possibly Extinct (EX).

Threats to species: Habitat loss; specimens not collected.

Conservation status: It was collected once from Patharia forest of Sylhet by G. Mann in 1828. Since then no other location of occurrence could be traced yet.

Occurrence in Bangladesh: Sylhet (Patharia forest).

Global distributions: Bangladesh, Bhutan, China, India, Laos, Nepal, Thailand and Vietnam.

Conservation measures taken: None.

Conservation measures proposed: Location of occurrence is to be traced, if exists, ex-situ or as appropriate conservation management to be taken.

Herbarium Specimens: Sylhet: Patharia forest, 07.1828, Mann 1073 (ASSAM).


Fig. 28

Basionym: Cissus serrulatum Roxb. (1820).

Synonyms: C. nepalensis DC. (1824); Vitis capriolata D. Don (1826); V. serrulata (Roxb.) Wall. (1831).

Local name: Not available.

Habit: Climbing shrub.

Habitat: Rain forests.

Potential value: Fruits edible.


Status of occurrence: Endangered (EN).

Threats to species: Habitat destruction.

Conservation status: It has been collected from Teknaf of Cox’s Bazar in 1997 after Sinclair from Signal Hill in 1943. It was also collected from Dhaka city area in 1970.
Occurrence in Bangladesh: Cox’s Bazar (Teknaf, Signal hill) and Dhaka (Second capital area).

Global distributions: Bangladesh, Bhutan, China, India, Myanmar, Nepal and Thailand.

Conservation measures taken: None.

Conservation measures proposed: Both in-situ and ex-situ conservation management required immediately.

Herbarium specimens: Cox’s Bazar: Teknaf, 24.10.1997, Rahman et al. 2124 (HCU); Signal Hill, 14.08.1943, Sinclair 3142 (E); Dhaka: Second capital area, 17.05.1970, Rahman 100 (DUSH).


Synonyms: *Vitis parvifolia* Roxb. (1820); *V. purani* Buch.-Ham. ex D. Don (1825); *V. wallichii* Kurz (1872).

Local name: Not available.

Habit: Climbing shrub.

Habitat: Evergreen forests.

Potential value: Not known.


Status of occurrence: Possibly Extinct (EX).

Threats to species: Habitat loss; specimens not collected.

Conservation status: Hook. f. (1875) reported this plant from Eastern part of Bengal without citing any locality. Since then no report of collection of it from elsewhere in Bangladesh is available.

Occurrence in Bangladesh: Eastern Bengal (ink).

Global distribution: Bangladesh, China, India, Japan, Korea, Laos, Malaysia, North-West Himalayas, Nepal, Pakistan, Taiwan, Thailand, the Philippines and Vietnam.

Conservation measures taken: None.

Conservation measures proposed: Location of occurrence is to be traced, if exists, conservation management to be taken as appropriate.

Herbarium Specimens: No specimen is available at any herbaria consulted.


Synonym(s): *Vitis lanata* Roxb. (1814, 1824); *Cissus vitiginea* Roxb. (1832); *C. heyneana* (Wall. ex Wight & Arn.) Planch. (1887); *Vitis heyneana* Wall. ex Wight & Arn. (1834); *V. indica* Hook. & Arn. (1838).

Local name: Gode lata.

Habit: Climbing shrub.

Habitat: Thickets of foot hills.

Potential value: Fruits edible.

Botanical identification: A large climbing shrub with corky bark. Leaves simple, cordate-ovate or broadly ovate, apex shortly acuminate, base cordate. Inflorescences paniculate
cymes. Flowers small, green, unisexual, calyx minute, corolla lobes cohering at the apex. Fruits berry, globose, blackish. *Flowering and Fruiting*: May-October.

**Status of occurrence**: Endangered (EN).

**Threats to species**: Habitat destruction.

**Conservation status**: It was collected by Das in 1964 from Gazni of Mymensingh and again in 1995 from Kaptai Sitapahar of Rangamati by Das & Akram. Since then no other collection from any locality could be found.

**Occurrence in Bangladesh**: Chittagong (Ink), Mymensingh (Gazni), Rangamati (Sitapahar).

**Global distributions**: Bangladesh, China to the Himalayas and Myanmar.

**Conservation measures taken**: None.

**Conservation measures proposed**: Both in-situ and ex-situ conservation measures to be taken immediately.


**Note**: No species of the family Vitaceae has been included in the Red Data Book of Bangladesh (Khan *et al.*, 2001).

**References**


IUCN Red List 2010. IUCN Red List version 2010.4: Table 5. Threatened species in each country (totals by taxonomic group).


