



## বীৰঘৰা মহাবিদ্যালয়, বঙাইগাঁও

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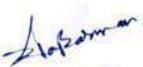
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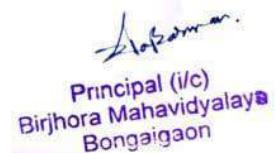
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An Initiative of  
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Department of Science and Technology (DST)  
Ministry of Science and Technology  
Government of India



Proceeding of DST Sponsored National Level Workshop  
On  
'Cyber Security, Crypt Analysis and Security for Physical Infrastructure'



**Organized by :**  
**IQAC, Birjhora Mahavidyalaya, Bongaigaon**

Date : 25<sup>th</sup> to 27<sup>th</sup> June, 2019

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## Cyber Crime: Types and Challenges in India

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### Abstract:

The advancement of technology and development of the internet has increased the concept of cybercrimes. Cybercrimes can be defined as the unlawful acts where the computer is used either as a tool or a target or both. The most common cybercrime includes hackings, bank robbery, web hijacking, credit card frauds, child pornography, cyber terrorism, illegal downloading, industrial espionage, kidnapping children via chat rooms, creation or distribution of viruses, spam, scams etc.

According to National Crime Records Bureau (NCRB) annual cybercrime data report about 12,317 cybercrime cases reported in 2016. This is a 6% rise as compared to 2015. Uttar Pradesh, with 2,639 cases reported the highest number of cases of cybercrime accounting for 21.4% of the total, followed by Maharashtra with 19.3% or 2,380 cases and Karnataka with 8.9% or 1,101 cases in 2016. However, experts say about 90% of cybercrime cases go unreported.

In this communication, author has discussed about the cybercrime and its types.

### 1. INTRODUCTION

Cyber-crimes can be defined as the unlawful acts where the computer is used either as a tool or a target or both. The term is a general term that covers crimes like phishing, credit card frauds, bank robbery, illegal downloading, industrial espionage, child pornography, kidnapping children via chat rooms, scams, cyber terrorism, creation and/or distribution of viruses, Spam and so on.

Cyber-crime is a broad term that is used to define criminal activity in which computers or computer networks are a tool, a target, or a place of criminal activity and include everything from electronic cracking to denial of service attacks. It also covers the traditional crimes in which computers or networks are used to enable the illicit activity.

### 2. DIFFERENT KINDS OF CYBER CRIMES

The different kinds of cybercrimes are as follows:

#### i. Unauthorized Access and Hacking:

Unauthorized access means any kind of access without the permission of either of the rightful or person in charge of the computer, computer system or computer network. Hacking means an illegal intrusion into a computer system and/or network. Every act committed towards breaking into a computer and/or network is hacking. Hackers write or use ready-made computer programs to attack the target computer. They possess the desire to destruct and they get the kick out of such destruction. Some hackers hack for personal monetary gains, such as to stealing the credit card information, transferring money from various bank accounts to their own account followed by withdrawal of money. Government websites are the most targeted sites for the hackers.

#### ii. Web Hijacking:

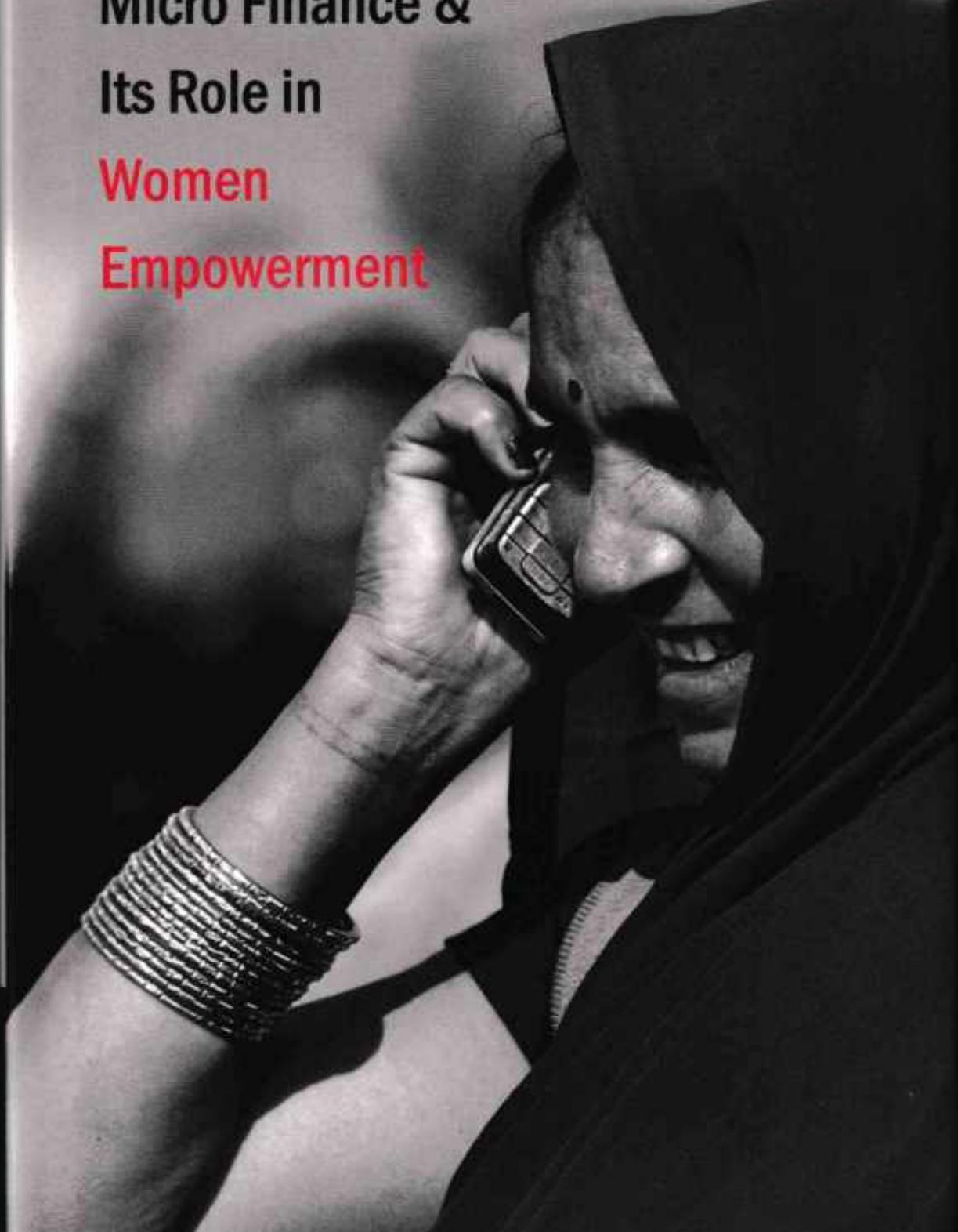
Web hijacking means taking forceful control of another person's website. In this case the owner of the website loses control over his website and its content.

#### iii. Pornography:

Pornography means showing sexual acts in order to cause sexual excitement. The definition of pornography also includes pornographic websites, pornographic magazines produced using computer and the internet pornography delivered over mobile phones.

EASTERN

# Micro Finance & Its Role in Women Empowerment



Edited by Tarun Kumar Bahadur

# Micro Finance & Its Role in Women Empowerment

**Editor**

*Tarun Kumar Bahadur*



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Guwahati-1

**Tarun Kumar Bahadur**

Micro Finance & Its Role in Women Empowerment

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## Role and Scope of Micro Credit in Agricultural Development among Marginal and Small Land Holdings in Assam with special reference to Bongaigaon and Goalpara Districts

*Hemanta Kumar Saad*

### Introduction

Credit is an instrument that enables farmers to acquire commands over the use in working capital, fixed capital and consumption goods. Agricultural development through employing modern inputs is possible when farmers are provided easy and cheap credit. Farmers who got credit facility were found to be more responsive to the adoption of improved agricultural technology. The emergence of Green Revolution and introduction of new technology in agriculture has led the increasing demand for disbursing credit to most of the farmers. Traditionally, farmers depended for their credit needs on local moneylenders, friends and relatives, local merchants and commission agents. Increasing dependency on informal sources of credit by rural households from 1991 onwards is a cause of concern in India (Tripathy, 2015). NSSO estimated that 48.6 percent of India's farm households were indebted, of which 61 percent had operational holdings below one hectare; 57.7 percent of the outstanding amount was sourced from institutional channels (including government) and rest 42.3 percent from money lenders, traders, relatives and friends. According to NSSO 70<sup>th</sup> round data, as much as 40 percent of the finances of farmers still comes from informal sources, despite an increase in the flow of institutional credit to agriculture in recent years. Usurious money lenders account for a 26 percent share of total agricultural credit (Economic Survey, 2014-15). Marginal land holding households suffered the most with only 15 percent of their credit being sourced from

institutional sources (NSSO). The latest All India Debt and Investment Survey have shown that non-institutional financial agencies accounted for as much as 44 percent of the outstanding credit in 2012-13 (Hoda & Tewary, 2015). Hence, institutionalization of rural credit system was thought of as an alternative.

Micro finance is playing a very vital role towards the up-liftment of marginalized section of the rural community in India. The growth of microfinance has emerged out of the failure of development financial institutions and national commercial banks to sustainably meet the needs of poor rural populations in developing countries. In contrast to microcredit (i.e. loans), microfinance addresses a wider range of financial services. Microfinance services are provided by three types of sources (Asian Development Bank, 2000)—(a) Formal institutions, such as rural banks and cooperatives; (b) Semiformal institutions, such as NGOs; and (c) Informal sources such as money lenders and shopkeepers (Roy, 2012). In India, between 2000 and 2007, only 8 percent of credits disbursed by the microfinance sector, dominated by the Self-Help Group model, went to agriculture (Solène Morvant-Roux, 2008).

In a poor agricultural state like Assam where savings are negligible among the small farmers, agricultural credit appears to be a critical factor affecting agricultural productivity. Credit disbursement per hectare in Assam is far below to the national average. By 1996-97 per hectare credit disbursed in Assam was only about 30 percent of the national average. Agricultural credit requirement per hectare of cropped area is substantially high in Assam as compared to credit availability. So the relevance of microfinance assumes great significance in the state of Assam. Micro finance can play an important role for financing agricultural sector of the state. Innovative credit products, the self-help groups (SHGs)-bank linkage programme, launched in 1993-94 for providing micro-finance to the rural poor has been proved to be the most cost effective credit delivery system in India.

To examine the scope of credit access and the role of micro finance in agriculture, a field study has been undertaken in the districts of Bongaigaon and Goalpara in western part of Assam in 2016. The economy of Bongaigaon and Goalpara districts are basically agrarian in nature with about 75 percent of the population dependent on agriculture. The land holding sizes of farmers are mostly marginal and small. Paddy is the major crop in the districts. Besides, oil seeds, pulses, cash crop like fruits, vegetables, jute, rubber, etc. are also grown. However, in the study area scope of credit access is very much limited and function of micro finance in agricultural sector is not encouraging. Thus, realizing the necessity of micro finance for rural transformation, the proposed paper attempted to examine the scope of micro finance and SHGs-bank linkage programme as an instrument for agricultural development in Assam which can be supplemented by the findings of the study in Bongaigaon and Goalpara Districts of Assam.

## Review of Literature

Researches and agriculturists have established a strong positive correlation of agriculture with credit. Direct agriculture credit has significant positive impact on agriculture output. Das, et al (2009) said, change in per capita agriculture direct credit (amount outstanding) by one percent will lead to increase in per capita agriculture output by 0.11 percent. But small and marginal farmers faced problems to access credit and deprived from cheap and timely credit by any cause.

Majority of peasants in developing countries are still excluded from the banking system. Bank penetration rates in agricultural regions of Africa and South Asia are barely over 5-6 percent (Bachelier, 2007). In developed countries, agricultural banks played an important role in modernization of agriculture. In developing countries, micro finance has the potential to play this role, given its advantage in terms of proximity to the client with co-operative approaches. Microfinance helps farmer access credit to improve their competitiveness (Solène Morvant-Roux, 2008). In the 1980's, the failure of government-led credit supply gave way to a new paradigm and a renewed approach to rural and agricultural finance in developing countries. State-owned development banks closed, financial sectors were liberalized and microfinance evolved. Based on an approach that encourages financial intermediation, the new rural finance paradigm redefined the roles of the various factors involved in providing financial services, especially governments. Public subsidies were redirected towards creating new microfinance institutions (MFIs) that were supposed to achieve financial sustainability thanks to cost-covering interest rates.

With the recommendation of the Narasimham Committee on the liberalization of financial system, function of the commercial banks has been restricted in rural areas. Banks were to be permitted to close rural branches, in the name of rationalization of branch networks and for its profitability. The growth of commercial banks' lending to agriculture and allied activities witnessed a substantial decline in the 1990s as compared to the 1980s. Agriculture's share in scheduled commercial banks' total outstanding credit as on 31st March 2005 was only Rs. 1,12,475 crore. The total agricultural lending by commercial banks is lower than credit in "personal loans" which stood at Rs. 2,66,988 crore, comprising advances for housing and consumer durables (Roy, 2012). Growth in credit to agriculture declined from 6.8 percent in the 1980s to only 2.6 percent in the 1990s. However, agricultural advances to total advances increased from 16.60 percent in 2010-11 to 18.88 percent (RBI benchmark is 18%) in 2011-12. The flow of credit to agriculture by commercial banks and regional rural banks (RRBs) taken together increased from Rs.5402 crore in 1991-92 to Rs.141,082 crore in 2005-06 in India (increased by 141 percent or about 26 times; 25.13

percent in CAGR). But the flow of credit from the co-operative sector was much slower (12.5 percent in CAGR) to commercial banks including RRBs. Share of RRBs was merely 9.8 percent in 2012-13 (RBI, 2010 & 2014a). Scheduled commercial bank's outstanding advances to agriculture has shown a high rate of growth of 59.2 percent in case of loans to NBFCs and 29.5 percent in case of NGOs for lending to individual farmers or SHGs and also for loans to agri-clinics and agri-business centres (Goyal, 2014). The fact is that financing agriculture is generally more costly, risky and less profitable than other forms of financing.

Commission for Agricultural Cost and Pricing (CACP) (2011) report mentioned that the credit growth by the co-operatives to the agriculture sector has relatively increased, but is not getting translated into more number of new accounts. Between 2002 and 2011, agricultural credit grew by 17.6 percent per annum, but there is little evidence to argue that the major beneficiaries of the revival in agricultural credit in the 2000s have been the small and marginal farmers (Ramakumar, 2014). In the whole process small and marginal farmers are usually left out of the purview of formal credit (Satyasai, 2012) or they are often not accessible due to lack of required collateral. The flow of credit from commercial banks has benefited largely the big farmers in comparison to the small and marginal farmers. There is a wide gap between the loan accounts and credit disbursal to small and marginal farmers and big farmers during 1985-86 to 2011-12. During 2011-12, 77.8 percent of loan accounts of small and marginal farmer received 63.5 percent of total disbursed credit whereas 22.2 percent of loan accounts belonging to the large farmer obtained 36.5 percent of total loan amount disbursed (Tripathy, 2015). Ahmed (1998) said that the interest rates of moneylenders and private finance companies vary from 36 percent to 100 percent per annum. Datt & Mahajan (2013) expressed that the small and marginal farmers who have borrowed from money lenders, normally at the rate of 36 percent per annum. In post reform era, there has been indifference in extending credit to agriculture. Neither the Government nor the RBI, bothered to reverse the trend despite this being pointed out by Planning Commission and by other experts. Very silently definition of agriculture credit was broadened which allowed big loans also to be included under this category. In post reforms, the banking system has mobilized more deposits from farmers and extended less credit to a declining number of farmers. Deficient, inappropriate or lack of collateral, credit rationing, lender preferences for high-income customers borrowing large amounts, and bureaucratic procedures in the formal financial sector are often identified as key factors contributing to low access to credit among most rural agricultural farmers. Table 4.1 shows the proportion of operational holdings availing institutional credit in India.

**Table 4.1 Proportion of Operational Holdings Availing Institutional Credit at all India Level From 1981-82 to 2006-07**

Operational holdings size-group	Proportion of operational holdings availing institutional credit (in %)						Increment in 2006-07 over 2001-02(in %)
	1981-82	1986-87	1991-92	1996-97	2001-02	2006-07	
Marginal	17.53	14.78	15.68	9.50	14.02	19.6	4.6
Small	27.42	24.12	17.90	17.63	27.74	32.8	5.0
Semi-medium	31.03	29.27	21.53	19.90	31.57	34.5	3.0
Medium	33.24	30.16	22.45	23.10	33.13	39.4	6.3
Large	33.19	29.40	22.48	23.04	29.38	40.1	10.6
Overall	23.09	20.10	17.53	13.41	20.24	25.0	4.75

Source: (i) Satyasai, K.J.S., (2012); (ii) *Access to Rural Credit and Input Use: An Empirical Study*: Agricultural Economic Research Review, Vol.25 (Conference Number) pp 461-471

Institutional credit to overall operational holdings has been decreased from 23.1 percent in 1981-82 to 13.4 percent in 1996-97 while a gradual improvement is seen and after a decade it reached to 25 percent. Proportion of marginal land holdings availing institutional credit is all along lower than other size of land holdings from 1981-82 to 2006-07.

In India, despite all the efforts, the growth of microfinance through SHGs is not even in all the regions. The poor socio-economic status and the dismal scenario of banking system in the North Eastern states breed the appropriate ground for growth of microfinance programme in the region but only five percent of the total SHGs of India are concentrated in NE states. Per SHG saving is also found to be the minimum in the region. Loaning performance of SHGs has improved over the years in the NE region but still lagging behind in comparison to other parts of India. The analysis of credit availability indicates that direct short-term credit per hectare in the northeastern India is less than Rs.100/ against a national average of Rs.421.50 per hectare (Baruah and Sarma, 2001).

It was only during the early part of the 20<sup>th</sup> century that the credit structure of Assam took some concrete shape. The money lenders had freehold upon the credit field and earned big profits on usury without check. Government also provided loans in times of natural calamities but the proportion of such loans was quite insignificant. The money lenders retained the predominant hold even after banking institutions like the co-operative credit societies, banks loan offices, etc. grew up. Because of poor development of the commercial banks in the state, especially in rural areas they accounted for less than one percent of the credit supply in most districts. The *Kabuliwalas* were found engaged in their usurious business of money lending all over Assam (Gazetteer of India: Assam State, 1999).

Improper utilization of credit often results in poor repayment and cause huge outstanding<sup>1</sup> and constrained the financial institutions to provide credit to agriculture sector (Bhawmick et. al., 2005). Crop loan recovery decreased from 73 percent to 70 percent and agri-loan recovery decreased from 67 percent to 61 percent during 2010-11 to 2011-12 (Profile of Agri-Horti Sector of Assam, June, 2012).

Borbora & Mahanta (2005) noticed that, in Assam, even though the incidence of indebtedness is less in comparison to other major states in India, the use of credit for productive purposes was found to be as low at 7.8 percent. As a result, there is not much improvement in farm productivity.

Bhawmick, et al(2005) said, agriculture in the state is severely capital starved. Without improving the micro credit system, it is not possible to improve the agricultural scenario in Assam as most of the farmers belong to the marginalized category.

Majority of the MFIs of Assam do not require any collateral to provide loan to their clients. A few MFIs require some collateral preferably cash in the form of savings account balance maintained with the particular MFI. Roy, (2012) found that majority (94.1%) of the MFIs in Assam are giving loan to their clients for agricultural purposes. It has been observed that around 94 percent of the sample MFIs provides agricultural finance to the small scale farmers in the state of Assam. Only about 6 percent of the sample MFIs provide loan to its clients for non agricultural purposes. Thus, from the above observations it is clear that the MFIs are playing crucial role for the development of the small scale agriculture in Assam by providing required loan for the agricultural activities. The MFIs of Assam are earning higher return on assets (ROAs) of 9.43 percent compared to the national average ROA of 1.40 percent during 2008-2010 and this result is found to be statistically significant at 5% level of significance. Moreover, MFIs of Assam are also earning higher return on equity (ROEs) of 19.83 percent compared to the national average ROE of 12 percent during 2008-2010 and this result is found to be statistically significant at 5% level of significance.

### **Research Problem**

With the backdrop of the poor performance of institutional sources in farming sector which is lying behind to the national average; growth of micro finance and self help group-bank linkages programme could draw scope to extend credit for agricultural development in the state. However, in spite of various incentives, present role of microfinance through SHGs is not encouraging and its impact on agricultural development is negligible in Bongaigaon and Goalpara districts.

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<sup>1</sup> Average amount of debt per household with outstanding loan in India on 30 June , 2012 was 103457 (Kumar et al, 2015)

### **Objectives of the Study**

The twin basic objectives of the study was to investigate the scope and role of the micro finance and self help group programme to be played in agricultural development and to evaluate the performance of present micro finance and self help group-bank linkages programme in agricultural development in two districts of western Assam. The study will prescribe policy for effective functioning of the concept of micro finance and SHG in the farm sector.

### **Methodology**

The study has been conducted by collecting secondary and primary data. We have surveyed different published literature and report of the government and researchers for framing the research problem and to support the statement of the problem. Primary data of the study have been collected by sample survey of 253 farmers of Goalpara and Bongaigaon district. Sample is drawn by multiple random sampling methods selecting 8 to 12 farmers each from 25 villages of two districts. Simple statistical tools adopted to analyze the data.

### **Findings and Discussion**

Increased availability of institutional credit and other capital inputs will encourage further private investment. However, in Assam, either for land development or infrastructure or acquiring assets it is very meager especially from the standpoint of farmers' owing to their weak economic background. Credit disbursement per hectare in Assam is far below the national average. By 1996-97 per hectare credit disbursed in Assam was only about 30 percent of the national average (Goyari, 2007). The credit use in agriculture in the state as on 1998 stood at Rs.791/- per hectare against the national average of Rs.3633/- per hectare. Farm level studies on agricultural credit show that credit requirement per hectare of cropped area is substantially high in Assam as compared to credit availability. Agriculture credit availability in Assam was Rs.9120/- per hectare against Rs.15380/- per hectare in all India in 2012 (Profile of Agri-Horti Sector of Assam, June, 2012). The overall credit-deposit (C-D) ratio amongst banks in Assam has been low. In 2002-03, credit-deposit ratio of commercial banks in Assam was 33 percent against 53.1 percent in all-India (Agriculture Development in Assam, 2001-02 & 2002-03). Moreover, the per capita deposit and per capita credit for the state as a whole stands at Rs.18,654 and Rs.7,845 respectively, that is C-D ratio of all banks in Assam stood at 39.71 percent as on 31st March, 2011 which is much lower than the national norm of 60 percent. With the growing credits in the state, the C-D ratio of all scheduled commercial banks in Assam has been increased to 37.3 percent as on March 2012 compared to all India ratios of 78.1 percent (Economic Survey, Assam, 2012-13; Profile of Agri-Horti Sector of Assam, June, 2012). In such a situation agriculture is no exception to this. As on

31st March 2011, the state has banking network comprising 27 Commercial Banks (22 Public Sector Banks and 5 Private Sector Banks), 2 Regional Rural Banks and 1 state Co-operative Bank. Banking services are provided through a network of 1569 branches of all the banking agencies. The number of bank branches per lakh of population in Assam is much lower than the national average and the average number of people covered by a bank is much higher, around 20 thousand in Assam in comparison with some other states of India and all India average of 14 thousand as on March, 2011 (Das, 2012). Area covered by each banks branch is 47 sq km; average population under each branch is 18700 compared to less than 14000 in all India in 2011-12 (Profile of Agri-Horti Sector of Assam, June, 2012). The location of the bank branches reveals that 54 percent are located in rural and 25 percent in semi-urban areas (Government of Assam, 2012; NABARD, 2013).

However, in spite of vast network of bank branches, still many villages in the state do not have access to banking facility. Out of total allocation of 842 villages during 2010-11 to all the banking agencies, 559 villages were covered by State Bank of India and Assam Gramin Vikash Bank as on 31st March, 2011 (State Bank of India, 2011). That means still 283 villages are uncovered by said banking service. Although agriculture is one of the biggest recipient of credit from commercial banks, the major amount has been absorbed by plantation sector (about 95 percent of the total other agricultural credit) while in other major plantation states like West Bengal, Tamil Nadu, Andhra Pradesh etc., such discrimination to rural cultivators does not exist. This shows that agriculture and allied occupations in the vast rural areas of the state have been very badly neglected by the national scheduled commercial banks. Thus, it can be reinforce by micro finance and can play significance role in the state agriculture. Table 4.2 shows the branch network of banking agencies in Assam and in two districts studied.

**Table 4.2 Branch Network of Banking Agencies in Assam and Bongaigaon and Goalpara as on 31st March, 2011**

Sl. No.	Category	No. of Bank Branches		
		Goalpara	Bongaigaon	Assam
1	Commercial Bank	37	27	1093
2	Regional Rural Bank	13	11	408
3	State Govt. undertaking Bank/ Cooperative Banks	04	02	68
Total		54	40	1569

Source: NABARD (2013b)

Small and marginal  
Both in case of per hectare  
Assam is considerably lower  
average credit per operational holding  
in All-India, Punjab and Haryana

**Table 4.3 Average Credit Holding in All-India**

State	Marginal farmers		Small farmers
	Per OH	Per ha	
All-India	4291	7754	1021
Punjab	18630	13751	3062
Assam	339	709	567

OH= Operational holding.

Source: Agricultural Economics

At the country level, the average credit holding per hectare is Rs. 1021/- followed by small (Rs. 7754/-) and large (Rs. 2953/-) farmers. It is inversely related to the size of holding. The maximum credit holding per hectare in all-India is Rs.8425/- on average. The credit holding available by marginal farmers is Rs. 4291/- which is about 5 times more than the maximum credit holding per hectare in Assam both in terms of holding size and per hectare. The credit holding per hectare in the small farmer class was quite small.

Banks extends credit to agriculture in rural areas have not been able to cover the smaller fragment of land holding. The rate most of the commercial banks provide loans to agriculture is high. Nationalized banks provide long term loans except on agriculture. Marginal farmers are dependent on money lenders. The money lenders provide loans on the harvest of crops. The money lenders in Bongaigaon is very high due to backwardness and agricultural advance.

Small and marginal farmers in the state are deprived from institutional credit. Both in case of per hectare credit advances and per capita credit to agriculture, Assam is considerably lower than the all-India averages. Table 4.3 shows the average credit per operational holding and per cropped hectare by size category in All-India, Punjab and Assam during 2006-07.

**Table 4.3 Average Credit Obtained per Cropped Hectare and per Operational Holding in All-India, Punjab and Assam in 2006-07 (In Rupees)**

State	Marginal farmers		Small farmers		Semi-medium farmers		Medium farmers		Large farmers		All farmers	
	Per OH	Per ha	Per OH	Per ha	Per OH	Per ha	Per OH	Per ha	Per OH	Per ha	Per OH	Per ha
All-India	4291	7754	10212	6024	16899	5113	29246	4572	45689	2953	8425	5580
Punjab	18630	13751	30629	11046	52648	10096	105780	9456	166395	5727	67722	8009
Assam	339	709	567	431	733	287	1544	321	2577	228	472	455

OH= Operational holding, ha: Hectare

Source: Agricultural Economics Research Review, Vol.25 (Conference Number) 2012.

At the country level, an average loan of Rs.5580/- could be obtained per hectare. The marginal farmers could obtain maximum amount (Rs.7754/ha), followed by small (Rs.6024/ha), semi-medium (Rs.5113/ha), medium (Rs.4572/ha) and large (Rs.2953/ha) farmers. Thus, credit amount per unit cropped area was inversely related to farm-size. Credit obtained per operational holding was Rs.8425/- on all-India basis with the ratio between what large farmers obtained to that availed by marginal farmers of almost 10. Punjab farm-households obtained the maximum credit of Rs. 67722/- per operational holding while in Assam the amount is a meager Rs.472/- by a farm-household. Thus, credit availability in Assam both in terms of per operational holding as well as per hectare in each size-class was quite small compared to Punjab and to all-India average.

Banks extends credit only against security but the majority of the cultivators in rural areas have no such tangible assets to mortgage as security. Because of smaller fragment of land, lack of proper collateral guarantee, and poor repayment rate most of the commercial banks refuse to give loan to the farmers. The nationalized banks provide only long-term loans and are reluctant to give short-term loans except on security. As a result, a vast majority of the rural poor and marginal farmers are to approach the money lenders and are still in the grip of money lenders. The small peasants are compelled to make a 'distress sale' of their agricultural products at a very low price in order to repay the loan just after their harvest of crops. The performance of the credit institutions in the district of Bongaigaon is very poor in lending to agricultural sector. Percentage of agricultural advance to total advance as on 31<sup>st</sup> March 2005 was 6.3 percent. The

population coverage of banking services is estimated to be 26,613 persons per bank office in 2006 which was quite high to the state average. The C-D ratio in the district which stands at 47.18 percent is much lower than the stipulated norm of 60 percent.

The *Kisan Credit Card* (KCC) scheme introduced as a step towards simplifying the procedure for timely and adequate short-term institutional credit to farmers. However, only 15 percent farmers have been provided *Kishan Credit Cards* (KCC) to the farmers in the state. Percentage of operational holding covered by KCCs in 2009-10 was 17.90 percent (Agricultural Statistics at a Glance, 2010). The cumulative position of issuance of KCC as on 31<sup>st</sup> March, 2003 was 52180 with Rs.4559.21 lakhs as amount sanctioned and Rs.2675.79 lakhs as amount disbursed against a target of one lakh KCC for the 2002-03 (Agriculture Development in Assam, 2001-02 & 2002-03). That means only 58.7 percent loan sanctioned has been disbursed. The cumulative targets and achievements of KCC issued upto 2011-12 in Goalpara district was 94039 and 46545 (49.5%) while in Bongaigaon district it was 57424 and 38530 (67.10%). In Assam achievement rate was 48.59 percent.

### **Status of Microfinance in Assam and in the Study Area**

Both the models of micro finance operational in India, i.e., SHG-Bank Linkage Model and MFI-Bank Linkage Model are also operational in Assam. But the micro finance programme in the state has not progressed in the same manner as it has progressed in other parts of the country up to 1999-2000. This was mainly because of the lack of awareness and exposure among the various stakeholders which was also seen in the field survey. However, there has been visible progress under SHG-Bank Linkage Programme from the year 2000-01 onwards. During 1998-99, only 14 SHGs were provided with bank loan of Rs.2.07 lakh which has increased to 29094 SHGs with bank loan of Rs.22715.61 lakh during 2010-11 representing a CAGR of 89 percent and 117.12 percent respectively. As on 31<sup>st</sup> March 2011, the Regional Rural Banks are in the lead position had the maximum share (55.7 percent) in terms of number of SHGs savings linked and with 64.7 percent share provided bank loan followed by Commercial Banks (34.5 percent) and Co-operative Banks (9.7 percent). On the other hand, in terms of savings amount, the Commercial Banks had the maximum share (55.8 percent) followed by Regional Rural Banks (34.8 percent in SHGs savings and 27.6 percent in bank loan) and Co-operative Banks (9.4 percent in SHGs savings and 7.7 percent in bank loan). The Regional Rural Banks are also in the lead position in terms of volume of bank loan disbursed to SHGs during 2010-11 with 43.3 percent share followed by Commercial Banks with 42.4 percent share and Cooperative Banks with only 14.4 percent share. Table 4.4 states the growth of SHGs and their bank linkage in Assam and in two districts studied.

**Table 4.4 Performance of SHGs in Terms of Savings, Bank Loan Disbursed and Bank Loans Outstanding in Bongaigaon, Goalpara and Assam  
(As on 31st March 2011)**

District	In terms of Savings			In terms of Bank Loan Disbursed			In terms of Bank Loans Outstanding		
	No. of SHGs	Amount of Saving (Rs. lakh)	Per SHG Saving (Rs.)	No. of SHGs	Bank Loan Disbursed (Rs. Lakh)	Per SHG Bank Loan Disbursed (Rs.)	No. of SHGs	Bank Loan OS (Rs. Lakh)	Per SHG Bank Loan OS (Rs.)
Bongaigaon	4486	135.09	3011	532	381.89	71784	1111	617.08	55543
Goalpara	4151	100.33	2417	510	485.83	95261	1492	536.1	35932
Assam	160523	3653.64	2276	21052	13084.3	62152	58345	22252.69	38139

Source: NABARD, Regional Office, Guwahati.

Table 4.4 expressed that the status of SHGs in Bongaigaon district is better to Goalpara district in terms of number of SHGs having savings. However, in terms of bank loan disbursed and bank loan outstanding, Goalpara district is in favoured to Bongaigaon district. Per SHG bank loan disbursed for the Bongaigaon District is Rs.71784/- which is higher than the State's figure of Rs.62152/-, is still quite low than the national figure of Rs.1,21,623/-. Bongaigaon is in 9th rank with bank loan disbursed of Rs. 381.89 lakh among 532 number of SHGs. Whereas in Goalpara district, bank loan disbursed of Rs.485.83 lakh among 510 number SHGs and per SHG bank loan disbursed is Rs.95261/- higher than Bongaigaon district and State average as well and ranked 3 among the districts of Assam (Official Records of NABARD Regional Office, Guwahati). It is observed that the per SHG bank loan outstanding as on 31st March 2011 in the state of Assam in only Rs. 8,139/- which is much lower than the per SHG bank loan outstanding of the country as whole which is Rs.65,224/-. In Goalpara district, 1492 number SHGs have Rs.536.1 lakh bank loan outstanding or Rs.35932/- per SHG bank loan outstanding with rank 15<sup>th</sup> while in Bongaigaon district 1111 number SHGs have Rs.617.08 lakh bank loan outstanding or Rs.55543/- per SHG bank loan with rank 5<sup>th</sup> in the state.

Demand for credit for current investment (crop loan) was highest among small cultivator households in the sample villages in both districts. Although Self Help Groups were formed but farmers did not aware much and sometime face problems to access credit from these groups. Out of the 253 paddy farmers interviewed during the field study in Goalpara and Bongaigaon district, 51 can received KCC loan where 23 out of 127 farmers interviewed in Goalpara district and 28 out of 126 farmers interviewed in Bongaigaon district. Out of 23 farmers in Goalpara only 3 have fully repay their loan while 12 not repay at all and 8 have partially repaid. In Bongaigaon district out of 28 farmers received KCC loan, 7 have completely repaid the loan while 8 not at all but 13 have partially repaid their

loan. Only 35 farmers among 253 respondents are member of any self-help groups, 32 in Goalpara district and 3 in Bongaigaon district. Farmers seldom realize the benefit of forming SHGs and its importance for micro-finance.

### Conclusion and Recommendations

The concept of micro finance and self help group-bank linkages were developed to extend help to the small and marginal growers of the country. Although status of micro finance in the districts of Bongaigaon and Goalpara is significant, performance in the study area was very poor. Lesser number of farmers is associated with the self help group and can access insufficient credit for agricultural development in the study area. NABARD and other government agencies of course promoting self-help groups but scopes for extending helps are still wide. More functional implications are requiring to active the micro finance schemes for the benefit of the rural and needy farmers. Professional attitude to be grow among the farmers. Training, awareness, exposure, etc. to be enhance for motivating the farmers to form self help groups, make it more active, accountable and sustainable.

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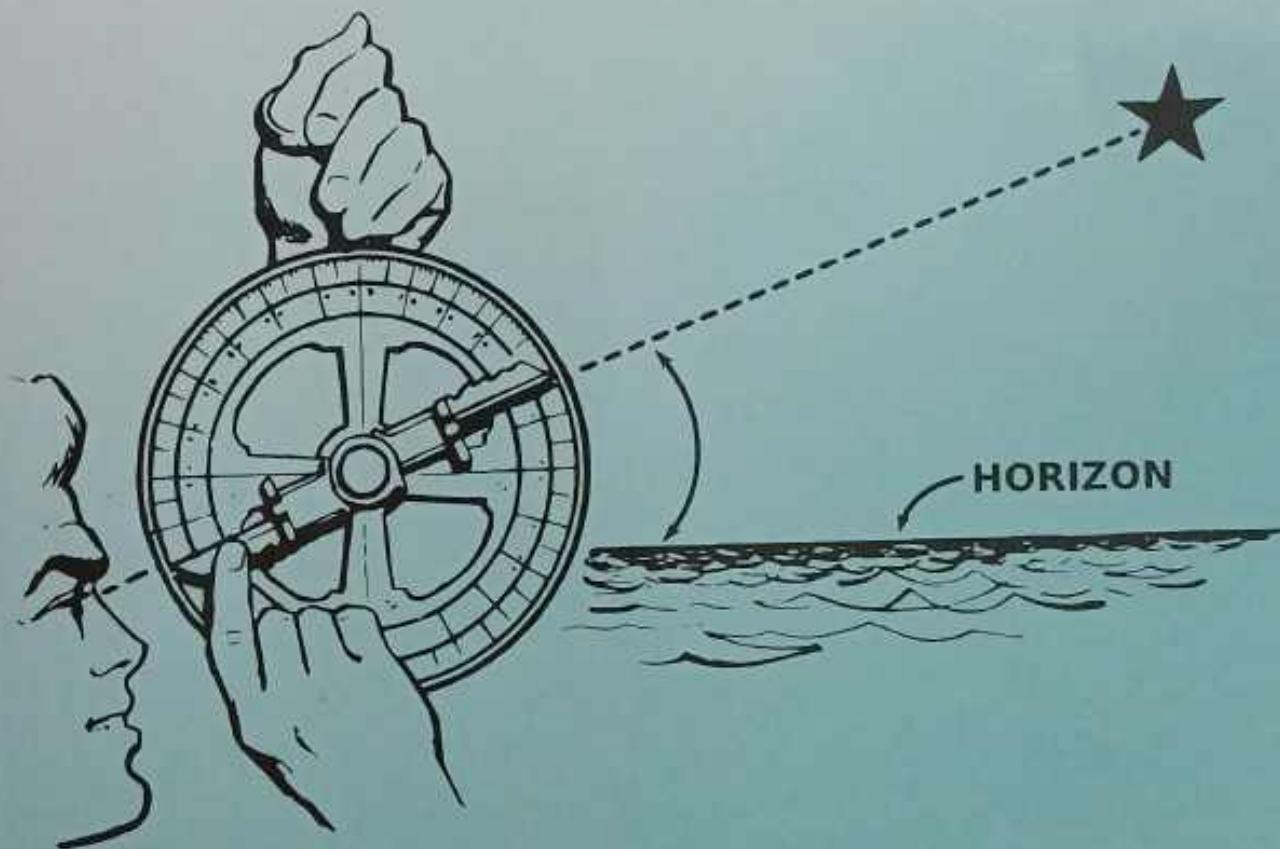
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# FLOWERING PLANTS OF INDIA

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DICOTYLEDONS

Volume - II



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**PEDALIUM** D. Royen, Syst. Nat., ed. 10, 2: 1123. 1759.

01 species

**Pedalium murex** L., Syst. Nat., ed. 10, 2: 1123. 1759.

Andhra Pradesh, Bihar, Delhi, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Puducherry, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, West Bengal.

**SESAMUM** L., Sp. Pl. 2: 634. 1753.

05 taxa (04 species; 01 infraspecific)

**Sesamum alatum** Thonn., Beskr. Guin. Pl.: 284. 1827.*Volkameria alata* (Thonn.) Kuntze, Revis. Gen. Pl. 2: 482. 1891.*Sesamum ekambaramii* Naidu, J. Bombay Nat. Hist. Soc. 51: 698. 1953.

Andhra Pradesh, Karnataka, Kerala.

**Sesamum indicum** L., Sp. Pl. 2: 634. 1753.*Sesamum orientale* L., Sp. Pl. 2: 634. 1753.*Sesamum luteum* Retz., Observ. Bot. 6: 31. 1789.*Sesamum occidentale* Heer & Regel, Index Seminum (Zurich) 1842: [4, adnot. 5]. 1842.*Volkameria orientalis* (L.) Kuntze var. *indica* (L.) Kuntze, Revis. Gen. Pl. 2: 481. 1891.subsp. **indicum**

Almost throughout India.

subsp. **malabaricum** (Burm.) Bedigian, Novon 23: 6. 2014.*Solanum malabaricum* Burm., Fl. Malabar. Ind.: 4. 1769.*Solanum mulayanum* N.C. Nair, Bull. Bot. Surv. India 5: 251. 1964.*Solanum radiatum* sensu M.V. Ramana, J. Econ. Taxon Bot. 35: 642. 2011, non Thonn. ex Hornem., 1806.*Solanum orientale* L. var. *malabaricum* G.V. Narayana, Madras Agric. J. 37: 48. 1950, nom. inval.

Endemic to India: Goa, Haryana, Kerala, Maharashtra, Punjab, Rajasthan, Uttar Pradesh.

**Sesamum prostratum** Retz., Observ. Bot. 4: 28. 1786.*Sesamum laciniatum* Klein ex Willd., Sp. Pl., ed. 4, 3: 359. 1800.

Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu.

**Sesamum radiatum** Thonn. ex Hornem., Enum. Pl. Hort. Hafn. Suppl. 2: 12. 1806.*Sesamopteris radiata* (Schumach. & Thonn.) DC. ex Meisn., Pl. Vasc. Gen. 2: 206. 1840.

Kerala.

**CUTIVATED SPECIES****Ceratotheca triloba** (Bernh.) E. Mey. ex Bernh., Bot. Mag. 114: t. 6974. 1888.*Sporledera triloba* Bernh., Linnaea 16: 42. 1842.**ACANTHACEAE**

(W. Arisdason, P. Lakshminarasiyan, K. Karthigeyan, Gopal Krishna, Dinesh Albertson, P. Venu, Debatri Panja

Tinku Ghosh, H.S. Debnath, G. Gnanasekaran, G.V.S. Murthy, D.K. Roy)

40 genera, 479 species 47 infraspecies ( 3 subspecies, 43 varieties and 1 forma)

**ACANTHUS** L., Sp. Pl. 2: 639. 1753.

07 species, including 01 cultivated species.

*Acanthus albus* Debnath, B.K. Singh & P. Giri, Indian J. Forest, 36(3): 411. 2013.

West Bengal (Sundarbans).

**Acanthus carduaceus** Griff., Itin. Pl. Khayah Mts.: 144, 688. 1848.  
West Bengal.

**Acanthus ebracteatus** Vahl, Symb. Bot. 2: 75, t. 40. 1791.  
Andaman and Nicobar Islands, Kerala, Maharashtra, Odisha, Puducherry.

**Acanthus ilicifolius** L., Sp. Pl. 2: 639. 1753.  
Andaman and Nicobar Islands, Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Odisha, Tamil Nadu, West Bengal.

**Acanthus leucostachyus** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 98. 1832.  
Assam, Manipur, Meghalaya, Tripura, West Bengal.

**Acanthus volubilis** Nees in Wall., Pl. Asiat. Rar. 2: 56, t. 172. 1831.  
Andaman and Nicobar Islands, West Bengal (Sundarbans).

**ANDROGRAPHIS** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 77, 116. 1832.  
(G. Gnanasekaran and G.V.S. Murthy)  
26 species and 1 variety.

**Andrographis affinis** Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832; Karthik. & al., Fl. Pl. India 1: 1. 2009.  
*Andrographis neesiana* Wight var. *affinis* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 504. 1884.  
Endemic to India: Karnataka, Kerala, Tamil Nadu.

**Andrographis alata** (Vahl) Nees in A. DC., Prodr. 11: 516. 1847.  
*Justicia alata* Vahl, Enum. Pl. 1: 139. 1804.  
Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**Andrographis atropurpurea** (Dennst.) Alston, Taxon 26: 539. 1977.  
*Justicia atropurpurea* Dennst., Schlüssel Hortus Malab.: 12, 22, 35. 1818.  
*Andrographis wightiana* Arn. ex Nees in A. DC., Prodr. 11: 517. 1847, nom. illeg.  
Endemic to India: Karnataka, Kerala, Tamil Nadu.

**Andrographis beddomei** C.B. Clarke in Hook.f., Fl. Brit. India 4: 506. 1884.  
*Andrographis nallamalayana* J.L. Ellis, Bull. Bot. Surv. India 8: 362. 1967.  
Endemic to India: Andhra Pradesh (Cuddapah, Kurnool, Mahabubnagar and Prakasam districts).

**Andrographis ceylanica** Nees, Compan. Bot. Mag. 2: 313. 1837.  
*Andrographis macrobotrys* Nees var. *parviflora* C.B. Clarke in Hook.f., Fl. Brit. India 4: 503. 1884.  
*Andrographis macrobotrys* Nees var. *ceylanica* (Nees) L.H. Cramer in Dassan., Revis. Handb. Fl. Ceylon 12: 100. 1998,  
nom. superfl.  
Karnataka, Kerala.

**Andrographis chendurunii** E.S.S. Kumar, A.E.S. Khan & S.G. Gopal, Nordic J. Bot. 22: 683, f. A-H. 2004.  
Endemic to India: Kerala (Kollam District).

**Andrographis echiooides** (L.) Nees in Wall., Pl. Asiat. Rar. 3: 117. 1832.  
*Justicia echiooides* L., Sp. Pl. 1: 16. 1753.  
*Indoneesiella echiooides* (L.) Sreem., Phytologia 16: 466. 1968.  
*Erianthera echiooides* (L.) M.R. Almeida, Fl. Maharashtra 4A: 40. 2003.  
*Neesiella echiooides* (L.) Sreem., Phytologia 15: 271. 1967, nom. illeg.  
Almost throughout the country.

**Andrographis elongata** (Vahl) T. Anderson, J. Linn. Soc., Bot. 9: 502. 1867.  
*Justicia elongata* Vahl, Enum. Pl. 1: 130. 1804.  
*Cryptophragmum cordifolium* Nees in Wall., Pl. Asiat. Rar. 3: 100. 1832.  
*Cryptophragmum elongatum* (Vahl) Nees in A. DC., Prodr. 11: 95. 1847.

*Justicia cordifolia* B. Heyne ex Wall., Numer. List: n. 2482a, 1830, nom. nud.

*Justicia clandestina* Russ. ex Wall., Numer. List: n. 2482b, 1830, nom. nud.

Endemic to India: Andhra Pradesh, Kerala, Odisha, Tamil Nadu.

**Andrographis explicata** (C.B. Clarke) Gamble, Fl. Madras 1049, 1924.

*Andrographis viscosa* Nees var. *explicata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 504, 1884.

*Andrographis ceylanica* Wight, Icon. Pl. Ind. Orient. 4(4): 8, t. 1560, 1850, non Nees 1836.

Endemic to India: Tamil Nadu.

**Andrographis glandulosa** (B. Heyne ex Roth) Nees in Wall., Pl. Asiat. Rar. 3: 115, 1832.

*Justicia glandulosa* B. Heyne ex Roth, Nov. Pl. Sp.: 13, 1821.

Endemic to India: Andhra Pradesh, Karnataka.

**Andrographis gracilis** Nees in A. DC., Prodr. 11: 516, 1847.

Endemic to India: Kerala, Tamil Nadu.

**Andrographis lawsonii** Gamble, Bull. Misc. Inform. Kew 1923: 375, 1923, "lawsonii".

*Erianthera lobelioides* Nees in Wall., Pl. Asiat. Rar. 3: 115, 1832.

*Erianthera lobelioides* Nees var. *ovalifolia* Nees in DC., Prodr. 11: 515, 1847.

Endemic to India: Karnataka, Kerala, Tamil Nadu.

**Andrographis lineata** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 116, 1832.

*Justicia lineata* Wall., Numer. List: n. 2486a, 1830, nom. nud.

*Andrographis neesiana* Wight var. *lineata* (Wall. ex Nees) Sreem. in B.D. Sharma & al., Biol. Mem. 2: 104, 1977, nom. illeg.

*Andrographis beddomei* sensu G. Babu & al., J. Econ. Taxon. Bot. 30: 391, 2006, non C.B. Clarke, 1884.

var. **lineata**

Endemic to India: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

var. **lawii** C.B. Clarke in Hook.f., Fl. Brit. India 4: 505, 1884.

*Andrographis affinis* sensu T. Anderson, J. Linn. Soc., Bot. 9: 502, 1867, non Nees 1832.

Endemic to India: Karnataka (Bellary, Chikkaballapur, Chikkamagaluru and Chitradurg districts).

**Andrographis lobelioides** (Wall. ex Nees) Wight, Ill. Ind. Bot.; t. 164b, f. 11, 1850.

*Erianthera lobelioides* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 115, 1832.

*Justicia lobelioides* Wall., Numer. List: n. 2484, 1830, nom. nud.

Endemic to India: Tamil Nadu (Coimbatore, Dindigul [?] and Nilgiris districts).

**Andrographis longipedunculata** (Sreem.) L.H. Cramer ex Karthik., Sanjappa, Moorthy, Fl. Pl. India 1: 3, 2009.

*Neesiella longipedunculata* Sreem., Phytologia 15: 271, 1967.

*Indoneesiella longipedunculata* (Sreem.) Sreem., Phytologia 16: 466, 1968.

*Erianthera longipedunculata* (Sreem.) M.R. Almeida, Fl. Maharashtra 4(A): 41, 2003

*Andrographis longipedunculata* (Sreem.) L.H. Cramer ex Gnanasek. & Kottaim., Int. J. Curr. Res. Biosci. Pl. Biol. 6(10): 33, 2019, isonym.

*Andrographis longipedunculata* L.H. Cramer, Kew Bull. 51: 555, 1996, nom. inval.

Almost throughout the country.

**Andrographis macrobotrys** Nees in A. DC., Prodr. 11: 516, 1847.

Karnataka, Kerala, Tamil Nadu.

**Andrographis megamalayana** Gnanasek., Karupp. & G.V.S. Murthy, Phytotaxa 244(1): 89, 2016.

Endemic to India: Kerala (Idukki District), Tamil Nadu (Dindigul and Theni districts).

**Andrographis neesiana** Wight, Icon. Pl. Ind. Orient. 4(4): 8, t. 1561, 1850.

*Andrographis lineata* Wall. ex Nees var. *neesiana* (Wight) Fyson, Fl. Nilgiri Pulney Hill-Tops: 315, 1915, syn. nov.

Endemic to India: Karnataka (?), Kerala, Tamil Nadu.

**Andrographis paniculata** (Burm.f.) Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832.

*Justicia paniculata* Burm.f., Fl. Ind.: 9. 1768.

*Andrographis subspathulata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 502. 1884.

Almost throughout the country.

**Andrographis producta** (C.B. Clarke) Gamble, Fl. Madras 1049. 1924.

*Andrographis neesiana* Wight var. *producta* C.B. Clarke in Hook.f., Fl. Brit. India 4: 504. 1884;

Endemic to India: Karnataka, Kerala, Maharashtra (?), Tamil Nadu.

**Andrographis rothii** C.B. Clarke in Hook.f., Fl. Brit. India 4: 506. 1884.

*Andrographis lobelioides* (Wall. ex Nees) Wight var. *composita* C.B. Clarke in Hook.f., Fl. Brit. India 4: 505. 1884.

Endemic to India: Tamil Nadu (Tirunelveli District).

**Andrographis rotundifolia** (Sreem.) Sreem., Phytologia 37: 416. 1977.

*Andrographis neesiana* Wight var. *rotundifolia* Sreem., Bull. Bot. Surv. India 8: 91. 1966.

Endemic to India: Tamil Nadu (Coimbatore District).

**Andrographis serpyllifolia** (Vahl) Wight, Icon. Pl. Ind. Orient. 2(3): 1, t. 517. 1842.

*Justicia serpyllifolia* Vahl, Enum. Pl. 1: 169. 1804.

*Erianthera serpyllifolia* (Vahl) Nees in Wall., Pl. Asiat. Rar. 3: 115. 1832.

*Andrographis humifusa* Wall. ex Nees in A. DC., Prodr. 11: 514. 1847.

*Justicia nummularifolia* Wall., Numer. List: n. 2461. 1830, nom. nud.

Endemic to India: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**Andrographis stellulata** C.B. Clarke in Hook.f., Fl. Brit. India 4: 504. 1884.

Endemic to India: Tamil Nadu (Coimbatore, Dindigul and Nilgiris districts).

**Andrographis stenophylla** C.B. Clarke in Hook.f., Fl. Brit. India 4: 504. 1884.

Endemic to India: Andhra Pradesh, Kerala, Tamil Nadu.

**Andrographis viscosa** Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832.

Karnataka (?), Tamil Nadu (Dindigul and Tirunelveli districts).

**ASYSTASIA** Blume, Bijdr. Fl. Ned. Ind. 14: 796. 1826.

11 species, 1 subspecies and 01 variety.

**Asystasia atroviridis** T. Anderson, J. Linn. Soc., Bot. 9: 526. 1867.

*Asystasiella atroviridis* (T. Anderson) Lindau in Engl. & Prantl, Nat. Pflanzenfam. 4: 326. 1895.

*Mackaya atroviridis* (T. Anderson) Das in Kanjilal & al., Fl. Assam 3: 448. 1939.

Meghalaya.

**Asystasia chelonoides** Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.

Andaman and Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Asystasia crispata** Benth., Linnaea 24(6): 647. 1852.

Endemic to India: Western Ghats of Karnataka, Kerala, Tamil Nadu.

**Asystasia dalzelliana** Santapau, Kew Bull. 3(2): 276. 1948.

*Asystasia violacea* Dalzell ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 494. 1884, non Dalzell 1850.

Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Asystasia gangetica** (L.) T. Anderson in Thwaites, Enum. Pl. Zeyl.: 235. 1860.

*Justicia gangetica* L., Cent. Pl. II: 3. 1756.

*Asystasia gangetica* (L.) T. Anderson var. *mendelianae* S.R. Kundu & Mahua Pal, J. Econ. Taxon. Bot. 21(2): 486. 1997.

**subsp. *gangetica***

*Asystasia coromandeliana* Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.

Andaman and Nicobar Islands, Andhra Pradesh, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Sikkim, Tamil Nadu, West Bengal.

**subsp. *micrantha*** (Nees) Ensermu in Seyani & Chikuni, Proc. XIII Plen. Meet. AETFAT, Zomba Malawi 1: 343. 1991.

*Asystasia coromandeliana* Nees var. *micrantha* Nees in DC., Prodr. 11: 165. 1847.

*Asystasia indica* H.J. Chowdhery & Av. Bhattacharjee, Indian J. Forest. 29: 211. 2006.

West Bengal.

**var. *krishnae*** Tandyekk., Pandur. & N. Mohanan, Rheedia 29(2): 174. 2019.

Endemic to India: Kerala (Kollam District).

**Asystasia macrocarpa** Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.

*Ruellia macrocarpa* Wall., Numer. List: n. 2348. 1830.

Assam, Sikkim, Uttarakhand, West Bengal.

**Asystasia mysorensis** (Roth) T. Anderson, J. Linn. Soc., Bot. 9: 524. 1867; M. Varghese, G.L. Shah & Inamdar, J. Econ. Taxon. Bot. 14: 643. 1990.

*Ruellia mysorensis* Roth, Nov. Pl. Sp. 303. 1821.

*Asystasia lawiana* Dalzell in Hooker's J. Bot. Kew Gard. Misc. 4: 344. 1852.  
Karnataka, Kerala, Maharashtra.

**Asystasia neesiana** (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.

*Ruellia neesiana* Wall., Pl. Asiat. Rar. 1: 73, t. 83. 1830.

*Asystasiella neesiana* (Wall.) Lindau in Engl. & Prantl, Nat. Pflanzenfam. 4: 326. 1895.

Arunachal Pradesh, Assam, Manipur, Meghalaya.

**Asystasia pusilla** C.B. Clarke, J. Linn. Soc., Bot. 25: 55. 1887; C.E.C. Fisch., Rec. Bot. Surv. India 12: 119. 1938.  
Mizoram.

**Asystasia travancorica** Bedd., Icon. Pl. Ind. Or.: t. 178. 1874.

Endemic to India: Western Ghats of Kerala, Tamil Nadu.

**Asystasia variabilis** (Nees) Trimen, Handb. Fl. Ceylon 3: 324. 1895.

*Asystasia coromandeliana* Nees var. *variabilis* Nees in DC., Prodr. 11: 165. 1847.

*Asystasia chelonoides* Nees var. *variabilis* (Nees) M.R. Almeida, Fl. Maharashtra 4A: 7. 2003.

*Asystasia chelonoides* Nees var. *quadrangularis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 494. 1884, nom. illeg.  
Kerala, Maharashtra, Tamil Nadu.

**BARLERIA** L., Sp. Pl. 2: 636. 1753.

28 species, 01 subspecies and 01 variety.

**Barleria acanthoides** Vahl, Symb. Bot. 1: 47. 1790.

Gujarat, Haryana, Punjab, Rajasthan.

**Barleria acuminata** Wight ex Nees in Wall., Pl. Asiat. Rar. 3: 93. 1832.

*Barleria tomentosa* Roth var. *acuminata* (Wight ex Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 485. 1884.  
Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**Barleria buxifolia** L., Sp. Pl. 2: 636. 1753.

Andhra Pradesh, Karnataka, Kerala, Punjab, Tamil Nadu, West Bengal.

**Barleria courtallica** Nees in DC., Prodr. 11: 226. 1847.

*Barleria nutans* Nees in DC., Prodr. 11: 227. 1847.

Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu.

**Barleria cristata** L., Sp. Pl. 2: 636. 1753.

*Barleria cristata* L. var. *dichotoma* (Roxb.) Prain, Bengal Pl. 2: 812. 1903.

*Barleria cristata* L. var. *albida* Haines, Bot. Bihar Orissa 4: 683. 1922.

Throughout the country.

**Barleria cuspidata** B. Heyne ex Nees in Wall., Pl. Asiat. Rar. 3: 93. 1832.

Andhra Pradesh, Karnataka, Kerala, Maharashtra, Rajasthan, Tamil Nadu.

**Barleria durairajii** K. Ravik., D. Naras., Devanath. & Gnanasek., Rheedia 26(2): 136. 2016.

Tamil Nadu (Vallanadu Beat, Srivaikundam Range, Thoothukudi District).

**Barleria gibsonii** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 339. 1850.

*Barleria gibsonioides* Blatt., J. Bombay Nat. Hist. Soc. 32: 733, t. 1. 1928.

*Barleria montana* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 487. 1884, non Nees 1832.

Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu.

**Barleria grandiflora** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 339. 1850.

Endemic to India: Goa, Karnataka, Maharashtra.

**Barleria hochstetteri** Nees in DC., Prodr. 11: 231. 1847.

Gujarat, Rajasthan.

**Barleria involucrata** Nees in Wall., Pl. Asiat. Rar. 3: 92. 1832.

var. *involucrata*.

Karnataka, Kerala.

var. *elata* (Dalzell) C.B. Clarke in Hook.f., Fl. Brit. India 4: 486. 1884.

*Barleria elata* Dalzell, Hooker's J. Bot. Kew Gard. Misc.: 227. 1851.

Endemic to India: Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Barleria lavaniana** S.S. Patil, S.R. Yadav & Lekhak, Pl. Syst. Evol. 305(10): 942, f. 1-9. 2019.

Endemic to India: Maharashtra (Aurangabad, Osmanabad, Pune and Satara districts).

**Barleria lawii** T. Anderson, J. Linn. Soc., Bot. 9: 492. 1867.

*Barleria sepalosa* C.B. Clarke in Hook.f., Fl. Brit. India 4: 487. 1884.

Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra.

**Barleria longiflora** L.f., Suppl. Pl.: 290. 1782.

Andhra Pradesh, Karnataka, Maharashtra, Odisha, Tamil Nadu.

**Barleria lupulina** Lindl., Edwards's Bot. Reg. 18: t. 1483. 1833.

Bihar, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, West Bengal.

**Barleria montana** Nees in Wall., Pl. Asiat. Rar. 3: 92. 1832.

*Barleria morrisiana* E. Barnes & C.E.C. Fisch., Bull. Misc. Inform. Kew 1939(10): 659. 1940.

Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu.

**Barleria mysorensis** Roth, Nov. Sp. Pl.: 313. 1821.

Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**Barleria nitida** Nees in Wall., Pl. Asiat. Rar 3: 91. 1832.

Karnataka, Tamil Nadu.

**Barleria noctiflora** L.f., Suppl. Pl.: 290. 1782.

Andhra Pradesh, Karnataka, Tamil Nadu.

**Barleria pilosa** B. Heyne ex Nees in Wall., Pl. Asiat. Rar. 3: 93. 1832.

Western Ghats of Tamil Nadu (Tirunelveli Hills).

**Barleria prattensis** Santapau, Kew Bull. 3(3): 487. 1949.

Andhra Pradesh, Dadra and Nagar Haveli, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu.

**Barleria prionitis** L., Sp. Pl. 2: 636. 1753.

subsp. **prionitis**.

Throughout the country.

subsp. **pubiflora** (Benth. ex Hohen.) Brummitt & J.R.I. Wood, Kew Bull. 38(3): 436. 1983.

*Barleria pubiflora* Benth. ex Hohen., Flora 32: 358. 1849.

*Barleria prionitis* L. subsp. *prionitis* var. *diacantha* Blatt. & Hallb., J. Bombay Nat. Hist. Soc. 26: 811. 1919. *var. B.* *diacantha* Nees 1847.

Daman and Diu, Gujarat, Madhya Pradesh, Maharashtra, Punjab, Rajasthan.

**Barleria repens** Nees in DC., Prodr. 11: 230. 1847.

Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Barleria sahyadrica** K.M.P. Kumar & Sardesai, Phytotaxa 411(1): 65. 2019.

Endemic to India: Maharashtra (Kolhapur District).

**Barleria stocksii** T. Anderson, J. Linn. Soc., Bot. 9: 493. 1867.

Endemic to India: Andhra Pradesh, Karnataka.

**Barleria strigosa** Willd., Sp. Pl., ed. 4, 3: 379. 1800.

*Barleria polytricha* Wall., Pl. Asiat. Rar. 1: 72, t. 82. 1830.

*Barleria caerulea* Roxb., Fl. Ind. ed. 2, 3: 39. 1832.

*Barleria macrophylla* B. Heyne ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 489. 1884.

Throughout the country.

**Barleria terminalis** Nees in DC., Prodr. 11: 225. 1847.

*Barleria polystachya* Hook. ex Nees in DC., Prodr. 11: 226. 1847.

*Barleria strigosa* Willd. var. *polystachya* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 490. 1884.

*Barleria strigosa* Willd. var. *terminalis* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 490. 1884.

Goa, Karnataka, Maharashtra, Odisha.

**Barleria tomentosa** Roth, Nov. Pl. Sp.: 314. 1821.

*Barleria paniculata* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 92. 1832.

*Barleria tomentosa* Roth var. *glandulosa* C.E.C. Fisch., Rec. Bot. Surv. India 9: 135. 1921.

Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**BLEPHARIS** Juss., Gen. Pl. 103. 1789.

04 species.

**Blepharis integrifolia** (L.f.) E. Mey. ex Schinz, Vierteljahrsschr. Naturf. Ges. Zürich 60: 416. 1915.

*Acanthus integrifolius* L.f., Suppl. Pl.: 294. 1782.

*Acanthus repens* Vahl, Symb. Bot. 2: 76. 1791.

*Blepharis molluginifolia* Pers., Syn. Pl. 2: 180. 1806.

*Acanthus molluginifolius* (Pers.) Poir. in Lam., Encycl. Suppl. 1: 90. 1810.

*Blepharis repens* (Vahl) Roth, Nov. Pl. Sp.: 321. 1821.

Andhra Pradesh, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, West Bengal.

**Blepharis lawsonii** G.S. Giri & R.N. Banerjee, Blumea 28(2): 363, f. 1. 1983.

Kerala, Tamil Nadu.

**Blepharis maderaspatensis** (L.) B. Heyne ex Roth, Nov. Pl. Sp.: 320. 1821.

*Acanthus maderaspatensis* L., Sp. Pl. 2: 639. 1753.

*Blepharis boerhaaviaefolia* Pers., Syn. Pl. 2: 180. 1806, "boerhaaviaefolia".

*Blepharis boerhaaviaefolia* Pers. var. *maderaspatensis* (L.) Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832.

Throughout the country.

**Blepharis scindica** Stocks ex T. Anderson, J. Linn. Soc., Bot. 7(25): 36. 1863.

*Acanthodium grossum* sensu Wight, Icon. Pl. Ind. Orient. 4(4): 5, t. 1535, 1536. 1850, non Nees 1847.

*Blepharis edulis* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 479. 1884, p.p. non (Forssk.) Pers. 1806.

Western and northern regions and Upper Gangetic Plains.

**CALACANTHUS** T. Anderson ex Benth. in Benth. & Hook.f., Gen. Pl. 2: 1088. 1876, "Calacantha".

01 species.

**Calacanthus grandiflorus** (Dalzell) Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 13: 278. 1883.

*Lepidagathis grandiflora* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 138. 1850.

*Calacanthus dalzellianus* T. Anderson ex Benth. & Hook.f., Gen. Pl. 2: 1088. 1876.

Endemic to India: Western Ghats of Karnataka, Maharashtra.

**CODONACANTHUS** Nees in DC., Prodr. 11: 103. 1847.

02 species.

**Codonacanthus pauciflorus** Nees in DC., Prodr. 11: 103. 1847.

*Ruellia pauciflora* Wall., Numer. List: n. 2369. 1830.

Arunachal Pradesh, Assam, Manipur, West Bengal.

**Codonacanthus sanjappae** Karthig., Sumathi, Jayanthi & D. Naras., Nordic J. Bot. 28: 501, f. 1. 2010.

South Andaman (Rutland Island).

**CROSSANDRA** Salisb., Parad. Lond. 1: t. 12. 1805.

01 species.

**Crossandra infundibuliformis** (L.) Nees in Wall., Pl. Asiat. Rar. 3: 98. 1832.

*Justicia infundibuliformis* L., Syst. Nat., ed. 10, 2: 850. 1759.

*Ruellia infundibuliformis* (L.) Andrews, Bot. Repos. 8(111): t. 542. 1808.

*Crossandra undulifolia* Salisb., Parad. Lond. 1: t. 12. 1805, "undulaefolia".

Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, West Bengal.

**CYNAROSPERMUM** Vollesen, Kew Bull. 54(1): 171. 1999.

01 species

**Cynarospermum aspernum** (Nees) Vollesen, Kew Bull. 54(1): 172, f. 1. 1999.

*Blepharis asperrima* Nees in DC., Prodr. 11: 267. 1847.

Endemic to India: Karnataka, Kerala, Maharashtra.

**DICLIPTERA** Juss., Ann. Mus. Natl. Hist. Nat. 9: 267. 1807, nom. cons.

23 species and 4 varieties, including 2 cultivated species.

**Dicliptera abuensis** Blatt., J. Proc. Asiat. Soc. Bengal 26: 347. 1931.

Endemic to India: Gujarat, Maharashtra, Rajasthan.

**Dicliptera beddomei** C.B. Clarke in Hook.f., Fl. Brit. India 4: 551. 1885.

Andhra Pradesh, Madhya Pradesh.

**Dicliptera bupleuroides** Nees in Wall., Pl. Asiat. Rar. 3: 111. 1832.

*Dicliptera roxburghiana* Nees var. *bupleuroides* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 554. 1885.  
Throughout the country.

**Dicliptera chinensis** Juss., Ann. Mus. Natl. Hist. Nat. 9: 268. 1807.

*Justicia chinensis* L., Sp. Pl. 1: 16. 1753.

*Dicliptera roxburghiana* Nees in Wall., Pl. Asiat. Rar. 3: 111. 1832.  
West Bengal and northeastern region.

**Dicliptera cuneata** Nees in Wall., Pl. Asiat. Rar. 3: 111. 1832.

Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu.

**Dicliptera fera** (C.B. Clarke) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 10. 2009.

*Peristrophe fera* C.B. Clarke in Hook.f., Fl. Brit. India 4: 556. 1885.

Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, West Bengal.

**Dicliptera foetida** (Forssk.) Blatt., Rec. Bot. Surv. India 8: 361. 1921.

*Justicia foetida* Forssk., Fl. Aegypt.-Arab.: 5. 1775.

*Dicliptera zeylanica* Nees in DC., Prodr. 11: 474. 1847.

var. **foetida**.

Karnataka, Maharashtra.

var. **kanarana** M.R. Almeida, Fl. Maharashtra 4A: 29. 2003.

Karnataka, Maharashtra.

**Dicliptera ghatica** Santapau, Bot. Mem. Univ. Bombay 2: 80. 1952.

*Dicliptera foetida* (Forssk.) Blatt. var. *ghatica* (Santapau) M.R. Almeida, Fl. Maharashtra 4A: 28. 2003.

Endemic to India: Maharashtra.

**Dicliptera heterostegia** Nees in DC., Prodr. 11: 478. 1847.

Karnataka, Maharashtra, Tamil Nadu.

**Dicliptera lanceolaria** (Roxb.) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 11. 2009.

*Justicia lanceolaria* Roxb., Fl. Ind. 1: 122. 1820.

*Peristrophe lanceolaria* (Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 114. 1832.

Assam (Khasi Hills).

**Dicliptera leonotis** Dalzell ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 553. 1885.

Gujarat, Maharashtra, Rajasthan.

**Dicliptera longifolia** (King & Prain) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 11. 2009.

*Peristrophe longifolia* King & Prain, J. Asiatic Soc. Bengal, Pt. 2, Nat. Hist. 69(2): 171. 1900.

Nagaland.

**Dicliptera magnibracteata** Collett & Hemsl., J. Linn. Soc., Bot. 28: 108. 1890.

*Peristrophe magnibracteata* (Collett & Hemsl.) Z.P. Hao, Y.F. Deng & N.H. Xia, Nordic J. Bot. 25: 12. 2007.  
Assam.

**Dicliptera manilalii** Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 11. 2009.

*Peristrophe montana* Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832.

Andaman and Nicobar Islands, Karnataka, Kerala, Madhya Pradesh, Tamil Nadu.

**Dicliptera nasikensis** Lakshmin. & B.D. Sharma, J. Econ. Taxon. Bot. 7: 481. 1986.

Endemic to India: Maharashtra.

**Dicliptera paniculata** (Forssk.) I. Darbysh., Kew Bull. 62(1): 122. 2007.

*Dianthera paniculata* Forssk., Fl. Aegypt.-Arab.: 7. 1775.

*Dianthera bicalyculata* Retz., Kongl. Vetensk. Acad. Handl. 1775: 297. 1776.

*Justicia bicalyculata* (Retz.) Vahl, Symb. Bot. 2: 13. 1791.

*Peristrophe bicalyculata* (Retz.) Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832.

*Peristrophe paniculata* (Forssk.) Brummitt, Kew Bull. 28(3): 451. 1983.

*Dianthera malabarica* L.f., Suppl. Pl.: 85. 1782, nom. illeg.

var. **paniculata**.

Tropical and subtropical regions of the country.

var. **rivinoides** (C.B. Clarke) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 12. 2009.

*Peristrophe bicalyculata* Retz. var. *rivinoides* C.B. Clarke in Hook.f., Fl. Brit. India 4: 555. 1885.

Southern parts of the country.

var. **subaequibracteata** (Bennet) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 12. 2009.

*Peristrophe bicalyculata* Retz. var. *subaequibracteata* Bennett, J. Bombay Nat. Hist. Soc. 66(1): 229. 1969.

*Peristrophe paniculata* (Forssk.) Brummitt var. *subaequibracteata* (Bennett) Bennett, J. Econ. Taxon. Bot. 5(4): 972. 1984.  
West Bengal.

**Dicliptera parvibracteata** Nees. in Wall., Pl. Asiat. Rar. 3: 111. 1832.

Andhra Pradesh, Tamil Nadu.

**Dicliptera rauí** Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 12. 2009.

*Justicia speciosa* Roxb., Fl. Ind. 1: 122. 1820.

*Peristrophe speciosa* (Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832.

Assam, Himachal Pradesh, Meghalaya, West Bengal.

**Dicliptera sebastinei** Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 12. 2009.

*Peristrophe acuminata* Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832, non *Dicliptera acuminata* (Ruiz & Pav.) Juss. 1807.

var. **sebastinei**.

Andaman and Nicobar Islands.

var. **khasiana** (C.B. Clarke) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 12. 2009.

*Peristrophe acuminata* Nees var. *khasiana* C.B. Clarke in Hook.f., Fl. Brit. India 4: 555. 1885.

Meghalaya.

**Dicliptera spinulosa** Hochst. ex K. Balkwill, Kew. Bull. 51(1): 53. 1996.

*Dicliptera micranthes* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 553. 1885, non Nees 1832.

*Dicliptera verticillata* sensu J.R.I Wood & al., Kew Bull. 38: 450. 1983, non (Forssk.) C. Chr. 1922.

Bihar, Gujarat, Karnataka, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, West Bengal.

**Dicliptera undulata** (Vahl) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 13. 2009.

*Justicia undulata* Vahl, Symb. Bot. 2: 8. 1790.

*Peristrophe undulata* (Vahl) Nees in DC., Prodr. 11: 496. 1847.

Kerala, Tamil Nadu.

**DYSCHORISTE** Nees in Wall., Pl. Asiat. Rar. 3: 75, 81. 1832.

04 species.

**Dyschoriste dalzellii** (T. Anderson ex Bedd.) Kuntze, Revis. Gen. Pl. 2: 456. 1891.

*Calophanes dalzellii* T. Anderson ex Bedd., Icon. Pl. Ind. Or. 1: 60, t. 248. 1874.

*Calophanes rigidula* Dalzell ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 411. 1884.

Endemic to India: Andhra Pradesh, Karnataka, Maharashtra.

**Dyschoriste depressa** Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.

*Justicia mysorensis* Klein ex Schult., Mant. 1: 146. 1822.

*Dyschoriste cernua* Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.

*Dipteracanthus nagechana* Nees in Wall., Pl. Asiat. Rar. 3: 82. 1832.

*Calophanes nagechana* (Nees) Nees in DC., Prodr. 11: 109. 1847.

*Calophanes depressus* (Nees) T. Anderson in Thwaites, Enum. Pl. Zeyl.: 225. 1860.

*Dyschoriste nagechana* (Nees) Bennet, Indian Forester 109: 220. 1983.

*Dyschoriste mysorensis* (Schult.) M.R. Almeida, Fl. Maharashtra 4: 32. 2003.

Chhattisgarh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, West Bengal.

**Dyschoriste madurensis** (Burm.f.) Kuntze, Revis. Gen. Pl. 2: 486. 1891.

*Justicia madurensis* Burm.f., Fl. Ind.: 9, t. 4, f. 3. 1768.

*Ruellia littoralis* L.f., Suppl. Pl.: 289. 1781.

*Dischoriste littoralis* (L.f.) Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.

Andhra Pradesh, Kerala, Tamil Nadu.

**Dyschoriste vagans** (Wight) Kuntze, Revis. Gen. Pl. 2: 486. 1891.

*Calophanes vagans* Wight, Icon. Pl. Ind. Orient. 4(4): 4, t. 1526. 1850.

*Dipteracanthus vagans* Benth. ex T. Anderson, J. Linn. Soc., Bot. 9: 459. 1867.

Endemic to India: Andhra Pradesh, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu.

**ECBOLIUM** Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 40: 75. 1871.

02 species and 02 infraspecific.

**Ebolium ligustrinum** (Vahl) Vollesen, Kew Bull. 44(4): 651. 1989.

*Justicia ligustrina* Vahl, Enum. Pl. 1: 118. 1804.

*Ebolium linneanum* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 40(1): 75. 1875.

*Ebolium linneanum* Kurz var. *dentatum* (Klein ex Link) C.B. Clarke in Hook.f., Fl. Brit. India 4: 545. 1885.

*Ebolium linneanum* Kurz var. *laetevirens* (Vahl) C.B. Clarke in Hook.f., Fl. Brit. India 4: 545. 1885.

*Ebolium viride* (Forssk.) Alston subsp. *ligustrina* (Vahl) M.R. Almeida, Fl. Maharashtra 4(A): 34. 2003.

*Ebolium viride* (Forssk.) Alston subsp. *ligustrina* (Vahl) M.R. Almeida var. *dentata* (Klein ex Link) M.R. Almeida, Fl. Maharashtra 4(A): 35. 2003.

var. *ligustrinum*.

Andhra Pradesh, Assam, Bihar, Kerala, Maharashtra, Odisha, Tamil Nadu, West Bengal.

var. *aryankavensis* Remadevi & Binojk., J. Econ. Taxon. Bot. 27(suppl.): 1189. 2003.

Kerala.

**Ebolium viride** (Forssk.) Alston in Trimen, Handb. Fl. Ceylon 6: 229. 1931.

*Justicia viridis* Forssk., Fl. Aegypt.-Arab. 5: 375. 1775.

*Justicia rotundifolia* Nees in Wall., Pl. Asiat. Rar. 3: 108. 1832.

*Ebolium linneanum* Kurz var. *rotundifolia* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 545. 1885.

*Ebolium viride* (Forssk.) Alston var. *rotundifolia* (Nees) Raizada, Indian Forester 84(8): 482. 1958.

var. *viride*

Andhra Pradesh, Kerala, Maharashtra, Tamil Nadu, West Bengal.

var. *chandrasekariana* Remadevi & Binojk., J. Econ. Taxon. Bot. 25(1): 236, f. 1A-G. 2001.

Endemic to India: Kerala (Alappuzha District).

**ECHINACANTHUS** Nees in Wall., Pl. Asiat. Rar. 3: 90. 1832.

01 species.

**Echinacanthus attenuatus** Nees in Wall., Pl. Asiat. Rar. 3: 90. 1832.

Bihar, Sikkim, Uttarakhand, West Bengal.

**ELYTRARIA** Michx., Fl. Bor.-Amer. 1: 8. 1803, nom. cons.  
01 species.

*Elytraria acaulis* (L.f.) Lindau in Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 1: 304. 1897.  
*Justicia acaulis* L.f., Suppl. Pl. 84. 1782.  
*Elytraria crenata* Vahl, Enum. Pl. 1: 106. 1804.  
*Elytraria lyrata* Vahl, Enum. Pl. 1: 106. 1804.  
*Elytraria acaulis* L.f. var. *lyrata* (Vahl) Bremek., Reinwardtia 3: 251. 1955.  
 Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

**ERANTHEMUM** L., Sp. Pl.: 9. 1753.

12 species and 01 variety.

*Eranthemum capense* L., Sp. Pl. 1: 9. 1753.

*Justicia fastigata* Lam., Tabl. Encycl. 1: 41. 1791.

*Justicia montana* Roxb., Pl. Coromandel 2: 41, t. 176. 1798.

*Eranthemum fastigatum* R. Br. in Roem. & Schult., Syst. 1: 174. 1817.

*Eranthemum montanum* (Roxb.) Roxb., Fl. Ind. 1: 110. 1820.

*Eranthemum wightianum* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 107. 1832.

*Daedalacanthus montanus* (Roxb.) T. Anderson in Thwaites, Enum. Pl. Zeyl.: 229. 1869.

*Daedalacanthus montanus* (Roxb.) T. Anderson var. *concanensis* T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 421. 1884.

*Daedalacanthus montanus* (Roxb.) T. Anderson var. *wightiana* (Wall. ex Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 421. 1884.

*Eranthemum montanum* Roxb. var. *concanensis* (T. Anderson ex C.B. Clarke) Gamble, Fl. Madras 1025. 1924.

*Eranthemum montanum* Roxb. var. *wightiana* (Wall. ex Nees) Gamble, Fl. Madras 1025. 1924.

*Eranthemum capense* L. var. *concanensis* (T. Anderson ex C.B. Clarke) Santapau, Bot. Mem. Univ. Bombay 2: 34. 1951.

*Eranthemum capense* L. var. *wightiana* (Wall. ex Nees) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 42. 2009.

*Daedalacanthus fastigatus* (Lam.) Alston in Trimen, Handb. Fl. Ceylon 6: 226. 1931.

*Justicia pulchella* Wight ex Wall., Numer. List: n. 2495. 1831–1832, nom. nud.

Andhra Pradesh, Kerala, Maharashtra, Odisha, Tamil Nadu, West Bengal.

*Eranthemum ciliatum* (Craib) Benoist in Lecomte, Fl. Indo-Chine 4: 661. 1935.

*Daedalacanthus ciliatus* Craib, Bull. Misc. Inform. Kew 1913(6): 202. 1913.

Nagaland (Naga Hills).

*Eranthemum cinnabarinum* Wall. var. *succisifolium* (Kurz) C.B. Clarke in Hook.f., Fl. Brit. India 4: 499. 1884.

*Eranthemum succisifolium* Kurz, J. Asiatic Soc. Bengal, Pt. 2, Nat. Hist. 41: 142. 1876.

Maharashtra.

*Eranthemum erythrochilum* J.R.I. Wood, Edinburgh J. Bot. 51(2): 180, f. 1A–E. 1994.

West Bengal.

*Eranthemum griffithii* (T. Anderson) Bremek. & Nann.-Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45(1): 35. 1948.

*Daedalacanthus griffithii* T. Anderson, J. Linn. Soc., Bot. 9: 486. 1867.

Assam, West Bengal.

*Eranthemum pulchellum* Andrews, Bot. Repos. 2: 88. 1798.

*Eranthemum nervosum* (Vahl) R. Br., Prodr. Fl. Nov. Holland: 476. 1810.

*Eranthemum edgeworthiana* Nees in DC., Prodr. 11: 446. 1847.

*Daedalacanthus nervosus* (Vahl) T. Anderson, J. Linn. Soc., Bot. 9: 487. 1867.

Andhra Pradesh, Bihar, Chandigarh, Haryana, Jammu and Kashmir, Madhya Pradesh, Odisha, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal.

**Eranthemum purpurascens** (Buch.-Ham. ex Nees) Nees in Wall., Pl. Asiat. Rar. 3: 106. 1832.

*Justicia purpurascens* Buch.-Ham. ex Nees in Wall., Pl. Asiat. Rar. 3: 106. 1832.

*Daedalacanthus purpurascens* (Buch.-Ham. ex Nees) T. Anderson, J. Linn. Soc., Bot. 9: 488. 1867.

*Justicia pulchella* Roxb., Pl. Coromandel 2: 41, t. 177. 1798.

*Eranthemum pulchellum* Andrews var. *purpurascens* (Buch.-Ham. ex Nees) Kuntze, Revis. Gen. Pl. 2: 500. 1891.  
Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tripura,  
Uttarakhand, Uttar Pradesh, West Bengal.

**Eranthemum roseum** (Vahl) R. Br., Prodr.: 477. 1810; Karthik. & al., Fl. Pl. India 1: 16. 2009.

*Justicia rosea* Vahl, Enum. Pl. 1: 165. 1804.

*Daedalacanthus roseus* (Vahl) T. Anderson, J. Linn. Soc., Bot. 9: 487. 1867.

*Eranthemum pulchellum* Roxb. var. *roseum* Kuntze, Revis. Gen. Pl. 2: 489. 1891.

*Pseuderanthemum roseum* Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München. 13: 236. 1864.  
nom. inval.

Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan.

**Eranthemum splendens** (T. Anderson) Bremek. & Nann.-Bremek., Verh. Kon. Ned. Akad. Wetensch. Afd. Natuurk.  
Sect. 2, 45(1): 35. 1948.

*Daedalacanthus splendens* T. Anderson, J. Linn. Soc., Bot. 9: 486. 1867.  
Sikkim Himalayas, Uttarakhand, West Bengal.

**Eranthemum strictum** Colebr. ex Wall., Fl. Ind. 1: 114. 1820.

*Daedalacanthus strictus* (Colebr. ex Wall.) T. Anderson, J. Linn. Soc., Bot. 9: 487. 1867.  
Manipur, Meghalaya, Mizoram, Sikkim, Tripura.

**Eranthemum suffruticosum** Roxb., Fl. Ind. 1: 111. 1832.

*Eranthemum barlerioides* Roxb., Fl. Ind. 1: 113. 1832.

*Petalidium barlerioides* (Roth) Nees in DC., Prodr. 11: 114. 1847, partly.

*Daedalacanthus suffruticosus* (Roxb.) T. Anderson, J. Linn. Soc., Bot. 9: 488. 1867.  
Andaman and Nicobar Islands, Assam, Tripura.

**Eranthemum tubiflorum** (T. Anderson) Radlk. ex Lindau in Engl. & Prantl, Pflanzfam. 4(3b): 311. 1895.

*Daedalacanthus tubiflorus* T. Anderson, J. Linn. Soc., Bot. 9: 485. 1867.

*Daedalacanthus roseus* (R. Br.) T. Anderson var. *neesii* C.B. Clarke in Hook.f., Fl. Brit. India 4: 420. 1884.

*Eranthemum roseum* (Vahl) R. Br. ex Roem. & Schult. var. *neesii* (C.B. Clarke) Karthik. & Moorthy in Karthik. & al., Fl.  
Pl. India 1: 16. 2009.

Endemic to India; Arunachal Pradesh.

**Eranthemum wattii** (Bedd.) Stapf, Bot. Mag. 135: t. 8239. 1909.

*Daedalacanthus wattii* Bedd., Gard. Mag.: 644. 1901.

*Daedalacanthus parvus* C.B. Clarke, Kew Hand-List Dicot. 225, nom. nud.  
Maharashtra and northern parts of the country.

**GRAPTOPHYLLUM** Nees in Wall., Pl. Asiat. Rar. 3: 76, 102. 1832.

01 species and 1 variety.

**Graptophyllum pictum** (L.) Griff., Not. Pl. Asiat. 4: 139. 1854.

*Justicia picta* L., Sp. Pl., ed. 2: 21. 1762.

*Graptophyllum hortense* Nees in Wall., Pl. Asiat. Rar. 3: 102. 1832.

var. *pictum*.

Cultivated throughout the country.

var. *luridosanguineum* (Sims) M.R. Almeida, Fl. Maharashtra 4(A): 43. 2003.

*Justicia picta* L. var. *luridosanguinea* Sims, Bot. Mag. 44: t. 1870. 1816.

Cultivated in gardens.

**GYMNOSTACHYUM** Nees in Wall., Pl. Asiat. Rar. 3: 76. 1832.

10 species.

**Gymnostachyum canescens** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 505. 1867.*Cryptophragmum canescens* Nees in DC., Prodr. 11: 95. 1847.

Endemic to India: Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Gymnostachyum ceylanicum** Arn. & Nees, Compan. Bot. Mag. 2: 311. 1836.

Tamil Nadu.

**Gymnostachyum febrifugum** Benth., Flora 32: 558. 1849.*Gymnostachyum alatum* Wight, Icon. Pl. Ind. Orient. 4(4): 4, t. 1525. 1850.

Endemic to India: Western Ghats of Karnataka, Kerala.

**Gymnostachyum glabrum** (Dalzell) T. Anderson, J. Linn. Soc., Bot. 9: 506. 1867.*Cryptophragmum glabrum* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 338. 1850.

Goa, Karnataka, Maharashtra.

**Gymnostachyum lateriflorum** (C.B. Clarke) B. Hansen, Nordic J. Bot. 5(4): 356. 1985.*Eranthemum lateriflorum* C.B. Clarke, J. Linn. Soc., Bot. 25: 55, t. 27. 1889.

Manipur.

**Gymnostachyum latifolium** (Dalzell) T. Anderson, J. Linn. Soc., Bot. 9: 505. 1867.*Cryptophragmum latifolium* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 137. 1850.

Goa, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Gymnostachyum polyanthum** Wight, Icon. Pl. Ind. Orient. 4(3): 18, t. 1494. 1849.

Karnataka, Kerala.

**Gymnostachyum sahyadricum** C.N. Mohanan, Remadevi & Binojk., J. Econ. Taxon. Bot. 26(1): 38, f. A-D. 2002.

Endemic to India: Kerala (Chokkampatty Hills).

**Gymnostachyum venustum** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 506. 1867.*Cryptophragmum venustum* Ness in Wall., Pl. Asiat. Rar. 3: 100. 1832.

Endemic to India: Assam, Meghalaya.

**Gymnostachyum warrierianum** K.M.P. Kumar & al., Kew Bull. 70(3)-40: 2. 2015.

Endemic to India: Kerala (Aralam forest, Kannur District).

**HAPLANTHODES** Kuntze in T. Post & Kuntze, Lex. Gen. Phan.: 265. 1903.

03 species and 01 variety.

**Haplanthodes plumosa** (T. Anderson) Panigrahi & G.C. Das, Bull. Bot. Surv. India 23: 200. 1981.*Haplanthus plumosus* T. Anderson, J. Linn. Soc., Bot. 9: 504. 1867.*Haplanthus tentaculatus* (L.) Nees var. *plumosa* (T. Anderson) C.B. Clarke in Hook.f., Fl. Brit. India 4: 507. 1884.

Endemic to India: Karnataka, Maharashtra.

**Haplanthodes tentaculatus** (L.) R.B. Majumdar, Bull. Bot. Soc. Bengal 24: 76. 1971.*Ruellia tentaculata* L., Cent. Pl. 2: 22. 1756.*Haplanthus tentaculatus* Nees in DC., Prodr. 11: 513. 1847, p.p.*Haplanthodes tentaculata* (L.) Panigrahi & G.C. Das, Bull. Bot. Surv. India 23: 201. 1981.var. *tentaculatus*

Endemic to India: Goa, Gujarat, Maharashtra, Tamil Nadu.

**var. neilgherryensis** (Wight) J.R.I. Wood, Novon 23(3): 386. 2014.

*Haplanthus neilgherryensis* Wight, Icon. Pl. Ind. Orient. 4(4): 7, t. 1556. 1850.

*Bremekampia neilgherryensis* (Wight) Sreem., Bull. Bot. Surv. India 6: 323. 1964.

*Haplanthodes neilgherryensis* (Wight) R.B. Majumdar, Bull. Bot. Soc. Bengal 25(1 & 2): 76. 1971.

Endemic to India: Daman and Diu, Goa, Karnataka, Kerala, Maharashtra, Rajasthan, Tamil Nadu.

**Haplanthodes verticillatus** (Roxb.) R.B. Majumdar, Bull. Bot. Soc. Bengal 25(1 & 2): 76. 1971.

*Justicia verticillata* Roxb., Fl. Ind. 1: 135. 1820.

*Haplanthus verticillaris* (Roxb.) Nees in DC., Prodr. 11: 513. 1847.

*Haplanthus verticillatus* (Roxb.) Duthie, Fl. Upper Gang. Pl. 2: 67. 1911.

*Bremekampia verticillata* (Roxb.) Sreem., Bull. Bot. Surv. India 6: 323. 1964.

*Haplanthodes verticillata* (Roxb.) Panigrahi & G.C. Das, Bull. Bot. Surv. India 23(3 & 4): 199. 1981.

Assam, Bihar, Goa, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, West Bengal.

**HAPLANTHUS** Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832.

(G. Gnanasekaran & G.V.S. Murthy)

02 species and 01 variety.

**Haplanthus laxiflorus** (Blume) Gnanasek., G.V.S. Murthy & Y.F. Deng, Blumea 61(3): 168. 2016.

*Justicia laxiflora* Blume, Bijdr. Fl. Ned. Ind. 14: 789. 1826.

*Andrographis laxiflora* (Blume) Lindau in Engl. & Prantl, Nat. Pflanzenfam. 4: 323. 1895.

*Haplanthus tener* Nees in Wall., Pl. Asiat. Rar. 3: 115. 1832.

*Haplanthus tener* Nees var. *elongatus* Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832.

*Gymnostachyum andrographioides* T. Anderson, J. Linn. Soc., Bot. 9: 504. 1867.

*Andrographis tenera* (Nees) Kuntze, Revis. Gen. Pl. 2: 482. 1891.

*Andrographis tenera* (Nees) J.B. Imlay, Bull. Misc. Inform. Kew 1939: 126. 1939.

*Andrographis tenuiflora* T. Anderson, J. Linn. Soc., Bot. 9: 502. 1867, nom. illeg.

*Justicia tenuiflora* Wall., Numer. List: n. 7185a, nom. nud.

**var. laxiflorus**.

Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland.

**var. parishii** (T. Anderson) Gnanasek., G.V.S. Murthy & Y.F. Deng, Blumea 61(3): 168. 2016.

*Gymnostachyum parishii* T. Anderson, J. Linn. Soc., Bot. 9: 504. 1867.

Endemic to India: Andaman and Nicobar Islands.

**Haplanthus ovatus** (T. Anderson ex Bedd.) Gnanasek., G.V.S. Murthy & Y.F. Deng, Blumea 61(3): 168. 2016.

*Gymnostachyum ovatum* T. Anderson ex Bedd., Icon. Pl. Ind. Or.: 60, 61, t. 250. 1874.

*Andrographis ovata* (T. Anderson ex Bedd.) Benth. & Hook.f., Gen. Pl. 2(2): 1100. 1876.

Endemic to India: Andhra Pradesh, Chhattisgarh, Karnataka, Kerala, Odisha.

**HYGROPHILA** R. Br., Prodr.: 479. 1810.

16 species and 1 variety.

**Hygrophila anomala** (Blatt.) M.R. Almeida, Fl. Maharashtra 4: 40. 2003.

*Cardanthera anomala* Blatt., J. Proc. Asiat. Soc. Bengal 26: 350. 1930.

*Synnema anomala* (Blatt.) Santapau, Rec. Bot. Surv. India 16(1): 194. 1967.

Maharashtra.

**Hygrophila balsamica** (L.f.) Raf., Fl. Tellur. 4: 66. 1838.

*Adenosma thymus* Nees in Wall., Pl. Asiat. Rar. 3: 79. 1832.

*Adenosma verticillata* Nees in DC., Prodr. 11: 69. 1847.

*Cardanthera balsamica* (L.f.) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1074. 1876.

*Cardanthera balsamica* (L.f.) Benth. var. *thymus* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 404. 1884.

*Cardanthera verticillata* (Nees) Benth. ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 404. 1884.

*Hygrophila balsamica* (L.f.) Raf. var. *thymus* (Nees) Karthik. & al., Fl. Pl. India 1: 21. 2009.  
 Andhra Pradesh, Chhattisgarh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Odisha, Tamil Nadu, Tripura, West Bengal.

*Hygrophila difformis* (L.f.) Blume, Bijdr. Fl. Ned. Ind. 803. 1826.

*Ruellia difformis* L.f., Suppl. Pl.: 289. 1782.

*Cardanthera difformis* (L.f.) Druce, Bot. Soc. Exch. Club Brit. Isles (Suppl. 2): 612. 1917.  
 Assam, Bihar, Odisha, West Bengal.

*Hygrophila griffithii* (T. Anderson) Steem., Bull. Bot. Surv. India 10: 222. 1968.

*Adenosma griffithii* T. Anderson, J. Linn. Soc., Bot. 9: 454. 1867.

*Cardanthera griffithii* (T. Anderson) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1074. 1876.

*Synnema griffithii* (T. Anderson) Kuntze, Revis. Gen. Pl. 2: 500. 1891.

Assam, West Bengal.

*Hygrophila heinei* Steem., Bull. Bot. Surv. India 10: 223. 1968.

*Ruellia uliginosa* L.f., Suppl. Pl.: 290. 1781, non *Hygrophila uliginosa* S. Moore 1880.

*Adenosma uliginosa* (L.f.) R. Br. ex Nees in R. Br., Verm. Bot. Schrift. 3: 398. 1827.

*Cardanthera uliginosa* (L.f.) Buch.-Ham. ex Benth. in Benth. & Hook.f., Gen. Pl. 2: 1074. 1876.

*Cardanthera uliginosa* (L.f.) Buch.-Ham. ex Benth. var. *birbhumensis* B.P. Guha, Bull. Bot. Soc. Bengal 21: 47. 1967.

*Hygrophila heinei* Steem. var. *birbhumensis* (B.P. Guha) H.B. Naithani & S. Biswas in H.B. Naithani, Fl. Pl. India, Nepal & Bhutan: 333. 1990.

Andhra Pradesh, Kerala, Odisha, Rajasthan, Tamil Nadu.

*Hygrophila incana* Nees in DC., Prodr. 11: 91. 1847.

Southern region.

*Hygrophila madurensis* (N.P. Balakr. & Subr.) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 20. 2009.

*Santapaua madurensis* N.P. Balakr. & Subr., J. Indian Bot. Soc. 42: 411. 1963.

Tamil Nadu.

*Hygrophila parishii* (T. Anderson) Karthik & Moorthy in Karthik. & al., Fl. Pl. India 1: 22. 2009.

*Nomaphila parishii* T. Anderson, J. Linn. Soc., Bot. 9: 455. 1867.

Madhya Pradesh.

*Hygrophila pinnatifida* (Dalzell) Steem., Bull. Bot. Surv. India 10: 222. 1968.

*Nomaphila pinnatifida* Dalzell, Hooker's J. Bot. Kew. Gard. Misc. 3: 38. 1851.

*Adenosma pinnatifida* (Dalzell) T. Anderson, J. Linn. Soc., Bot. 9: 455. 1867.

*Cardanthera pinnatifida* (Dalzell) Benth. in Benth. & Hook.f., Gen. Pl. 2(2): 1074. 1876.

*Synnema pinnatifidum* (Dalzell) Kuntze, Revis. Gen. Pl. 2: 500. 1891.

Karnataka, Maharashtra.

*Hygrophila polysperma* (Roxb.) T. Anderson, J. Linn. Soc., Bot. 9: 456. 1867.

*Justicia polysperma* Roxb., Fl. Ind. 1: 119. 1820.

*Hemiadelphus polyspermus* (Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 80. 1832.

*Hemiadelphus polyspermus* (Roxb.) Nees var. *joshianus* Prak. Rao & S.N. Biswas, Indian Forester 94: 657. 1968.

*Ruellia uliginosa* Wall., Numer. List: n. 2378, partly. 1831–1832, nom. nud.

Throughout the country.

*Hygrophila pusilla* Blume, Bijdr. Fl. Ned. Ind. 14: 804. 1826.

Andaman and Nicobar Islands.

*Hygrophila ringens* (L.) R. Br. ex Steud., Nomencl. Bot., ed. 1, 1: 418. 1821.

*Ruellia ringens* L., Sp. Pl.: 635. 1753.

*Ruellia erecta* Burm.f., Fl. Ind.: 135, t. 41, f. 3. 1768.

- Ruellia undulata* Vahl, Symb. Bot. 3: 82. 1794.  
*Ruellia salicifolia* Vahl, Symb. Bot. 3: 84. 1794.  
*Justicia lancea* Thunb., Trans. Linn. Soc. London 2: 338. 1794.  
*Hygrophila angustifolia* R. Br., Prodr. Fl. Nov. Holland.: 479. 1810.  
*Ruellia obovata* Roxb. ex Hornem., Suppl. Hort. Bot. Hafn.: 144. 1819.  
*Ruellia longifolia* Roth, Nov. Sp.: 306. 1821.  
*Ruellia quadrivalvis* Buch.-Ham., Trans. Linn. Soc. London 14: 291. 1824.  
*Hygrophila undulata* (Vahl) Blume, Bijdr. Fl. Ned. Ind. 13: 803. 1826.  
*Hygrophila obovata* Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.  
*Hygrophila phlomoides* (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 80. 1832.  
*Hygrophila quadrivalvis* (Buch.-Ham.) Nees in Wall., Pl. Asiat. Rar. 3: 80. 1832.  
*Hygrophila dimidiata* (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.  
*Hygrophila radicans* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.  
*Hygrophila salicifolia* (Vahl) Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.  
*Ruellia hirsuta* Roxb., Fl. Ind. ed. 2, 3: 51. 1832.  
*Hygrophila incana* Nees in DC., Prodr. 11: 91. 1847.  
*Hygrophila salicifolia* Vahl var. *glabra* T. Anderson, J. Linn. Soc., Bot. 9: 456. 1867.  
*Hygrophila salicifolia* Vahl var. *hirsuta* T. Anderson, J. Linn. Soc., Bot. 9: 456. 1867.  
*Hygrophila salicifolia* (Vahl) Nees var. *dimidiata* (Wall.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 407. 1884.  
*Hygrophila salicifolia* Vahl var. *assurgens* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 407. 1884.  
*Hygrophila phlomoides* (Wall.) Nees var. *repens* C.B. Clarke in Hook.f., Fl. Brit. India 4: 408. 1884.  
*Hygrophila phlomoides* (Wall.) Nees var. *roxburghii* C.B. Clarke in Hook.f., Fl. Brit. India 4: 408. 1884.  
*Dyschoriste erecta* (Burm.f.) Kuntze, Revis. Gen. Pl. 2: 485. 1891.  
*Hygrophila erecta* (Burm.f.) Hochr., Candollea 5: 230. 1934.  
*Hygrophila bengalensis* S.K. Mandal, A. Bhattacharjee & Nayek, J. Bombay Nat. Hist. Soc. 94(3): 546. 1997.  
*Hygrophila salicifolia* Vahl var. *cochinensis* Remadevi & Binojk., J. Econ. Taxon. Bot. 25(1): 233. 2003.  
*Hygrophila ringens* (L.) R. Br. ex Steud. var. *cochinensis* (Remadevi & Binojk.) Karthik & Moorthy in Karthik. & al., Fl. Pl. India 1: 23. 2009.  
*Hygrophila incana* (B. Heyne) C.B. Clarke in Hook.f., Fl. Brit. India 4: 408. 1884, nom. illeg.  
 Throughout the country.

- Hygrophila schulli** (Buch.-Ham.) M.R. Almeida & S.N. Almeida, J. Bombay Nat. Hist. Soc. 83(Suppl.): 221. 1987.  
*Bahel schulli* Buch.-Ham., Trans. Linn. Soc. London 14: 289. 1824.  
*Barleria longifolia* L., Cent. Pl. II: 22. 1756.  
*Barleria auriculata* Schumach., Beskr. Guin. Pl.: 285. 1827.  
*Ruellia longifolia* (L.) Roxb., Fl. Ind. ed. 2, 3: 50. 1832.  
*Asteracantha longifolia* (L.) Nees in Wall., Pl. Asiat. Rar. 3: 90. 1832.  
*Asteracantha auriculata* Nees in DC., Prodr. 11: 248. 1847.  
*Hygrophila spinosa* T. Anderson in Thwaites, Enum. Pl. Zeyl.: 225. 1860.  
*Hygrophila auriculata* (Schumach.) Heine, Kew Bull. 16: 172. 1962.  
*Hygrophila schulli* (Buch.-Ham.) M.R. Almeida & S.N. Almeida var. *alba* Parmar, J. Econ. Taxon. Bot. 32: 150. 2008.  
*Hygrophila auriculata* (Schumach.) Heine var. *alba* (Parmar) P.M. Salim, J. Mathew & Yohannan, Annals Pl. Sci. 6(1): 1500. 2017, syn. nov.  
*Hygrophila longifolia* (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39: 78. 1870, nom. illeg.  
 Andhra Pradesh, Chhattisgarh, Daman and Diu, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal.

**Hygrophila serpyllum** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 456. 1867.

*Physichilus serpyllum* Nees, Compan. Bot. Mag. 2: 311. 1837.

*Ruellia polysperma* Roth, Nov. Pl. Sp.: 305. 1821.

*Adenosma polysperma* Spreng., Syst. Veg. 2: 829. 1825.

var. **serpyllum**.

Endemic to India: Daman and Diu, Madhya Pradesh, Maharashtra, Rajasthan, Telangana.

*var. hookeriana* C.B. Clarke in Hook.f., Fl. Brit. India 4: 407. 1884.  
Maharashtra.

**Hygrophila stocksi** T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 407. 1884.  
*Hygrophila serpyllum* sensu T. Anderson, J. Linn. Soc., Bot. 9: 455. 1867, partly.  
Maharashtra.

**Hygrophila triflora** (Roxb. ex Nees) Fosberg & Sachet, Baileya 21: 145. 1981.  
*Adenosma triflora* Roxb. ex Nees in Wall., Pl. Asiat. Rar. 3: 79. 1832.  
*Ruellia triflora* Roxb., Fl. Ind. ed. 2, 3: 52. 1832.  
*Cardanthera triflora* (Roxb. ex Nees) Buch.-Ham. ex Nees in DC., Prodr. 11: 68. 1847.  
*Synemna triflorum* (Roxb. ex Nees) Kuntze, Revis. Gen. Pl. 2: 500. 1891.  
Assam, West Bengal.

**HYPÖESTES** Sol. ex R. Br., Prodr. Fl. Nov. Holland.: 474. 1810.  
3 species and 1 variety.

**Hypoestes andamanensis** Thoth., Reinwardtia 7(1): 1, f. 1-10. 1965.  
Endemic to India: Andaman and Nicobar Islands.

**Hypoestes lanata** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 343. 1850.  
Maharashtra.

**Hypoestes phyllostachya** Baker, J. Linn. Soc., Bot. 22: 511. 1887.  
Kerala, Tamil Nadu, West Bengal.

**Hypoestes thothathrii** Vasudeva Rao & Chakrab., J. Econ. Taxon. Bot. 5(4): 989. 1984.  
Andaman and Nicobar Islands (Rutland Island, Barakhadi).

**Hypoestes triflora** Roem. & Schult., Syst. Veg. 1: 88. 1817.  
*var. triflora*  
Assam, Meghalaya, Nagaland, Sikkim, West Bengal.

*var. pedunculata* N.P. Balakr., Bull. Bot. Surv. India 16: 172. 1977.  
Meghalaya.

**ISOGLOSSA** Oerst., Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1854: 155. 1854, nom. cons.  
1 species.

**Isoglossa collina** (T. Anderson) B. Hansen, Nordic J. Bot. 5(1): 12. 1985.  
*Justicia collina* T. Anderson, J. Linn. Soc., Bot. 9: 515. 1867.  
*Dianthera collina* (T. Anderson) C.B. Clarke in Hook.f., Fl. Brit. India 4: 543. 1885.  
Arunachal Pradesh, Assam, Meghalaya, Sikkim, West Bengal.

**JUSTICIA** L., Sp. Pl. 1: 15. 1753.  
70 species and 9 varieties, including 2 cultivated species.

**Justicia adhatoda** L., Sp. Pl. 1: 15. 1753.  
*Adhatoda zeylanica* Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 393. 1790.  
*Adhatoda vasica* Nees in Wall., Pl. Asiat. Rar. 3: 103. 1832.  
Throughout the country.

**Justicia andamanica** (Vasudeva Rao) Vasudeva Rao, J. Econ. Taxon. Bot. 18(1): 247. 1994.  
*Rostellularia andamanica* Vasudeva Rao, J. Econ. Taxon. Bot. 6(3): 719. 1985.  
Endemic to India: Andaman and Nicobar Islands.

**Justicia anfractuosa** C.B. Clarke, J. Linn. Soc., Bot. 25: 56. 1889.

Endemic to India: Manipur, Nagaland.

**Justicia apiculata** (Bedd.) J.R.I. Wood, Novon 23(3): 386. 2014.

*Rungia apiculata* Bedd., Icon. Pl. Ind. Or.: 60, t. 247. 1874.

*Rungia apiculata* Bedd. var. *compta* C.B. Clarke in Hook.f., Fl. Brit. India 4: 549. 1885.

Andhra Pradesh, Kerala, Tamil Nadu.

**Justicia assamica** C.B. Clarke in Hook.f., Fl. Brit. India 4: 537. 1885.

*Rostellularia assamica* (C.B. Clarke) J.L. Ellis, Bull. Bot. Surv. India 24: 209. 1983.

Assam, Meghalaya.

**Justicia atkinsonii** T. Anderson, J. Linn. Soc., Bot. 9: 509. 1867.

Arunachal Pradesh, Assam, Sikkim, West Bengal.

**Justicia beddomei** (C.B. Clarke) Bennet, Indian J. Forest. 5(4): 326. 1982.

*Adhatoda beddomei* C.B. Clarke in Hook.f., Fl. Brit. India 4: 540. 1885.

*Justicia gingiana* Sebastine & Ramam., Bull. Bot. Surv. India 6: 99. 1965.

Karnataka, Tamil Nadu.

**Justicia betonica** L., Sp. Pl.: 15. 1753.

var. **betonica**.

Throughout the country.

var. **ramosissima** (Roxb.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 525. 1885.

*Justicia ramosissima* Roxb., Fl. Ind. 1: 130. 1820.

Throughout the country.

var. **villosa** C.B. Clarke in Hook.f., Fl. Brit. India 4: 525. 1885.

Central, eastern and southern regions and Upper Gangetic Plains.

**Justicia burkilliana** J. Bhattacharya, Kew Bull. 57(1): 231. 2002.

Endemic to India: Arunachal Pradesh.

**Justicia concinna** J.R.I. Wood, Novon 23(3): 386. 2014.

*Rungia elegans* Dalzell & A. Gibson, Bombay Fl.: 196. 1861.

Goa, Karnataka, Maharashtra.

**Justicia craibii** W.W. Sm., Rec. Bot. Surv. India 4: 285. 1911.

Assam, Meghalaya.

**Justicia crenatifolia** J.R.I. Wood, Novon 23(3): 387. 2014.

*Rungia crenata* T. Anderson, J. Linn. Soc., Bot. 9: 518. 1867.

Endemic to India: Western Ghats of Goa, Karnataka, Maharashtra.

**Justicia cymosa** (Griff.) Karthik., Moorthy & Karthig., **comb. nov.**

*Adhatoda cymosa* Griff., Itin. Pl. Khasyah Mts.: 7, 96. 1848, non *Justicia cymosa* Herb. Madras ex Nees, 1847, inval.

*Justicia ramamurthyi* Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 28. 2009, nom. superfl. & nom. illeg.

**Justicia dasycarpa** Kurz, J. Asiatic Soc. Bengal, Pt. 2, Nat. Hist. 42(2): 96. 1873.

Assam, Manipur.

**Justicia diffusa** Willd., Sp. Pl. 1: 87. 1797.

*Rostellularia diffusa* (Willd.) Nees in Wall., Pl. Asiatic Rar. 3: 100. 1832.

*var. diffusa.*

Throughout the country.

*var. hedyotidifolia* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 538. 1885.

*Rostellularia hedyotidifolia* Nees in Wall., Pl. Asiat. Rar. 3: 100. 1832.

*Rostellularia diffusa* Willd. var. *hedyotidifolia* (Nees) Kumari in A.N. Henry & al., Fl. Tamil Nadu 2: 158. 1987.

Madhya Pradesh, Rajasthan, Tamil Nadu.

*var. orbiculata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 538. 1885.

*Rostellularia diffusa* (Willd.) Nees var. *orbiculata* (Wall. ex T. Anderson) J.L. Ellis in B.D. Sharma & al., Biol. Mem. 2: 109. 1977.

*Rostellularia diffusa* (Willd.) Nees var. *rotundifolia* (Nees) J.L. Ellis, Bull. Bot. Surv. India 30: 132. 1990.

*Justicia orbiculata* Wall. ex T. Anderson, J. Linn. Soc., Bot. 9: 512. 1867, nom. superfl. & nom. illeg.

Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu.

**Justicia ekakusuma** Pradeep & Sivar., Rheedia 1: 42. 1991.

Endemic to India: Kerala.

*Justicia ellisii* Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 25. 2009.

*Dianthera debilis* Forssk., Fl. Aegypt.-Arab.: 9. 1775, non *Justicia debilis* Vahl 1791, nec Lam. 1792.

*Monechma bracteatum* Hochst., Flora 24(1): 375. 1841.

*Monechma debile* (Forssk.) Nees in DC., Prodr. 11: 411. 1847.

Gujarat, Maharashtra, Tamil Nadu.

**Justicia eudoxa** J.R.I. Wood, Novon 23(3): 387. 2014.

*Rungia laeta* C.B. Clarke in Hook.f., Fl. Brit. India 4: 546. 1885.

Kerala, Tamil Nadu.

**Justicia gambleana** K.M.P. Kumar, Robi & Hareesh, Kew Bull. 71(3)-39: 1. 2016.

Kerala (Dhoni Forest, Palakkad District).

**Justicia gendarussa** Burm.f., Fl. Ind.: 10. 1768.

*Gendarussa vulgaris* Nees in Wall., Pl. Asiat. Rar. 3: 104. 1832.

Throughout the country.

**Justicia glabra** J. König ex Roxb., Fl. Ind. 1: 132. 1820.

*Raphidospora glabra* (J. König ex Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 115. 1832.

Andhra Pradesh, Karnataka, Madhya Pradesh, Tamil Nadu.

**Justicia glauca** Rottler, Neue Schriften Ges. Naturf. Freunde Berlin 4: 219. 1802.

*Gendarussa tranquiliensis* Wight, Icon. Pl. Ind. Orient. 2(2): 4, t. 462. 1841, non Nees 1832.

Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu, Uttarakhand, West Bengal.

Andaman and Nicobar Islands.

**Justicia grossa** C.B. Clarke in Hook.f., Fl. Brit. India 4: 533. 1885.

*Justicia helferi* C.B. Clarke in Hook.f., Fl. Brit. India 4: 533. 1885.

Andaman and Nicobar Islands.

**Justicia heterocarpa** T. Anderson, J. Proc. Linn. Soc., Bot. 7: 41. 1863.

*Justicia heterocarpoides* Blatt., J. Proc. Asiat. Soc. Bengal 26: 344. 1931.

Punjab, Rajasthan.

**Justicia heyneana** J.R.I. Wood, Novon 23(3): 387. 2014.

*Rungia linifolia* Nees in Wall., Pl. Asiat. Rar. 3: 110. 1832.

*Rostellularia gracilis* Wight, Icon. Pl. Ind. Orient. 4(4): 6, t. 1541. 1850.

*Justicia gracilis* (Wight) T. Anderson, J. Linn. Soc., Bot. 9: 512. 1867.

**var. *heyneana***

Endemic to India: Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Rajasthan, Tamil Nadu.

**var. *saldanhae* (Mascar. & Janarth.) J.R.I. Wood, Novon 23(3): 387. 2014.**

*Rungia linifolia* Nees var. *saldanhae* Mascar. & Janarth., Novon 20: 182, f. 1. 2010.

Endemic to India: Karnataka.

***Justicia himalayensis* (C.B. Clarke) J.R.I. Wood, Novon 23(3): 387. 2014.**

*Rungia himalayensis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 548. 1885.

Assam, Sikkim, West Bengal.

***Justicia japonica* Thunb., Fl. Jap.: 20. 1784.**

*Justicia simplex* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 539. 1885, p.p. non D. Don 1825.

*Rostellularia japonica* (Thunb.) J.L. Ellis, Bull. Bot. Surv. India 22: 196. 1982.

Throughout the country.

***Justicia khasiana* C.B. Clarke in Hook.f., Fl. Brit. India 4: 537. 1885.**

*Rostellularia khasiana* (C.B. Clarke) J.L. Ellis, Bull. Bot. Surv. India 20: 172. 1979.

Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Tripura, West Bengal.

***Justicia latior* (Nees) J.R.I. Wood, Novon 23(3): 388. 2014.**

*Rungia latior* Nees, Compan. Bot. Mag. 2: 313. 1836.

*Rungia longifolia* Nees subsp. *latior* (Nees) L.H. Cramer, Kew Bull. 51(3): 556. 1996.

*Rungia longifolia* Nees var. *latifolia* Wight ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 547. 1885.

**var. *latior*.**

Kerala, Tamil Nadu. **Endemic.**

**var. *anamalayana* (Chandrab. & V. Chandras.) J.R.I. Wood, Novon 23(3): 388. 2014.**

*Rungia latior* Nees var. *anamalayana* Chandrab. & V. Chandras., J. Bombay Nat. Hist. Soc. 84(3): 722. 1987.

*Rungia longifolia* Nees subsp. *latior* (Nees) L.H. Cramer var. *anamalayana* (Chandrab. & V. Chandras.) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 39. 2009.

*Rungia anamalayana* (Chandrab. & V. Chandras.) Nazarudeen & G. Rajkumar, Pl. Sci. Today 7(1): 24. 2020, syn. nov.

Endemic to India: Tamil Nadu (Anamalais, Coimbatore District).

***Justicia latispica* (C.B. Clarke) Gamble, Fl. Madras 1080. 1924.**

*Justicia procumbens* L. var. *latispica* C.B. Clarke in Hook.f., Fl. Brit. India 4: 539. 1885.

*Rostellularia latispica* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45(2): 71. 1948.

*Justicia procumbens* L. subsp. *latispica* (C.B. Clarke) L.H. Cramer in Dassan., Revis. Handb. Fl. Ceylon 12: 120. 1996.

*Rostellularia procumbens* Wight, Icon. Pl. Ind. Orient. 4(4): 6, t. 1539. 1850, non Nees 1832.

Andhra Pradesh, Kerala, Tamil Nadu.

***Justicia mastersii* (T. Anderson) J.R.I. Wood, Novon 23(3): 388. 2014.**

*Rungia mastersii* T. Anderson, J. Linn. Soc., Bot. 9: 519. 1867.

Endemic to India: Assam.

***Justicia meghalayana* J.R.I. Wood, Novon 23(3): 388. 2014.**

*Rungia khasiana* T. Anderson, J. Linn. Soc., Bot. 9: 518. 1867.

Endemic to India: Assam, Meghalaya.

***Justicia muralis* (Nees) Karthig. & Lakshmin., comb. nov.**

*Rungia muralis* Nees in DC., Prodr. 11: 470. 1847.

*Rungia parviflora* (Retz.) Nees var. *muralis* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 550. 1885.

Gujarat, Karnataka, Kerala, Tamil Nadu.

**Justicia nagpurensis** V.A.W. Graham, Kew Bull. 43(4): 597. 1988.

*Rostellularia procumbens* (L.) Nees var. *serpyllifolia* Benth. in Hohen., Pl. Ind. Orient. 571. 1847.

*Justicia simplex* D. Don var. *serpyllifolia* (Benth.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 539. 1885.

*Justicia serpyllifolia* (Benth.) Gamble, Fl. Madras 1080. 1924, non Vahl 1804.

*Rostellularia serpyllifolia* (Benth.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45(2): 62. 1948.

*Rostellularia mollissima* (Nees) Nees var. *serpyllifolia* (C.B. Clarke) Raizada, Suppl. Duthie's Fl. Gangetic Plain: 209. 1976.

*Justicia hansenii* Sivar. & P. Mathew, Taxon 38(3): 486. 1989.

Goa, Karnataka, Tamil Nadu.

**Justicia neesiana** (Wall. ex Nees) T. Anderson, J. Linn. Soc., Bot. 9: 513. 1867.

*Gendarussa neesiana* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 105. 1832.

*Adhatoda neesiana* (Wall. ex Nees) Nees in DC., Prodr. 11: 397. 1847.

Meghalaya, Sikkim.

**Justicia neesii** Ramamoorthy in C.J. Saldanha & Nicolson, Fl. Hassan Dist.: 551. 1976.

*Rostellularia crinita* Nees in Wall., Pl. Asiat. Rar. 3: 101. 1832.

*Rostellularia neesii* (Ramamoorthy) A.K. Mukh., Fl. Pachmarhi & Bori Res. 236. 1984.

*Justicia micrantha* Wall. ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 536. 1885, non Pohl ex Nees, 1847.

Andhra Pradesh, Karnataka, Madhya Pradesh, Tamil Nadu.

**Justicia nepalensis** V.A.W. Graham, Kew Bull. 43: 597. 1988.

*Rostellularia rotundifolia* (Nees) Nees in DC., Prodr. 11: 370. 1847.

*Rostellularia rotundifolia* Nees in Wall., Pl. Asiat. Rar. 3: 100. 1832, non *Justicia rotundifolia* Nees 1832.

*Justicia simplex* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 539. 1885, p.p.

Throughout the country.

**Justicia nilgherrensis** (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 526. 1885.

*Adhatoda nilgherrensis* Nees in Wall., Pl. Asiat. Rar. 3: 103. 1832.

Karnataka, Kerala, Tamil Nadu.

**Justicia notha** C.B. Clarke in Hook.f., Fl. Brit. India 4: 537. 1885.

*Rostellularia simplex* Wight, Icon. Pl. Ind. Orient. 4(4): 6, t. 1542. 1850, non *Justicia simplex* D. Don 1825.

Tamil Nadu.

**Justicia oreophila** C.B. Clarke in Hook.f., Fl. Brit. India 4: 526. 1885.

*Adhatoda oreophila* (C.B. Clarke) C.E.C. Fisch., Bull. Misc. Inform. Kew 1935: 575. 1935.

*Justicia ventricosa* Wall. ex Hook.f. var. *major* Benoist, Notul. Syst. (Paris) 5: 120. 1936.

Manipur, Nagaland, Tripura.

**Justicia parviflora** Retz., Observ. Bot. 5: 9. 1788.

*Rungia parviflora* (Retz.) Nees in Wall., Pl. Asiat. Rar. 3: 110. 1832.

*Rungia parviflora* (Retz.) Nees var. *monticola* Gamble, Fl. Madras 1072. 1924.

Throughout the country.

**Justicia pathanamthittensis** Remadevi & Binojk., J. Econ. Taxon. Bot. 32(3): 660, f. 1. 2008.

Endemic to India: Kerala.

**Justicia pectinata** L., Cent. Pl. II: 3. 1756.

*Rungia pectinata* (L.) Nees in DC., Prodr. 11: 470. 1847.

*Rungia parviflora* (Retz.) Nees var. *pectinata* (L.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 550. 1884.

Throughout the country.

**Justicia peploides** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 511. 1867.

*Rostellularia peploides* Nees in Wall., Pl. Asiat. Rar. 3: 101. 1832.

*Justicia quinqueangularis* (Nees) J. König ex Roxb. var. *peploides* C.B. Clarke in Hook.f., Fl. Brit. India 4: 537. 1885.

*Rostellularia quinqueangularis* J. König ex Roxb. var. *peploides* (Nees) Raizada, Suppl. Duthie's Fl. Gangetic Plain: 209. 1976.  
*Rostellularia* Pradesh, Bihar, Chhattisgarh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, West Bengal.

**Justicia procumbens** L., Sp. Pl.: 15. 1753.  
*Rostellularia procumbens* (L.) Nees in DC., Prodr. 11: 371. 1847.  
 Throughout the country.

**Justicia prostrata** (Roxb. ex C.B. Clarke) Gamble, Fl. Madras 1081. 1924.  
*Justicia diffusa* Willd. var. *prostrata* Roxb. ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 538. 1885.  
*Rostellularia prostrata* (Roxb. ex C.B. Clarke) R.B. Majumdar, Bull. Bot. Soc. Bengal 25(1 & 2): 75. 1971.  
*Rostellularia diffusa* (Nees) Nees var. *prostrata* (Roxb. ex C.B. Clarke) J.L. Ellis, Bull. Bot. Surv. India 30: 131. 1990.  
 Andaman and Nicobar Islands, Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Odisha, Tamil Nadu, West Bengal.

**Justicia pubigera** (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 536. 1885.  
*Peristrophe pubigera* Nees in Wall., Pl. Asiat. Rar. 3: 114. 1832.  
 Himachal Pradesh, Jammu and Kashmir, Uttarakhand.

**Justicia punduana** (Wall. ex Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 527. 1885.  
*Rungia punduana* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 110. 1832.  
 Assam, Meghalaya.

**Justicia quadrifaria** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 514. 1867.  
*Gendarussa quadrifaria* Nees in Wall., Pl. Asiat. Rar. 3: 105. 1832.  
 Assam, West Bengal.

**Justicia quinqueangularis** J. König ex Roxb., Fl. Ind. 1: 134. 1820.  
*Rostellaria quinqueangularis* (J. König ex Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 101. 1832.  
 var. **quinqueangularis**.  
 Throughout the country.

var. **kawalii** Anamma & Venu, Indian J. Forest. 39(2): 179. 2016.  
 Telangana (Kawal Tiger Reserve, Adilabad District).

**Justicia ramamurthyi** Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 28. 2009.  
*Adhatoda cymosa* Griff., Itin. Pl. Khasyah Mts. (Posth. Papers 1): 7. 96. 1848, non *Justicia cymosa* Nees 1847.  
 Assam.

**Justicia repens** L., Sp. Pl.: 15. 1753.  
*Rungia repens* (L.) Nees in Wall., Pl. Asiat. Rar. 3: 110. 1832.  
 Throughout the country.

**Justicia salicifolia** T. Anderson, J. Linn. Soc., Bot. 9: 514. 1867.  
*Calophanoides salicifolia* (T. Anderson) Bremek., Dansk. Bot. Ark. 20: 84. 1961.  
 Arunachal Pradesh, Assam, Meghalaya.

**Justicia salsolooides** T. Anderson, J. Linn. Soc., Bot. 9: 514. 1867.  
 Karnataka, Tamil Nadu.

**Justicia santapaui** Bennet, J. Bombay Nat. Hist. Soc. 67: 358. 1970.  
*Hemichoriste montana* Nees in Wall., Pl. Asiat. Rar. 3: 102. 1832.  
*Justicia montana* (Nees) Wall. ex T. Anderson, J. Linn. Soc., Bot. 9: 509. 1867, non Roxb., 1805.  
 Goa, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Justicia simplex** D. Don, Prodr. Fl. Nepal 118. 1825.

*Rostellularia procumbens* (L.) Nees var. *simplex* (D. Don) T. Yamaz. in H. Hara, Fl. E. Himal. 302. 1966.  
Throughout the country.

**Justicia sivadasanii** Sunil, K.M.P. Kumar & Naveen Kum., Kew Bull. 70(4): 55. 1. 2015.

Kerala (Thundathil Forest Range, Ernakulam District).

**Justicia stolonifera** (C.B. Clarke) B. Hansen, Nordic J. Bot. 9(2): 210. 1989.

*Rungia stolonifera* C.B. Clarke in Hook.f., Fl. Brit. India 4: 547. 1885.

*Rungia chinensis* Benth., Fl. Hongk.: 266. 1861.

Meghalaya, Nagaland.

**Justicia sumatrana** (Miq.) Kurz, J. Asiatic Soc. Bengal, Pt. 2, Nat. Hist. 45(3): 142. 1876.

*Gendarussa sumatrana* Miq., Fl. Ned. Ind. 2: 832. 1858.

*Mananthes sumatrana* (Miq.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45(2): 59. 1948.

Andaman and Nicobar Islands (Katchal Island).

**Justicia tranquebariensis** L.f., Suppl. Pl.: 85. 1782.

*Gendarussa tranquebariensis* (L.f.) Nees in Wall., Pl. Asiatic Rar. 3: 105. 1832.

*Adhatoda tranquebariensis* Nees in DC., Prodr. 11: 399. 1847.

Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Justicia trinervia** Vahl, Enum. Pl. 1: 156. 1804.

var. *trinervia*.

Andhra Pradesh, Karnataka, Kerala, Odisha, Tamil Nadu.

var. *arenaria* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 526. 1885.

*Adhatoda arenaria* Nees in DC., Prodr. 11: 387. 1847.

Karnataka.

**Justicia vahlii** Roth, Nov. Pl. Sp.: 14. 1821.

*Rostellularia vahlii* (Roth) Nees in Wall., Pl. Asiatic Rar. 3: 102. 1832.

*Justicia diffusa* Willd. var. *vahlii* (Roth) C.B. Clarke in Hook.f., Fl. Brit. India 4: 538. 1885.

var. *vahlii*

Andhra Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu, West Bengal.

var. *ruplicola* (J.L. Ellis) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 29. 2009.

*Rostellularia vahlii* (Roth) Nees var. *ruplicola* J.L. Ellis, Bull. Bot. Surv. India. 11: 435. 1972.

Andhra Pradesh.

**Justicia vallis-silentiosae** J.R.I. Wood, Novon 23(3): 388. 2014.

*Rungia sisparensis* (Benth.) T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 546. 1884, non *Justicia sisparensis* Lindau, 1895.

*Adhatoda sisparensis* Benth. in Hohen., Pl. Ind. Exsic. No. 1436. 1847, pro syn.

Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**Justicia vasculosa** T. Anderson, J. Linn. Soc., Bot. 9: 515. 1867.

*Adhatoda vasculosa* Nees in Wall., Pl. Asiatic Rar. 3: 104. 1832.

*Mananthes vasculosa* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45(2): 59. 1948.

Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Nagaland, Sikkim, West Bengal.

**Justicia ventricosa** Wall. ex Hook.f., Bot. Mag. 54: t. 2766. 1827.

*Gendarussa ventricosa* Nees in Wall., Pl. Asiatic Rar. 3: 104. 1832.

Nagaland, Sikkim, Tripura, West Bengal.

**Justicia virgata** T. Anderson, J. Linn. Soc., Bot. 9: 516. 1867.

*Dianthera virgata* (T. Anderson) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1114. 1876.

Eastern and northeastern regions and Eastern Himalayas.

**Justicia wightiana** (Nees) J.R.I. Wood, Novon 23(3): 389. 2014.

*Rungia wightiana* Nees in Wall., Pl. Asiat. Rar. 3: 110. 1832.

Karnataka, Kerala, Tamil Nadu.

**Justicia wynnaadensis** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 515. 1867.

*Gendarussa wynnaadensis* Nees in Wall., Pl. Asiat. Rar. 3: 104. 1832.

*Adhatoda wynnaadensis* (Nees) Nees in DC., Prodr. 11: 406. 1847.

Karnataka, Kerala, Maharashtra, Tamil Nadu.

**LEPIDAGATHIS** Willd., Sp. Pl. 3: 400. 1800.

26 species and 7 varieties.

**Lepidagathis balakrishnanii** Remadevi & Binojk., J. Econ. Taxon. Bot. 32(3): 554, f. 1. 2008.

Endemic to India: Kerala.

**Lepidagathis bandraensis** Blatt., J. Proc. Asiat. Soc. Bengal. 26: 347. 1931.

Endemic to India: Gujarat, Maharashtra, Rajasthan.

**Lepidagathis barberi** Gamble, Bull. Misc. Inform. Kew 1923: 375. 1923.

Endemic to India: Karnataka, Tamil Nadu.

**Lepidagathis benojiana** Jithin & Jose, Nordic J. Bot. 35(4): 436. 2017.

Endemic to India: Kerala (Kulamavu, Idukki District).

**Lepidagathis chlorostachya** Nees in DC., Prodr. 11: 256. 1847.

Kerala.

**Lepidagathis clavata** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 340. 1850.

Endemic to India: Western Ghats of Karnataka, Maharashtra.

**Lepidagathis cristata** Willd., Sp. Pl. 3: 400. 1800.

*Lepidagathis rupestris* Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832.

*Lepidagathis cristata* Willd. var. *rupestris* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 516. 1885.

Notheastern and peninsular regions: Andhra Pradesh, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh.

**Lepidagathis cuspidata** Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832.

*Ruellia cuspidata* Wall., Numer. List. n. 2405. 1830.

Andhra Pradesh, Assam, Goa, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Sikkim, Uttar Pradesh.

**Lepidagathis diffusa** C.B. Clarke in Hook.f., Fl. Brit. India 4: 518. 1885.

Karnataka, Tamil Nadu.

**Lepidagathis fasiculata** (Retz.) Nees in Wall., Pl. Asiat. Rar. 3: 95. 1832.

*Ruellia fasiculata* Retz., Observ. Bot. 4: 28. 1786.

Andhra Pradesh, Bihar, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, West Bengal.

**Lepidagathis hamiltoniana** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 96. 1832.

*Lepidagathis beddomii* T. Anderson, J. Linn. Soc., Bot. 9: 499. 1867.

Andhra Pradesh, Bihar, Madhya Pradesh, Maharashtra, Odisha, Uttar Pradesh, West Bengal.

**Lepidagathis incurva** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal 119. 1825.

*Lepidagathis hyalina* Nees in Wall., Pl. Asiat. Rar. 3: 95. 1832.

var. **incurva**.

Assam, Bihar, Goa, Karnataka, Kerala, Maharashtra, Manipur, Punjab, Rajasthan, Sikkim, West Bengal.

var. **aristata** (C.E.C. Fisch.) H.B. Naithani & S. Biswas in H.B. Naithani, Fl. Pl. India, Nepal & Bhutan: 334. 1990.

*Lepidagathis hyalina* Nees var. *aristata* C.E.C. Fisch., Bull. Misc. Inform. Kew 1932: 201. 1932.

Meghalaya.

var. **lophostachyoides** (Nees) B.D. Sharma, N.P. Singh, Sundararagh. & Deshp., Fl. Karnataka Anal.: 209. 1984.

*Lepidagathis hyalina* Nees var. *lophostachyoides* Nees in DC., Prodr. 11: 252. 1847.

Karnataka.

var. **mollis** (C.B. Clarke) Raizada & H.O. Saxena, Indian Forester 92: 315. 1966.

*Lepidagathis hyalina* Nees var. *mollis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 521. 1885.

West Bengal and throughout northern and Terai Himalayas.

var. **mucronata** (Nees) C.B. Clarke ex T. Cooke, Fl. Bombay 2: 397. 1904.

*Lepidagathis mucronata* Nees in Wall., Pl. Asiat. Rar. 3: 95. 1832.

*Lepidagathis hyalina* Nees var. *mucronata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 521. 1885.

Peninsular region.

var. **semiherbacea** (Nees) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 31. 2009.

*Lepidagathis semiherbacea* Nees in Wall., Pl. Asiat. Rar. 3: 96. 1832.

Eastern Himalayas, northeastern region, West Bengal.

var. **ustulata** (Nees) Raizada & H.O. Saxena, Indian Forester 92: 315. 1966.

*Lepidagathis ustulata* Nees in Wall., Pl. Asiat. Rar. 3: 95. 1832.

*Lepidagathis hyalina* Nees var. *ustulata* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 521. 1885.

Himachal Pradesh, Jammu and Kashmir, Uttar Pradesh.

**Lepidagathis keralensis** Madhus. & N.P. Singh, Kew Bull. 47: 301. 1992.

Endemic to India: Kerala.

**Lepidagathis lutea** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 139. 1850.

Endemic to India: Gujarat, Karnataka, Maharashtra, Rajasthan.

**Lepidagathis mitis** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 3: 226. 1851.

Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu.

**Lepidagathis prostrata** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 138. 1850.

Goa, Gujarat, Himachal Pradesh, Karnataka, Maharashtra.

**Lepidagathis pungens** Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832.

Karnataka, Kerala, Tamil Nadu.

**Lepidagathis purpuricaulis** Nees in Wall., Pl. Asiat. Rar. 3: 96. 1832.

Bihar, Himachal Pradesh, Jharkhand, Madhya Pradesh, Odisha, Punjab, Uttar Pradesh, West Bengal.

**Lepidagathis rigida** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 341. 1850.

Endemic to India: Maharashtra.

**Lepidagathis scariosa** Nees in Wall., Pl. Asiat. Rar. 3: 95. 1832.

Karnataka, Tamil Nadu.

**Lepidagathis shrirangii** Natekar, Kambale & Chandore, Phytotaxa 405(4): 215. 2019.  
Endemic to India: Maharashtra (Konkan region, Ratnagiri District).

**Lepidagathis spinosa** Wight ex Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832.  
Karnataka, Maharashtra, Tamil Nadu.

**Lepidagathis subarmata** (C.B. Clarke) Gamble, Fl. Madras 1067. 1924.  
*Lepidagathis mitis* Dalzell var. *subarmata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 516. 1885.  
Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu.

**Lepidagathis submittis** Blatt., J. Proc. Asiat. Soc. Bengal 26: 349. 1931.  
Tamil Nadu.

**Lepidagathis trinervis** Nees in Wall., Pl. Asiat. Rar. 3: 96. 1832.  
var. *trinervis*.

Bihar, Daman and Diu, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Sikkim, West Bengal  
var. *asperrima* C.B. Clarke in Hook.f., Fl. Brit. India 4: 507. 1885.  
Maharashtra.

**Lepidagathis ushae** Borude, Gosavi & Chandore, Kew Bull. 75(1): 19. 2020.  
Endemic to India: Maharashtra.

**LEPTOSTACHYA** Nees in Wall., Pl. Asiat. Rar. 3: 76, 105. 1832.  
01 species.

**Leptostachya wallichii** Nees in Wall., Pl. Asiat. Rar. 3: 105. 1832.  
*Dianthera leptostachya* C.B. Clarke in Hook.f., Fl. Brit. India 4: 542. 1885.  
*Dianthera debilis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 542. 1885, non Forssk., 1775.  
*Leptostachya debilis* (C.B. Clarke) C.B. Clarke & Stapf ex Hosseus, Bot. Jahrb. Syst. 41(2): 73. 1907.  
*Justicia neodebilis* Bennet, Indian Forester 109(4): 219. 1983.  
Arunachal Pradesh, Meghalaya, Sikkim, Tamil Nadu, West Bengal.

**MACKAYA** Harv., Thes. Cap. 1: 8, t. 13. 1859, nom. cons.  
01 species.

**Mackaya indica** (Nees) Ensermu, Kew Bull. 47(4): 673. 1992.  
*Thyrsacanthus indicus* Nees in DC., Prodr. 11: 325. 1847.  
*Eranthemum indicum* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 497. 1884.  
*Pseuderanthemum indicum* (Nees) A.M. Cowan & Cowan, Trees N. Bengal 98. 1929.  
Arunachal Pradesh, Assam, Meghalaya, Sikkim, West Bengal.

**MEYENIA** Nees in Wall., Pl. Asiat. Rar. 3: 75, 78. 1832.  
01 species.

**Meyenia hawtayneana** (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 78. 1832.  
*Thunbergia hawtayneana* Wall., Tent. Fl. Napal 49. 1826.  
Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**MONOTHECIUM** Hochst., Flora 26(1): 74. 1842.  
01 species.

**Monothecium aristatum** (Nees) T. Anderson in Thwaites, Enum. Pl. Zeyl.: 234. 1860.  
*Anthocometes aristatus* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.  
Karnataka, Kerala, Tamil Nadu.

**NELSONIA** R. Br., Prodr. Fl. Nov. Holland.: 480. 1810.  
01 species.

**Nelsonia canescens** (Lam.) Spreng., Syst. Veg., ed. 16, 1: 42. 1824.

*Justicia canescens* Lam., Tabl. Encycl. 1: 41. 1791.

**Nelsonia campestris** R. Br., Prodr. Fl. Nov. Holland.: 481. 1810.

*Justicia vestita* Schult., Mant. 1: 145. 1822.

**Nelsonia campestris** R. Br. var. *vestita* (Schult.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 394. 1884.

Andaman and Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Odisha, Tripura, Uttar Pradesh, West Bengal.

**NEURACANTHUS** Nees in Wall., Pl. Asiat. Rar. 3: 76. 1832.  
03 species and 01 subspecies.

**Neuracanthus neesianus** (Wight ex T. Anderson) C.B. Clarke in Hook.f., Fl. Brit. India 4: 491. 1884.

*Lepidagathis neesianus* Wight ex T. Anderson, J. Linn. Soc., Bot. 9: 499. 1867.

Endemic to India: Tamil Nadu (North Arcot).

**Neuracanthus sphaerostochys** Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 140. 1850.  
Goa, Gujarat, Karnataka, Maharashtra, Nagar Haveli, Rajasthan.

**Neuracanthus tetragonostachyus** Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832.  
subsp. *tetragonostachyus*.  
Bihar.

subsp. *trinervius* (Wight) Bidgood & Brummitt, Kew Bull. 53(1): 16. 1998.  
*Neuracanthus trinervius* Wight, Icon. Pl. Ind. Orient. 4(4): 5, t. 1532. 1850.  
Karnataka, Maharashtra.

**PETALIDIUM** Nees in Wall., Pl. Asiat. Rar. 3: 75, 82. 1832.  
01 species.

**Petalidium barlerioides** (Roth) Nees in Wall., Pl. Asiat. Rar. 3: 82. 1832.

*Ruellia barlerioides* Roth, Nov. Pl. Sp.: 310. 1821.

*Ruellia bracteata* Roxb., Fl. Ind. ed. 3: 47. 1832.

Almost throughout the country.

**PHAULOPSIS** Willd., Sp. Pl. 3: 4, 342. 1800, "Phaylopsis", nom. & orth. cons.  
01 species.

**Phaulopsis dorsiflora** (Retz.) Santapau, Kew Bull. 3: 276. 1948.

*Ruellia dorsiflora* Retz., Observ. Bot. 6: 31. 1791.

*Micranthus oppositifolius* J.C. Wendl., Bot. Beob.: 39. 1798.

*Phaulopsis parviflora* Willd., Sp. Pl. 3: 342. 1800.

*Aethilema reniforme* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 94. 1832.

*Phaulopsis oppositifolius* (J.C. Wendl.) Lindau in Engl. & Prantl, Pflanzfam. Nachtr. 1: 305. 1895.

*Micranthus dorsiflorus* (Retz.) C.E.C. Fisch., Bull. Misc. Inform. Kew 1932: 63. 1932.

*Phaulopsis imbricata* sensu Karthik. & al., Fl. Pl. India 1: 34. 2009, non (Forssk.) Sweet 1827.

Andaman and Nicobar Islands, Andhra Pradesh, Assam, Chhattisgarh, Kerala, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

**PHLOGACANTHUS** Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

12 species and 01 variety.

**Phlogacanthus albiflorus** Bedd., Icon. Pl. Ind. Or.: 40, t. 180. 1874.

*Diotacanthus albiflorus* (Bedd.) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1101. 1876.

Endemic to India: Tamil Nadu.

**Phlogacanthus curviflorus** Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

*Justicia curviflora* Wall., Pl. Asiat. Rar. 2: 9, t. 112. 1830.

var. **curviflorus**.

Arunachal Pradesh, Assam, Manipur, Meghalaya.

var. **menchanensis** Barnali Dutta & Borthakur, Bangladesh J. Pl. Taxon. 23(1): 71. 2016.

Assam (Nagaon [Menchan Gaon] and Jorhat districts).

**Phlogacanthus gomezii** (Nees) J.R.I. Wood, Edinburgh J. Bot. 51(2): 182. 1994.

*Loxanthus gomezii* Nees in DC., Prodr. 11: 322. 1847.

**Phlogacanthus wallichii** C.B. Clarke in Hook.f., Fl. Brit. India 4: 511. 1884.

Arunachal Pradesh, Meghalaya.

**Phlogacanthus grandis** Bedd., Icon. Pl. Ind. Or.: 39, t. 179. 1874.

*Diota canthus grandis* (Bedd.) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1101. 1876.

Endemic to India: Western Ghats of Kerala, Tamil Nadu.

**Phlogacanthus guttatus** (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

*Justicia guttata* Wall., Pl. Asiat. Rar. 1: 24, t. 28. 1830.

Arunachal Pradesh, Assam, Meghalaya.

**Phlogacanthus jenkinsii** C.B. Clarke in Hook.f., Fl. Brit. India 4: 513. 1885.

Assam, Manipur.

**Phlogacanthus lambertii** Raizada, Indian Forester 60(8): 535. 1934.

Uttarakhand.

**Phlogacanthus parviflorus** T. Anderson, J. Linn. Soc., Bot. 9: 506. 1867.

Endemic to India: Arunachal Pradesh, Nagaland, Sikkim.

**Phlogacanthus pubinervius** T. Anderson, J. Linn. Soc., Bot. 9: 508. 1867.

Assam, Meghalaya, West Bengal.

**Phlogacanthus thyrsiformis** (Roxb. ex Hardw.) Mabb. in Manilal, Bot. Hist. Hort. Malabaricus: 83. 1980 & Taxon 69(5): 606. 1980.

*Justicia thyrsiformis* Hardw., Asiat. Res. 6: 349. 1799.

*Justicia thyrsiflora* Roxb., Fl. Ind. 1: 116. 1820.

**Phlogacanthus thyrsiflorus** (Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

Arunachal Pradesh, Bihar, Maharashtra, Sikkim, West Bengal.

**Phlogacanthus tubiflorus** Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

*Justicia tubiflora* Wall., Numer. List: n. 2428. 1830.

Arunachal Pradesh, Assam, Meghalaya, Sikkim.

**Phlogacanthus vitellinus** (Roxb.) T. Anderson, J. Linn. Soc., Bot. 9: 507. 1867.

*Justicia vitellina* Roxb., Fl. Ind. 1: 115. 1831.

*Justicia quadrangularis* Hook., Bot. Mag. 55: t. 2845. 1828.

*Justicia asperula* G. Lodd., Bot. Cab. 17(9): t. 1681. 1831.

**Phlogacanthus asperulus** (G. Lodd.) Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

**Phlogacanthus quadrangularis** (Hook.) Heine, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 10(2): 148. 1988.

Arunachal Pradesh, Assam, West Bengal.

#### DOUBTFUL SPECIES

**Phlogacanthus gracilis** T. Anderson ex Burkhill, Rec. Bot. Surv. India 10: 336. 1924.

Arunachal Pradesh.

**PSEUDERANTHEMUM** Radlk. ex Lindau in Engl. & Prantl, Nat. Pflanzenfam. 4: 330. 1895.  
06 species, including 04 cultivated species.

**Pseudanthemum album** (Roxb.) Merr., J. Malayan Branch Roy. Asiat. Soc. 1: 37. 1923.

*Justicia alba* Roxb., Fl. Ind. 1: 116. 1820.

*Eranthemum album* (Roxb.) Nees in DC., Prodr. 11: 455. 1847.

Andaman and Nicobar Islands, Arunachal Pradesh.

**pseuderanthemum crenulatum** (Lindl.) Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 13: 282.

1883.

*Eranthemum crenulatum* Lindl., Bot. Reg. 11: t. 879. 1825,

Meghalaya.

**Pseudanthemum latifolium** (Vahl) B. Hansen, Nordic J. Bot. 9(2): 213. 1989.

*Justicia latifolia* Vahl, Symb. Bot. 2: 4. 1791.

*Justicia palatifera* Wall., Pl. Asiat. Rar. 1: 80, t. 92, ff. 1-3. 1830.

*Eranthemum palatiferum* (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 108. 1832.

Andaman and Nicobar Islands, Arunachal Pradesh, Assam, West Bengal.

**Pseudanthemum leptanthus** (C.B. Clarke) Lindau in Engl. & Prantl, Nat. Pflanzenfam. IV, 3b: 330. 1895.

*Eranthemum leptanthus* C.B. Clarke in Hook.f., Fl. Brit. India 4: 500. 1884.

Meghalaya.

**Pseudanthemum malabaricum** (C.B. Clarke) Gamble, Fl. Madras 1064. 1924.

*Eranthemum malabaricum* C.B. Clarke in Hook.f., Fl. Brit. India 4: 497. 1884.

*Eranthemum crenulatum* Wall. ex T. Anderson in Thwaites, Enum. Pl. Zeyl.: 235. 1860.

Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Eranthemum reticulatum** W. Bull ex A. de Vos, Belgique Hort. 26: 151. 1876.

Maharashtra.

**RHINACANTHUS** Nees in Wall., Pl. Asiat. Rar. 3: 76, 108. 1832.

03 species and 01 variety.

**Rhinacanthus calcaratus** (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 109. 1832.

*Justicia calcarata* Wall., Pl. Asiat. Rar. 2: 9, t. 113. 1830.

Arunachal Pradesh, Assam, Tripura.

**Rhinacanthus grandiflorus** Dunn, Bull. Misc. Inform. Kew 1920: 135. 1920.

Nagaland.

**Rhinacanthus nasutus** (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39: 79. 1870.

*Justicia nasuta* L., Sp. Pl.: 16. 1753.

*Rhinacanthus communis* Nees in Wall., Pl. Asiat. Rar. 3: 109. 1832.

var. *nasutus*.

Almost throughout the country.

var. *montanus* (C.B. Clarke) N.P. Balakr., J. Bombay Nat. Hist. Soc. 63: 329. 1966.

*Rhinacanthus communis* Nees var. *montanus* C.B. Clarke in Hook.f., Fl. Brit. India 4: 541. 1885.

Tamil Nadu.

**RUELLIA** L., Sp. Pl.: 634. 1753.

09 species.

**Ruellia beddomei** C.B. Clarke in Hook.f., Fl. Brit. India 4: 413. 1884.

*Dipteracanthus beddomei* (C.B. Clarke) Santapau, Indian Forester 79: 352. 1953.

Bihar, Central region, Odisha, Upper Gangetic Plains.

**Ruellia cernua** Roxb., Fl. Ind. ed. 2, 3: 45. 1832.

*Dipteracanthus cernuus* (Roxb.) Santapau, Indian Forester 79: 322. 1953.

*Ruellia cernua* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 413. 1884, non Roxb. 1832.

Central to east and southern parts of the country, Upper Gangetic Plains.

**Ruellia ciliatiflora** Hook., Bot. Mag. 66: t. 3718. 1839.

Uttarakhand.

**Ruellia patula** Jacq., Misc. Austriac. 2: 358. 1781.

*Ruellia ocyoides* Cav., Icon. 5: 9. 1788.

*Ruellia erecta* Roth, Nov. Pl. Sp.: 302. 1821.

*Dipteracanthus patulus* (Jacq.) Nees in Wall., Pl. Asiat. Rar. 3: 82. 1832.

*Ruellia malabarica* Kostel., Allg. Med.-Pharm. Fl. 3: 975. 1834.

*Ruellia patula* Jacq. var. *alba* Saxton, Rec. Bot. Surv. India 6: 288. 1918.

*Dipteracanthus patulus* (Jacq.) Nees var. *alba* (Saxton) Bhandari, Bull. Bot. Surv. India 6(2-4): 327. 1964.

Haryana, Karnataka, Kerala, Tamil Nadu, Uttarakhand, Uttar Pradesh.

**Ruellia prostrata** Poir. in Lam., Encycl. 6: 349. 1804.

*Dipteracanthus prostratus* (Poir.) Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.

*Dipteracanthus dejuncta* Nees in Wall., Pl. Asiat. Rar. 3: 82, 175. 1832.

*Ruellia prostrata* Poir. var. *dejecta* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 416. 1884.

Andhra Pradesh, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Punjab, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal.

**Ruellia pseudopatula** Ensermu, Kew Bull. 57: 747, f. 1. 2002.

Haryana, Punjab.

**Ruellia sivarajanii** Sreedevi, Remadevi & Binojk., J. Econ. Taxon. Bot. 27(Suppl.): 1186, f. 1A-D. 2003.  
Endemic to India; Kerala.

**Ruellia suffruticosa** Roxb., Fl. Ind. ed. 2, 3: 53. 1832.

*Dipteracanthus sibua* Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832.

*Dipteracanthus suffruticosus* Voigt, Hort. Suburb. Calcutt.: 483. 1845.

Bihar, Chhattisgarh, Madhya Pradesh, Odisha, West Bengal.

**Ruellia tuberosa** L., Sp. Pl.: 635. 1753.

*Ruellia clandestina* L., Sp. Pl.: 634. 1753.

Andaman and Nicobar Islands, Andhra Pradesh, Haryana, Kerala, Madhya Pradesh, Puducherry, Tamil Nadu, Uttarakhand, Uttar Pradesh; also cultivated and naturalised throughout the country.

**SPHINCTACANTHUS** Benth. in Benth. & Hook.f., Gen. Pl. 2(2): 1118. 1876.

01 species.

**Sphinctacanthus griffithii** (T. Anderson) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1118. 1876.

*Justicia griffithii* T. Anderson, J. Linn. Soc., Bot. 9: 516. 1867.

Nagaland (Mishmi Hills).

**STAUROGYNE** Wall., Pl. Asiat. Rar. 2: 80, t. 186. 1831.

10 species and 01 variety.

**Staurogyne andamanica** M.V. Ramana, Sanjappa, Venu & Chorghe, Kew Bull. 69(2)-9506: 1. 2014.  
Andaman and Nicobar Islands.

**Staurogyne argentea** Wall., Pl. Asiat. Rar. 2: 80, t. 186. 1831.

*Staurogyne angustifolia* Wall., Pl. Asiat. Rar. 2(8): 81. 1831.

*Ebermaiera staurogynae* Nees in DC., Prodr. 11: 75. 1847.

*Ebermaiera angustifolia* (Wall.) T. Anderson, J. Linn. Soc., Bot. 9: 451. 1866.

Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Tripura.

**Staurogyne glutinosa** (Wall. ex C.B. Clarke) Kuntze, Revis. Gen. Pl. 2: 497. 1891.

*Ebermaiera glutinosa* Wall. ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 396. 1884.

Bihar, Kerala, Uttar Pradesh, West Bengal.

**Staurogyne paniculata** (Wall. ex T. Anderson) Kuntze, Revis. Gen. Pl. 2: 497. 1891.

*Ebermaiera paniculata* Wall. ex T. Anderson, J. Linn. Soc., Bot. 9: 453. 1866.

var. **paniculata**

Northeastern region (Manipur).

var. **glabrior** (C.B. Clarke) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 40. 2009.

*Ebermaiera paniculata* Wall. ex T. Anderson var. *glabrior* C.B. Clarke in Hook.f., Fl. Brit. India 4: 401. 1884.

Northeastern region.

**Staurogyne perpusilla** A.N. Henry & N.P. Balakr., Bull. Bot. Surv. India 3: 205, ff. 1-4. 1962.

Endemic to India: Madhya Pradesh (Bastar District).

**Staurogyne polybotrya** (Nees) Kuntze, Revis. Gen. Pl. 2: 497. 1891.

*Ebermaiera polybotrya* Nees in DC., Prodr. 11: 74. 1847.

Bihar, Sikkim, West Bengal.

**Staurogyne simonsii** (T. Anderson) Kuntze, Revis. Gen. Pl. 2: 497. 1891.

*Ebermaiera simonsii* T. Anderson, J. Linn. Soc., Bot 9: 451. 1866.

Assam, Meghalaya, Mizoram, Tripura.

**Staurogyne spatulata** (Blume) Koord., Exkurs.-Fl. Java 3: 211. 1912, "spatulata".

*Adenosma spatulata* Blume, Bijdr. Fl. Ned. Ind. 14: 757. 1826, "spatulatum".

*Ebermaiera glauca* Nees, Compan. Bot. Mag. 2: 310. 1837.

*Ebermaiera glauca* Nees var. *spatulata* (Blume) C.B. Clarke in Hook.f., Fl. Brit. India 4: 396. 1884.

Assam, Bihar, Karnataka, Kerala, Maharashtra, Tamil Nadu, West Bengal.

**Staurogyne thyrsoidaea** (Nees) Kuntze, Revis. Gen. Pl. 2: 497. 1891.

*Ebermaiera thyrsoidaea* Nees in Wall., Pl. Asiat. Rar. 3: 80. 1832.

Northeastern region (Tripura).

**Staurogyne zeylanica** (Nees) Kuntze, Revis. Gen. Pl. 2: 497. 1891.

*Ebermaiera zeylanica* Nees in DC., Prodr. 11: 74. 1847.

*Erythracanthus elongatus* sensu Dalzell & A. Gibson, Bombay Fl.: 174. 1861, non Nees 1847.

Goa, Karnataka, Kerala, Maharashtra, Tamil Nadu

**STROBILANTHES** Blume, Bijdr. Fl. Ned. Ind. 13: 781, 796. 1826.

155 species, 07 varieties and 01 forma.

**Strobilanthes abbreviata** Y.F. Deng & J.R.I. Wood, Bot. J. Linn. Soc. 150(3): 377. 2006

Mizoram.

**Strobilanthes adnata** C.B. Clarke in Hook.f., Fl. Brit. India 4: 436. 1884, "adnatus".

*Endopogon decurrens* Nees in DC., Prodr. 11: 105. 1847.

*Hymenochlaena decurrens* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 301. 1944.

*Strobilanthes decurrens* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 470. 1867, nom. illeg.

Endemic to India: Arunachal Pradesh, Assam, Meghalaya, Nagaland.

***Strobilanthes affinis*** (Griff.) Terao ex J.R.I. Wood & J.R. Benn., Kew Bull. 58(1): 134. 2003.  
*Adenosma affinis* Griff., Not. Pl. Asiat. 4: 133. 1854.

***Strobilanthes acrocephala*** T. Anderson, J. Linn. Soc., Bot. 9: 473. 1867.  
*Strobilanthes darrisii* H. Lév., Repert. Spec. Nov. Regni Veg. 12: 18. 1913.  
*Strobilanthes thirionni* H. Lév., Repert. Spec. Nov. Regni Veg. 12: 18. 1913.  
*Tarphochlamys affinis* (Griff.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 157. 1944.  
*Tarphochlamys darrisii* (Lév.) E. Hossain, Notes Roy. Bot. Gard. Edinburgh 32(3): 410. 1973.  
 Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Tripura.

***Strobilanthes agasthyamalana*** Sasidh., Dantas & Robi, Kew Bull. 71(4)-51: 2. 2016.  
 Endemic to India: Kerala (Agasthyamala, Pongalapara, Thiruvananthapuram District).

***Strobilanthes amabilis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 476. 1884.  
*Leptacanthus amabilis* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 184. 1944.  
 Endemic to India: Kerala, Tamil Nadu.

***Strobilanthes anamallica*** J.R.I. Wood, Kew Bull. 50: 11. 1994.  
*Strobilanthes adenophorus* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 440. 1884, non Nees 1847.  
*Nilgirianthus beddomei* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 172. 1944, non  
*Strobilanthes beddomei* T. Anderson 1867.  
 Endemic to India: Karnataka, Kerala, Tamil Nadu.

***Strobilanthes anceps*** Nees, Compan. Bot. Mag. 12: 312. 1836.  
 Kerala, Tamil Nadu.

***Strobilanthes andamanensis*** Bor, Indian Forest Rec. Bot. 2: 237. 1941.  
*Hemigraphis glandulosa* T. Anderson in Kurz, Rep. Veg. Andaman Isl., App. B. 13. 1870.  
*Strobilanthes glandulosa* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 467. 1884, non Blume 1826.  
*Strobilanthes sanjappae* Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 57. 2009, nom. superfl.  
 Endemic to India: Andaman and Nicobar Islands.

***Strobilanthes andersonii*** Bedd., Madras J. Lit. Sci. Ser. 3, 1: 55. 1864.  
*Didyplosandra andersonii* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 269. 1944.  
 Endemic to India: Tamil Nadu (Anamalai Hills, Coimbatore District).

***Strobilanthes angustifrons*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 466. 1884.  
*Goldfussia edgeworthiana* Nees in DC., Prodr. 11: 173. 1847.  
*Pteracanthus angustifrons* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.  
*Goldfussia acuminata* Shakya, J. Jap. Bot. 50(4): 99. 1975.  
 Himachal Pradesh, Uttarakhand.

***Strobilanthes asymmetrica*** J.R.I. Wood & J.R. Benn., Kew Bull. 58(1): 161. 2003.  
 Manipur, Mizoram.

***Strobilanthes atropurpureus*** Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832.

var. ***atropurpureus***.  
 Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Punjab, Sikkim.

var. ***stenophylla*** (C.B. Clarke) Y.F. Deng & J.R.I. Wood, J. Trop. Subtrop. Bot. 18(5): 482. 2010.  
 Meghalaya.

***Strobilanthes attenuata*** (Wall. ex Nees) Nees in DC., Prodr. 11: 193. 1847.  
*Ruellia attenuata* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 83. 1832.

*Strobilanthes alata* Nees in DC., Prodr. 11: 194. 1847.

*Strobilanthes reflexa* Nees in DC., Prodr. 11: 194. 1847.

*Strobilanthes newii* Bedd. ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 464. 1884.

*Strobilanthes urticifolia* Wall. ex Kuntze, Revis. Gen. Pl. 2: 499. 1891.

*Meckenzia newii* (Bedd. ex C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 183. 1944.

*Pieracanthus attenuatus* (Wall. ex Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

*Pieracanthus reflexus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

*Pieracanthus urticifolius* (Wall. ex Kuntze) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 109. 1944.

Himachal Pradesh, Jammu and Kashmir, Punjab, Uttarakhand.

*Strobilanthes auriculata* Nees in Wall., Pl. Asiat. Rar. 3: 69, 86, t. 295. 1832.

*Strobilanthes amplexens* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Strobilanthes plumulosa* Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832.

*Strobilanthes edgeworthiana* Nees in DC., Prodr. 11: 190. 1847.

*Strobilanthes auriculata* Nees var. *bracteolata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 453. 1884.

*Strobilanthes auriculata* Nees var. *edgeworthiana* C.B. Clarke in Hook.f., Fl. Brit. India 4: 453. 1884.

*Strobilanthes auriculata* Nees var. *plumulosa* C.B. Clarke in Hook.f., Fl. Brit. India 4: 453. 1884.

*Strobilanthes siamensis* C.B. Clarke, Bull. Herb. Boissier, Ser. 2, 7: 716. 1905.

*Strobilanthes venusta* Craib, Bull. Misc. Inform. Kew 1914: 1311. 1914.

*Strobilanthes leucopogon* Ridl., J. Straits Branch Roy. Asiat. Soc. 86: 304. 1922.

*Strobilanthes trichophora* C.E.C. Fisch., Bull. Misc. Inform. Kew 1932(4): 202. 1932.

*Strobilanthes auriculata* Nees var. *acuta* Benoist in Lecomte, Fl. Indo-China 4: 674. 1935.

*Strobilanthes auriculata* Nees var. *rubrifolia* Benoist in Lecomte, Fl. Indo-China 4: 674. 1935.

*Strobilanthes auriculata* Nees var. *stamensis* (C.B. Clarke) Benoist in Lecomte, Fl. Indo-China 4: 674. 1935.

*Strobilanthes incisa* J.B. Imlay, Bull. Misc. Inform. Kew 1939(3): 120. 1939.

*Perilepta auriculata* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 194. 1944.

*Perilepta amplexens* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 269. 1944.

*Perilepta edgeworthiana* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 274. 1944.

*Perilepta plumulosa* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 283. 1944.

*Perilepta siamensis* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 285. 1944.

*Perilepta venusta* (Craib) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 287. 1944.

*Ruellia auriculata* Wall., Numer. List; n. 2341. 1831–1832, nom. nud.

#### var. *auriculata*.

Bihar, Manipur, Meghalaya, Odisha, Uttarakhand, West Bengal.

#### var. *dyeriana* J.R.I. Wood, Kew Bull. 58: 92. 2003.

*Strobilanthes dyeriana* Mast., Gard. Chron. 1: 442. 1893.

*Strobilanthes maclellandii* C.B. Clarke in Hook.f., Fl. Brit. India 4: 453. 1884.

*Strobilanthes maclellandii* C.B. Clarke var. *latipes* C.B. Clarke in Hook.f., Fl. Brit. India 4: 454. 1884.

*Strobilanthes maclellandii* C.B. Clarke var. *latipes* C.B. Clarke in Hook.f., Fl. Brit. India 4: 454. 1884.

*Perilepta dyeriana* (Mast.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 274. 1944.

*Perilepta maclellandii* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 195, 279. 1944.

Bihar, West Bengal (Cultivated).

#### *Strobilanthes aurita* J.R.I. Wood, Kew Bull. 50: 12. 1994.

*Strobilanthes caudatus* auct. non T. Anderson 1867: C.B. Clarke in Hook.f., Fl. Brit. India 4: 441. 1884; Gamble, Fl. Madras 1040. 1924.

Endemic to India: Karnataka, Kerala.

#### *Strobilanthes barbata* Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Strobilanthes tetraptera* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 342. 1850, "tetrapterus".

*Nilgirianthus barbatus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 172. 1944.

*Strobilanthes barbata* Nees var. *bonaccordensis* E.S.S. Kumar & Raj Vikr., J. Econ. Taxon. Bot. 25(3): 742. 2002.

Endemic to India: Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Strobilanthes benthamii** B. Mani, Sinj. Thomas, Britto, Pradeep, Y.F. Deng & E.S.S. Kumar, Pl. Sci. Today 7(1): 30. 2020.  
*Endopogon versicolor* Wight, Icon. Pl. Ind. Orient. 4(3): 19, t. 1497. 1849.  
*Phlebophyllum versicolor* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944,  
 non *Strobilanthes versicolor* Diels, 1912.  
 Endemic to India: Tamil Nadu (Nilgiris District).

**Strobilanthes bislei** Sinj. Thomas, B. Mani, Britto & Pradeep, Pl. Sci. Today 6(1): 52, f. 3. 2019.  
 Endemic to India: Karnataka (Bisle Ghat, Hassan District).

**Strobilanthes bolumpattiana** Bedd., Icon. Pl. Ind. Or. 1: 46, t. 200. 1874.

*Didyplosandra bolumpattiana* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 177. 1944.  
 Endemic to India: Tamil Nadu (Bolampatty Hills, Coimbatore District).

**Strobilanthes borii** J.R.I. Wood, Kew Bull. 64: 25. 2009.  
 Endemic to India: Nagaland (Naga Hills).

**Strobilanthes bracteata** (Nees) J.R.I. Wood, Edinburgh J. Bot. 51(2): 232. 1994.

*Goldfussia bracteata* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Strobilanthes quadrangularis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 460. 1884.

*Ruellia bracteata* Wall., Numer. List: n. 2357b. 1830, nom. nud.

Himachal Pradesh, Jammu and Kashmir, Punjab, Uttarakhand.

**Strobilanthes brunonianiana** Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832.

*Sympagis brunonianiana* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 254. 1944.

*Strobilanthes petiolaris* Nees in DC., Prodr. 11: 189. 1847.

*Ruellia brunonianiana* Wall., Numer. List: n. 2368. 1831–1832, nom. nud.

Endemic to India: Assam.

**Strobilanthes callosa** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Strobilanthes grahamiana* Wight, Icon. Pl. Ind. Orient. 4(4): 3, t. 1520. 1850.

*Carvia callosa* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 187. 1944.

*Ruellia callosa* Wall., Numer. List: n. 2359. 1830, nom. nud.

Dadra and Nagar Haveli, Goa, Gujarat, Karnataka, Maharashtra, Rajasthan.

**Strobilanthes campanulata** Wight, Icon. Pl. Ind. Orient. 4(4): 8, t. 1562. 1850.

*Strobilanthes heyneana* Nees var. *campanulata* (Wight) C.B. Clarke in Hook.f., Fl. Brit. India 4: 444. 1884.

*Nilgirianthus campanulatus* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 271. 1944.

Endemic to India: Chhattisgarh, Karnataka, Madhya Pradesh.

**Strobilanthes canarica** Bedd., Icon. Pl. Ind. Or.: 50, t. 215. 1868–1874.

*Phlebophyllum canaricum* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 271. 1944.

Endemic to India: Karnataka (Dakshina Kannada and Hassan districts).

**Strobilanthes capitata** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867.

*Goldfussia capitata* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

var. **capitata**.

Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, West Bengal.

var. **nitida** C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884.

Meghalaya.

**Strobilanthes carinei** J.R.I. Wood, Novon 23: 390. 2014.

*Stenosiphonium setosum* T. Anderson, J. Linn. Soc., Bot. 9: 464. 1867.

*Stenosiphonium parviflorum* T. Anderson, J. Linn. Soc., Bot. 9: 464. 1867, p.p.

Endemic to India: Kerala.

**Strobilanthes benthamii** B. Mani, Sinj. Thomas, Britto, Pradeep, Y.F. Deng & E.S.S. Kumar, Pl. Sci. Today 7(1): 30. 2020.  
*Endopogon versicolor* Wight, Icon. Pl. Ind. Orient. 4(3): 19, t. 1497. 1849.

*Phlebophyllum versicolor* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944,  
 non *Strobilanthes versicolor* Diels, 1912.  
 Endemic to India: Tamil Nadu (Nilgiris District).

**Strobilanthes bislei** Sinj. Thomas, B. Mani, Britto & Pradeep, Pl. Sci. Today 6(1): 52, f. 3. 2019.  
 Endemic to India: Karnataka (Bisle Ghat, Hassan District).

**Strobilanthes bolumpattiana** Bedd., Icon. Pl. Ind. Or. 1: 46, t. 200. 1874.

*Didyplosandra bolumpattiana* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 177. 1944.  
 Endemic to India: Tamil Nadu (Bolampatty Hills, Coimbatore District).

**Strobilanthes borii** J.R.I. Wood, Kew Bull. 64: 25. 2009.

Endemic to India: Nagaland (Naga Hills).

**Strobilanthes bracteata** (Nees) J.R.I. Wood, Edinburgh J. Bot. 51(2): 232. 1994.

*Goldfussia bracteata* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Strobilanthes quadrangularis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 460. 1884.

*Ruellia bracteata* Wall., Numer. List: n. 2357b. 1830, nom. nud.

Himachal Pradesh, Jammu and Kashmir, Punjab, Uttarakhand.

**Strobilanthes brunonianiana** Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832.

*Sympagis brunonianiana* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 254. 1944.

*Strobilanthes petiolaris* Nees in DC., Prodr. 11: 189. 1847.

*Ruellia brunonianiana* Wall., Numer. List: n. 2368. 1831–1832, nom. nud.

Endemic to India: Assam.

**Strobilanthes callosa** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Strobilanthes grahamiana* Wight, Icon. Pl. Ind. Orient. 4(4): 3, t. 1520. 1850.

*Carvia callosa* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 187. 1944.

*Ruellia callosa* Wall., Numer. List: n. 2359. 1830, nom. nud.

Dadra and Nagar Haveli, Goa, Gujarat, Karnataka, Maharashtra, Rajasthan.

**Strobilanthes campanulata** Wight, Icon. Pl. Ind. Orient. 4(4): 8, t. 1562. 1850.

*Strobilanthes heyneana* Nees var. *campanulata* (Wight) C.B. Clarke in Hook.f., Fl. Brit. India 4: 444. 1884.

*Nilgirianthus campanulatus* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 271. 1944.

Endemic to India: Chhattisgarh, Karnataka, Madhya Pradesh.

**Strobilanthes canarica** Bedd., Icon. Pl. Ind. Or.: 50, t. 215. 1868–1874.

*Phlebophyllum canaricum* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 271. 1944.

Endemic to India: Karnataka (Dakshina Kannada and Hassan districts).

**Strobilanthes capitata** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867.

*Goldfussia capitata* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

var. **capitata**.

Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, West Bengal.

var. **nitida** C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884.

Meghalaya.

**Strobilanthes carinei** J.R.I. Wood, Novon 23: 390. 2014.

*Stenosiphonium setosum* T. Anderson, J. Linn. Soc., Bot. 9: 464. 1867.

*Stenosiphonium parviflorum* T. Anderson, J. Linn. Soc., Bot. 9: 464. 1867, p.p.

Endemic to India: Kerala.

**Strobilanthes carmelensis** Simj. Thomas, B. Mani, Britto & Pradeep, Webbia 74(2): 287. 2019.  
Endemic to India: Kerala (Wayanad District).

**Strobilanthes carnatica** Carine, J.M. Alexander & Scotland, Kew Bull. 59(1): 23, f. 8. 2004.  
Endemic to India: Andhra Pradesh, Karnataka, Tamil Nadu.

**Strobilanthes ciliata** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Strobilanthes warreensis* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 341. 1850.

*Strobilanthes parviflora* Bedd., Icon. Pl. Ind. Or.: t. 197. 1874.

*Nigritianthus warreensis* (Dalzell) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 173. 1944.

*Nigritianthus ciliatus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 299. 1944.

*Ruellia ciliata* Wall., Numer. List: n. 2415. 1833, nom. nud.

Endemic to India: Goa, Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Strobilanthes clarkei** J.R.I. Wood, Edinburgh J. Bot. 51(2): 236, f. 8B. 1994.

*Strobilanthes rhombifolia* sensu C.B. Clarke, J. Linn. Soc., Bot. 25: 54 1889, non C.B. Clarke in Hook.f., Fl. Brit. India 4: 481. 1884.

Endemic to India: Manipur, Nagaland.

**Strobilanthes consanguinea** (Nees) T. Anderson in Thwaites, Enum. Pl. Zeyl.: 226. 1860, p.p.

*Endopogon consanguineus* Nees in Wall., Pl. Asiat. Rar. 3: 99. 1832.

*Ruellia spicata* Roth, Nov. Pl. Sp.: 310. 1821.

*Phlebophyllum spicatum* (Roth) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944.

Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

**Strobilanthes cordifolia** (Vahl) J.R.I. Wood, Novon 23: 390. 2014.

*Ruellia cordifolia* Vahl, Symb. Bot. 3: 84. 1796.

*Stenosiphonium russelianum* Nees in Wall., Pl. Asiat. Rar. 3: 84. 1832.

*Stenosiphonium subsericeum* Nees in Wall., Pl. Asiat. Rar. 3: 84. 1832.

*Stenosiphonium confertum* Nees in DC., Prodr. 11: 105. 1847.

*Stenosiphonium russelianum* Nees var. *subsericeum* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 464. 1867.

*Stenosiphonium cordifolium* (Vahl) Alston in Trimen, Handb. Fl. Ceylon 6: 226. 1931.

Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana.

**Strobilanthes cruciata** (Bremek.) Terao, Acta Phytotax. Geobot. 31: 59. 1980.

*Tetragoga cruciata* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 300. 1944.

*Tetragoga nagaensis* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 299. 1944.

*Strobilanthes nagaensis* (Bremek.) W.J. Kress & de Filips, Contr. U.S. Natl. Herb. 45: 483. 2003.

Nagaland.

**Strobilanthes cusia** (Nees) Kuntze in Revis. Gen. Pl. 2: 499. 1891.

*Goldfussia cusia* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Ruellia indigofera* Griff., Itin. Pl. Khasyah Mts.: 237. 1848.

*Baphicacanthus cusia* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 59, 190. 1944.

*Strobilanthes flaccidifolia* sensu T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867, non Nees 1847.

Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland.

**Strobilanthes cuspidata** (Benth.) T. Anderson, J. Linn. Soc., Bot. 9: 465. 1867.

*Endopogon cuspidatus* Benth., Linnaea 24: 646. 1851.

*Endopogon versicolor* Wight, Icon. Pl. Ind. Orient. 4(3): 19, t. 1497. 1849.

*Phlebophyllum versicolor* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944.

Endemic to India: Andhra Pradesh, Kerala, Odisha, Tamil Nadu.

**Strobilanthes cyphantha** Diels, Notes Roy. Bot. Gard. Edinburgh 5: 162. 1912.

*Pteracanthus cyphanthus* (Diels) C.Y. Wu & C.C. Hu, Fl. Reipubl. Popularis Sin. 70: 134. 2002.

*Strobilanthes curviflorus* C.B. Clarke ex C.Y. Wu & al., Index Fl. Yunnan 2: 1685. 1984, nom. nud.

Arunachal Pradesh.

**Strobilanthes decipiens** J.R.I. Wood, Kew Bull. 58: 112, f. 8A-K. 2003.  
Endemic to India: Manipur, Mizoram, Nagaland.

**Strobilanthes decurrens** Nees in DC., Prodr. 11: 189. 1847.  
Endemic to India: Kerala, Tamil Nadu.

**Strobilanthes denticulata** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 483. 1867.  
*Asystasia denticulata* Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.  
*Strobilanthes flaccidifolia* Nees in DC., Prodr. 11: 194. 1847.  
*Triaenacanthus griffithianus* Nees in DC., Prodr. 11: 269. 1847.  
*Strobilanthes griffithiana* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867.  
*Ruellia denticulata* Wall., Numer. List: n. 2418. 1828, nom. nud.  
Arunachal Pradesh, Assam, Meghalaya, Nagaland.

**Strobilanthes dimorphotricha** Hance, J. Bot. 31: 355. 1883.

*Strobilanthes geniculata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884.  
*Strobilanthes geniculata* C.B. Clarke var. *integra* C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884.  
*Strobilanthes burkillii* Dunn, Bull. Misc. Inform. Kew 1920: 208. 1920.  
*Goldfussia dimorphotricha* (Hance) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 231, 274. 1944.  
*Goldfussia geniculata* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 233. 1944.  
*Strobilanthes gracilis* T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867, nom. illeg.  
Arunachal Pradesh, Meghalaya.

**Strobilanthes discolor** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 477. 1867.

*Goldfussia discolor* Nees in DC., Prodr. 11: 172. 1847.  
*Strobilanthes discolor* (Nees) T. Anderson var. *nudicalyx* C.B. Clarke in Hook.f., Fl. Brit. India 4: 462. 1884.  
*Diflugossa nagaensis* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 237. 1944.  
Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, West Bengal.

**Strobilanthes divaricata** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 478. 1867.

*Goldfussia divaricata* Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.  
*Ruellia divaricata* Wall., Numer. List: n. 2372. 1830, nom. nud.  
Assam, Meghalaya, Sikkim, West Bengal.

**Strobilanthes dupenii** Bedd. ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 453. 1884.

*Kanjarum palghatense* Ramam., Bull. Bot. Surv. India 13: 153. 1973.  
Endemic to India: Kerala.

**Strobilanthes echinata** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Strobilanthes pectinata* T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867.  
*Strobilanthes pectinata* T. Anderson var. *daltonii* C.B. Clarke in Hook.f., Fl. Brit. India 4: 447. 1884.  
*Strobilanthes maingayi* C.B. Clarke in Hook.f., Fl. Brit. India 4: 448. 1884.  
*Strobilanthes hirtisepala* C.B. Clarke, J. Asiatic Soc. Bengal, Pt. 2, Nat. Hist. 74: 655. 1908.  
*Strobilanthes pectinata* T. Anderson var. *acuminata* J.B. Imlay, Bull. Misc. Inform. Kew 1939: 119. 1939.  
*Tetraglochidium hirtisepalum* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 221. 1944.  
*Tetraglochidium maingayi* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 221. 1944.  
*Strobilanthes echinata* Nees var. *daltonii* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 274. 1944.  
*Goldfussia echinata* (Nees) N.P. Balakr., Fl. Jowai 2: 355. 1983.  
*Goldfussia echinata* (Nees) N.P. Balakr. var. *daltonii* (C.B. Clarke) V. Singh & P. Singh, J. Econ. Taxon. Bot. 15(3): 703. 1992.  
*Ruellia pectinata* Wall., Numer. List: n. 2356. 1828, nom. nud.  
Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, West Bengal.

**Strobilanthes elongata** C.B. Clarke in Hook.f., Fl. Brit. India 4: 470. 1884.

*Strobilanthes paucinervia* T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 470. 1884.

*Strobilanthes furcata* Biswas, Assam Forest Rec., Bot. 1: 23. 1934.

Andaman and Nicobar Islands, Arunachal Pradesh, Assam (?), Meghalaya, Nagaland.

**Strobilanthes extensa** (Wall. ex Nees) Nees in DC., Prodr. 11: 195. 1847, "extensus".

*Goldfussia extensa* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Pteracanthus extensus* (Wall. ex Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

*Goldfussia extensa* Wall., Numer. List: n. 7160. 1831–1832, nom. nud.

Meghalaya, Nagaland.

**Strobilanthes fimbriata** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Endopogon macrostegius* Nees in DC., Prodr. 11: 104. 1847.

*Strobilanthes macrostegia* C.B. Clarke in Hook.f., Fl. Brit. India 4: 456. 1884.

*Ruellia fimbriata* Wall., Numer. List: n. 2363. 1828, nom. nud.

Arunachal Pradesh, Assam, Meghalaya.

**Strobilanthes foliosa** (Wight) T. Anderson, J. Linn. Soc., Bot. 9: 467. 1867.

*Endopogon foliosus* Wight, Icon. Pl. Ind. Orient. 4(3): 20, t. 1501. 1849.

*Endopogon capitatus* Wight, Icon. Pl. Ind. Orient. 4(3): 20, t. 1499. 1849.

*Strobilanthes foliosa* (Wight) T. Anderson var. *capitata* (Wight) T. Anderson, J. Linn. Soc., Bot. 9: 467. 1867.

*Nilgirianthus foliosus* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 173. 1944.

Karnataka, Kerala, Tamil Nadu.

**Strobilanthes frondosa** J.R.I. Wood, Edinburgh J. Bot. 51(2): 239, f. 9A–H. 1994.

Manipur.

**Strobilanthes gamblei** Carine, J.M. Alexander & Scotland, Kew Bull. 59(1): 5. 2004.

Endemic to India: Karnataka, Kerala.

**Strobilanthes glabrata** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

Endemic to India: Arunachal Pradesh, Assam, Meghalaya.

**Strobilanthes glomerata** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867.

*Goldfussia glomerata* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Goldfussia glomerata* Nees var. *speciosa* Hook., Bot. Mag. 80: t. 4767. 1854.

*Ruellia glomerata* Wall., Numer. List: n. 2361. 1828, nom. nud.

Arunachal Pradesh, Assam, Meghalaya.

**Strobilanthes glutinosa** Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832.

*Ruellia jacquemontiana* Nees in DC., Prodr. 11: 145. 1847.

*Pseudaechmanthera glutinosa* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 188. 1944.

*Ruellia hirta* D. Don, Prodr. Fl. Nepal: 119. 1825, non Vahl, 1794, nom. illeg.

*Ruellia glutinosa* Wall., Numer. List: n. 2350. 1828, nom. nud.

Assam, Himachal Pradesh, Jammu and Kashmir, Uttarakhand.

**Strobilanthes gracilis** Bedd., Madras J. Lit. Sci. Ser. 3, 1: 55. 1864.

*Mackenziea gracilis* (Bedd.) Bremek. in Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 182. 1944.

Endemic to India: Kerala, Tamil Nadu.

**Strobilanthes hamiltoniana** (Steud.) Bosser & Heine, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 10(2): 148. 1988.

*Ruellia hamiltoniana* Steud., Nomencl. Bot., ed. 2, 2: 481. 1841.

*Goldfussia colorata* Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832.

*Goldfussia crinita* Nees in DC., Prodr. 11: 176. 1847.

**Strobilanthes crinita** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867.

***Strobilanthes colorata*** Nees var. *crinita* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 473. 1884.  
***Diflugossa colorata*** (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 246. 1944.  
***Diflugossa crinita*** (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 246. 1944.  
***Strobilanthes colorata*** sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 473. 1884, non Nees 1836.  
 Arunachal Pradesh, Assam, Kerala, Manipur, Meghalaya, Nagaland, Sikkim; naturalised in botanic gardens in Kerala,  
 Maharashtra, West Bengal.

***Strobilanthes helicta*** T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867.

***Asystasia calycina*** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 90. 1832.

***Echinacanthus calycinus*** Wall. ex Nees in DC., Prodr. 11: 168. 1847.

***Pteracanthus calycinus*** (Wall. ex Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

***Ruellia calycina*** Wall., Numer. List: n. 2417. 1831–1832, nom. nud.

Arunachal Pradesh, Meghalaya, Nagaland, Sikkim, West Bengal.

***Strobilanthes heteromalla*** T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 437. 1884.

***Xenacanthus heteromallus*** (T. Anderson ex C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 176. 1944.

Endemic to India: Karnataka, Tamil Nadu.

***Strobilanthes heyneana*** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

***Strobilanthes trifida*** Nees, Compan. Bot. Mag. 2: 312. 1836.

***Strobilanthes asperrima*** Nees in DC., Prodr. 11: 183. 1847.

***Strobilanthes tenera*** Nees in DC., Prodr. 11: 184. 1847.

***Strobilanthes rugosa*** Wight, Icon. Pl. Ind. Orient. 4(4): 17, t. 1619. 1850.

***Strobilanthes heyneana*** Nees var. *viridis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 444. 1884.

***Nilgirianthus heyneanus*** (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 173. 1944,  
 incl. vars.

Andhra Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Tamil Nadu.

***Strobilanthes himalayana*** J.R.I. Wood, Edinburgh J. Bot. 51(2): 241. 1994.

Sikkim, West Bengal.

***Strobilanthes hirta*** (Vahl) Blume, Bijdr. Fl. Ned. Ind. 14: 797. 1826.

***Ruellia hirta*** Vahl, Symb. Bot. 3: 84, t. 67. 1794.

***Ruellia sarmentosa*** Nees in Wall., Pl. Asiat. Rar. 3: 83. 1832, var. *sarmentosa*.

***Ruellia sarmentosa*** Nees var. *urens* (Roth) Nees in Wall., Pl. Asiat. Rar. 3: 83. 1832.

***Hemigraphis hirta*** (Vahl) T. Anderson, J. Linn. Soc., Bot. 9: 462. 1867.

Andhra Pradesh, Bihar, Haryana, Karnataka, Kerala, Madhya Pradesh, Odisha, Punjab, Uttarakhand, West Bengal.

***Strobilanthes homotropa*** Nees in DC., Prodr. 11: 187. 1847.

***Mackenziea homotropa*** (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 182. 1944.

***Strobilanthes sexennis*** Nees var. *homotropa* (Nees) J.R.I. Wood, Kew Bull. 50: 19. 1995.

***Strobilanthes sexennis*** sensu Bedd., Icon. Pl. Ind. Or.: t. 206. 1874, non Nees, 1847.

Endemic to India: Karnataka, Kerala.

***Strobilanthes humilis*** (Nees) Gamble, Fl. Madras 1035. 1924.

***Endopogon viscosus*** Nees var. *humilis* Nees in DC., Prodr. 11: 104. 1847.

***Phlebophyllum humile*** (Gamble) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944.

Endemic to India: Tamil Nadu (Coimbatore, Tirunelveli districts).

***Strobilanthes imbricata*** Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832.

***Parasympagis wallichii*** Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 256. 1944.

Manipur.

***Strobilanthes imlayae*** J.R.I. Wood, Edinburgh J. Bot. 51(2): 232, f. 13H. 1994.

Manipur, Nagaland.

***Strobilanthes inflata*** T. Anderson, J. Linn. Soc., Bot. 9: 476. 1867.

*Pteracanthus inflatus* (T. Anderson) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 278. 1944.  
Arunachal Pradesh, Sikkim, West Bengal.

***Strobilanthes integrifolia*** (Dalzell) Kuntze, Revis. Gen. Pl. 2: 499. 1891.

*Endopogon integrifolius* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 324. 1850.

*Leptacanthus alatus* Wight, Icon. Pl. Ind. Orient. 4(4): 4, t. 1527. 1850.

***Strobilanthes perfoliata*** T. Anderson, J. Linn. Soc., Bot. 9: 471. 1867.

*Mackenzica integrifolia* (Dalzell) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 182. 1944.  
Goa, Karnataka, Kerala, Maharashtra.

***Strobilanthes ixiocephala*** Benth., Flora 32: 557. 1849.

*Strobilanthes neesiana* Wight, Icon. Pl. Ind. Orient. 4(4): 4, t. 1523. 1850.

*Thelcaphale ixiocephala* (Benth.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 188. 1944.  
Goa, Karnataka, Kerala, Maharashtra.

***Strobilanthes jeyporensis*** Bedd., Icon. Pl. Ind. Or.: t. 214. 1874.

*Phlebophyllum jeyporense* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944.  
Endemic to India: Andhra Pradesh, Chhattisgarh, Kerala, Odisha.

***Strobilanthes jomyi*** P. Biju, Josekutty, Rekha & J.R.I. Wood, Phytotaxa 332(1): 75. 2017.

Endemic to India: Kerala (Pandy lateritic plateau, Kasaragod District).

***Strobilanthes kannanii*** Josekutty, P. Biju, J.R.I. Wood & Augustine, Nordic J. Bot. 36(8)-e01689: 2. 2018.

Endemic to India: Kerala (Paithalmala, Kannur District).

***Strobilanthes khasyana*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 471. 1867, "khasyanus".

*Endopogon khassyanus* Nees in DC., Prodr. 11: 104. 1847.

*Listrobanthes khasyana* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 254. 1944.

Endemic to India: Meghalaya, Sikkim, West Bengal.

***Strobilanthes kingdonii*** J.R.I. Wood, Edinburgh J. Bot. 51(2): 244. 1994.

Arunachal Pradesh.

***Strobilanthes kunthiana*** (Nees) T. Anderson ex Benth., Fl. Hongk.: 262. 1861, in nota.

*Phlebophyllum kunthianum* Nees in Wall., Pl. Asiat. Rar. 3: 83. 1832.

Endemic to India: Karnataka, Kerala, Tamil Nadu.

***Strobilanthes lachenensis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 465. 1884.

*Pteracanthus lachenensis* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 200. 1944.

Arunachal Pradesh, Sikkim.

***Strobilanthes lamiifolia*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 476. 1867, partly.

*Goldfussia lamiifolia* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Ruellia rotundifolia* D. Don, Prodr. Fl. Nepal 120. 1825.

*Strobilanthes rotundifolia* Benoist, Bull. Mus. Hist. Nat. 28: 97. 1922.

*Pteracanthus rotundifolius* (D. Don) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

*Ruellia lamiifolia* Wall., Numer. List: n. 2347. 1831–1832, nom. nud.

Arunachal Pradesh, Sikkim, West Bengal.

***Strobilanthes lanata*** Nees in DC., Prodr. 11: 191. 1847.

*Strobilanthes gossypina* T. Anderson, J. Linn. Soc., Bot. 9: 466. 1867.

*Phlebophyllum lanatum* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 169. 1944.

Endemic to India: Karnataka, Kerala, Tamil Nadu.

**Strobilanthes paniculiformis** J.R.I. Wood, Kew Bull. 61(1): 10. 2006.

Endemic to India: Arunachal Pradesh, Nagaland.

**Strobilanthes papillosa** T. Anderson, J. Linn. Soc., Bot. 9: 468. 1867.

*Nilgirianthus papillosum* (T. Anderson) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 173. 1944.  
Endemic to India: Tamil Nadu (Nilgiris District).

**Strobilanthes parryorum** C.E.C. Fisch., Bull. Misc. Inform. Kew 1928: 142. 1928.

*Pteracanthus parryorum* (C.E.C. Fisch.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 282. 1944.

Meghalaya, Mizoram.

**Strobilanthes parvifolia** J.R.I. Wood, Kew Bull. 64: 25. 2009.

Arunachal Pradesh.

**Strobilanthes pavala** (Roxb.) J.R.I. Wood, Novon 23(3): 392. 2014.

*Ruellia pavala* Roxb., Hort. Bengal.: 95. 1814 & Fl. Ind. ed. 2, 3: 47. 1832.

*Ruellia latebrosa* B. Heyne ex Roth, Nov. Pl. Sp.: 307. 1821.

*Ruellia crossandra* Steud., Nomencl. Bot., ed. 2, 2: 481. 1841.

*Hemigraphis elegans* Nees in DC., Prodr. 11: 722. 1847.

*Hemigraphis latebrosa* (B. Heyne ex Roth) Nees in DC., Prodr. 11: 723. 1847.

*Ruellia crenata* Benth. ex Hohen., Flora 32: 558. 1849.

*Ruellia ebracteata* Dalzell, Hooker's J. Bot. Kew. Gard. Misc. 2: 342. 1850.

*Ruellia ebracteolata* T. Anderson, J. Linn. Soc., Bot. 9: 462. 1867.

*Ruellia rupestris* B. Heyne ex T. Anderson in J. Linn. Soc., Bot. 9: 462. 1867.

*Hemigraphis pavala* Kurz, J. Asiatic Soc. Bengal, Pt. 2, Nat. Hist. 39(2): 78. 1870.

*Hemigraphis ebracteata* (Dalzell) C.B. Clarke in Hook.f., Fl. Brit. India 4: 424. 1884.

*Hemigraphis elegans* Nees var. *crenata* (Benth. ex Hohen.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 425. 1884.

*Hemigraphis crenata* (Benth. ex Hohen.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 41(1): 137. 1944.

*Hygrophila crossandra* (Steud.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 137. 1944.

*Ruellia obscura* Russ. ex Wall., Numer. List: n. 2382. 1831–1832, nom. nud.

*Crossandra diffusa* Buch.-Ham. ex Wall., Numer. List: n. 2383a. 1831–1832, nom. nud.

*Ruellia diffusa* Wall., Numer. List: n. 2383b,c. 1831–1832, nom. nud.

Throughout the country in dry regions.

**Strobilanthes pentstemonoides** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 477. 1867.

*Goldfussia pentstemonoides* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Ruellia capitata* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal 120. 1825.

*Goldfussia flexuosa* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Strobilanthes pentstemonoides* Nees var. *flexuosa* C.B. Clarke in Hook.f., Fl. Brit. India 4: 460. 1884.

*Ruellia pentstemonoides* Wall., Numer. List: n. 2340. 1831–1832, nom. nud.

*Ruellia cephalotes* Wall., Numer. List: n. 2352. 1831–1832, nom. nud.

var. **pentstemonoides**.

Arunachal Pradesh, Assam, Nagaland, Uttarakhand, West Bengal.

var. **dalhousieana** (Nees) J.R.I. Wood, Edinburgh J. Bot. 51(2): 253. 1994.

*Goldfussia dalhousieana* Nees in DC., Prodr. 11: 174. 1847.

*Strobilanthes pentstemonoides* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 477. 1867, partly.

*Strobilanthes dalhousianus* C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884.

Himachal Pradesh, Jammu and Kashmir, Uttarakhand.

**Strobilanthes perrottetiana** Nees in DC., Prodr. 11: 179. 1847.

*Nilgirianthus perrottetianus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 174. 1944.

Endemic to India: Karnataka, Kerala, Tamil Nadu.

***Strobilanthes persicifolia*** (Lindl.) J.R.I. Wood, Kew Bull. 64(1): 28. 2009.

*Ruellia persicifolia* Lindl., Bot. Reg. 11: t. 955. 1826.

*Ruellia anisophylla* Wall. ex Hook., Exot. Fl. 3(30): t. 191. 1826.

*Strobilanthes anisophylla* (Wall. ex Hook.) T. Anderson, J. Linn. Soc., Bot. 9(40): 478. 1867.

*f. persicifolia*.

Assam, Meghalaya, Sikkim, West Bengal.

*f. isophylla* (Nees) J.R.I. Wood in J.R.I. Wood & Scotland, Kew Bull. 64(1): 28. 2009.

*Goldfussia isophylla* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.

*Strobilanthes goldfussia* Dalzell & A. Gibson, Bombay Fl. Suppl.: 71. 1860, excl. syn.

*Strobilanthes isophylla* (Nees) T. Anderson, J. Linn. Soc., Bot. 9(40): 478. 1867, "isophyllus".

*Strobilanthes isophylla* T. Anderson, Cat. Pl. Calcutta: 43. 1865, nom. inval.

Meghalaya, Uttarakhand, West Bengal; grown in botanic gardens in Peninsular region.

***Strobilanthes philipmathewiana*** J. Mathew & Yohannan, Annals Pl. Sci. 6.01: 1499, f. 1. 2017.

Endemic to India: Kerala (Vellarimala, Kozhikode District).

***Strobilanthes polythrix*** T. Anderson, J. Linn. Soc., Bot. 9: 470. 1867.

Meghalaya, Nagaland.

***Strobilanthes pothigaiensis*** Gopalan & Chithra, Kew Bull. 63(3): 499, f. 1. 2009.

Endemic to India: Kerala (Agasthyamalai, Pothigaimalai, Thiruvananthapuram District).

***Strobilanthes pterygorrachis*** C.B. Clarke, J. Linn. Soc., Bot. 25: 54, t. 25. 1889.

Endemic to India: Arunachal Pradesh, Assam, Nagaland.

***Strobilanthes pubiflora*** J.R.I. Wood, Edinburgh J. Bot. 51(2): 254. 1994.

*Strobilanthes pentstemonoides* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 460. 1884, non (Nees) T. Anderson, 1867.

Manipur, Nagaland, Sikkim, West Bengal.

***Strobilanthes pulneyensis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 438. 1884.

*Strobilanthes circarensis* Gamble, Bull. Misc. Inform. Kew 1923: 373. 1923.

*Xenacanthus pulneyensis* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 176. 1944.

Endemic to India: Andhra Pradesh, Chhattisgarh, Karnataka, Kerala, Odisha, Tamil Nadu.

***Strobilanthes recurva*** C.B. Clarke, J. Linn. Soc., Bot. 25: 53. 1889.

Assam (?), Nagaland.

***Strobilanthes reticulata*** Stapf, Bull. Misc. Inform. Kew 1894: 347. 1894.

*Nilgirianthus reticulatus* (Stapf) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 173. 1944.

Endemic to India: Karnataka, Maharashtra.

***Strobilanthes rhombifolia*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 461. 1884.

*Goldfussia sessilis* Nees in DC., Prodr. 11: 172. 1847.

Endemic to India: Arunachal Pradesh, Assam, Nagaland.

***Strobilanthes rubescens*** T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867.

*Strobilanthes boerhaavioides* T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867.

*Pteracanthus rubescens* (T. Anderson) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

var. *rubescens*.

Assam, Meghalaya, Nagaland, Sikkim.

var. *microsperma* C.B. Clarke in Hook.f., Fl. Brit. India 4: 469. 1884.

Meghalaya.

**Strobilanthes rubicunda** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 483. 1867.

*Leptacanthus rubicundus* Nees in Wall., Pl. Asiat. Rar. 3: 90. 1832.

Endemic to India: Kerala, Tamil Nadu.

**Strobilanthes rufescens** (Roth) T. Anderson, J. Linn. Soc., Bot. 9: 472. 1867.

*Ruellia rufescens* Roth, Nov. Pl. Sp.: 304. 1821.

*Ruellia comosa* Roxb., Fl. Ind. ed. 2, 3: 43. 1832.

**Strobilanthes rufescens** (Roth) T. Anderson var. *rubiginosa* C.B. Clarke in Hook.f., Fl. Brit. India 4: 430. 1884, partly. Manipur, Mizoram, Nagaland, West Bengal.

**Strobilanthes sabiniana** (Wall. ex Lindl.) Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832.

*Ruellia sabiniana* Wall. ex Lindl., Bot. Mag.: t. 1238. 1829.

*Ruellia sabiniana* Wall., Numer. List: n. 2338. 1831–1832, nom. nud.

*Ruellia argentea* Wall., Numer. List: n. 2339. 1831–1832, nom. nud.

Meghalaya, West Bengal.

**Strobilanthes sainthomiana** Augustine, Josekutty & P. Biju, Taiwania 62(1): 64. 2017.

Endemic to India: Kerala (Paithalmala, Kannur District).

**Strobilanthes scaber** T. Anderson in Thwaites, Enum. Pl. Zeyl.: 227. 1860.

Assam, Meghalaya, West Bengal.

**Strobilanthes scrobiculata** Dalzell ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 445. 1884.

*Supushpa scrobiculata* (Dalzell ex C.B. Clarke) Suryan., Proc. Kon. Ned. Akad. Wetensch. C 73: 428. 1970.

Endemic to India: Goa, Karnataka, Maharashtra.

**Strobilanthes secunda** T. Anderson, J. Linn. Soc., Bot. 9: 480. 1867, "secundus".

*Ditrichospermum secundum* (T. Anderson) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 189. 1944. Endemic to India: Arunachal Pradesh, Assam, Meghalaya, Nagaland, Sikkim.

**Strobilanthes sessilis** Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832.

*Strobilanthes sessiloides* Dalzell & A. Gibson, Bombay Fl.: 187. 1861, p.p., non Wight, 1850.

*Pleocaulus sessilis* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 185. 1944.

var. *sessilis*.

Karnataka, Kerala, Maharashtra, Tamil Nadu.

var. *ritchiei* C.B. Clarke in Hook.f., Fl. Brit. India 4: 452. 1884.

*Pleocaulus ritchiei* (C.B. Clarke) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 185. 1944. Karnataka, Maharashtra.

var. *sessiloides* Wight, Icon. Pl. Ind. Orient. 4(4): 2, t. 1512. 1850.

*Pleocaulus sessiloides* (Wight) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 185. 1944. Endemic to India: Karnataka, Kerala, Maharashtra, Tamil Nadu.

**Strobilanthes sexennis** Nees, Compan. Bot. Mag. 2: 312. 1836.

*Mackenziea sexennis* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 182. 1944. Tamil Nadu (Nilgiris District).

**Strobilanthes simonsii** T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867.

Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland, Tripura.

**Strobilanthes simplex** J.R.I. Wood, Edinburgh J. Bot. 51(2): 259, f. 12A–E: 257. 1994.

Endemic to India: Manipur, Nagaland.

***Strobilanthes spicata*** T. Anderson, J. Linn. Soc., Bot. 9: 484. 1867.

***Strobilanthes phyllocaulos*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 464. 1884.

Endemic to India: Meghalaya.

***Strobilanthes stenophylla*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 472. 1884, "stenophyllus"; Karthik. & al., Fl. Pl. India 1: 59. 2009.

Endemic to India: Meghalaya (Khasi Hills).

***Strobilanthes subnudata*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 472. 1884.

Sikkim, West Bengal.

***Strobilanthes tamburensis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 454. 1884.

Arunachal Pradesh.

***Strobilanthes tenax*** Dunn, Bull. Misc. Inform. Kew 1920: 209. 1920.

Arunachal Pradesh, Assam.

***Strobilanthes thomsonii*** T. Anderson, J. Linn. Soc., Bot. 9: 478. 1867.

Arunachal Pradesh, Sikkim, West Bengal.

***Strobilanthes tibetica*** J.R.I. Wood, Edinburgh J. Bot. 51(2): 262. 1994.

Arunachal Pradesh, Nagaland.

***Strobilanthes tomentosa*** (Nees) J.R.I. Wood, Kew Bull. 64(1): 16. 2009.

*Aechmanthera tomentosa* Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832.

*Ruellia gossypina* Wall. ex Nees in Wall., Pl. Asiat. Rar. 1: 38, t. 42. 1830.

*Aechmanthera gossypina* (Wall. ex Nees) Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832.

*Aechmanthera tomentosa* Nees var. *humilis* Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832.

*Aechmanthera tomentosa* Nees var. *wallichii* C.B. Clarke in Hook.f., Fl. Brit. India 4: 428. 1884.

*Aechmanthera leiosperma* C.B. Clarke in Hook.f., Fl. Brit. India 4: 429. 1884.

Assam, Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Punjab, Sikkim, Uttarakhand, Uttar Pradesh, West Bengal.

***Strobilanthes torrentium*** Benoist, Bull. Mus. Natl. Hist. Nat. 28: 188. 1922.

Manipur, Mizoram, Nagaland.

***Strobilanthes tricostata*** S. Thomas, B. Mani, Britto & Pradeep, Phytotaxa 413(3): 244. 2019.

Endemic to India: Tamil Nadu (Megamalai, Theni District).

***Strobilanthes tristis*** (Wight) T. Anderson, J. Linn. Soc., Bot. 9: 470. 1867.

*Goldfussia tristis* Wight, Icon. Pl. Ind. Orient. 4(4): 1, t. 1508. 1850.

Endemic to India: Karnataka, Kerala, Tamil Nadu.

***Strobilanthes tubiflos*** (C.B. Clarke) J.R.I. Wood, Edinburgh J. Bot. 51(2): 264. 1994.

***Strobilanthes petiolaris*** Nees var. *tubiflos* C.B. Clarke in Hook.f., Fl. Brit. India 4: 458. 1884.

Endemic to India: Arunachal Pradesh.

***Strobilanthes twangensis*** J.R.I. Wood & D. Borah, Kew Bull. 74: 41. 2019.

Endemic to India: Arunachal Pradesh (Tawang District).

***Strobilanthes urceolaris*** Gamble, Bull. Misc. Inform. Kew 1923: 374. 1923.

*Nilgirianthus urceolaris* (Gamble) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 173. 1944.

Endemic to India: Kerala, Tamil Nadu.

**Strobilanthes urens** (Roth) J.R.I. Wood, Novon 23: 393. 2014.

*Ruellia urens* Roth, Nov. Pl. Sp.: 302. 1821.

*Ruellia dura* Nees, Compan. Bot. Mag. 11: 311. 1836.

*Hemigraphis dura* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 461. 1867.

*Gantelbua urens* (Roth) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 148. 1944.

*Hemigraphis urens* (Roth) J.R.I. Wood, Edinburgh J. Bot. 51(1): 108. 1994.

Endemic to India; Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Uttarakhand, Uttar Pradesh,

**Strobilanthes urophylla** (Nees) Nees in DC., Prodr. 11: 192. 1847.

*Dipteracanthus urophyllus* Nees in Wall., Pl. Asiat. Rar. 3: 82. 1832.

*Strobilanthes urophyllus* (Nees) Nees var. *sikkimensis* C.B. Clarke in Hook.f., Fl. Brit. India 4: 472. 1884.

*Pteracanthus urophyllus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 198. 1944.

*Ruellia urophylla* Wall., Numer. List: n. 2344. 1831–1832, nom. nud.

Arunachal Pradesh, Meghalaya, Sikkim, West Bengal.

**Strobilanthes venosa** (B. Heyne ex C.B. Clarke) J.R.I. Wood, Novon 23: 394. 2014.

*Hemigraphis venosa* B. Heyne ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 423. 1884.

Endemic to India; Deccan or Carnatic.

**Strobilanthes violacea** Bedd., Icon. Pl. Ind. Or.: 48, t. 205. 1874.

*Mackenziaea violacea* (Bedd.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 182. 1944.

Endemic to India; Tamil Nadu (Nilgiris District).

**Strobilanthes violifolia** T. Anderson, J. Linn. Soc., Bot. 9: 485. 1867.

*Echinacanthus parviflorus* T. Anderson, J. Linn. Soc., Bot. 9: 459. 1867.

*Echinacanthus andersonii* C.B. Clarke in Hook.f., Fl. Brit. India 4: 415. 1884.

*Echinacanthus andersonii* C.B. Clarke var. *viscosus* C.B. Clarke in Hook.f., Fl. Brit. India 4: 415. 1884.

*Echinacanthus pumilio* C.B. Clarke in Hook.f., Fl. Brit. India 4: 415. 1884.

*Pteracanthus violifolius* (T. Anderson) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 200. 1944.

*Clarkeasia parviflora* (T. Anderson) J.R.I. Wood, Edinburgh J. Bot. 51(2): 189. 1994.

*Clarkeasia parviflora* (T. Anderson) J.R.I. Wood var. *albescens* J.R.I. Wood, Edinburgh J. Bot. 51(2): 189. 1994.

Himachal Pradesh, Manipur, Meghalaya, Sikkim, West Bengal.

**Strobilanthes virendrakumariana** Venu & P. Daniel in Venu, Strobilanthes Penins. India: 189, f. 50. 2006.

Endemic to India; Kerala.

**Strobilanthes walkeri** Arn. ex Nees, Compan. Bot. Mag. 2: 312. 1836.

*Strobilanthes walkeri* Arn. ex Nees var. *stenocarpa* C.B. Clarke in Hook.f., Fl. Brit. India 4: 441. 1884.

Kerala, Tamil Nadu.

**Strobilanthes wallichii** Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832.

*Ruellia alata* Wall., Pl. Asiat. Rar. 1: 26, t. 31. 1830.

*Pteracanthus alatus* (Wall.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 199. 1944.

Arunachal Pradesh, Assam, Jammu and Kashmir, Nagaland, Sikkim, West Bengal.

**Strobilanthes wightiana** Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832.

*Nilgirianthus wightianus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 175. 1944.

Endemic to India; Kerala, Odisha, Tamil Nadu.

**Strobilanthes wightii** (Bremek.) J.R.I. Wood, Novon 23: 394. 2014.

*Stenosiphonium wightii* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 15. 1944.

*Stenosiphonium diandrum* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 426. 1884, non Nees 1847.

Endemic to India; Tamil Nadu.

**Strobilanthes zenkeriana** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 467. 1867.

*Goldfussia zenkeriana* Nees in DC., Prodr. 11: 172. 1847.

*Goldfussia leschenaultiana* Nees in DC., Prodr. 11: 172. 1847.

*Endopogon strobilanthes* Wight, Icon. Pl. Ind. Orient. 4(3): 20, t. 1500. 1849.

*Xenacanthus leschenaultianus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 41(1): 176. 1944.

*Xenacanthus zenkerianus* (Nees) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 176. 1944.

*Strobilanthes foliosa* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 433. 1884, p.p. non (Wight) T. Anderson, 1867.

Endemic to India: Kerala, Tamil Nadu.

**THUNBERGIA** Retz., Physiogr. Sälsk. Handl. 1(3): 163. 1780, nom. cons.

12 species and 02 varieties.

*Thunbergia alata* Bojer ex Sims, Bot. Mag. 52: t. 2591. 1825.

Naturalised throughout the country.

*Thunbergia bicolor* (Wight) Lindau, Bot. Jahrb. Syst. 17(41): 42. 1893.

*Schmidia bicolor* Wight, Icon. Pl. Ind. Orient. 5(2): 16, t. 1848. 1852.

*Thunbergia wightiana* T. Anderson, J. Linn. Soc., Bot. 9: 448. 1866.

*Thunbergia bicolor* (Wight) Manilal & Suresh, J. Econ. Taxon. Bot. 5(2): 422. 1984, isonym.

Endemic to India: Western Ghats of Kerala, Tamil Nadu.

*Thunbergia coccinea* Wall. ex D. Don, Prodr. Fl. Nepal 120. 1825.

*Hexacentris coccinea* (Wall.) Nees in Wall., Pl. Asiat. Rar. 3: 78. 1832.

Throughout the country.

*Thunbergia erecta* (Benth.) T. Anderson, J. Proc. Linn. Soc., Bot. 7: 18. 1864.

*Meyenia erecta* Benth. in Hook., Niger. Fl.: 476. 1849.

Widely cultivated throughout the country in gardens, parks as an ornamental and hedge plant.

*Thunbergia fragrans* Roxb., Pl. Coromandel 1(3): 47, t. 67. 1796.

var. *fragrans*.

Widely distributed throughout the country.

var. *hispida* Gamble, Fl. Madras 1008. 1924.

Andhra Pradesh, Odisha.

var. *vestita* Nees in Wall., Pl. Asiat. Rar. 3: 78. 1832.

*Thunbergia tomentosa* Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 78. 1832.

Tamil Nadu.

*Thunbergia grandiflora* Roxb., Bot. Reg. 6: 495. 1820.

*Thunbergia grandiflora* Roxb. var. *axillaris* C.B. Clarke in Hook.f., Fl. Brit. India 4: 392. 1884, syn. nov.

Northeastern region, and cultivated in the plains throughout the country.

*Thunbergia laevis* Nees in Wall., Pl. Asiat. Rar. 3: 77. 1832.

*Thunbergia fragrans* Roxb. var. *laevis* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 391. 1884.

Eastern, northern and peninsular regions, also planted in gardens.

*Thunbergia laurifolia* Lindl., Gard. Chron. 1856: 260. 1856.

Eastern region and Andaman and Nicobar Islands; grown as an ornamental in Maharashtra.

*Thunbergia lutea* (Lindl.) T. Anderson, J. Linn. Soc., Bot. 9: 448. 1867.

*Hexacentris lutea* Lindl., Gard. Chron. 1854: 151. 1854.

Endemic to India: West Bengal (Darjeeling).

*Thunbergia maculata* Lace, Bull. Misc. Inform. Kew 1914(4): 154. 1914.

Northeastern region (Manipur).

**Thunbergia mysorensis** (Wight) T. Anderson, J. Linn. Soc., Bot. 9: 448. 1867.

*Hexacentris mysorensis* Wight, Icon. Pl. Ind. Orient. 3(2): 6, t. 871. 1844–1845.  
Endemic to India: Karnataka, Kerala, Tamil Nadu; cultivated as an ornamental throughout the country.

**Thunbergia natalensis** Hook., Bot. Mag. 84: t. 5082. 1858.

Grown in gardens throughout the country.

### CULTIVATED SPECIES

**Acanthus mollis** L., Sp. Pl. 2: 639. 1753.

**Dicliptera babui** Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 10. 2009.

*Justicia baphica* Spreng., Neue Entdeck. Pflanzenk. 3: 82. 1822.

*Peristrophe baphica* (Spreng.) Bremek., Nova Guinea ser. 2, 8: 149. 1957.

*Peristrophe tinctoria* sensu C.B. Clarke in Hook.f., Fl. Brit. India 4: 556. 1885, p.p. non Nees 1832.

**Dicliptera bivalvis** (L.) Juss., Ann. Mus. Natl. Hist. Nat. 9: 268. 1807.

*Justicia bivalvis* L., Syst. Nat., ed. 10, 2: 850. 1759.

*Justicia roxburghiana* Roem. & Schult., Syst. Veg. 1: 140. 1817.

*Peristrophe tinctoria* (Roxb.) Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832.

*Justicia tinctoria* Roxb., Fl. Ind. 1: 123. 1820, non Lour. 1790.

*Peristrophe roxburghiana* (Roem. & Schult.) Bremek., Acta Bot. Neerl. 4: 656. 1955, non *Dicliptera roxburghiana* Nees 1832.

**Dicliptera sivarajanii** Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 12. 2009, nom. superfl. & nom. illeg.

**Justicia brandegeana** Wassh. & L.B. Sm., Fl. Illustr. Catarin., 1, Acan.: 102. 1969.

*Beloperone guttata* Brandegee, Univ. Calif. Publ. Bot. 4: 278. 1912.

**Justicia tinctoriella** Bennet & Raizada, Indian Forester 109(4): 219. 1983.

*Sericographis tinctoria* Oerst., Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1854: 150, t. 3, f. 15, 16. 1855.

*Justicia colorifera* V.A.W. Graham, Kew Bull. 43(4): 611. 1988, nom. illeg.

**Pseuderanthemum bicolor** (Schrank) Radlk. ex Lindau in Engl. & Prantl, Nat. Pflanzenfam. IV, 3b: 330, f. 133A–D. 1895.

*Eranthemum bicolor* Schrank, Pl. Rar. Hort. Monac.: t. 8. 1819.

**Pseuderanthemum kewense** L.H. Bailey, Gentes Herb. 1: 130. 1923.

**Pseuderanthemum malaccense** (C.B. Clarke) Lindau in Engl. & Prantl, Nat. Pflanzenfam. 4: 330. 1895.

*Eranthemum malaccense* C.B. Clarke in Hook.f., Fl. Brit. India 4: 498. 1884.

**Pseuderanthemum reticulatum** (W. Bull ex A. de Vos) Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 13: 286. 1884.

### DOUBTFUL/EXCLUDED TAXA

**Dicliptera riparia** Nees in Wall., Pl. Asiat. Rar. 3: 112. 1832.

*Dicliptera roxburghiana* Nees var. *riparia* (Nees) Benoist in Lecomte & al., Fl. Indo-Chine 4: 768. 1935.

**Eranthemum macrophyllum** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 106. 1832.

*Daedalacanthus macrophyllus* (Wall. ex Nees) T. Anderson, J. Linn. Soc., Bot. 9: 487. 1867.

**Eranthemum tetragonum** Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 106. 1832.

*Daedalacanthus tetragonotus* (Wall. ex Nees) T. Anderson, J. Linn. Soc., Bot. 9: 487. 1867

**Justicia biflora** Vahl, Symb. Bot. 2: 9. 1791.

**Justicia flagelliformis** C.B. Clarke in Hook.f., Fl. Brit. India 4: 535. 1885.

**Justicia parviflora** (Retz.) Nees var. *ciliata* (Bremek.) Karthig. & Lakshmin., comb. nov.

*Rungia parviflora* (Retz.) Nees var. *ciliata* Bremek., Dansk. Bot. Ark. 20: 88. 1961.

**Justicia tukuchensis** V.A.W. Graham, J. Jap. Bot. 56: 117. 1981.

**Pseuderanthemum lapathifolium** (Vahl) B. Hansen, Nordic J. Bot. 9: 214. 1989.

*Justicia lapathifolia* Vahl, Enum. Pl. 1: 126. 1804.

*Eranthemum lapathifolium* (Vahl) Nees in DC., Prodr. 11: 454. 1847.

**Ruellia glandulosa** Roth, Nov. Pl. Sp.: 312. 1821.

**Ruellia involucrata** Vahl, Symb. Bot. 3: 83. 1794.

- \**Staurogyne helferi* T. Anderson, J. Linn. Soc., Bot. 11: 452. 1867.  
 \**Staurogyne lasiobotrys* Nees in DC., Prodr. 11: 721. 1847.  
*Staurogyne incana* (Blume) Kuntze, Revis. Gen. Pl. 2: 497. 1891.  
*Staurogyne longifolia* (Nees) Kuntze, Revis. Gen. Pl. 2: 497. 1891.  
*Strobilanthes bheriensis* (Shakya) J.R.I. Wood, Edinburgh J. Bot. 51: 218. 1994.  
*Dossiphyga bheriensis* Shakya, J. Jap. Bot. 50: 97. 1975.  
*Strobilanthes cuneata* (Shakya) J.R.I. Wood, Edinburgh J. Bot. 51: 218. 1994.  
*Dossiphyga cuneata* Shakya, J. Jap. Bot. 50: 99. 1975.  
*Strobilanthes diandra* (Nees) Alston in Trimen, Handb. Fl. Ceylon 6: 227. 1931.  
*Senosiphonium diandrum* Nees in DC., Prodr. 11: 105. 1847, non Wight, 1850.  
*Strobilanthes hallbergii* Blatt., J. Proc. Asiat. Soc. Bengal 26: 345. 1931.  
*Strobilanthes khoshoana* (S.R. Paul) Karthik. & Moorthy in Karthik. & al., Fl. Pl. India 1: 51. 2009.  
*Sugushya khoshoanii* S.R. Paul, Bot. Not. 132: 149. 1979.  
*Strobilanthes lurida* Wight var. *bourneae* Gamble, Bull. Misc. Inform. Kew 1923: 374. 1923.  
*Strobilanthes microcarpa* T. Anderson, J. Linn. Soc., Bot. 9: 482. 1867.  
*Strobilanthes nutans* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867.  
*Goldfussia nutans* Nees in Wall., Pl. Asiat. Rar. 3: 88. 1832.  
*Strobilanthes paucinervia* T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 470. 1884.  
*Strobilanthes saccata* J.R.I. Wood, Edinburgh J. Bot. 51: 256. 1994.

\*These two species have been included in the Flora of West Bengal Volume 4 (2019) based on a single specimen each housed at CAL, of which the latter was collected by C.C. Calder from Cinchona camp in Darjeeling on 22 March 1924.

## PHRYMACEAE

(V. Sampath Kumar)  
01 genus, 01 species

**PHRYMA** L., Sp. Pl.: 601. 1753.

01 species

**Phryma leptostachya** L., Sp. Pl. 2: 601. 1753.

- Phryma oblongifolia* Koidz., Bot. Mag. (Tokyo) 43: 400. 1929.  
*Phryma leptostachya* var. *oblongifolia* (Koidz.) Honda, Bot. Mag. (Tokyo) 50: 608. 1936.  
*Phryma leptostachya* var. *asiatica* H. Hara, Enum. Spermatoph. Jap. 1: 297. 1948.  
*Phryma leptostachya* subsp. *asiatica* (H. Hara) Kitam., Acta Phytotax. Geobot. 17: 7. 1957.  
*Phryma asiatica* (H. Hara) O. Deg. & I. Deg., Phytologia 22: 212. 1971.  
 Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttarakhand.

## VERBENACEAE

(V. Sampath Kumar, A. Rajendran and P. Daniel)  
18 genera; 115 taxa (110 species, 05 infraspecific)

\***CALICCARPA** L., Sp. Pl. 1: 111. 1753.

08 species

**Callicarpa arborea** Roxb., Fl. Ind. 1: 405. 1820.

Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar (?), Chhattisgarh, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Sikkim, Tamil Nadu, Tripura, Uttarakhand, West Bengal.

**Callicarpa longifolia** Lam., Encycl. 1: 563, t. 69, f. 2. 1785.

*Callicarpa lanceolaria* Roxb., Fl. Ind. 1: 409. 1820.

*Callicarpa roxburghiana* Roem. & Schult., Mant. Syst. Veg. 3: 54. 1827, nom. illeg.

*Callicarpa longifolia* Lam. var. *lanceolaria* (Roxb.) C.B. Clarke in Hook.f., Fl. Brit. India 4: 570. 1885.  
 Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Sikkim, Tripura, Uttarakhand, West Bengal.

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BOTANICAL SURVEY OF INDIA

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## TACCACEAE

(D.K. Roy)  
01 genus, 03 species

**TACCA** J.R. Forst. & G. Forst., Char. Gen. Pl. 35. 1775, nom. cons.  
3 species

*Tacca chantrieri* Andre, Rev. Hort. (Paris) 73: 541. 1901.  
*Tacca minor* Ridl., Mat. Fl. Malay. Penins. 2: 78. 1907.  
*Tacca roxburghii* H. Limpr. in Engl., Pflanzenr. IV, 42: 18. 1928.  
 Assam, Nagaland.

**Tacca integrifolia** Ker Gawl., Bot. Mag. 36: t. 1488. 1812.  
*Tacca aspera* Roxb., Fl. Ind. 2: 169. 1824.  
*Tacca laevis* Roxb., Fl. Ind. 2: 171. 1824.  
*Tacca choudhuriana* Deb, Indian Forester 90: 241. 1964.  
 Arunachal Pradesh, Assam, Karnataka, Maharashtra, Manipur, Meghalaya, Sikkim, Tamil Nadu.

**Tacca leontopetaloides** (L.) Kuntze, Revis. Gen. Pl. 2: 704. 1891.  
*Leontice leontopetaloides* L., Sp. Pl. 1: 313. 1753.  
*Tacca pinnatifida* J.R. Forst. & G. Forst., Char. Gen. Pl., ed. 2. 70, t. 35. 1776.  
 Andaman & Nicobar Islands, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu.

## DIOSCOREACEAE

(Manas Bhaumik)  
02 genera, 61 taxa (38 species; 23 infraspecific)

**DIOSCOREA** L., Sp. Pl. 2: 1032. 1753.  
 60 taxa (37 species and 23 varieties)

**Dioscorea alata** L., Sp. Pl. 2: 1033. 1753.  
*Dioscorea atropurpurea* Roxb., Fl. Ind. 3: 800. 1832.  
*Dioscorea globosa* Roxb., Fl. Ind. 3: 797. 1832.  
*Dioscorea alata* var. *globosa* (Roxb.) Prain, Bengal Pl. 2: 1067. 1903.  
*Dioscorea rubella* Roxb., Fl. Ind. 3: 798. 1832.  
*Dioscorea alata* var. *rubella* (Roxb.) Prain, Bengal Pl. 2: 1067. 1903.  
*Dioscorea purpurea* Roxb., Fl. Ind. 3: 799. 1832.  
*Dioscorea alata* var. *purpurea* (Roxb.) Prain, Bengal Pl. 2: 1067. 1903.

**Dioscorea arachidna** Prain & Burkill, J. Asiatic Soc. Beng. 10: 21. 1914.  
 Assam, Meghalaya.

**Dioscorea belophylla** (Prain) Haines, Forest Fl. Chota Nagpur 530. 1910.  
*Dioscorea rummularia* var. *belophylla* Prain, Bengal Pl. 2: 1065, 1067. 1903.  
*Dioscorea glabra* Hook.f., Fl. Brit. India 6: 294. 1892, non Roxb., 1832.  
 Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

**Dioscorea brandisii** Prain & Burkill, Proc. Asiatic Soc. Bengal 10: 27. 1914.  
 Arunachal Pradesh, Assam.

**Dioscorea bulbifera** L., Sp. Pl. 2: 1033. 1753.  
*Dioscorea sativa* Thunb., Fl. Jap. 151. 1784, non L., 1753.

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**Trichopus zeylanicus** Gaertn., Fruet 1: 44, t. 14, 1788.  
*Trichopodium travancoricum* Bedd., Icon. Pl. Ind. Orient. 68, t. 290, 1874.  
*Trichopus zeylanicus* ssp. *travancoricus* (Bedd.) Burkhill in Steenis, Fl. Males., ser. I, Spermat. 4: 299, 1951.  
 Kerala.

### CULTIVATED/PLANTED SPECIES

**Dioscorea alata** L. var. **tarri** Prain&Burkhill, J. Proc. Asiat. Soc. Bengal 10: 39, 1914.  
**Dioscorea alata** L. var. **vera** Prain&Burkhill, J. Proc. Asiat. Soc. Bengal 10: 39, 1914.

## STEMONACEAE

(D.K. Roy)

02 genera, 04 taxa (03 species, 01 infraspecific)

**STEMONA** Lour., Fl. Cochinch. 2: 404, 1790.  
 03 taxa (02 species and 01 variety)

**Stemona tuberosa** Lour., Fl. Cochinch. 2: 404, 1790.

var. **tuberosa**

Andhra Pradesh, Arunachal Pradesh, Assam, Meghalaya, Manipur, Nagaland, Odisha, West Bengal.

var. **minor** (Hook.f.) C.E.C. Fisch. in J.S. Gamble, Fl. Madras, 1514, 1928.  
*Stemona minor* Hook.f., Fl. Brit. India 6: 298, 1892.  
 Kerala, Tamil Nadu.

**Stemona curtisii** Hook.f., Fl. Brit. India 6: 298, 1892.  
 Andman & Nicobar Islands.

**STICHONEURON** Hook.f. in Benth. & Hook.f., Gen. Pl. 3: 747, 1883.  
 01 species

**Stichoneuron membranaceum** Hook.f., Fl. Brit. India 6: 299, 1892.  
 Meghalaya, Nagaland, Tripura.

## TYPHACEAE

(D.K. Roy)

01 genus, 06 species

**TYPHA** L., Sp. Pl. 2: 971, 1753.  
 06 species

**Typha angustifolia** L., Sp. Pl. 2: 971, 1753.  
 Andhra Pradesh, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal.

**Typha domingensis** Pers., Syn. Pl. 2: 532, 1807.  
*Typha angustata* Bory & Chaub., Exped. Sci. Moree, Bot. 338, 1832.  
 Almost throughout India.

**Typha elephantina** Roxb., Fl. Ind. 3: 566, 1832.  
 Assam, Meghalaya, West Bengal.

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Kerala.

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Kerala, Tamil Nadu.

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01 species

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06 species

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**Typha domingensis** Pers., Syn. Pl. 2: 532. 1807.

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Almost throughout India.

**Typha elephantina** Roxb., Fl. Ind. 3: 566. 1832.

Assam, Meghalaya, West Bengal.

**Typha latifolia** L., Sp. Pl. 2: 971. 1753.

Tamil Nadu.

**Typha laxmannii** Lepech., Nova Acta Acad. Sci. Imp. Petrop. Hist. Acad. 12: 84. 1801.

Jammu and Kashmir.

**Typha orientalis** C. Presl, Epimel. Bot. 239. 1851.

Jammu and Kashmir.

## SPARGANIACEAE

(D.K. Roy)

01 genus, 05 species

**SPARGANIUM** L., Sp. Pl. 2: 971. 1753.

05 species

**Sparganium angustifolium** Michx., Fl. Bor.-Amer. 2: 189. 1803.

*Sparganium simplex* Muhl., Cat. Pl. Amer. Sept. 82. 1813, nom. illeg.

Assam, Meghalaya.

**Sparganium emersum** Rehmann, Verh. Naturf. Vereins Brünn 10: 80. 1871.

*Sparganium simplex* Huds., Fl. Angl. ed. 2: 401. 1778, nom. illeg.

Meghalaya, Sikkim.

**Sparganium erectum** L., Sp. Pl. 2: 971. 1753.

*Sparganium ramosum* Huds., Fl. Angl. ed. 2: 401. 1778.

Assam, Himachal Pradesh, Jammu and Kashmir, Uttarkhand, Uttar Pradesh.

**Sparganium fallax** Graebn. in Allg. Bot. Z. Syst. 4: 32. 1898.

Assam, Sikkim.

**Sparganium stoloniferum** (Buch.-Ham. ex Graebn.) Buch.-Ham. ex Juz. in V.L. Komarov (ed.), Fl. URSS 1: 219. 1934.

*Sparganium ramosum* Huds. subsp. *stoloniferum* Buch.-Ham. ex Graebn. in Engl., Pflanzenr. 2(IV. 10): 14. 1900.

*Sparganium erectum* L. subsp. *stoloniferum* (Buch.-Ham. ex Graebn.) H. Hara, J. Jap. Bot. 51: 228. 1976.

Himachal Pradesh, Jammu and Kashmir, Uttar Pradesh.

## ARACEAE

(K. Sasikala, E. Vajravelu & P. Daniel)

25 genera, 200 taxa (180 species, 20 infraspecific)

**AGLAONEMA** Schott, Wiener Z. Kunst. 1829: 892. 1829.

06 taxa (05 species and 01 variety)

**Aglaonema birmanicum** Hook.f., Fl. Brit. India 6: 529. 1893.

Manipur.

**Aglaonema commutatum** Schott, Syn. Aroid. 123. 1856.

Kerala, Maharashtra, Tamil Nadu, West Bengal.

**Aglaonema hookerianum** Schott, Bonplandia (Hannover) 7: 30. 1859.

*Aglaonema clarkei* Hook.f., Fl. Brit. India 6: 529. 1893.

Arunachal Pradesh, Assam, Meghalaya, Mizoram, Sikkim, Tripura.

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Jammu and Kashmir.

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(D.K. Roy)

01 genus, 05 species

**SPARGANIUM** L., Sp. Pl. 2: 971. 1753.

05 species

**Sparganium angustifolium** Michx., Fl. Bor.-Amer. 2: 189. 1803.

*Sparganium simplex* Muhl., Cat. Pl. Amer. Sept. 82. 1813, nom. illeg.

Assam, Meghalaya.

**Sparganium emersum** Rehmann, Verh. Naturf. Vereins Brünn 10: 80. 1871.

*Sparganium simplex* Huds., Fl. Angl. ed. 2: 401. 1778, nom. illeg.

Meghalaya, Sikkim.

**Sparganium erectum** L., Sp. Pl. 2: 971. 1753.

*Sparganium ramosum* Huds., Fl. Angl. ed. 2: 401. 1778.

Assam, Himachal Pradesh, Jammu and Kashmir, Uttarkhand, Uttar Pradesh.

**Sparganium fallax** Graebn. in Allg. Bot. Z. Syst. 4: 32. 1898.

Assam, Sikkim.

**Sparganium stoloniferum** (Buch.-Ham. ex Graebn.) Buch.-Ham. ex Juz. in V.L. Komarov (ed.), Fl. URSS 1: 219. 1934.

*Sparganium ramosum* Huds. subsp. *stoloniferum* Buch.-Ham. ex Graebn. in Engl., Pflanzren. 2(IV. 10): 14. 1900.

*Sparganium erectum* L. subsp. *stoloniferum* (Buch.-Ham. ex Graebn.) H. Hara, J. Jap. Bot. 51: 228. 1976.

Himachal Pradesh, Jammu and Kashmir, Uttar Pradesh.

## ARACEAE

(K. Sasikala, E. Vajravelu & P. Daniel)

25 genera, 200 taxa (180 species, 20 infraspecific)

**AGLAONEMA** Schott, Wiener Z. Kunst. 1829: 892. 1829.

06 taxa (05 species and 01 variety)

**Aglaonema birmanicum** Hook.f., Fl. Brit. India 6: 529. 1893.

Manipur.

**Aglaonema commutatum** Schott, Syn. Aroid. 123. 1856.

Kerala, Maharashtra, Tamil Nadu, West Bengal.

**Aglaonema hookerianum** Schott, Bonplandia (Hannover) 7: 30. 1859.

*Aglaonema clarkei* Hook.f., Fl. Brit. India 6: 529. 1893.

Arunachal Pradesh, Assam, Meghalaya, Mizoram, Sikkim, Tripura.

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AN ANNOTATED CHECKLIST

MONOCOTYLEDONS



**Botanical Survey of India**

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**Ashiho Asosii Mao**  
**Sudhansu Sekhar Dash**



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2020

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**Wolffia microscopica** (Griff. ex Voigt) Kurz, J. Linn. Soc. 9: 265. 1866.  
*Grantia microscopica* Griff. ex Voigt, Hort Suburb. Calcutt., 692. 1845.  
 West Bengal.

**Wolffia neglecta** Landolt, Ber. Geobot. Inst. E.T.H. Stiftung Rübel 60: 147. 1994.  
 Rajasthan, West Bengal.

**WOLFFIELLA** Hegelm. in Bot. Jahrb. Syst. 21: 303. 1895.  
 01 species

**Wolffiella hyalina** (Delile) Monod, Mém. Soc. Hist. Nat. Afrique N., Hors-ser. 2: 242. 1949.  
*Lemna hyalina* Delile, Descr. Egypte, Hist. Nat. 4: 27. 1813.  
*Pseudowolffia hyalina* (Delile) Hartog & Plas, Blumea 18: 365. 1970.  
 Andhra Pradesh.

## TRIURIDACEAE

(D.K. Roy)

01 genus, 02 species

**SCIAPHILA** Bl., Bijdr. 514. 1825.  
 02 species

**Sciaphila janthina** (Champ.) Thwaites, Enum. Pl. Zeyl. 294. 1864.  
*Hyalisma janthina* Champ., Calcutta J. Nat. Hist. 7: 466. 1847.  
 Kerala, Tamil Nadu.

**Sciaphila khasiana** Hook.f. in Benth. & Hook.f., Gen. Pl. 3: 1003. 1883.  
 Meghalaya.

## ALISMATACEAE

(Vijay Kumar Mastakar)

07 genera, 20 taxa (17 species, 03 subspecies)

**ALISMA** L., Sp. Pl. 1: 342. 1753.  
 04 taxa (03 species and 01 subspecies)

**Alisma gramineum** Lej, Fl. Spain 1: 175. 1811.  
 Jammu and Kashmir, Punjab.

**Alisma lanceolatum** With., Arrang. Brit., Pl. ed. 3. 2: 362. 1796.  
 Jammu and Kashmir, Punjab, Uttar Pradesh.

**Alisma plantago-aquatica** L., Sp. Pl. 1: 342. 1753.  
*Alisma plantago* L., Sp. Pl. 1: 342. 1753.

subsp. **plantago-aquatica**  
 Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu and Kashmir, Manipur, Nagaland, Punjab, Uttar Pradesh,  
 West Bengal.

Subsp. **orientale** (Sam.) Sam., Ark. Bot. 24 A: 16. 1932.  
*Alisma plantago-aquatica* var. *orientale* Sam., Acta Hort. Goth. 2: 84. 1926.  
 Jammu and Kashmir, Uttar Pradesh.

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**JUNCAGINACEAE**

(Manas Bhaumik)

01 genus, 02 species

**TRIGLOCHIN** L., Sp. Pl. 1: 338. 1753.

02 species

*Triglochin maritima* L., Sp. Pl. 1: 339. 1753 (as 'maritimum').  
Himachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand.**Triglochin palustre** L., Sp. Pl. 1: 338. 1753.

Himachal Pradesh, Jammu and Kashmir, Uttarakhand.

**TRILLIACEAE**

(Rajib Gogoi, Syamali Dasgupta and D.K.Roy)

03 genera and 07 taxa (04 species, 03 varieties)

**PARIS** L., Sp. Pl. 1: 367. 1753.

06 taxa (01 species, 05 varieties)

*Paris polyphylla* Sm., Rees, Cyclop. 26. Paris 2, 1813.*Daiswa polyphylla* (Sm.) Raf., Fl. Tell. 4: 18. 1838.var. **polyphylla**

Arunachal Pradesh, Himachal Pradesh, Jammu &amp; Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal.

var. **alba** H. Li & R.J. Mitchell, Bull. Bot. Res., Harbin 6: 123. 1986.*Paris polyphylla* var. *appendiculata* H. Hara, Fl. E. Himal. 410. 1966.

Sikkim.

var. **chinensis** (Franch.) H. Hara, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 10: 176. 1969.*Paris polyphylla* var. *fargesii* (Franch.) S. Dasgupta, Fasc. Fl. India. 23: 109. 2006.*Paris fargesii* Franch., J. de Bot. 12: 190. 1898.*Paris polyphylla* Sm. subsp. *fargesii* (Franch.) H. Hara, J. Fac. Sci. Univ. Tokyo Bot. 10: 177. 1969.

Arunachal Pradesh, Manipur.

var. **latifolia** F.T. Wang & C. Yu Chang in Fl. Reipubl. Popularis Sin. 15: 250, 94. 1971.*Paris polyphylla* var. *brachystemon* Franch., J. de Bot. 12: 191. 1898.*Paris daiswus* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal: 49. 1825, pro syn.

Arunachal Pradesh, Himachal Pradesh, Jammu &amp; Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal.

var. **stenophylla** Franch., Nouv. Arch. Mus. Hist. Nat. II, 10: 97. 1888.*Paris polyphylla* var. *violacea* (Lev.) S. Dasgupta, Fasc. Fl. India. 23: 109. 2006.*Paris violacea* Lev., Fedd. Repert. 11: 302. 1912.*Paris marmorata* Steam, Bull. Brit. Mus. Nat. Hist. 2: 79. 1956.*Paris polyphylla* subsp. *marmorata* (Steam) H. Hara, J. Fac. Sci. Univ. Tokyo Bot. n.10: 176, t. 2 B-C, 6c. 1969.*Paris polyphylla* var. *wallichii* H. Hara in Ohashi, Fl. E. Himal. 3: 134, f. 14b. 1975.*Paris polyphylla* sensu Wall., Pl. Asiat. Rar. 2: 24. t. 126. 1831, non Sm., 1813.

Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Uttarakhand, West Bengal.

Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Uttarakhand, West Bengal.

**var. *yunnanensis*** (Franch.) Hand.-Mazz., Symb. Sin. 7: 1216. 1936.

*Daiswa yunnanensis* (Franch.) Takht., Brittonia 35: 257. 1983.

*Paris yunnanensis* Franch., Mem. Soc. Philom. Centen. Paris 290. 1888.

Assam, Sikkim.

**TRILLIDIUM** Kunth, Enum. Pl. 5: 120. 1850.

01 species

**Trillidium govanianum** (Wall. ex D. Don) Kunth, Enum. Pl. 5: 120. 1850

*Trillium govanianum* Wall. ex D. Don in Royle, Ill. Bot. Himal. Mts.: 384. t. 93, f. 1, 1839.

Himachal Pradesh, Himalayas, Jammu and Kashmir, Sikkim, Uttarakhand, West Bengal.

**TRILLIUM** L. Sp. Pl. 1: 339. 1753.

02 species

**Trillium smallii** Maxim., Bull. Acad. Imp. Sci. Saint-Pétersbourg 29:217. 1884.

Sikkim.

**Trillium tschonoskii** Maxim. in Bull. Acad. Petersbourg 29: 218. 1884.

Arunachal Pradesh, Sikkim.

Assam, Meghalaya, Sikkim.

## MELANTHIACEAE

(Rajib Gogoi and Syamali Dasgupta)

03 genera and 09 taxa (07 species, 02 varieties)

**ALETRIS** L., Sp. Pl. 1: 319. 1753.

05 taxa (04 species, 01 variety)

**Aletris alpestris** Diels, Bot. Jahrb. Syst. 36 (35, Beibl. 82); 20. 1905.

*Aletris alpestris* var. *occidentalis* Hara, J. Jap. Bot. 47: 276. 1972.

Sikkim.

**Aletris gracilis** Rendle, J. Bot. 44: 41. 1906.

Sikkim, Uttarakhand.

**Aletris pauciflora** (Klotz.) Hand.-Mazz., Symb. Sin. 7: 1220. 1936.

*Stachypogon pauciflorus* Klotz. in Klotz. & Garcke, Bot. Erg. Waldem. 49, t. 94. 1862.

*Aletris nepalensis* Hook.f., Fl. Brit. India 6: 264. 1892.

**var. *pauciflora***

Jammu & Kashmir, Sikkim, Uttarkhand.

**var. *khasiana*** (Hook.f.) F.T.Wang & Tang. in Fl. Reipubl. Popularis Sin. 15: 172. 1978.

*Aletris khasiana* Hook.f., Fl. Brit. India 6: 265. 1892.

Meghalaya.

**Aletris glabra** Bureau & Franch., J. Bot. (Morot.) 5: 156. 1891.

*Aletris sikkimensis* Hook.f., Fl. Brit. India 6: 265. 1892.

Sikkim.

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**Pontederia plantaginea** Roxb., Fl. Ind. ed. 1832 2: 123. 1832.

*Monochoria plantaginea* (Roxb.) Kunth, Enum. Pl. 4: 135. 1843.

*Monochoria vaginalis* var. *plantaginea* (Roxb.) Solms in A. DC. & C. DC., Monogr. Phan. 4: 524. 1883.

*Monochoria vaginalis* var. *angustifolia* G.X. Wang, Acta Phytotax. Sin. 41: 569. 2003.

West Bengal.

**Pontederia vaginalis** Burm.f., Fl. Indica: 80. 1768.

*Monochoria vaginalis* (Burm.f.) C. Presl, Reliq. Haenk. 1: 128. 1827.

*Monochoria hastifolia* C.Presl., Reliq. Haenk. 1: 127. 1827, nom. illeg.

*Gomphima vaginalis* (Burm.f.) Raf., Fl. Tellur. 2: 10. 1837.

*Monochoria vaginalis* (Burm.f.) C. Presl ex Kunth, Enum. Pl. 4: 134. 1843.

*Pontederia cordata* Lour., Fl. Cochinch. 1: 245. 1790, nom. illeg.

Almost throughout India.

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## PHILYDRACEAE

(Rajib Gogoi)

01 genus, 01 species

---

**Philydrum** Banks ex Gaertn., Fruct 1: 62. 1788.

01 species

**Philydrum lanuginosum** Banks ex Gaertn., Fruct. 1: 62, t 16, f. 10. 1788.

Andaman & Nicobar Islands.

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## XYRIDACEAE

(D.K. Roy)

01 genus, 06 species

---

**XYRIS** Gronov. ex L., Sp. Pl. 1: 42. 1753.

06 species

**Xyris capensis** Thunb., Prodr. Pl. Cap. 12. 1794.

*Xyris capensis* var. *schoenoides* (Mart.) L.A. Nilsson, Ofvers. Kongl. Vetensk.-Akad. Forh. 24: 41. 1892.

*Xyris schoenoides* Mart. in Wall., Pl. Asiat. Rar. 3: 30. 1832.

Meghalaya, Nagaland, Tamil Nadu.

**Xyris complanata** R. Br., Prodr. Fl. Nov. Holland. 1: 256. 1810.

*Xyris anceps* Lam., Tabl. Encycl. 1: 132. 1791.

Kerala.

**Xyris coronata** Haines, Bot. Bihar Orissa 6: 1072. 1924.

Bihar, Odisha, West Bengal.

**Xyris indica** L., Sp. Pl. 1: 42. 1753.

*Xyris robusta* Mart. in Wall., Pl. Asiat. Rar. 3: 30. 1832.

Arunachal Pradesh, Assam, Chhattisgarh, Karnataka, Kerala, Meghalaya, Sikkim, Tamil Nadu, West Bengal.

**Xyris pauciflora** Willd., Phytographia 1: 2. 1794.

Karnataka, Kerala, Meghalaya, Odisha, Sikkim, Tamil Nadu.

**Xyris wallichii** Kunth, Enum. Pl. 4: 16. 1843.

Meghalaya.

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## RUPPIACEAE

(Vijay Kumar Mastakar)

01 genus, 02 species

---

**RUPPIA** L., Sp. Pl. 1: 127. 1753.

02 species

**Ruppia spiralis** L. ex Dumort., Fl. Belg. 164. 1827.

*Ruppia maritima* sp. *spiralis* L. ex Dumort., Fl. Belg. 164. 1827.

*Ruppia maritima* subsp. *spiralis* (Dumort.) Asch. & Graebn., Syn. Mitteleur. Fl. 1: 356. 1897.

Tamil Nadu.

**Ruppia maritima** L., Sp. Pl. 1: 127. 1753.

*Buccaferrrea cirrhosa* Petagna, Inst. Bot. 5: 1826. 1787.

*Ruppia rostellata* Koch ex Rehb., Iconogr. Bot. Pl. Crit. 2: 66, t. 174. 1824.

*Ruppia cirrhosa* (Petagna) Grande, Bull. Orto Bot. Regia Univ. Napoli 5: 58. 1918.

Andhra Pradesh, Gujarat, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh.

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## ZANNICHELLIACEAE

(D.K. Roy)

01 genus, 02 taxa (01 species, 01 infraspecific)

---

**ZANNICHELLIA** L., Sp. Pl. 2: 969. 1753.

02 taxa (01 species and 01 subspecies)

**Zannichellia palustris** L., Sp. Pl. 2: 969. 1753.

subsp. **palustris**

Assam.

subsp. **pedicellata** (Rosén & Wahlenb.) Hook.f., Fl. Brit. India 6: 568. 1892.

*Zannichellia palustris* var. *pedicellata* Rosén & Wahlenb., Nova Acta Regiae Soc. Sci. Upsal. 8: 254. 1821.  
Bihar, Maharashtra, Punjab, Uttar Pradesh.

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## CYMODOCEACEAE

(Vijay Kumar Mastakar)

05 genera, 07 species

---

**CYMODOCEA** K.D.Koenig, Ann. Bot. (Konig. & Sims) 2: 96. 1805, nom. cons.

01 species

**Cymodocea rotundata** Asch. & Schweinf., Sitzungsber. Ges. Naturf. Freunde Berlin 1870: 84. 1870.

*Phucagrostis rotundata* (Asch. & Schweinf.) Ehrenb. & Hemprich, Symb. Phys., Bot.: t. 11. 1900.  
Andaman & Nicobar Islands, Tamil Nadu.

**HALODULE** Endl., Gen. 1: 1368. 1841.

03 species

**Halodule pinifolia** (Miki) Hartog, Blumea 12: 309. 1964.

*Diplanthera pinifolia* Miki, Bot. Mag. (Tokyo) 46: 787. 1932.  
Andhra Pradesh, Tamil Nadu.



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## Structural and Optical Properties of Green Synthesized Copper Oxide Nanoparticles

**Sanjib Baglari<sup>a</sup>, Riu Riu Wary<sup>b</sup>, Pranjal Kalita<sup>c</sup>, Manasi Buzar Baruah<sup>b\*</sup>**

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<sup>b</sup>Department of Physics, Central Institute of Technology, Kokrajhar, Assam:783370, India

<sup>c</sup>Department of Chemistry, Central Institute of Technology, Kokrajhar, Assam:783370, India

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### ABSTRACT

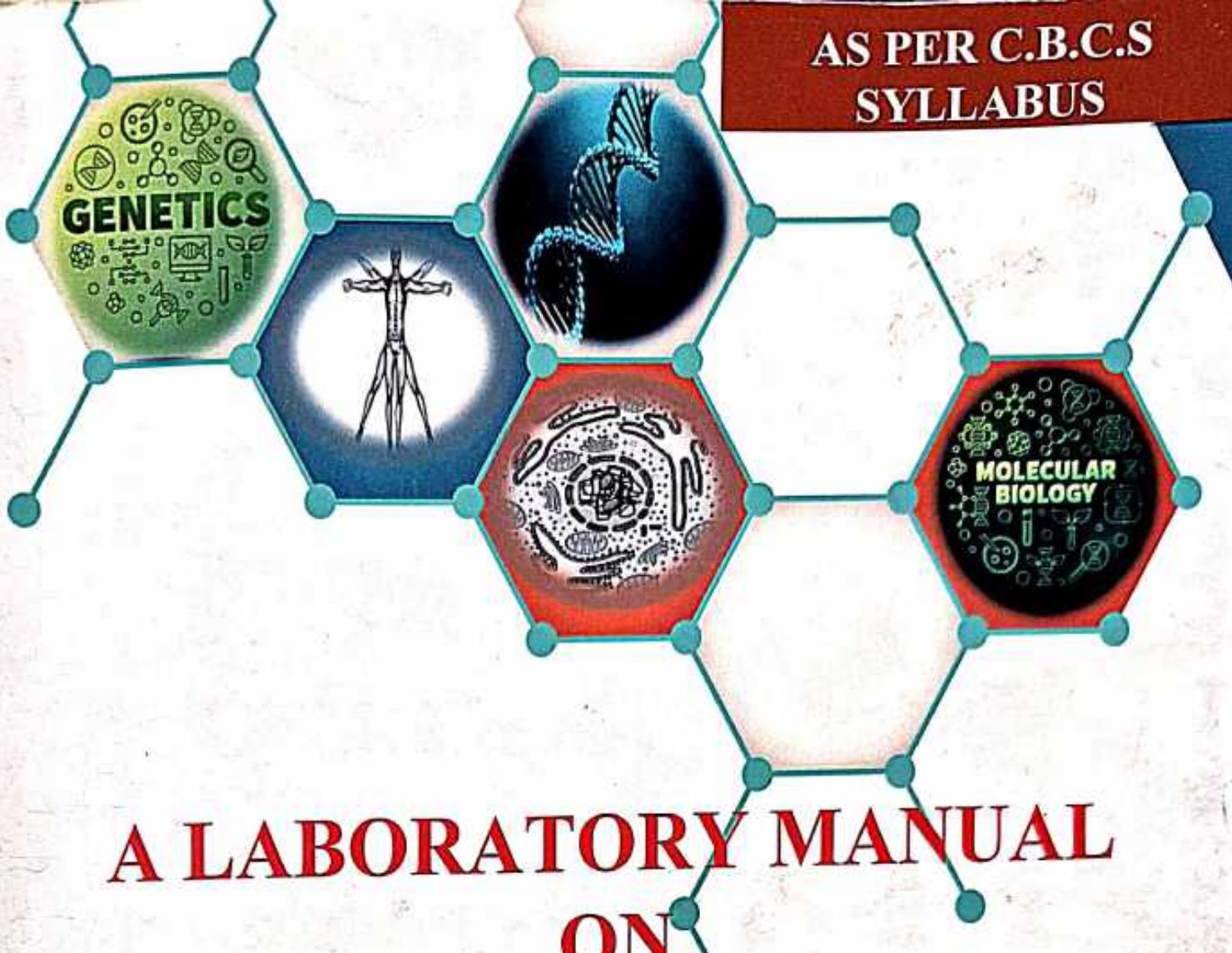
Discarded fruit peels create various environmental pollutions, the reuse of such waste peels reduces pollution, waste as and it also sustains environmental balance. In this communication, we have reported the synthesis of copper oxide nanoparticles using aqueous extract of citrus maxima peel and copper nitrate as precursor. The prepared CuO NPs were characterized by XRD, SEM, EDS, FTIR, PL and UV-visible spectroscopy. The obtained result revealed that the synthesized CuO nanoparticles were spherical in shape with monoclinic crystal structure. UV-visible diffuse reflectance spectroscopy was used to estimate the direct and indirect band gap energy of CuO nanoparticles. Photoluminescence (PL) was carried out to investigate materials imperfection and recombination mechanism.

### INTRODUCTION:

In recent year, the green synthesis becomes an alternative method for material fabrications because of various environmental issues. The method utilizes green chemistry for the synthesis of nanoscale materials for various potential applications and attracted the attention of researcher in contrast to the traditional method which produces harmful waste product for the environment. In general, the traditional method employed organic solvent, harsh reducing agent, flammable, toxic and corrosive chemical compounds and required sophisticated instruments and time consuming. However, green technology utilizes the only environmentally available natural product and reduces the usages of chemical reagents with improvement in crystal quality along with the efficiency of method.

Nanomaterials have various applications in the field of science and technology and biomedical applications because of its unique and remarkable properties as compare to the bulk counterparts [1]. Due to the large surface area and high surface energy of nanoparticles, metal oxide nanoparticles are used broadly in the form of nanoscale [2-4]. Electronic, magnetic, antibacterial, catalysis, sensing and optical properties made the nanomaterials superior in nanoscale. Among various type of nanomaterials, Copper Oxide (CuO) is another p-type semiconductor with narrow indirect band gap energy ~1.2 eV [5,82] with

AS PER C.B.C.S  
SYLLABUS



# A LABORATORY MANUAL ON

B. Sc. (Honours) Zoology

- ◆ CELL BIOLOGY
- ◆ PHYSIOLOGY
- ◆ BIOCHEMISTRY
- ◆ GENETICS
- ◆ MOLECULAR BIOLOGY

Dr. Biplab Kumar Saha



Belongs to Dept. of Zoology  
With best compliments from Dr. B. K. Saha  
05/01/2021

# A Laboratory Manual on B. Sc. (Honours) Zoology

(CBCS syllabus)

First Edition, 2020

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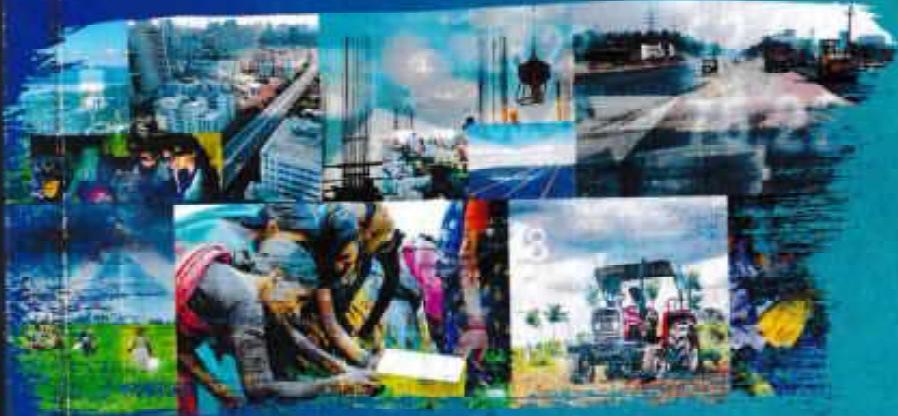
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# **CONTEMPORARY ISSUES OF DEVELOPMENT POLICIES IN INDIA**



**Edited by  
Dr Himangshu Kalita**



**Internal Quality Assurance Cell (IQAC)  
Dispur College, Guwahati - 06**

**Contemporary Issues of Development  
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## **Food Security, Food Production and Environmental Protection of the Nation: An Analytical Study in Indian Agriculture with Special Reference to Assam**

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### **ABSTRACT**

Agriculture contributes substantially to the output and employment of a predominantly agricultural and over-populated country like India. Agriculture sector occupies centre stage to sustain food security. Although, Indian agriculture provides food for a large section of World population and occupies first or second ranks in the production of different crops, productivity levels are much lower as compared to many countries. Growth of foodgrains production has fallen short of population growth during the last decade. The ratio of foodgrains to non-foodgrains declined from 74:26 in 1970-71 to 66:34 in 2010-11. The extension of non-foodgrains production at the cost of foodgrains production may hamper the availability of foodgrains and food security of the nation in the long run.

Productivity of agricultural crops and growth rates of

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Pradip Debnath  
Nabanita Konwar  
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# Metric Fixed Point Theory

Applications in Science, Engineering and  
Behavioural Sciences



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বঙাইগাঁও-কোকবাৰ্যাৰ-চিৰাং  
**গ্রেতিহ্য আৰু সংস্কৃতি**

সম্পাদনা  
ড° ৰাতুল পাঠক



অসম কলেজ শিক্ষক সংস্থা

# বঙাইগাঁও-কোকৰাখাৰ-চিৰাং ঐতিহ্য আৰু সংস্কৃতি

সম্পাদক  
ড° ৰাতুল পাঠক

সহঃ অধ্যাপক, অসমীয়া বিভাগ  
মানিকপুৰ আৰ্�ಥিলিক মহাবিদ্যালয়



অসম কলেজ শিক্ষক সংস্থা

## **BONGAIGAON-KOKRAJHAR-CHIRANG:**

**AITIYJA ARU SANSKRITI** : A collection of articles illuminating the Historical, Geographical, Agricultural and Cultural aspects of Bongaigaon, Kokrajhar and Chirang district, edited by **Dr. Ratul Pathak**, Asstt. Professor of Assamese, Manikpur Anchaliik College, Manikpur and published by **Dr. Jayanta Barua**, General Secretary, Assam College Teachers' Association, ACTA House, Solapar, Guwahati-781008, Assam and Ganesh Books, Noonmati, Guwahati-3, Print in India.

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নিম্ন  
আমাৰ মা  
বঙাইগাঁও-কো  
মহান শিক্ষকসকলৰ

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প্ৰভোগ্য ঠাই হ'ব।  
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ৰী। বাস্তৱ কাৰে  
হাপন কৰিছিল

মোগল সন্দৰ্ভ  
সৰিবলৈ আহি  
থ গড়ে ঘৰি  
খন এতিয়াও

বা নামনিলে  
গতে আঙু  
হৰণকাৰীৰ  
(আৰপিএল)  
(সংযুক্ত)  
আচলতে  
শ কৰিব।  
ন কৰিলে  
হ দৰ্শনৰ  
যুবকে

## বঙ্গইগাঁও কেন্দ্ৰিক পর্যটন উদ্যোগৰ সন্তাৰনীয়তা : এক চমু অৱলোকন

ড° হেমন্ত কুমাৰ সাউদ

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কাৰখনা, শক্তিচালিত যন্ত্ৰাংশ, শ্ৰমিক-কৰ্মচাৰী কোলাহল, কেঁচা-সামগ্ৰীৰ  
নৰৰবাহ, এক প্ৰদৃষ্টিত পৰিৱেশ আৰু এইবোৰৰ ফলশ্ৰুতিত উৎপাদিত সেৱা-  
সামগ্ৰী তথা বনিক শ্ৰেণীৰ যথা সৰ্বোচ্চ মূলাখ অৰ্জনৰ কাৰচাজি। এই উদ্যোগ-  
প্ৰতিষ্ঠানবোৰে কিছুসংখ্যক মজুৰিভোগী শ্ৰমিক-কৰ্মচাৰীক কৰ্মসংস্থাপন আৰু  
আৱৰ উৎস প্ৰদান কৰে যদিও লাভৰ সিংহভাগ মৃষ্টিমেয় বনিয়া গোষ্ঠীয়ে কুক্ষিগত  
কৰি থাকে। অসমৰ দৰে বাজ্যত য'ত বেছিভাগ বৃহৎ তথা মজলীয়া উদ্যোগ-  
প্ৰতিষ্ঠান বহিৰাগত বণিকগোষ্ঠীৰ কৰলত; স্থানীয় উদ্যোগী তথা উদ্যোগীসকলে,  
যিসকল মূলতঃ পথম প্ৰজন্মৰ উদ্যোগী—তেওঁলোকে উদ্যোগ-প্ৰতিষ্ঠান গঢ়ি  
আৰ্থিক স্বচ্ছতা অৰ্জনত পদে-পদে প্ৰত্যাহুনৰ সন্মুখীন হ'ব লগাত পৰে।  
অসমৰ প্ৰাকৃতিক অৱস্থিতি, সামাজিক পৰিৱেশ, জনগোষ্ঠীয় চৰিত্ৰ, প্ৰবৃত্তি  
তথা ঐতিহ্যই আমাৰ বৃহৎ উদ্যোগৰ বিপৰীতে কূন্দ বা কূটীৰ উদ্যোগ-প্ৰতিষ্ঠান,  
ঐতিহ্য বহনকাৰী পৰাম্পৰাগত শিল্প-কলা আৰু মানুহৰ পৰিবৰ্তিত কৃচিৰোধক  
চাহিদালৈ কপাসৰ কৰি উদ্যোগ গঢ়ি তুলিলে স্থানীয় লোকৰ সংস্থাপন অৰু

### বঙ্গাইগাঁও- কোকারাবাৰ-চিৰাং : ঐতিহ্য আৰু সংস্কৃতি

উপাৰ্জন বৃক্ষৰ লগতে বাজাৰখনৰও বহনক্ষম উহায়ন সম্ভৱ হ'ব। এইক্ষেত্ৰত সতৰৰ বাধা-বিপত্তিৰ কথা অধিক চিন্তা কৰাৰ বিপৰীতে সন্তাৱনীয়তাবোৰৰ ওপৰত অধিক মনোনিৰেশ কৰিলে নিশ্চয় সফলতা লাভ কৰিব।

অসমৰ প্ৰাকৃতিক সম্পদসমূহৰ ভিত্তিত পৰাম্পৰাগতভাৱে গঢ়ি উঠা কুটিৰ আৰু কুন্দ শিল্প সমূহ, যেনে- বাঁহ-বেতৰ শিল্প, মৃত শিল্প, বয়ন শিল্প, কুহিলা শিল্প, কাঁহ-পিতলৰ শিল্প, ঢাৰী-পাটিৰ শিল্প, পৰম্পৰাগত খাদ্য সন্তাৱ, আটোজৰাজী শিল্প ইত্যাদিক আধুনিক কৃপত প্ৰাহকৰ চাহিদা অনুসৰে সংৰক্ষণ আৰু পৰিবেশন কৰিলে বাজাৰখনে আৰ্থিক আৰু সামাজিক সবলীকৰণ নিশ্চিত কৰিবপৰিব। প্ৰাকৃতিক সম্পদসমূহৰ অচিলালৈ গঢ়ি উঠা এই শিল্প কলাসমূহৰ উপৰিও অসমৰ মনোৰম প্ৰাকৃতিক সৌন্দৰ্য, জৈৱ বৈচিত্ৰিতা আৰু সাংস্কৃতিক আৰু আধ্যাত্মিক সমলোৱাৰে অসমত আন এক উদ্যোগৰ সন্তাৱনীয়তাক প্ৰসাৰিত কৰিছে। অসমৰ গভীৰ অৰণ্য, দৃষ্টিনন্দন নদ-নদী, জান-জুবি, বাজাৰ ইমুৰৰ পৰা সিমুৰালৈ প্ৰাহিত মহাবাহ ব্ৰহ্মপুত্ৰ, পাহাৰ, বনাঘল, দৃঢ়প্ৰাপ্য বনাপাণী, চাহ-বাগিছাৰোৰ বিস্তৃত সেউজ দলিচা ইত্যাদিবে সমৃদ্ধ অসমত ই'ক টুৰিজিমৰ লগতে দুসোহ সিক খেল — যেনে, পেৰাখাইড়ি, বাফটিৎ আদিৰ জড়িয়তে পৰ্যটন উদ্যোগটোৱ সন্তাৱনীয়তাবোৰ সদৰ্যবহাৰ ঐতিয়াও চালুকীয়া অৱস্থাতে আছে। অসমৰ অন্য প্ৰান্তৰ দৰে বঙ্গাইগাঁও জিলা আৰু পশ্চিম অসমৰ জিলাসমূহতো এই সন্তাৱনীয়তাবোৰ বিবাজমান। সাম্প্রতিক সময়ত ই'ক টুৰিজিমে ঘৰ্থেষ্ট জনপ্ৰিয়তা অৰ্জন কৰিবলৈ সক্ষম হৈছে আৰু অদূৰ ভৱিষ্যতে ইয়াৰ প্ৰসাৰ অৱশ্যস্তাৰী। ই'ক টুৰিজিমে প্ৰকৃতি সংৰক্ষণৰ লগতে পৰ্যটন ক্ষেত্ৰখনৰ সমতা বজাই ৰাখি স্থানীয়লোকৰ নিয়োগ, দক্ষতা, উপাৰ্জন, একাধ্যাতা আদি বৃক্ষিত অৱিহণা যোগায়।

বঙ্গাইগাঁও জিলাৰ নাতি দূৰত বিশ্ব পৰ্যটনক্ষেত্ৰ মানাহ জৈৱ মণ্ডল সংৰক্ষণ (Manas Bio-sphare Reserve) অৱস্থিত। ইয়াৰ উপৰি চিৰাং জিলাৰ ৰায়মনা অভয়াৰণ্য, কোকৰাবাৰ জিলাৰ চক্ৰশিলা সংৰক্ষিত বনাঘল, কাঁকেজানা বনাঘল, ভেৰুচূড়া-শংকৰঘোলা বনাঘল, নাক-কাটি, ভূমেৰুৰ, মহাদেৱ পাহাৰ, বামুন পাহাৰ, খগড়পুৰ পাহাৰ, বাঘেশ্বৰী পাহাৰ, সন্মাসী পাহাৰ

## বঙ্গাইগাঁও-কোকাবাবাৰ-চিৰাংঁও ঐতিহ্য আৰু সংস্কৃতি

অদিয়ে জিলাখনলৈ পৰ্যটনৰ সুযোগ আনি দিছে। ভৈৰৰ পাহাৰৰ চূড়াটোৱা বজ্রখনৰ ভিতৰতে সু-উচ্চ চূড়া হিচাপে স্বীকৃতি লাভ কৰিছে, যি দৃশ্যপ্রাপ্তি সেনাসী বান্দৰৰ আৱাসস্থলী। তদুপৰি, নাককাটি পাহাৰৰ এটা চূড়াই সম্পত্তি কহ দৰ্শনাৰ্থীৰ আকৰ্ষণৰ কেন্দ্ৰ হৈ পৰিছে। যোগীঘোপাৰ দুঃখ পাহাৰৰ প্রাচীন গুহাবোৰেও পৰ্যটনৰ সমল বহন কৰি আছে। ইয়াৰ উপৰি জিলাখনৰ নিগমঘোলা, বাঘপাৰা, খগড়পুৰ অঞ্চলৰ গাবোৰ বসতি প্ৰধান গাঁওবোৰৰ মাজত সিঁচিবিত হৈ থকা মনোৰম সৌন্দৰ্যবোৰেও পৰ্যটিকক আকৰ্ষণ কৰি আছে। অভয়াপুৰী অঞ্চলৰ কঁয়া-কুজিয়া পৰ্যটনথলী, আস্থা বিজৰ্ট, ট্ৰী হাউচ আদিও পৰ্যটিকৰ বাবে উপভোগ্য স্থল। বঙ্গাইগাঁও চহৰৰ মাজমজিয়াৰ বাকিৎ জন, পৰ্যটিক একুইবিয়াম, আৰ্দ্ধভূমি, কুক টাৰাৰ আদিয়েও পৰ্যটিকক সাময়িক অনোবঞ্চন প্ৰদানৰ সমল হিচাপে চিহ্নিত হৈছে।

প্ৰকৃতি প্ৰদত্ত সমলবোৰৰ উপৰি নামনি অসমৰ এই অঞ্চলটোত ধৰ্মীয় তথা সাংস্কৃতিক পৰ্যটনৰ বিকাশৰ সমল সিঁচিবিত হৈ আছে। বঙ্গাইগাঁও চহৰৰ বাঘেশ্বৰী মন্দিৰ, বৰপাৰা বাজহৰা কালী মন্দিৰ, হনুমান মন্দিৰ, বৌদ্ধ মন্দিৰ, সন্মাসী পাহাৰৰ শিৰ মন্দিৰ, অভয়াপুৰীৰ গণেশ মন্দিৰ, খগড়পুৰৰ মহাৰাণী মন্দিৰ, ছিপনচিলাৰ পাটেশ্বৰী মন্দিৰ, বসিগাঁওৰ গড়খ আশ্রম আদি উল্লেখযোগ্য উপসনাস্থল। ঐতিহাসিক অভয়াপুৰী জমিদাৰৰ বাজবাৰী, বিদ্যাপুৰৰ জমিদাৰৰ বাজবাৰী, চাপৰাকাটাৰ নৰনাৰায়ণ ক্ষেত্ৰ, বিষুপুৰ সত্ৰ, ঘৰচিয়া সত্ৰ, ধৰ্মপুৰ সত্ৰ, বঙাপানী সত্ৰ; শংকৰী কলা-কৃষ্ণিৰ কেন্দ্ৰ নামঘৰসমূহ আদিয়ে বঙ্গাইগাঁও জিলাৰ পৰ্যটনৰ সন্তানীয়তাকে সুচায়। বঙ্গাইগাঁও জিলাৰ নিকটবৰ্তী বগৰীবাৰীৰ মহামায়া মন্দিৰ, ধূবুৰীৰ শিখ মন্দিৰ, নেতাই ধূবুনী ঘাট, পানবাৰী বঙামাটিৰ জামে মছজিদ, ধূবুৰীৰ পাঁচপীৰৰ দৰগাহ, গোৱালপাৰাৰ শ্ৰীসূৰ্য পাহাৰৰ সূৰ্য মন্দিৰ, জৈন মন্দিৰ, পঞ্চবত্তৰ পাগলাটকে শিৰ মন্দিৰ, টুক্ৰেশ্বৰী দেৱালয়, বিজনীৰ লক্ষ্মীমন্দিৰ, সৰভোগৰ গৰুখীয়াৰ থান আদি ধৰ্মীয় হনুমোৰেও বঙ্গাইগাঁওত পৰ্যটন উদ্যাগটো সমৃদ্ধ কৰাত অবিহনা যোগাব পাৰে। যিহেতু বঙ্গাইগাঁও চহৰখন পথ তথা বেল যাতায়াত বাবস্থাত যথেষ্ট সুচল, ইয়াত পৰ্যটনৰ বিভিন্ন উপাদানবোৰৰ প্ৰসাৰত যথেষ্ট সুযোগ আছে। কোনো

### ବঙ୍ଗାଇଗାଁୱ- କୋକାରାଖାବ-ଚିବାୟ ଏତିଥ୍ୟ ଆକ ସଂସ୍କତି

ଏଥିନ ଠାଇର ପର୍ଯ୍ୟଟିନ ଉଦ୍ୟୋଗର ସବଲତା ଆକ ପ୍ରଗତି ପ୍ରଧାନତଃ ନିର୍ଭବ କରେ ଆବଶ୍ୟକିୟ ଉପାଦାନ, ପର୍ଯ୍ୟଟିନ ବାଣିଜ୍ୟ, ସାତାଯାତ ବ୍ୟାବସ୍ଥା, ଥକା-ଖୋରାବ ମୁ-ବ୍ୟାବସ୍ଥା, ଖଦ୍ୟ ସନ୍ତାବ, ଦୁଃସାହସିକ କାର୍ଯ୍ୟ, ମନୋବଞ୍ଜନ, ଅନନ୍ୟ ତଥା ଆବଶ୍ୟକିୟ ବିପନ୍ନୀ ଆକ ସଂସ୍କତି ତଥା ସାଂକ୍ଷତିକ ଅନୁଷ୍ଠାନ ଆଦିର ଓପରବତ । ହାନୀଯ ଲୋକର ଆତିଥ୍ୟ ପରାଯଣତା, ଆଚାର-ବ୍ୟାବସ୍ଥା, ଆଇନ-ଶୃଂଖଳା ଇତ୍ୟାଦିଯେଓ କ୍ରିୟା କରେ । ଏହି ଅଟିହିବୋର ଉପାଦାନର ସମାହାବତ ଏକୋ ଏକୋଥିନ ଠାଇ ପର୍ଯ୍ୟଟିନ କେନ୍ଦ୍ରଲୈ ଗଢ଼ ଲୟ । ବଙ୍ଗାଇଗାଁୱ ଜିଲ୍ଲାଖନର ସନ୍ଧାବନା ଏହି କ୍ଷେତ୍ର ଯଥେଷ୍ଟ ଧନ୍ୟାକ ।

ମୁ-ଚିତ୍ତିତ ପରିକଳନା, ବାଜର ପ୍ରକଳ୍ପ, ସଚେତନତା, ମୁ-ବ୍ୟାବସ୍ଥାପନା, ବ୍ୟାବସାୟିକ ମାନସିକତା, ଆତିଥ୍ୟ ପରାଯଣତା, ଧୈର୍ୟ, ସାହସ ଆକ ସଂଯୋଗ ଇତ୍ୟାଦି ଓଗବୋର ଆଯାତ କବି ନତୁନ ପ୍ରଜନ୍ମାଇ ପର୍ଯ୍ୟଟିକ ଏକ ଉଦ୍ୟୋଗ ହିଚାପେ ଗଢ଼ ଦି ନିଜକେ ଦ୍ୱାରାଲୟୀ କବାର ଲଗତେ ଦହଜନକ ସଂହାପନର ବାଟି ଦେଖୁବାବ ପାରେ । ଏହି କ୍ଷେତ୍ରର ବଙ୍ଗାଇଗାଁୱ ଜିଲ୍ଲାଖନ ସମଗ୍ରୀ ନାମନି ଆସମର ବାବେ ଆଦର୍ଶ ସ୍ଵକପ ହେଉଛି ।



କୋ

ଅନ୍ତ ଅନ୍ତ  
ଆକ କମ  
ଉତ୍ତର-ପୂର୍ବ  
ଟୌଫିଲିବ  
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# বঙাইগাঁও-কোকবাৰাৰ-চিৰাং ঐতিহ্য আৰু সংস্কৃতি

সম্পাদনা  
ড° ৰাতুল পাঠক



অসম কলেজ শিক্ষক সংস্থা

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সহকাৰী অধ্যাপক, উক্তি বিজ্ঞান বিভাগ  
বীৰবৰা মহাবিদ্যালয়, বঙাইগাঁও, অসম

চাইকাচ পেক্টিনাটা (*Cycas pectinata*), উক্তি -বাজ্যৰ  
জিমনোস্পার্মিক গোটৰ চাইকাডেচি (*Cycadaceac*) পৰিয়ালৰ অন্তৰ্ভুক্ত  
আৰু চাইকাচ গণৰ সদস্য। ই হৈছে প্ৰাচীনতম জিমনস্পার্ম বংশৰ, যাৰ উৎপত্তি  
কমেও ২৮০ নিযুত বছৰ আগৰ পার্মিয়ান সময়ৰ আৰু সন্তুষ্টতাঃ কাৰেনিফেৰাজ  
কালৰ শেষৰ ফালৰ। এই বিৰল প্ৰজাতিৰ উক্তি বিধি প্ৰায় ১৯৯.৬ ৰ পৰা ৬৫.৬  
নিযুত বছৰ আগতে জুৰাচিক- ক্ৰেটেচিয়াছ যুগত বিশ্বব্যাপী সবাধিক বৈচিত্ৰ্যত  
উপনীত হৈছিল। কিন্তু এতিয়া এইবিধি উক্তি পৃথিবীৰ অতি বিছিন্ন স্থানত  
সীমাবদ্ধ হৈ আছে। আন্তৰ্জাতিক প্ৰকৃতি আৰু প্ৰাকৃতিক সম্পদ সংৰক্ষণ সংঘই  
(International Union for Conservation of Nature and Natural Resources, IUCN) বৰ্তমান বিশ্বত চাইকাচ পেক্টিনাটাৰ প্ৰায়  
২০০,০০০ - ২৫০,০০০ জোপা প্ৰাপ্তবয়স্ক গচ জীয়াই থকাৰ অনুমান কৰিছে।

প্ৰাচীনতম জিমনস্পার্ম বংশৰ বেছিভাগ সদস্যই পৃথিবীৰ পৰা ইতিমধ্যে  
বিলুপ্ত হৈছে। জীৱাশ্মৰ ওপৰত কৰা অধ্যয়নে এই তথ্য প্ৰমাণ কৰিছে। সেয়েহে  
বৰ্তমান প্ৰাচীনতম জিমনস্পার্ম বংশৰ জীৱিত সদস্যক “জীৱিত জীৱাশ্ম উক্তি”

## বঙাইগাঁও-কোকাৰাবাৰ-চিৰাংঃ ঐতিহ্য আৰু সংস্কৃতি

বুলি কোৱা হয়। চাইকাছ পেঞ্জিনাটাও এবিধ জীৱিত জীৱাশ্ম উদ্ধিদ।

এই বিধ জীৱিত জীৱাশ্ম উদ্ধিদত পুৰুষ শঙ্কু (Male cone) আৰু  
স্ত্রী শঙ্কু (Female cone) দুটা পৃথক গছত বিকশিত হয়। পুৰুষ শঙ্কুত অসংখ্য  
পুৰুষ পুঞ্চৰ বিকশিত হয়, সেইবোৰক উদ্ধিদবিজ্ঞান ভাষাত মাসক্ৰ'স্পোৰোফিল  
বুলি কোৱা হয়। মাইক্ৰ'স্পোৰোফিলত পৰাগ বেণুৰ (Pollen grains) সৃষ্টি  
হয়। আনহাতে স্ত্রী শঙ্কুত কিছুসংখ্যক স্ত্রী-পুঞ্চৰ বিকশিত হয়। স্ত্রী-পুঞ্চক  
মেগাস্পোৰোফিল বুলি কোৱা হয়। প্রতিটো মেগাস্পোৰোফিলত ২ ৰ পৰা  
৬ টা লৈকে ডিস্বস্ফেটন (Ovule) থাকে। পৰাগ বেণুৰোৰে বতাহত ভাঁহি  
আহি মেগাস্পোৰোফিলত থকা ডিস্বস্ফেটনবোৰক নিষিক্ত কৰে, ফলত তাত  
বীজৰ সৃষ্টি হয় আৰু এই বীজৰ দ্বাৰাই বংশ বৃদ্ধি হয়। মেগাস্পোৰোফিলবোৰ  
দেখিবলৈ সৰ্প আকৃতিৰ সেই বাবে চাইকাছ পেঞ্জিনাটা উদ্ধিদক অসমত নাগচম্পা  
, নাগফুল আদি নামেৰেও জনা যায়।

স্বচ্ছ টিছ শল্য চিকিৎসক তথা উদ্ধিদ বিজ্ঞানী বুকানন-হেমিল্টনে ১৮২৬  
চনত কামৰূপ জিলাৰ গুৱাহাটী অঞ্চলত প্ৰথমতে চাইকাছ পেঞ্জিনাটা উদ্ধিদৰ  
আৱিষ্কাৰ কৰিছিল। তেওঁলোকে ইয়াক “অসম-চাইকেড” বুলি অভিহিত  
কৰিছিল। ভাৰতবৰ্ষৰ উপৰিও বৰ্তমান অসম চাইকেড ভূটান, নেপাল, থাইলেণ্ড  
আৰু চীন দেশসমূহৰ কিছুমান ভৌগোলিকভাৱে বিছিন্ন বনাঞ্চলত পোৱা হয়।  
কিন্তু অতি বিৰল, প্রায় বিলুপ্তিৰ পথত। কিছুমান বিশেষ কাৰণ যেনে- জলবায়ু  
পৰিৱৰ্তন, বাসস্থান সংকোচন, বনধৰণ আৰু সজ্জা বা শোভাময় (decora-  
tion) ব্যৱহাৰৰ বাবে পাত তথা লোক ঔষধৰ বাবে পুৰুষ শঙ্কুৰ অত্যধিক  
সংগ্ৰহ আদিৰ ফলত অসম-চাইকেড বিলুপ্তিৰ পথত দৃত গতিত আগবঢ়িছে  
বুলি উদ্ধিদ বিজ্ঞানীসকলে উদ্বোধন কৰিছে। সেইবাবে আন্তজাতিক প্ৰকৃতি আৰু  
প্ৰাকৃতিক সম্পদ সংৰক্ষণ সংঘই কাৰ্য্যকৰী সংৰক্ষণ ৰণনীতিৰ বাবে অসম-  
চাইকেডক অসুৰক্ষিত উদ্ধিদৰ তালিকাত তালিকাভুক্ত কৰিছে। ইয়াৰ উপৰিও  
কাৰ্য্যকৰী সংৰক্ষণ ৰণনীতি (আন্তজাতিক বাণিজ্য নিয়ন্ত্ৰণ কৰিবলৈ)  
বাবে অসম-চাইকেড প্ৰজাতিটোক বন্য প্ৰাণী আৰু উদ্ধিদৰ বিপদাপন্ন প্ৰজাতিৰ আন্তজাতিক  
বাণিজ্যৰ সম্বলন (Convention on International Trade in Endan-

gered Species of Wild Fauna and Flora, CITES) বৰ দুইনং পৰিলিপ্ত  
(Appendix-II) ত অন্তৰ্ভুক্ত কৰা হৈছে। অসম চৰকাৰৰেও সংৰক্ষণ উদ্দেশ্যে  
জৈৱিক বৈচিত্ৰ্য আইন, ২০০২ (The Biological Diversity Act, 2002)  
ৰ অধীনত জাননী দিয়া অসমৰ ভাবুকিযুক্ত উদ্ধিদৰ তালিকাত অসম-চাইকেডক  
অন্তৰ্ভুক্ত কৰিছে। এই আইনত জৈৱিক বৈচিত্ৰ্য ৰক্ষা আৰু জৈৱিক সম্পদ আৰু  
পৰম্পৰাগত জ্ঞানৰ ব্যৱহাৰৰ ফলত উন্নৰ হোৱা লাভালাভৰ ন্যায়সংজৰ্জন ভাগ-  
বতৰাৰ বাবে প্ৰাণালী অন্তৰ্ভুক্ত কৰা হৈছে।

ভাৰতবৰ্ষৰ কেৱল উন্নৰ-পূবৰ বাজ্য যেনে- ছিকিম, উন্নৰ বংশ  
(দাঙিলিং), অসম আৰু মণিপুৰত অসম-চাইকেডৰ বিস্তৃতি অত্যাধিক কম  
পৰিসৰত সীমিত হৈ আছে। এই বাজ্যসমূহৰ ভিতৰত বৰ্তমান অসমতে অসম-  
চাইকেডৰ বেছি সংখ্যক প্ৰাণ্বয়স্ক গছ জীৱাই আছে। গৱেষণা পত্ৰসমূহে প্ৰকাশ  
কৰিছিল যে কেইবা দশক আগতে গুৱাহাটী আৰু অসমৰ অন্যান্য জিলাসমূহৰ  
অৱণ্যত চাইকাছ পেক্কিনাটা প্ৰচুৰ পৰিমাণে আছিল। কিন্তু এতিয়া সেইবোৰ  
কেৱল নগাঁও, কামৰূপ (গ্ৰাম্য) আৰু বঙ্গাইগাঁও জিলাৰ অতি অৱনমিত  
অৱণ্যতহে কেৱল আৱদ্ধ হৈ আছে।

এতিয়াও বঙ্গাইগাঁও জিলাৰ বিভিন্ন বনাঞ্চলত অসম-চাইকেডৰ পুৰুষ  
(Male plant.) আৰু স্ত্ৰী গছ (Female plant) যথেষ্ট পৰিমাণত পোৱা  
যায়। ফলস্বৰূপে, প্ৰাণ্বয়স্ক গছৰ উপৰিও ইয়াৰ বিভিন্ন বয়সৰ বহুতো পুলিও  
দেখা যায়। ডিস্ব বা বীজৰ উপৰিও প্ৰাণ্বয়স্ক গছৰ গুৰিৰ পৰা বিকশিত হোৱা  
বুলিবিল (Bulbils)ৰ দ্বাৰাৰ ইয়াৰ বংশ বৃক্ষি হয়। অসম চাইকেড পোৱা  
বঙ্গাইগাঁও জিলাৰ বিভিন্ন ঠাই বা বনাঞ্চলবোৰৰ নাম—

- ১) কাকৈজানা, সংৰক্ষিত বনাঞ্চল
- ২) ভৈৰৱচূড়া, পাহাৰ
- ৩) মালেগড় পাহাৰ, পাচনিয়া
- ৪) মহাদেৱ পাহাৰ, উন্নৰ শালমাৰা
- ৫) বৰঘাৰা পাহাৰ, মূলাগাঁও
- ৬) ভূমেশ্বৰ পাহাৰ, আঠুগাঁও

## বঙ্গাইগাঁও-কোকাৰাবাৰ-চিৰাংঃ ঐতিহ্য আৰু সংস্কৃতি

- ৭) নিগমঘোলা, মাজগাঁও
- ৮) খগৰপুৰ পাহাৰ, উত্তৰ শালমাৰা
- ৯) নাম-কাটি পাহাৰ, উত্তৰ বইটামাৰী
- ১০) ভাটিপাৰা, মাজগাঁও
- ১১) বাটাবাৰী, অভয়াপুৰী।

এই ঠাইবোৰ বঙ্গাইগাঁও জিলাৰ বিভিন্ন কোণত সিঁচৰতি হৈ আছে আৰু এই বনাঞ্চলবোৰেই অসম চাইকেডৰ প্ৰাকৃতিক বাসস্থান। গতিকে অসম ৰাজ্যৰ ভিতৰত আন জিলা, যেনে- কামৰূপ বা নগাঁও জিলাৰ তুলনাত বঙ্গাইগাঁও জিলাত অসম চাইকেডৰ প্ৰাকৃতিক জনসংখ্যাৰ আকাৰ সবাধিক। সেয়েহে বঙ্গাইগাঁও জিলাক অসম-চাইকেডৰ হটেল্পট বুলি ক'ব পাৰি। কিন্তু ইয়াৰ প্ৰাকৃতিক বাসস্থানবোৰত এক নিৰস্তৰ নৃতাত্ত্বিক ভাবুকি অবিৰত ভাবে চলি আছে। ফলস্বৰূপে অসম চাইকেড বন্য-বাসস্থানত দ্রুত গতিত বিলুপ্তিৰ কাষলৈ গৈ আছে। সেয়েহে প্ৰকৃতিৰ এই বিৰল সম্পদৰ ব্যাপক সংৰক্ষণ বণনীতিৰ বাবে বঙ্গাইগাঁও জিলাৰ বনাঞ্চলৰবোৰত ইয়াৰ বাসস্থানৰ বৈজ্ঞানিক ক্ষেত্ৰ অধ্যয়ন, বন্য জনসংখ্যাৰ জৰীপ আৰু সংৰক্ষণ স্থিতি মূল্যায়ন কৰাটো অতি প্ৰয়োজনীয় হৈ পৰিছে। অসম ৰাজ্যিক বন বিভাগ বা অসম ৰাজিক জৈৱ বৈচিত্ৰ্য পৰিষদে এই বিৰল জীৱাশ্ম উদ্ভিদৰ প্ৰজাতিটো সংৰক্ষণৰ বাবে দায়িত্বশীল পদক্ষেপ লোৱা উচিত।

অসম চাইকেডৰ প্ৰাকৃতিক বাসস্থান চিনাক্ত কৰিব লাগিব আৰু লগতে ইয়াৰ বন্য-বাসস্থানত সংৰক্ষণৰ বাবে সান্তাৰ্য এলেকাবোৰৰ সীমানিৰ্ধাৰণ কৰি সংৰক্ষণ কৰিব লাগিব। ইয়াৰ বন্যজনসংখ্যাৰ স্থিতি আৰু গাঁথনিৰ মূল্যাঙ্কন কৰি পুনৰ সংস্থাপনৰ ব্যৱস্থা কৰিব লাগিব। লগতে ইয়াৰ অস্তিত্বৰ ওপৰত অৱধাৰিত ভাবে চলি থকা ভাবুকিসমূহক চিনাক্ত কৰি তাৰ প্ৰতিকাৰৰ পদ্ধতি - অৱলম্বন কৰিব লাগিব। ইয়াৰ উপৰিও জৈৱ প্ৰযুক্তিগত পদ্ধতি প্ৰয়োগ কৰিও - অসম চাইকেডক তত্ত্বাৰধানা তথ্য সংৰক্ষণ কৰিব পৰা যাব। যেনে- কলা-কৰ্ম গবেষণাগারত চাইকেডৰ বীজৰ অংকুৰণ কৰিও পুলি উৎপাদন কৰিব পাৰি। পুলিবোৰ সেউজ গৃহত লালন-পালন কৰাৰ পিছত ইয়াৰ প্ৰাকৃতিক বাসস্থানত

## বঙ্গাইল্যান্ড- কোকারাকাৰ চিবাঃ। ঐতিহ্য আৰু সংস্কৃতি

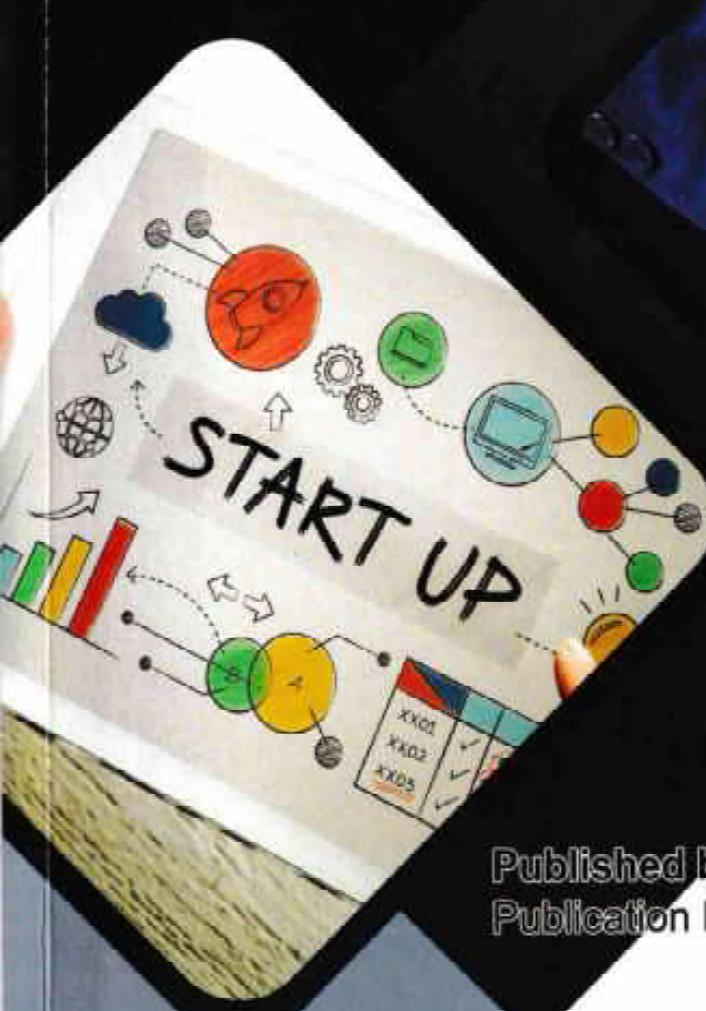
পুনৰ সংস্থাপন কৰিব পাৰি। লগতে সেউজ গৃহত লালন-পালন কৰা পুলিবেৰ  
বটানিকেল গার্ডেন, কলেজ চৌহদ, বিমালয় চৌহদ আদিতো বোপখ কৰিব  
পৰা থায়। অসম চাইকেড তথা ইয়াৰ বনা বাসস্থানৰ সংৰক্ষণৰ অধিক গুৰুত্বপূৰ্ণ  
কাৰ্যাসূচী হৈছে সজাগত সভা। অসম চাইকেডৰ বাসস্থানৰ চাৰিওফালে বাস  
কৰা স্থানীয় সপ্রদায়ৰ মাজত সজাগতা সভা আয়োজন কৰি পৰিবেশ শৰ্কৃত  
চাইকেডৰ গুৰুত্বৰ বিষয়ে অৱগত কৰাৰ লগতে সেইবোৰৰ অৰ্থনৈতিক সম্ভাৱনা  
আদিৰ বিষয়েও আলোচনা কৰাটো আটাইতকৈ গুৰুত্বপূৰ্ণ কাৰ্য।

অসম চাইকেড, ইয়াৰ বাসস্থানৰ চাৰিওফালে বাস কৰা স্থানীয় সপ্রদায়ৰ  
লোকসকলৰ জীৱিকাৰ এক উপায় হ'ব পাৰে। যেনে- অসম চাইকেডৰ সংৰক্ষণ  
স্থান পৰ্যাটন উদ্যোগ বিকাশৰ এক গুৰুত্বপূৰ্ণ অংশ হ'ব পাৰে বা এই উদ্ধিদৰ  
বিভিন্ন অংশৰ পৰা আলংকাৰিক সামগ্ৰী তৈয়াৰ কৰি অৰ্থ উপাৰ্জন কৰিব পাৰে।

তদুপৰি, অসম-চাইকেডৰ ডাঙৰ আকাৰৰ বন্য-জনসংখ্যা থকা প্ৰাকৃতিক  
বাসস্থান চৰকাৰী কৰ্তৃপক্ষৰ দ্বাৰা অসম চাইকেড বনাপ্ৰাণী অভয়াৰণ্য ঘোষণাৰ  
বাবে উপযুক্ত স্থান হ'ব পাৰে। যিয়ে বন্যজীৱৰ সংৰক্ষণৰ ক্ষেত্ৰত এক গুৰুত্বপূৰ্ণ  
ভূমিকা গ্ৰহণ কৰিব পাৰে।



# ENTREPRENEURSHIP DEVELOPMENT IN NORTH EAST INDIA-FOCUS ON STARTUP AND INNOVATION



**EDITOR**  
**DR HIMANGSHU KALITA**

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# ENTREPRENEURSHIP DEVELOPMENT in North East India-Focus on STARTUP AND INNOVATION

EDITOR  
Dr Himangshu Kalita



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## **ABOUT**

The book "Entrepreneurship Development in North East India-Focus on startup and Innovation" is a collection of 18 research paper contributed by 30 scholars from different universities and colleges of Assam and abroad, Edited by Dr Himangshu Kalita. Published by Principal Chairman, Publication Board, Dispur College, Guwahati -6

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## **Role of Higher Educational Institutions to Create Entrepreneurs in Assam**

### **TRACT**

Entrepreneurs are said the backbone of an economy. Entrepreneurship, the thrust of an entrepreneur is the process of doing the innovation, taking the decision, assuming the bearing the uncertainty, making the enterprise a success; supplied goods and services satisfy the need of the people. It has become a new mantra of a successful career for a growing number of educated, motivated and ambitious youth. Entrepreneurship is a very complex phenomenon to be developed; a continuous as well as never ending process and requires a systematic and organized approach.

Assam is incredible in her natural beauty and resources. Assam is one of the economically backward states of the country even though a glorious industrial and economic past. Problem of marketing and inefficiency in management are major cause of close down of SSI units comes up in Assam after 1993. Entrepreneurship culture did not develop simultaneously in Assam, along with its industrialization.

Educational institute may generate will, zeal and skill. Individual departments of colleges render services as facilitator and incubator in creating entrepreneurship. The UGC introduced a flexible system of certificate/diploma/advance diploma programme which run parallel to the conventional BA/BCom/BSc degree. New Education Policy, 2020 the multifaceted education policy. It is not the policy of creating job seekers, but job creators. Prime Minister of our country very strongly supported 'Make in India', 'Start up' and 'Stand up' India Mission. Rural colleges have the immense role for entrepreneurship development because of the closeness towards the resources.

In this paper an attempt has been made to identify how higher educational institutions can support to build entrepreneurship as a successful career option to collegiate students and accept it the choice and not the chance.

---

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# SUMMARY OF DOCTORAL THESES

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# **AGRICULTURAL PRODUCTION IN ASSAM IN THE RECENT DECADES: AN EMPIRICAL STUDY OF SELECT CROPS IN TWO DISTRICTS OF WESTERN ASSAM**



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## **Statement of the Problem**

Growth rate of agricultural production in Assam has been going down in the last couple of decades like the rest of the country. Productivity in many crops in the state is less than agriculturally advanced states as well as national average. Input use in Assam agriculture is much less than in many other agriculturally advanced states as well as national average. Although many factors might be responsible for poor growth of output over these years it is not feasible to analyze the causes of the decline which happened years ago from the field data collected at present. From the data collected from our primary survey we can analyze the relation between the agricultural productivity and the various underlying factors. This may give us hints as to

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# Metric Fixed Point Theory

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# Common Fixed Point Theorems and Applications in Intuitionistic Fuzzy Cone Metric Spaces



Nabanita Konwar

**Abstract** The aim of this chapter is to establish some common fixed point theorems in intuitionistic fuzzy cone metric space (in short, IFCMS) for compatible and weakly compatible mappings. The existence and uniqueness of the common fixed point have been studied. In order to substantiate the non-triviality of results some examples are provided.

## 1 Introduction

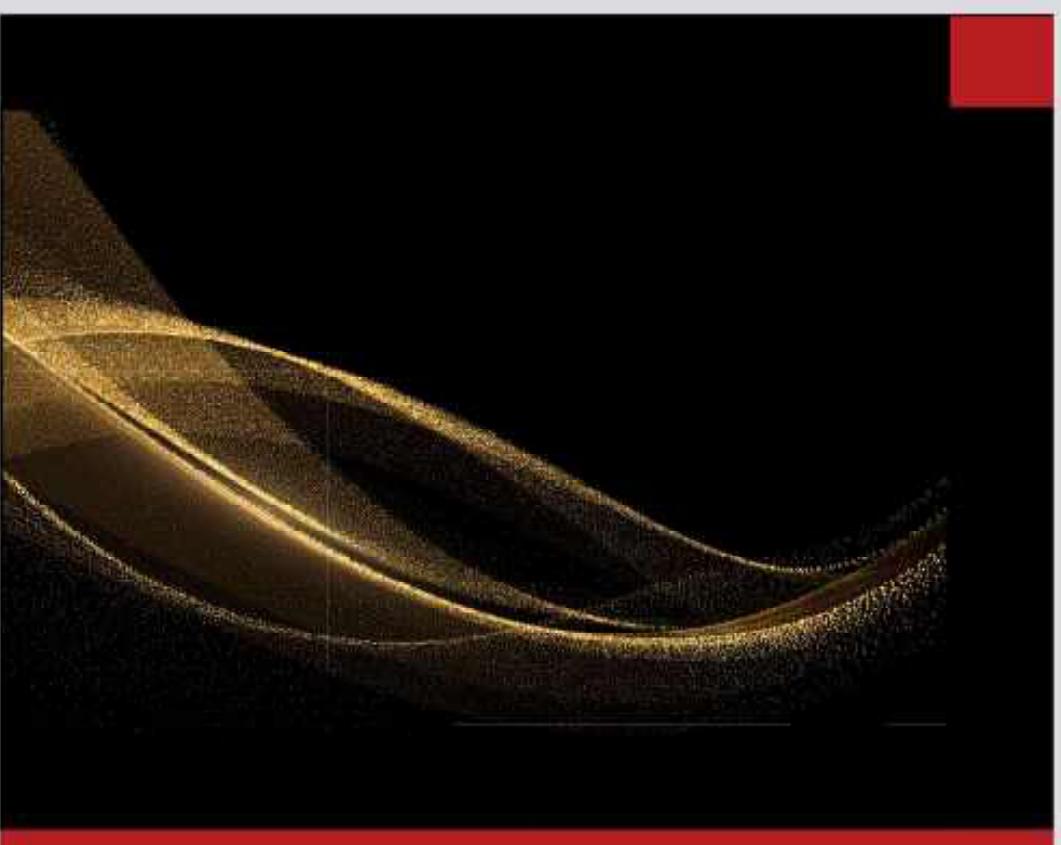
Sometimes the mathematical modeling of many real-life experiments becomes infeasible because of the inadequate measure of distance between two elements or points. For such type of situations, fuzzy logic or fuzzy set contribute a consequential platform to construct and improve the modeling and designing mathematical systems. The generalized form of fuzzy set, i.e., the intuitionistic fuzzy set (in short, IFS) can control more complex situations efficiently and also reduce the complexity of modeling systems for higher order sets. The flexible nature of such type of models helps to improve the applications of science and mathematics and also motivates our current study.

Fuzzy set theory was established by Zadeh [23] in 1965. A generalized concept called IFS was initiated by Atanassov [3] in 1986. With the help of this newly generalized set one can deal with the degree of membership as well as non-membership properties of an elements of a set. Kaleva and Seikkala [15] put forward the notion of fuzzy metric space (in short, FMS). Consequently the idea of FMS was modified by several mathematicians like Kramosil and Michalek [16], George and Veeramani [7], etc. Jungck and Rhoads [14] established the concept of weakly compatible maps on metric spaces. Further, Huang and Zhang [10] established the idea of cone metric space, whereas Abbas and Jungck [1] introduced some results on non-commuting mapping in cone metric spaces.

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Edited by

Pradip Debnath

Delfim F. M. Torres

Yeol Je Cho



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# Some New Fixed Point Results in Archimedean Type Intuitionistic Fuzzy $b$ -Metric Space

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Nabanita Konwar

Birjhora Mahavidyalaya

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## 4.1 INTRODUCTION

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In 1965, Zadeh [32] put forward the concept of fuzzy set theory to represent and explain the mathematical configuration for the circumstances where the information is imprecise or vague. After this in 1986, Atanassaov [2] introduced a new generalization and called it as intuitionistic fuzzy set where the imprecise information is categorized on the basis of their belongingness property and non-belongingness property within a set. The belongingness property is named as the degree of membership and the non-belongingness property is named as the degree of non-membership function. Initially, Kaleva and Seikkala [25] developed the concept of fuzzy metric space. Later on Kramosil and Michalek [26], George and Veeramani [16] modified the definition of fuzzy metric space, respectively. Bakhtin [4] and Czerwinski [7] put forward the concept of  $b$ -metric space where the condition of



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# 3 Analytical Sequel of Rational-Type Fuzzy Contraction in Fuzzy $b$ -Metric Spaces

*Nabanita Konwar*  
Birjhora Mahavidyalaya

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### 3.1 INTRODUCTION

In mathematical analysis, the study of the existence of fixed point of a function plays a significant role. With the help of fixed point of a function, one can verify the existence of a solution of the function within a metric space. The notion of generalized  $b$ -metric spaces has recently contributed significantly to the study of fixed point theory. Such type of generalization can modulate complex situations more effectively for higher order sets and scale down the complexity of modeling systems. It also creates an effective platform for mathematical modeling and designing.

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# **Chapter 7**

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## ***Theory of Approximation for Operators in Intuitionistic Fuzzy Normed Linear Spaces***

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### **7.1 Introduction**

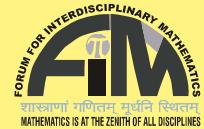
In nonlinear analysis, a significant number of problems are associated with a class of objects, many of which turn out to be linear spaces or vector spaces. If the limit process is imposed in such classes of objects then these areas are turned as the branch of metric or topology. When the induced metric fulfill the translation invariance property the “property of the norm” can be defined on it. The new structure is then converted to normed linear space. In Mathematics, there are some situations where the crisp norm is unable to measure the length of a vector accurately then for such type of situations the concept of fuzzy norm seems to be helpful. There has been a systematic improvement of fuzzy normed linear spaces (FNLSs) and one of the such important improvement of FNLS is the idea of intuitionistic fuzzy normed

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Recent Advances and Applications



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# Results on Generalized Tripled Fuzzy $b$ -Metric Spaces



Nabanita Konwar

**Abstract** The aim of this chapter is to introduce the concept of tripled fuzzy  $b$ -metric space (TF $b$ MS) and establish some new results on TF $b$ MS. We put forward the concept of tripled fuzzy  $\psi - b$ -contraction mapping and tripled fuzzy  $\psi - b$ -contraction sequence. We also investigate the uniqueness of fixed point on TF $b$ MS. In order to validate the non-triviality of results, some examples are provided.

## 1 Introduction

In analytical mathematics, the notion of metric space performs an important role to explain the existence of fixed point and common fixed point of mappings. In analysis, the existence of the fixed point of a mapping often implies the existence of a solution of that mapping within that metric space. Hence, the study of fixed point theory in several generalized metric spaces is of paramount importance for the development and modeling of different areas of science and engineering. In certain situations, the construction of a modeling system becomes difficult due to the inadequate measure of distance between two elements or points. For such situations, fuzzy sets or fuzzy logic contribute a consequential platform to construct and improve the modeling and designing systems.

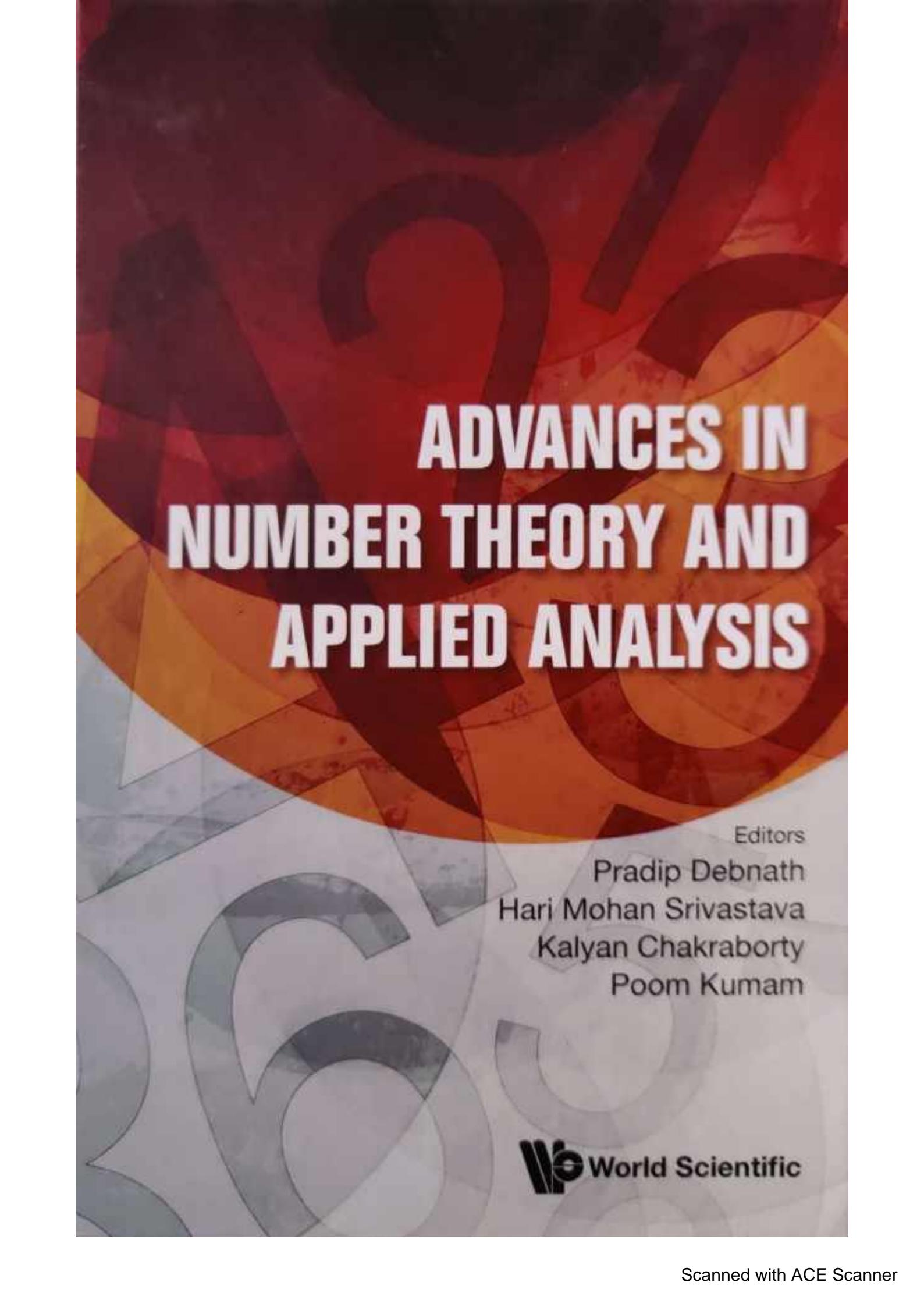
The notion of generalized  $b$ -metric space also plays an important role to the investigation of fixed point theory. Such types of generalization can control more complex situations efficiently and also reduce the complexity of modeling systems for higher order sets. They also extend a feasible platform for scientific modeling and designing. The flexible nature of such type of models helps to improve the applications of fixed point theory in the areas of science, engineering, and mathematics and also motivates several future work.

In order to elaborate the situations where data or elements are imprecise or vague and to represent a mathematical structure for such types of situations, a new con-

---

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## Chapter 2

# Arithmetic and Congruence Properties of Partition Function

Nabanita Konwar

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nabnitakonwar@gmail.com*

The purpose of this chapter is to present the systematic development and evolution of the partition function. We particularly discuss the arithmetic and congruence properties. Various types of identities are discussed as well. Finally, we recapitulate different types of Ramanujan congruences and also put forward some new generalizations of Ramanujan congruences on  $p(n)$  and  $p_j(n)$ .

### 1. Introduction

In mathematics, number theory always occupied a unique position due to its historical importance. It is one of the oldest branches of mathematics. Starting from the Babylonians and then from Pythagoras to Ramanujan, the subject has undergone a huge evolution. The Euclidean Algorithm, developed by Euclid, is an efficient tool toward the application of the Division Algorithm.

In this chapter, we present the systematic development and evolution of the partition function, and discuss the arithmetic and congruence properties and also various types of identities. Finally, different



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### Abstract

Discarded fruit peels caused pollution problem and reused of waste product reduces pollution and sustain environmental balance. In most cases, fruits peels are land filled or composted which lead to environmental problems like methane emission to the atmosphere due to anaerobic digestion and leachate formation, which percolates into the bottom of the earth during rainfall. This communication reports on the synthesis of copper oxide nanoparticles (CuO NPs) using *citrus maxima* peel. The prepared CuO NPs were characterized by XRD, SEM, EDS, UV-visible spectroscopy, FTIR and PL. The characterization results confirmed that the prepared CuO NPs have a monoclinic crystalline structure with a spherical shape and the average crystallite size of CuO NPs was about 20nm. The optical band gap ( $E_g$ ) of CuO NPs calculated from UV-Visible diffuse reflectance spectroscopy was **1.5eV**. The photo response V-I characteristics of CuO NPs showed good photo response under illumination conditions, which might be due to the maximum number of exciting photoelectrons due to illumination.

### Introduction

# **PROTECTED AREAS**

## **IN INDIAN EASTERN HIMALAYAN REGION**

### **FLORISTIC DIVERSITY &**

### **CONSERVATION STRATEGIES**



Editors  
JINTU SARMA  
DILIP KUMAR ROY

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Guwahati, Assam 781005

# **Protected Areas in Indian Eastern Himalayan Region: Floristic Diversity and Conservation Strategies**

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### Abstract

An annotated account of reported species of *Strobilanthes* (Acanthaceae) from Northeastern India including the state Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura & the Darjeeling Hills region of North Bengal is provided. About 76 taxa (74 species & 2 interspecific taxa) have been recorded here, based on herbarium specimens, earlier published works & current field collections. The taxa have been arranged alphabetically. The current accepted name of each species/intraspecific taxon is provided along with author citations, publication references, basionym (if any), relevant synonym (if any), reference (s) to regional Flora. After the complete citation, the type for only the currently accepted name has been provided, along with phenology, distribution & finally the details of the specimen(s) examined. Out of the 76 taxa occurring in Northeastern India, only 19 taxa have been recorded as endemic to the regions. The highest numerical diversity in the genus is recorded from Meghalaya (44) followed by Arunachal Pradesh (40), Assam (30), Nagaland (30), Mizoram (27), Darjeeling Hills Region (20), Manipur (17), Sikkim (16) & Tripura (3).

**Keywords:** Acanthaceae, *Strobilanthes*, flora of India, species diversity, taxonomic investigation, endemism.

### Introduction

*Strobilanthes* Blume (1826: 781, 796) is the second largest genus in the family Acanthaceae & comprises approximately 465 species widely distributed in tropical & subtropical regions of Asia & Australia (Deng *et al.*, 2006; Hu *et al.*, 2011; Joosekutty *et al.*, 2016, 2017, 2018; Biju *et al.*, 2017; Mabberley, 2017; Jomy, 2018; Son *et al.*, 2018; Nilanthi, 2019). It is one of the most interesting & confusing genera in the family Acanthaceae, known for its gregarious

nature, infrequent flowering & diverse habitats, coupled with narrow distribution of species (Mascarenhas, Janarthanam, 2013). In South East Asia, numerous taxa are described & lots of taxonomic confusions were addressed in the genus *Strobilanthes* by various workers, more particularly to be mentioned as Wood (1994, 2001), Wood & Scotland (2003a, 2003b, 2006, 2009), Wood *et al.* (2003, 2019), Albertson & Wood (2012).

The genus is represented by 160–170 taxa in India (Venu, 2006; Mascarenhas, Janarthanam, 2013; Josekutty *et al.*, 2016, 2017, 2018; Sasidharan *et al.*, 2016; Augustine *et al.*, 2017; Biju *et al.*, 2017; Augustine, 2018). Venu (2006), in his work on *Strobilanthes* from Peninsular India, treated 59 species of which 44 are endemic to the Western Ghats. In Northeastern India, the species diversity in the genus *Strobilanthes* is still ambiguous. Many species are poorly known & rarely collected, mainly because of their periodic flowering pattern & lack of comprehensive taxonomic investigation. The updated list has not been published subsequently so far from this region. However, new species remain to be discovered from the still existing virgin forests in north-eastern part of the country. So, aiming to prepare a comprehensive list of this interesting genus, present taxonomic investigation in Northeast Indian *Strobilanthes* was carried out & an up dated account on species diversity is presented.

## Materials & Methods

The genus *Strobilanthes* was investigated taxonomically exclusively in the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura & the Darjeeling Hills region of North Bengal (Map, Fig. 1). The study was mainly based on herbarium specimens, earlier published works & current field collections. The herbarium specimens (as well as their images available at <http://apps.kew.org/herbcat/navigator.do>, <https://plants.jstor.org/partner/C>) of *Strobilanthes* lodged in different herbaria (ASSAM, ARUN, BM, BSHC, CAL, E, GZU, K, L, MPU, NY, P) collected from diverse locations of Northeastern India were examined properly. The earlier published works on the genus *Strobilanthes* (Blume, 1826; Hooker, 1826; Lindl., 1826; Loddiges, 1826; Wallich, 1830, 1832; Nees, 1832, 1836, 1847; Anderson, 1865, 1867; Kurz, 1873, 1877; Clarke, 1884; Brandis, 1906; Smith, 1918, 1920; Biswas, 1934; Imlay, 1939; Kanjilal *et al.*, 1939; Hossain, 1973; Balakrishnan, 1981–1983; Deb, 1981–1983; Haridasan, Rao, 1985–1987; Joseph, 1952; Wood, 1994, 1998, 2001; Hajra *et al.*, 1996; Singh *et al.*, 2000; Singh *et al.*, 2012; Wood *et al.*, 2003; Wood, Scotland, 2003a, 2003b, 2006, 2009; Deng *et al.*, 2006; Venu, 2006; Bennett *et al.*, 2008; Hu *et al.*, 2011; Albertson, Wood, 2012; Josekutty *et al.*, 2016) from the region as well as from East Asia to South East Asia were thoroughly scrutinized. Field collections were also carried out in the state of Arunachal Pradesh (D.K. Roy & J. Sarma), Assam (D.K. Roy & J. Sarma), Meghalaya (D.K. Roy,

R. Lytan & N. Odyuo) & Nagaland (D.K. Roy, R. Lytan & N. Odyuo). The current accepted name of each species/intraspecific taxon is provided (as per POWO, WCSP, IPNI, Tropicos) along with author citation, publication references, basionym (if any), relevant synonym (if any), reference(s) to regional Flora. After the complete citation, the type for only the currently accepted name has been provided, along with phenology, distribution & finally the details of the specimen(s) examined.

## Results & Discussion

In this study, a total of 76 *Strobilanthes* taxa (74 species, 1 subspecies & 1 variety) have been reported from Northeast Indian states along with Darjeeling Hills region of North Bengal. The highest numerical diversity in the genus is recorded from Meghalaya (44) followed by Arunachal Pradesh (40), Assam (30), Nagaland (30), Mizoram (27), Darjeeling Hills Region (20), Manipur (17), Sikkim (16) & Tripura (3). Out of 76 *Strobilanthes* taxa, 19 taxa are found to be endemic to the region. In the presented account of the genus *Strobilanthes* in Northeastern India, the taxa have been arranged alphabetically. Colour images of some interesting *Strobilanthes* species encountered during the present field collections have been given in Fig. 2 & Fig. 3.



**Fig. 1.** Map of India (Northeastern Part) - state wise species diversity of genus *Strobilanthes*.

## Enumeration

***Strobilanthes abbreviata*** Y.F. Deng & J.R.I. Wood, in Deng *et al.*, Bot. J. Linn. Soc. 150(3): 377. 2006.

*Type:* Thailand, Chiangmai, H.B.G. Garrett 1225 (holo. K; iso. E).

*Fls. & Frts.:* June – December.

*Distribution:* Mizoram. **CAMBODIA, CHINA, MYANMAR, THAILAND, VIETNAM.**

*Notes:* The species is included based on Deng *et al.* (2006). In the original description of the species, some Indian specimens from the state of Mizoram were cited to be mentioned as- Mizoram. Chakang, 1600 m, Feb. 1927, A.W. Parry 114 (K); Lushai Hills, Phongpui, 1600 m, 1928, N. E. Parry 578 (K).

***Strobilanthes adnatus*** C.B. Clarke in Fl. Brit. India 4: 436. 1884; Kanjilal *et al.*, Fl. Assam 3: 419. 1939.

*Type:* India. Meghalaya, Khasia, Sohra coal hill (Cherra), C.B. Clarke 15192 (CALI).

*Fls. & Frts.:* April – August.

*Distribution:* Assam, Meghalaya, Mizoram, Nagaland. Endemic.

*Specimens examined:* **Meghalaya.** K. & J. Hills, Way to Cherrapunjee, 2 Jun. 1956, G. Panigrahi 2953 (ASSAM!); Pynursla, 29 Oct. 1952, G.K. Deka s.n. (ASSAM!); Pungtung forests, 28 Aug. 1935, S.R. Sharma 12192 (ASSAM!); Jarain, 1350m, 18 Aug. 1968, N.P. Balakrishnan 46744 (ASSAM!); Mawmluh, 8 Nov. 1930, P.C. Kanjilal 8792 (ASSAM!); Cherrapunjee, 12 Aug. 1960, G. Panigrahi 21931 (ASSAM!).

***Strobilanthes affinis*** (Griff.) Terao ex J.R.I. Wood & J.R. Benn., Kew Bull. 58: 134. 2003. *Adenosma affinis* Griff., Not. Pl. Asiat. 4: 133. 1854. *Strobilanthes acrocephala* T. Anderson, J. Linn. Soc., Bot. 9: 473. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 454. 1884; Kanjilal *et al.*, Fl. Assam 3: 422. 1939; Wood in Edinb. J. Bot. 51(2). 220. 1994. [Fig. 2A]

*Type:* East Bengal. Descent to Bogossan, 7 Nov. 1835, W. Griffith 6098 (K, K000883121).

*Fls. & Frts.:* September – March.

*Distribution:* Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland. **CHINA, MYANMAR, NEPAL.**

*Specimens examined:* **Arunachal Pradesh.** Selin Camp, 20 Oct. 1933, R.S. Rao 1440 (ASSAM!); East Siang, Pangin, 19.1.2013, M. Bhaumik 29856 (ARUN!). **Meghalaya.** Khasia Hills, ?, J.D. Hooker & T. Thomson 63 (K, image K000883119); Khasia Hills, 15 Sept. 1850, J.D. Hooker & T. Thomson 2253 (K, image K000883120); K. & J. Hills, Near Nortiang, 1350m, 27 Aug. 1968, N.P. Balakrishnan 47154 (ASSAM!); Peak forest, 4 Oct. 1930, S.R. Sharma 8638 (ASSAM!). **Nagaland.** Meleuri to Kohima, 23 Oct. 1973, C. Bahadur

55583 (ASSAM!); Kohima, Forest colony, 21 Nov. 1973, T.M. Hynniewta 56176 (ASSAM!); Naga Hills, Aug. 1936, N.L. Bor 1938 (ASSAM!). **Tripura.** Tlansang, 1800-2100ft, 3 Feb. 1962; D.B. Deb 27426 (ASSAM!).

***Strobilanthes anisophylla*** (Wall. ex Hook.) T. Anderson, J. Linn. Soc., Bot. 9(40): 478. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 462. 1884; Kanjilal *et al.*, Fl. Assam 3: 427. 1939; Albertson & Wood, Phytotaxa 43: 58. 2012. ***Ruellia anisophylla*** Wall. ex Hook., Exot. Fl. 3(30): t. 191. 1826. ***Strobilanthes persicifolia*** (Lindl.) J. R. I. Wood, Kew Bull. 64(1): 27. 2009.

Type: Lecto., Plate No. 191 in Hooker (1826) Exotic Flora.

Fls. & Frts.: October – March.

Distribution: Assam, Meghalaya, Sikkim. **BANGLADESH, BHUTAN.**

Specimens examined: **Assam.** N.C. Hills, Kapili Catchments, R.S. Baruah 117415 (ASSAM!); Goalpara, 3 Dec. 1918, U.N. Kanjilal 7449 (ASSAM!).

**Meghalaya.** Garo Hills, Tura Hills side, 6 Mar. 1975, M.K.V. Rao 59536 (ASSAM!); Rongrengiri, 15 Dec. 1960, G. Panigrahi 22610 (ASSAM!); Tura Top, 366-1294m, 12 Dec. 1960, G. Panigrahi 22369 (ASSAM!); K. & J. Hills, Pynursla-Dawki, 24 Nov. 1956, G. Panigrahi 4702 (ASSAM!); Shella, 23 Feb. 1938, G.K. Deka 16442 (ASSAM!); Cherrapunjee, Lowkyntang, 19 Nov. 1960, D.C.S. Raju 22225 (ASSAM!); Umsaw Forest, 24 Oct. 1937, S.R. Sharma 16479 (ASSAM!). Sikkim. ?, Jun. 1934, N.L. Bor 19975 (ASSAM!).

***Strobilanthes asymmetrica*** J.R.L Wood & J.R. Benn. in Wood *et al.*, Kew Bull. 58 (1): 161. 2003.

Type: India. Manipur, Kingdon Ward 18203 (holo. NY; iso. BM).

Fls. & Frts.: October – February.

Distribution: Manipur, Mizoram. Endemic.

Specimens examined: **Manipur.** Sirhoi, 1300 - 1700 m, 11 Oct. 1948, Kingdon Ward 18203 (BM, image BM000884979!).

***Strobilanthes atropurpureus*** Nees, Pl. Asiat. Rar. 3: 86. 1832.

**1a.** Leaf blades ovate to ovate-elliptic, 1-15 cm long, 1-7 cm wide, glabrous or thinly pilose on both surfaces, serrate to crenate along margins, acute at apex, rounded to attenuate & decurrent at base; petioles distinct, to 2.5 cm long, winged ..... var. **atropurpurea**

**1b.** Leaf blades narrow lanceolate, 0.5-3 long, 0.5-1 cm wide, glabrous above, pubescent along the veins beneath, dentuculate to undulate or subentire along margins, acuminate at apex, base attenuate; petioles obscure ..... var. **stenophylla**

***Strobilanthes atropurpureus*** Nees var. **atropurpurea**

***Strobilanthes wallichii*** Nees in Wall., Pl. Asiat. Rar. 3: 87. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 471. 1884; Kanjilal *et al.*, Fl. Assam 3: 540. 1939;

Wood in Edinb. J. Bot. 51(2): 265. 1994. *Pteracanthus alatus* (Nees) Bremek, Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2 41(1): 199. 1944.

*Type*: Nepal (?), N. Wallich 2398 (iso. K-W).

*Fls. & Frts.*: August – December.

*Distribution*: Arunachal Pradesh, Assam, Nagaland, North Bengal (Darjeeling), Sikkim. **NEPAL, PAKISTAN**.

*Specimens examined*: **Arunachal Pradesh**. Lohit F.D., Dreying to Shoeliang, 625-1200m, 13 Nov 1957, R.S. Rao 10539 (ASSAM!). **Nagaland**. Kohima, 26 Aug. 1937, G.K. Deka 16482 (ASSAM!). **Sikkim**. Chitrey, 16 Sept. 2008, K. Das & S.K Rai 34002 (BSHC!); Varsey, 22 Sept. 2002, S.K. Rai & S. Pradhan 25395 (BSHC!).

***Strobilanthes atropurpureus*** Nees var. ***stenophylla*** (C.B. Clarke) Y.F. Deng & J.R.I. Wood, J. Trop. Subtrop. Bot. 18(5): 482. 2010. *Strobilanthes stenophylla* C.B. Clarke in Hook.f., Fl. Brit. India 4: 472. 1884; Kanjilal *et al.*, Fl. Assam 3: 433. 1939.

*Type*: India. Meghalaya, Khasia hills, Borapani, C.B. Clarke 16362B (CAL!).

*Distribution*: Meghalaya. **CHINA**.

*Specimens examined*: **Meghalaya**: Khasia Hills, 6 Aug 1850, J.D. Hooker & T. Thomson 2033 (K, image K000883201!).

***Strobilanthes auriculata*** Nees, Pl. Asiat. Rar. 3: 86. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 453. 1884; Kanjilal *et al.*, Fl. Assam 3: 421. 1939; Wood in Edinburgh J. Bot. 51 (2): 220. 1994; Wood & Scotland, Kew Bull. 58: 90. 2003. ***Strobilanthes trichophora*** C.E.C. Fisch., Bull. Misc Inform., Kew 1932: 202. 1932.

*Type*: Wallich, Number List No. 2341b (CAL, K, MH microfice).

*Fls. & Frts.*: October – February.

*Distribution*: Manipur, Meghalaya, Mizoram. **BANGLADESH, CHINA, MYANMAR, NEPAL, THAILAND**.

*Specimens examined*: **Meghalaya**. Khasia Hills, 26 July 1850, J.D. Hooker & T. Thomson s.n. (K000882965); K. & J. Hills, Nongpoh, 27 Oct. 1935, G.K. Deka 12845 (ASSAM!); East Khasi Hills, Pungtung RF, 11 Sept. 2018, D.K. Roy 128917 (ASSAM!); Nongpoh, 14 Dec. 1931, Sri Ram 9772 (ASSAM!).

***Strobilanthes borii*** J.R.I.Wood, Kew Bull. 64(1): 25. 2009.

*Type*: India, Naga Hills, N. L. Bor s.n. (holo. K).

*Fls. & Frts.*: September – May.

*Distribution*: Nagaland. Endemic.

*Specimens examined*: Nagaland. Naga Hills, 1935, N.L. Bor s.n. (K, image K000883175!); Dzuko forest, Kujere forest, 2400m, 2 Sept. 2006, A.A. Mao & R. Gogoi 109435 & 109439 (ASSAM!); Apr 2006, A.A. Mao & R. Gogoi 111073 (ASSAM!).

***Strobilanthes brunoniana*** Nees in Pl. Asiat. Rar. 3: 87. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 457. 1884; Kanjilal *et al.*, Fl. Assam 3: 423. 1939; Wood et. al., Kew Bull. 58(1): 166. 2003. [Fig. 2B]

**Type:** India, Meghalaya, "Silhet", da Silva & Gomez in Wallich 2368 (BM, K-W, OXF).

**Fls. & Frts.:** September – January.

**Distribution:** Assam, Meghalaya, Nagaland. **BANGLADESH.**

**Specimens examined:** **Assam.** N.C. Hills, Borail Wildlife Sanctuary, Kalain Range, 16 Feb. 2012, H.A. Barbhuiya 886 (ASSAM!). **Meghalaya.** K. & J. Hills, Sohra, 22 Oct. 1871, C.B. Clarke 15588 (K, image K000883104!); s.l., N. Wallich 2368 (H, image E00273407); Van omslag uit boek, N. Wallich s.n. (L, image L0002951!); Pungtung forest, 22 Aug. 1938, G.K. Deka 19050 (ASSAM!); Mawsmai, 22 Feb. 1938, G.K. Deka 16510 (ASSAM!); Tharia forests, 13 Sept. 1937, S.R. Sharma 9354 (ASSAM!); Mawmluh forest, 8 Nov. 1930, P.C. Kanjilal 8797 (ASSAM!); East Khasi Hills, Pungtung RF, 11 Aug. 2018, D.K. Roy 128918 (ASSAM!); South Garo Hills, Balpakram NP, 8 Mar. 2013, D.K. Roy 129495 (ASSAM!).

***Strobilanthes capitata*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884; Wood in Edinburgh J. Bot. 51 (2): 224. 1994. ***Goldfussia capitata*** Nees, Pl. Asiat. Rar. 3: 88. 1832.

**Type:** Nepal, 1821, N. Wallich, Wall. Cat. Number 2351 (GZU, GZU000251595; BM, BM000793162; K, K000883084).

**Fls. & Frts.:** October – February.

**Distribution:** Assam, Manipur, Meghalaya, Mizoram, Nagaland, North Bengal (Darjeeling), Tripura. **BHUTAN, CHINA, MYANMAR, NEPAL.**

**Specimens examined:** **Mizoram.** Lushai Hills, Buanglang, 30 Jan Feb 1963, D.B. Deb 31459 (ASSAM!); Buanglang, 240ft, 29 Jan 1963 D.B. Deb 31448 (ASSAM!); Pualreng Wildlife Sanctuary, 5 Dec 2010, S.K. Singh & Party 120928 (ASSAM!); Dampa Tiger Reserve, 8 Dec 2006, N. Odyuo 113571 (ASSAM!). **Sikkim.** Fambonglho WLS, 12 July 1998, S.K Rai 14147 (BSHC!).

***Strobilanthes clarkei*** J.R.I. Wood, Edinb. J. Bot. 51(2): 236. 1994.

**Type:** India. Manipur, C.B. Clarke 42006 (holo. K).

**Fls. & Frts.:** October – December.

**Distribution:** Manipur, Nagaland. Endemic.

**Specimens examined:** **Manipur.** Karong, 1065m, 14 Nov 1885, C.B. Clarke 42006 (K, image K000883169!). **Nagaland:** Zakhoma, 1685m, 19 Oct 1949, Kingdon Ward 18901 (BM).

***Strobilanthes cruciata*** (Bremek.) Terao, Acta Phytotax. Geobot. 31(1-3): 59. 1980; Wood in Kew Bull. 64(1): 21. 2009. ***Tetragoga cruciata*** Bremek, Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2 41(1): 300. 1944. ***Tetragoga***

*nagaënsis* Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2 41(1): 299. 1944.

Type: Indonesia, Sumatra, Lörzing 5668 (holo. L; iso. A, SING).

Fls. & Frts.: December – July.

Distribution: Nagaland, Meghalaya. **SUMATRA, CHINA, INDONESIA, MYANMAR, THAILAND, VIETNAM.**

Specimens examined: **Meghalaya.** K. & J. Hills, Way to Balat from Mawsynram, 6 May 1975, G.H. Bhaumik 62015 (ASSAM!).

***Strobilanthes cusia*** (Nees) Kuntze, Revis. Gen. Pl. 2: 499. 1891; Wood in Edinburgh J. Bot. 51 (2): 223. 1994. *Goldfussia cusia* Nees, Pl. Asiat. Rar. 3: 88. 1832.

Type: F. Buchanan-Hamilton, Wall. Cat. Number 2386 (GZU, GZU000250387).

Fls. & Frts.: September – February.

Distribution: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland. **BHUTAN, CHINA, MYANMAR, THAILAND.**

Specimens examined: Arunachal Pradesh. Lohit, Tezu, 8 Jan. 1970, J. Joseph 48899 (ASSAM!); Kalai village, 15 Dec 1969, J. Joseph 48669 (ASSAM!); Tirap F.D., Waka, 6 Sept. 1958, G. Panigrahi 16903 (ASSAM!); Namdapha, Deban forest, 2500ft., 19 Dec 1993, A.S. Chauhan 99437 (ASSAM!); Aka Hills, Sept. 1935, N.L. Bor 16608 (ASSAM!); Assam. Sonitpur, Nameri NP, 30 May 2016, J Sarma 322 (TUH!).

***Strobilanthes cyphantha*** Diels in Notes Roy. Bot. Gard. Edinburgh 5: 162. 1912; Wood in Edinburgh J. Bot. 51 (2): 221. 1994.

Type: China. Yunnan, Tali Range, 9000-10000ft. G. Forrest 4549, partly (lecto. E).

Fls. & Frts.: July – December.

Distribution: Arunachal Pradesh. **CHINA, TIBET.**

Note: The species included based on Wood (1994) who mentioned the occurrence of the species in the state of Arunachal Pradesh (Kingdon Ward 20221).

***Strobilanthes decipiens*** J.R.I. Wood in Wood & Scotland, Kew Bull. 58(1): 112. 2003.

Type: India. Nagaland, Kingdon Ward 12507 (holo. BM).

Fls.: November – December.

Distribution: Nagaland, Mizoram. Endemic.

Specimens examined: **Mizoram.** Lushai Hills: Blue Mt., 950-1300m, Dec. 1931, Wenger 384 (K). **Nagaland.** Kekrima, 12 Nov 1935, F. Kingdon Ward 12507 (BM, image BM000906306!).

***Strobilanthes denticulata*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 483. 1867;

C.B. Clarke in Hook.f., Fl. Brit. India 4: 465. 1884; Kanjilal *et al.*, Fl. Assam 3: 428. 1939; Wood & Scotland, Kew Bull. 58: 109. 2003. *Asystasia denticulata* Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832. *Strobilanthes griffithiana* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 470. 1884; Kanjilal *et al.*, Fl. Assam 3: 432. 1939. *Strobilanthes flaccidifolia* Nees, Prodr. 11: 194. 1847; C.B. Clarke in Hook.f., Fl. Brit. India 4: 468. 1884; Kanjilal *et al.*, Fl. Assam 3: 440. 1939.

**Type:** India. Pundua in the Khasi Hills, F da Silva in Wallich 2418 (syn. BM, K-W).

**Fls. & Frts.:** November – February.

**Distribution:** Arunachal Pradesh, Assam, Meghalaya, Nagaland. Endemic.

**Specimens examined:** **Assam.** s.l., 1862, W. Griffith 6120 (K, image K000883229!); Mohadewa, 6 Jan. 1959, G.K. Deka 18131 (ASSAM!). **Meghalaya.** K. & J. Hills, 27km from Khilariat road to Sonapur, 850 Hills, 21 Nov. 1969, N.P. Balakrishnan 50093 (ASSAM!).

***Strobilanthes dimorphotricha*** Hance, J. Bot. 21(12): 355. 1883. *Strobilanthes geniculata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884; Kanjilal *et al.*, Fl. Assam 3: 425. 1939; Wood in Edinburgh J. Bot. 51 (2): 222. 1994. *Strobilanthes geniculata* var. *integra* C.B. Clarke in Hook.f., Fl. Brit. India 4: 459. 1884. *Strobilanthes gracilis* T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867. *Strobilanthes burkillii* Dunn, Bull. Misc. Inform. Kew 1920(6): 208. 1920; Kanjilal *et al.*, Fl. Assam 3: 426. 1939.

**Type:** India. Meghalaya (Khasia), C.B. Clarke 21919 (lecto. K).

**Fls. & Frts.:** August – December.

**Distribution:** Arunachal Pradesh, Meghalaya, Mizoram. **CHINA, VIETNAM.**

**Specimens examined:** **Arunachal Pradesh.** Pasighat, 12 Dec 1911, L.H. Burkill 37107 (K, image K000883086!); Mishmi, ?, W. Griffith 6116 (K, image K000883090!). **Meghalaya.** Khasia Hills, 1873, C.B. Clarke 21919 (K, image K000883088!).

***Strobilanthes discolor*** (Nees) T. Anders, in J. Linn. Soc. Bot. 9: 477. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 462. 1884; Kanjilal *et al.*, Fl. Assam 3: 426. 1939; Wood in Edinburgh J. Bot. 51 (2): 222. 1994. *Goldfussia discolor* Nees in A. DC, Prodr. 11: 172. 1847. *Strobilanthes discolor* var. *nudicalyx* C.B. Clarke in Hook.f., Fl. Brit. India 4: 462. 1884.

**Type:** India, Meghalaya (Khasia), W. Griffith ex Herb. Hooker (lecto. K).

**Fls. & Frts.:** July – January.

**Distribution:** Arunachal Pradeh, Assam, Manipur, Meghalaya, Mizoram, Nagaland. **BHUTAN, CHINA.**

**Specimens examined:** **Arunachal Pradesh:** Dirang Dzong 1550-1860m, 5 Nov. 1938, Kingdon Ward 14202 (BM); Subansiri F.D., Kimin to Zero, 230-290m, 24 Sept. 1959, G. Panigrahi 19304 (ASSAM!); Palin to Rish Hills,

17.11.1964, ARK Sastry 40712 (ARUN!); Lohit F.D., Parasuram Kundh, 200m, 3 Dec. 1957, R.S. Rao 10945 (ASSAM!); Shoeliang to Paya, 2500ft, 15 Nov. 1957, R.S. Rao 10639 (ASSAM!); West Siang, Passighat-Aliowali, 10.11.2013, M. Bhaumik 29622 (ARUN!); Kurung Kumey, 5.12.2009, S.S. Dash 32531 (ARUN!). **Assam:** North Lakhimpur, Ranga Reserve forest, 23 Nov. 1957, G. Panigrahi 11501 (ASSAM!); Dulong Reserve forest, 9 Mar. 1962, G. Panigrahi 27630; Sibsagar, 17 Nov. 1948, G.K. Deka 22740 (ASSAM!); Mikir Hills, Kaliogi Reserve, 5 Feb. 1977, S.K. Barthakur 69504 (ASSAM!). **Manipur:** Kapru, 1800m, Nov. 1907, Meebold 6466 (K); Laimatak, 1550m, Nov 1907, Meeboldll 26 (K); Sirhoi, 1400-1700m, 11 Oct. 1948, Kingdon Ward 18205 (BM, NY). **Meghalaya:** Khasia, ?, W. Griffith s.n. (K, image K000883054); Cherrapunjee, 9 Nov 1850, J.D. Hooker & T. Thomson 25 (K, image K000883052); Khasia, 10 Oct 1835, W. Griffith 6120 (K, image K000883053); K. & J. Hills, Nongpoh, 13 Dec. 1931, Sri Ram 9784 (SSAM); Jaintia Hills, Khilarihat, 1300m, 19 Nov. 1969, N.P. Balakrishnan 50050 (ASSAM!); K. & J. Hills, Pungtung Forest, 29 Dec. 1953, R. Sharma 12185 (ASSAM!); Khasi Hills, Nongkhluw to Mairang, 4200ft, 24 Mar. 1962, G.V.S. Rao 28212 (ASSAM!); Cherapunjee, 27 Sept. 1956, G. Painigrahi 3555 (ASSAM!). **Mizoram:** Sialsuk, 1550m, Dec. 1927, Parry 415 (K); South Lushai, Nov 1931, Wenger 382 (K). **Nagaland:** Saipung, 1550m, Dec. 1907, Meebold 7299 (K); Botoa on the way to Kohima from Wokha, 17 Oct. 1981, T.M. Hynniewta 80692 (ASSAM!); Tseminyu to Zumphu road, 5 Oct. 1977, C.L. Malhotra 75030 (ASSAM!).

***Strobilanthes divaricata*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 478. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 468. 1884; Kanjilal *et al.*, Fl. Assam 3: 430. 1939; Wood in Edinburgh J. Bot. 51 (2): 223. 1994. ***Goldfussia divaricata*** Nees, Pl. Asiat. Rar. 3: 89. 1832.

**Type:** Nepal. [Summa] versus Emodium, 1830, N. Wallich 2372 (K, K000883222).

**Fls. & Frts.:** July – November.

**Distribution:** Arunachal Pradesh, Meghalaya, North Bengal (Darjeeling), Sikkim. **BHUTAN, NEPAL.**

**Specimens examined:** **Arunachal Pradesh.** West of Tusing, 6 Nov. 1958, R.S. Rao 17351 (ASSAM!); Begi to Amjee, 12 Nov. 1964, A.R.K. Sastry 40530 (ASSAM!) Upper Subansiri, ?, K. Ambrish 17328 (ARUN!). **Meghalaya.** Mount Khasia, 5000-6000ft, J.D. Hooker s.n. (P, image P00719307); K. & J. Hills, ?, 27 Aug. 1950, G. Deka s.n. (ASSAM!). **Sikkim.** Khechiopalri, 29 Aug. 2010, S.K Rai 24583 (BSHC!); Yuksom Bakhim Trek, 18 Sept. 2004, S.K Rai & A.K Chettri 29721 (BSHC!); Hilley14th mile, 15 July 2010, S.K Rai 24574 (BSHC!). **North Bengal:** Darjeeling, 27 Aug. 1862, T. Anderson 1035 (P, image P00719308!).

***Strobilanthes echinata*** Nees, Pl. Asiat. Rar. 3: 85. 1832; Wood in Edinburgh

J. Bot. 51 (2): 224. 1994. *Strobilanthes pectinata* T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 447. 1884; Kanjilal *et al.*, Fl. Assam 3: 420. 1939.

**Type:** Bangladesh. Sulhet FD, F. de Silva, Wall. Cat. Number 2356 (BM, BM000884989).

**Fls. & Frts.:** May – September.

**Distribution:** Arunachal Pradesh, Sikkim, Meghalaya, Nagaland, North Bengal (Darjeeling). **BHUTAN, CAMBODIA, CHINA, INDONESIA, LAOS, MALAYSIA, MYANMAR, THAILAND, VIETNAM.**

**Specimens examined:** **Arunachal Pradesh.** Subansiri, Zero-Begii, 11.11.1964, A.R.K. Sastry 40521 (ARUN!); Hawai, 27 Apr. 2010, R. Gogoi 21263 (ARUN!).

**Meghalaya.** Jaintia Hills, Jarain, 20 Nov 1872, C.B. Clarke 18312 (K, image K000883001). **Nagaland.** Ngakuson, ?, N. Odyuo 140405 (ASSAM!). **Sikkim.** Hilltok to Deoniglo dhap, 4 Sept. 2010, K. Das & S.K. Rai 27101 (BSHC!).

***Strobilanthes elongata*** C.B.Clarke, Fl. Brit. India 4: 470. 1884; Kanjilal *et al.*, Fl. Assam 3: 432. 1939; Wood in Edinburgh J. Bot. 51 (2): 223. 1994; Albertson & Wood, Phytotaxa 43: 50. 2012. *Strobilanthes paucinervis* T. Anderson ex C.B.Clark in Hook.f., Fl. Brit. India 4: 470. 1884. *Strobilanthes furcata* Biswas in Assam Forest Rec., Bot. 1: 23. 1934; Kanjilal *et al.*, Fl. Assam 3: 434. 1939.

**Type:** India. Assam, Namrup (Patkai Hills), Griffith K.D. 6183 (Holo., K, K001096874).

**Fls. & Frts.:** April – October.

**Distribution:** Arunachal Pradesh, Assam, Meghalaya, Nagaland. Endemic

**Specimens examined:** **Arunachal Pradesh.** Tirap F.D., Namchai, 13 Oct. 1959, R.S. Rao 20178 (ASSAM!); Subansiri F.D., Khuni Pahad to Petepool, 26 Sept. 1959, G. Panigrahi 19660 (ASSAM!); Upper Siang, Gelling, 18 Sept. 2007, R.K. Choudhury 18694 (ARUN!). **Assam.** Kakoi Reserve forest, 15 Mar. 1962, G. Panigrahi 27920 (ASSAM!); Upper Dihing, West Block, Borjan, 8 July 1959, G. Panigrahi 1887 (ASSAM!); Lakhimpur, Joypure forest, 4 April 1930, G.K. Deka 13350 (ASSAM!); Namrup, ?, W. Griffith 6183 (K, image K001096874!).

***Strobilanthes extensa*** (Nees) Nees, Prodr. 11: 191. 1847; C.B. Clarke in Hook.f., Fl. Brit. India 4: 463. 1884; Kanjilal *et al.*, Fl. Assam 3: 427. 1939; Wood in Edinburgh J. Bot. 51 (2): 221. 1994. *Goldfussia extensa* Nees, Pl. Asiat. Rar. 3: 88. 1832.

**Type:** Bangladesh. Sulhet, W. Gomez, Wall. Cat. Number 7160 (K, K001126805).

**Fls. & Frts.:** July – October.

**Distribution:** Meghalaya, Mizoram, Nagaland, Sikkim. **BHUTAN, CHINA, NEPAL.**

**Specimens examined:** **Meghalaya.** K. & J. Hills, Cherrapunjee, 26 Sept.

1956, G. Panigrahi 3432 (ASSAM!); Mawmluh forest, 7 Oct. 1939, G.K. Deka 19048 (ASSAM!). **Sikkim.** Tendong RF, 14 Nov. 2002, S.K Rai 25869 (BSHC!); Fambonglho WLS, 12 July 1998, S.K. Rai 14117 (BSHC!).

***Strobilanthes fimbriata*** (Nees) C.B. Clarke, Pl. Asiat. Rar. 3: 85. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 447. 1884; Kanjilal *et al.*, Fl. Assam 3: 419. 1939; Albertson & Wood, Phytotaxa 43: 51. 2012. *Endopogon macrostegius* Nees, Prodr. 11: 104. 1847. *Strobilanthes macrostegia* (Nees) C.B. Clarke in Hook.f., Fl. Brit. India 4: 456. 1884; Kanjilal *et al.*, Fl. Assam 3: 422. 1939; Wood in Edinburgh J. Bot. 51 (2): 224. 1994. *Strobilanthes neesii* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42(2): 93. 1873; C.B. Clarke in Hook.f., Fl. Brit. India 4: 476. 1884.

*Type:* India. Meghalaya (“Silhet”), Da Silva & Gomez in Wallich 2363 (holo., K-W).

*Fls. & Frts.:* May – August.

*Distribution:* Arunachal Pradesh, Assam, Meghalaya, Mizoram. **CHINA, BANGLADESH, MYANMAR.**

*Specimens examined:* **Meghalaya.** (“Silhet”), Da Silva & Gomez in Wallich 2363 (K, image K000883002!); Khasia Hills, W. Griffith s.n. (K, image K000883109!). **Assam.** Sonitpur, Nameri NP, 22 April 2017, J Sarma 692 (TUH!).

***Strobilanthes frondosa*** J.R.I.Wood, Edinburgh J. Bot. 51(2). 239. 1994; Wood et. al., Kew Bull. 58(1): 163. 2003.

*Type:* Bhutan, J.R.I. Wood 7465 (holo. E; iso. K, THIMPHU).

*Fls. & Frts.:* August – October.

*Distribution:* Manipur. **BHUTAN, MYANMAR.**

*Specimens examined:* **Manipur.** Sirhoi Hills, 2300m, 20 Jul. 1948, Kingdon Ward 17823 (BM!).

***Strobilanthes glabratus*** Nees, Pl. Asiat. Rar. 3: 85. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 447. 1884; Kanjilal *et al.*, Fl. Assam 3: 420. 1939.

*Type:* Bangladesh, Montes Silhet, s.coll., Wall. Cat. Number 2390 (K, K000882998).

*Fls. & Frts.:* May – November.

*Distribution:* Arunachal Pradesh, Assam, Meghalaya. Endemic.

*Specimens examined:* **Arunachal Pradesh.** Tirap F.D., Tangkeng village, 20 Jun. 1961, D.B. Deb 25853 (ASSAM!). **Meghalaya.** K. & J. Hills, Mahadeo forest, 15 May 1932, S.R. Sharma 10086 (ASSAM).

***Strobilanthes glomerata*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 458. 1884; Fl. Assam 3: 421. 1939; Wood in Edinburgh J. Bot. 51 (2): 224. 1994. *Goldfussia glomerata* Nees, Pl. Asiat. Rar. 3: 88. 1832.

*Type*: Bangladesh. Mont. Sillet, F. de Silva, Wall. Cat. Number 2361 (GZU, GZU000251600).

*Fls. & Frts.*: October – January.

*Distribution*: Arunachal Pradesh, Assam, Meghalaya, Mizoram. **CHINA, MYANMAR.**

*Specimens examined*: **Arunachal Pradesh**. Lohit F.D., Heyuliang-Deuliang, 458–568m, 22 Nov. 1956, R.S. Rao 10748 (ASSAM!). **Mizoram**. Lushai Hills, Aizwal Protected forest, 11 Jan 1963, D.B. Deb 30517 (ASSAM!). **Meghalaya**. Nokrek Biosphere Reserve, Nokrek Peak, 12 Oct 2007, V.N. Singh & B. Singh 115980 (ASSAM!); !; East Khasi Hills, Pungtung RF, 11 Sept. 2018, D.K. Roy 128921 (ASSAM!).

***Strobilanthes glutinosa*** J. Graham, Cat. Pl. Bombay 162. 1839; C.B. Clarke in Hook.f., Fl. Brit. India 4: 458. 1884; Kanjilal *et al.*, Fl. Assam 3: 437. 1939; Wood in Edinburgh J. Bot. 51 (2): 223. 1994.

*Type*: India. N. Wallich, 2350 (BM, BM000793207).

*Frts.*: November.

*Distribution*: Assam, Meghalaya, Mizoram. **NEPAL, PAKISTAN.**

*Specimens examined*: **Assam**. Sela Sub-Agency, 15 Nov. 1951, G.K. Deka 23199 (ASSAM!); Sonitpur, Nameri NP, 25 June 2017, J Sarma 644 (TUH!).

***Strobilanthes hamiltoniana*** (Steud.) Bosser & Heine, Bull. Mus. Natl. Hist. Nat., B, Adansonia 10: 148. 1988; Wood in Edinburgh J. Bot. 51 (2): 223. 1994. *Ruellia hamiltoniana* Steud., Nomencl. Bot. (ed. 2) 2: 481. 1841. *Strobilanthes crinita* T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 473. 1884. *Strobilanthes laevigata* C.B. Clarke in Hook.f., Fl. Brit. India 4: 467. 1884. *Strobilanthes colorata* Nees, Companion Bot. Mag. 2: 312. 1837; C.B. Clarke in Hook.f., Fl. Brit. India 4: 473. 1884; Kanjilal *et al.*, Fl. Assam 3: 434. 1939. [Fig. 2C, D]

*Type*: Buch.-Ham. in Wall. Number. List No. 2388 (CAL, K, MH microfiche).

*Fls. & Frts.*: August – November.

*Distribution*: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, North Bengal (Darjeeling). **BHUTAN, CHINA, NEPAL, SRI LANKA, TIBET.**

*Specimens examined*: **Arunachal Pradesh**. Upper Siang, Jergging area, 14 Sept. 2007, RK Choudhury 18613 (ARUN!); Tirap F.D., Nampong to Pangsi Pass, 12 Oct. 1959, R.S. Rao 20160 (ASSAM!); Subansiri F.D., 6th mile from Kimin, 25 Sept. 1939, G. Panigrahi 19405 (ASSAM!); Kameng F.D., Bhallukpong, 300m, 11 Sept. 1964, J. Joseph 39783 (ASSAM!); Itanagar, 1 Nov. 1978, G.D. Pal 70104 (ARUN!); Naharlagun, 9 Nov. 1978, G.D. Pal 70191 (ARUN!). **Assam**. North Lakhimpur, Ranga Reserve forest, 23 Nov. 1957, G. Panigrahi 11459 (ASSAM!); Mikir Hills, Karbianglong, 13 Feb. 1977, S.K. Borthakur 69406 (ASSAM!); Sonitpur, Nameri National Park, Bogighuli, 31

Dec. 2004, S.S. Begum 104405 (ASSAM!). **Manipur.** Mao Krophe, 31 March 1991, A.A. Mao 97664 (ASSAM!). Meghalaya. K. & J. Hills, Laitlyngkot, 25 Sept. 1930, P.C. Kanjilal 8568 (ASSAM!); Shillong, 5 Oct. 1917, U.N. Kamjilal 7234 (ASSAM!); Garo Hills, Darugiri to Nengkhra, 16 Dec 2006, R. Shanpru 113376 (ASSAM!), Tura Top, 12 Dec. 1960, G. Panigrahi 22430 (ASSAM!); Nonhpoh, 30 Aug. 1941, G.K. Deka 20663 (ASSAM!). **Mizoram.** Lushai Hills, D.B. Deb 30466 (ASSAM!); Theiriat, 25 Jan. 1963, D.B. Deb 31343 (ASSAM!). **Meghalaya.** South Garo Hills, Balpakram NP, 5 Feb. 2014, D.K. Roy 130079 (ASSAM!). **Nagaland.** Jafpu Hills to Mao Road, 6000ft, 7 Oct. 1981, T.M. Hynniewta 80150 (ASSAM!), Wokha, 15 Oct. 1981, T.M. Hynniewta 80653 (ASSAM!); Dimapur, Hekishe, 5 Oct. 2016, D.K. Roy 136765 (ASSAM).

***Strobilanthes helicta*** T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 469. 1884; Kanjilal *et al.*, Fl. Assam 3: 431. 1939; Wood in Edinburgh J. Bot. 51 (2): 221. 1994.

**Type:** India. Meghalaya, Khasi Hills, ?, W. Griffith 6121 (K, image K000882986).

**Fls. & Frts.:** August – November.

**Distribution:** Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, North Bengal (Darjeeling), Sikkim. **BHUTAN, CHINA, MYANMAR, NEPAL.**

**Specimens examined:** **Arunachal Pradesh.** Namdapha, 29th Mile, 31 Oct. 1984, V.K. Kulshrestha & B.K. Shukla 86619 (ASSAM!); Sessa, 1056m, 12 Sept. 1964, J. Joseph 39860 (ASSAM!); Bomdila, 2780m, 15 Sept. 1964, J. Joseph 39936 (ASSAM!); Subansiri, Peji to Sayata, 25 Nov. 1964, A.R.K. Sastry 40922 (ARUN!); West Siang, Sidaron, 31 Aug. 2011, M. Bhaumik 27194 (ARUN!).

**Meghalaya.** K. & J. Hills, Jarain, 1350m, 19 Aug. 1968, N.P. Balakrishnan 46839 (ASSAM!); Near Mawsmai cave, 22 Sept. 1967, H. Deka 37728 (ASSAM!); Pungtung, 5 Nov. 1938, S.R. Sharma 17557 (ASSAM!); Khasi Hills, ?, W. Griffith 6121 (K, image K000882986). **Nagaland.** Dzuko valley, Kujere forest, 2400m, 1 Sept. 2006, A.A. Mao & R. Gogoi 109409 (ASSAM!). **Sikkim.** ?, June 1935, N.L. Bor 19883 (ASSAM!).

***Strobilanthes himalayana*** J.R.I.Wood, Edinburgh J. Bot. 51(2): 241. 1994; Wood et. al., Kew Bull. 58(1): 167. 2003.

**Type:** India. Sikkim, 1219 m, Sept. 1875, O. Kuntze 6661 (holo. E; iso. K).

**Fl. & Frts.:** June – October.

**Distribution:** North Bengal (Darjeeling), Sikkim. **BHUTAN.**

**Specimens examined:** **North Bengal.** Darjeeling, 1857, T. Thomson s.n. (K). **Sikkim.** s.l., 1219 m, November 1875, C.E.O. Kuntze 6661 (NY, image NY01163552; K, image K000883101); Tashi view Point, 21 Sept. 2010, S.K. Rai 27113 (BSHC!); Fambonglho WLS, 13 July 1995, S.K. Rai 14175 (BSHC!); Tendong RF, 17 Nov. 1998, B.K. Shukla 20684 (BSHC!); Sakyong RF, 16 Sept. 1986, B. Mitra 6983 (BSHC!); Kewzing Road, 21 Aug. 1986, A.K. Verma 6515 (BSHC!).

***Strobilanthes imbricata*** Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 455. 1884; Wood et. al., Kew Bull. 58(1): 155. 2003.  
**Type:** Burma (Myanmar). "in montium jugo Taong Dong", N.Wallich 7156 (lecto. K).

*Fls. & Frts.:* October – February.

**Distribution:** Manipur. **MYANMAR, THAILAND.**

**Specimens examined:** Manipur. Muneypoor, Lainetall, 26 Nov. 1885, C.B. Clarke 42146 (K, image K000883116!).

***Strobilanthes inflata*** T. Anderson, J. Linn. Soc., Bot. 9: 476. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 471. 1884; Deng *et al.*, Bot. J. Linn. Soc. 150(3): 384. 2006.

**Type:** India. J.D. Hooker & T. Thomson 28 (holo. K; iso. BM, NY).

*Fls. & Frts.:* June – December.

**Distribution:** Arunachal Pradesh, Assam, North Bengal (Darjeeling), Sikkim. **BHUTAN, CHINA, INDONESIA, MYANMAR, NEPAL.**

**Specimens examined:** **Sikkim.** 5-8000ft, J.D. Hooker 28 (K, image K000883210!); Pemayangtse, 7000ft., 08 May 1994, S. Kumar & G.P. Sinha 15976 (BSHC!); Hanuman Tok, 6500ft., 21 Sept. 2010, S.K Rai 27117 (BSHC!).

***Strobilanthes isophylla*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9(40): 478. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 462. 1884; Kanjilal *et al.*, Fl. Assam 3: 426. 1939. ***Goldfussia anisophylla*** Nees, Pl. Asiat. Rar. (Wallich). 3. 88. 1832. ***Strobilanthes anisophylla*** forma *isophylla* (Nees) J. R. I. Wood, Edinburgh J. Bot. 51: 229. 1994.

**Type:** India. Wall., Number. List No. 7162 (K, CAL, MH microfiche).

*Fls. & Frts.:* December – April.

**Distribution:** Assam, Meghalaya. **BHUTAN.**

**Specimens examined:** **Assam.** ?, s.coll. s.n. (K, image K000883048!).

**Meghalaya.** Khasi Hills, Kala Panee, 4 August 1850, J.D. Hooker & T. Thomson 2033 (K, image K000883050!).

***Strobilanthes khasyana*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 471. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 436. 1884; Kanjilal *et al.*, Fl. Assam 3: 418. 1939; Wood in Edinburgh J. Bot. 51: 220. 1994; Wood *et al.*, Kew Bull. 58(1): 171. 2003. ***Endopogon khasyanus*** Nees in DC., Prodr. 11: 104. 1847.

**Type:** India. Meghalaya, Griffith in Herb. Hook. (holo. K).

*Fls. & Frts.:* September – January.

**Distribution:** North Bengal (Darjeeling), Meghalaya. Endemic.

**Specimens examined:** **North Bengal.** East Himalaya, Darjeeling, ?, W. Griffith 6094 (K, image K000882909!); W. Griffith s.n. (K, image K000882912!).

**Meghalaya.** Khasi Hills, Nartiang, 20 Nov 1871, C.B. Clarke 15226 (K, image K000882913!); s.l., J.D. Hooker & T. Thomson s.n. (K, image K000882911);

Cherrapunjee, J.D. Hooker & T. Thomson s.n. (K, image K000882907!); Khasia Mamloo, 27 Aug. 1850, J.D. Hooker & T. Thomson s.n. (K, image K000882910!); Mawmluh, 9 Nov. 1930, P.C. Kanjilal 8793 (ASSAM!); Sonapur forest, 14 Sept. 1947, G.K. Deka 22511 (ASSAM!).

***Strobilanthes kingdonii*** J.R.I. Wood, Edinburgh J. Bot. 51 (2): 244. 1994.

*Type:* India, Arunachal Pradesh, Kingdon Ward 7654 (holo. K).

*Fls. & Frts.:* March – November.

*Distribution:* Arunachal Pradesh. **CHINA, TIBET.**

*Specimen examined:* Arunachal Pradesh. Lohit Valley, Kahao, 1220-1525 m, 16 Nov 1926, F.K. Ward 7654 (K, image K000883159!).

***Strobilanthes lachenensis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 465. 1884; Wood in Edinburgh J. Bot. 51 (2): 221. 1994.

*Type:* India. Sikkim, J.D. Hooker s.n. (lecto. K).

*Fls. & Frts.:* June – October.

*Distribution:* Arunachal Pradesh, Sikkim. **BHUTAN, CHINA, NEPAL, TIBET.**

*Specimens examined:* **Sikkim.** Lachen [Medous], 31 July 1849, J.D. Hooker s.n. (K, image K000883039!); Zema II, 17 July 2002, S.K. Rai 24779 (BSHC!).

***Strobilanthes lamiifolia*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 476. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 463. 1884; Wood in Edinburgh J. Bot. 51 (2): 222. 1994. *Goldfussia lamiifolia* Nees, Pl. Asiat. Rar. 3: 88 1832.

*Type:* Nepal. 1821, N. Wallich 2347 (lecto. K, GZU).

*Fls. & Frts.:* August – November.

*Distribution:* Arunachal Pradesh, Meghalaya, North Bengal (Darjeeling), Sikkim. **BHUTAN, CHINA, NEPAL.**

*Specimens examined:* **Meghalaya.** Khasia, 3000-5000ft., J.D. Hooker 26 (MPU, MPU018240!).

***Strobilanthes maculata*** T. Anderson, J. Linn. Soc., Bot. 9: 473. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 457. 1884; Kanjilal *et al.*, Fl. Assam 3: 424. 1939. [Fig. 2E]

*Type:* India, a cultivated plant in Hort. Bot. Cal. ex [Khasi Hills above] Silhet, apparently not preserved [neo. C.B. Clarke 19423c (K), isoneo. BM].

*Fls. & Frts.:* August – February.

*Distribution:* Assam, Meghalaya, Mizoram. Endemic.

*Specimens examined:* **Arunachal Pradesh.** Dalai valley, 25 May 2011, R. Gogoi 24465 (ARUN!). **Meghalaya.** Khasi Hills, Cherrapunjee, Sept. 1830, W. Gomez Cat. no. 7159 (K, image K001126804!); Jaintia Hills, Jawai to Jarain, 1350m, 16 Aug. 1968, N.P. Balakrishnan 42997 (ASSAM!); Khasia, W. Griffith s.n. (K, image K000883102!).

***Strobilanthes mastersii*** T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 476. 1884; Kanjilal *et al.*, Fl. Assam 3: 436. 1939; Albertson & Wood, Phytotaxa 43: 54. 2012. ***Strobilanthes aborensis*** Dunn, Bull. Misc. Inform. Kew 1920(6): 208; Kanjilal *et al.*, Fl. Assam 3: 429. 1939; Wood in Edinburgh J. Bot. 51 (2): 223. 1994.

*Type:* India. "ignota" [probably Arunachal Pradesh], Simons s.n. (Lecto. CAL, CAL0000019672).

*Fls. & Frts.:* September – February.

*Distribution:* Arunachal Pradesh, Assam, Manipur. **CHINA, TIBET.**

*Specimens examined:* **Arunachal Pradesh.** Abor Hills, Makum, 21 Nov 1911, J.H. Burkill 35757 (K, image K000883152!).

***Strobilanthes monadelpha*** Nees in Pl. Asiat. Rar. 3: 87. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 457. 1884; Kanjilal *et al.*, Fl. Assam 3: 423. 1939; Wood et. al., Kew Bull. 58(1): 167. 2003. ***Strobilanthes petiolaris*** Nees, Prodr. 11: 189. 1847; C.B. Clarke in Hook.f., Fl. Brit. India 4: 458. 1884; Kanjilal *et al.*, Fl. Assam 3: 424. 1939.

*Type:* India. Maghalaya, "Silhet", Gomez in Wallich 7159 (syn. A, BM, K-W).

*Fls. & Frts.:* September – December.

*Distribution:* Arunachal Pradesh, Meghalaya. Endemic.

*Specimens examined:* **Meghalaya.** Khasia Hills, Umwai, 7 Nov 1872, C.B. Clarke 19423 (K, image K000883103!); Jaintia Hills, Jawai Road, 6 Nov. 1938, G.K. Deka 17521 (ASSAM!); Sonapur, 16 Nov. 1956, G. Panigrahi 4447 (ASSAM!); Khasi Hills, Mawsmai, 22 Feb. 1938, G.K. Deka 16330 (ASSAM!); Cherrapunjee, 13 Oct. 1950, G.K. Deka 22989 (ASSAM!), Mawmluh forest, 8 Nov. 1930, Sri Ram 8788 (ASSAM!).

***Strobilanthes multidens*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 461. 1884; Wood in Edinburgh J. Bot. 51 (2): 222. 1994. ***Strobilanthes agrestis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 466. 1884; Kanjilal *et al.*, Fl. Assam 3: 429. 1939.

*Type:* Bhutan. W. Griffith 2398 (lecto. BM).

*Fls. & Frts.:* September – April.

*Distribution:* Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland, North Bengal (Darjeeling), Sikkim. **BHUTAN, CHINA, NEPAL.**

*Specimens examined:* **Arunachal Pradesh.** Kameng F.D., Rupa to Bumdila, 2000m, 11 Jun. 1957, G. Panigrahi 7293 (ASSAM!), Sessa 36km from Bhallukpung, 1250m, 10 Sept. 1964, J. Joseph 39733 (ASSAM!), Aka Hills, 1 Apr. 1981, N.L. Bor 17288 (ASSAM!). **Assam.** Sadiya, 27 Nov. 1947, G.K. Deka 22573 (ASSAM!), Foot hill Camp, 22 Mar. 1957, G. Panigrahi 5845 (ASSAM!).

**Meghalaya.** Khasia Hills, ?, W.S. Kurz s.n. (K, image K000883069!). **Mizoram.** Lushai Hills, Sialsuk, 4700ft, 15 Jan. 1963 D.B. Deb 30705 (ASSAM!). Sikkim. ?, J.D. Hooker s.n. (K, image K000883072); Rishap, 3 March 1871, C.B. Clarke 13911, (K, image K000883070!).

***Strobilanthes nobilis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 471. 1884; Kanjilal *et al.*, Fl. Assam 3: 432. 1939.

**Type:** India. Meghalaya, Jaintia Hills, Jarain, 21 Nov 1872, C.B. Clarke 17869 (K, K001096838).

**Fls. & Frts.:** September – January.

**Distribution:** Arunachal Pradesh, Assam, Meghalaya. **CHINA, MYANMAR, VIETNAM.**

**Specimens examined:** **Arunachal Pradesh.** West Kameng, Kamba-Kying, 25 Nov. 2010, M. Bhaumik 25473 (ARUN!); Subansiri, Ganga forest, 2700m, 13 Jan. 1997, K.P. Singh 101616 (ASSAM!); Sela Agency foot Hills to Sismi Camp, 17 Nov. 1951, G.K. Deka 23457 (ASSAM!). **Assam.** Sadiya, Dikrong forest, 27 Nov. 1947, G.K. Deka 22539 (ASSAM!); Cachar, Borail Range, Balacherra, 11 Nov. 1983, R. Mazumdar 83923 (ASSAM!). **Meghalaya.** Jaintia Hills, Jarain, 21 Nov 1872, C.B. Clarke 17869 (K, image K001096838!); Garo Hills, Nokrek Biosphere Reserve, Nokrek Peak, 7 Apr. 2009, V.N. Singh & B Singh 118482 (ASSAM!); South Garo Hills, Balpakram NP, 8 Mar. 2013, D.K. Roy 129486 (ASSAM!); Nongpoh, 27 Jan. 1938, S.R. Sharma 16274 (ASSAM!).

***Strobilanthes oligocephala*** T. Anderson ex C.B. Clarke in Hook.f., Fl. Brit. India 4: 461. 1884; Wood in Edinburgh J. Bot. 51 (2): 228. 1994. ***Strobilanthes paupera*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 463. 1884; Kanjilal *et al.*, Fl. Assam 3: 427. 1939.

**Type:** India. Sikkim/Darjeeling, J.D. Hooker s.n. (lecto. K, sheet annotated by Anderson).

**Fls. & Frts.:** July – November.

**Distribution:** Arunachal Pradesh, Meghalaya, North Bengal (Darjeeling), Sikkim. **BHUTAN, CHINA, NEPAL.**

**Specimens examined:** **Arunachal Pradesh.** Jabrang, 16 Oct. 1933, R.S. Rao 1308 (ASSAM!). **Meghalaya.** Khasi Hills, Nunklow, 23 Oct 1850, J.D. Hooker & T. Thomson 26 (K, image K000883066!). **Sikkim.** ?, 12 July 1874, W.J. Treutler 750 (K, image K000883061!); Chewabhanjyang, 10 Sept. 2008 S.K Rai 33999 (BSHC!); Singba R.S, 22 July 2013, C.S. Purohit 37447 (BSHC!).

***Strobilanthes oresbia*** W.W. Sm., Notes Roy. Bot. Gard. Edinburgh 10: 196. 1918; Wood in Edinburgh J. Bot. 51 (2): 221. 1994.

?**Type:** Upper Burma. Mountains above Laking-kha, 11,000-12,000ft., valley of Naw-Chang, F. Kingdon Ward 1911.

**Fls. & Frts.:** July – December.

**Distribution:** Arunachal Pradesh. **CHINA, MYANMAR.**

**Note:** The species is included based on Wood (1994) who mentioned the occurrences of the species in Arunachal Pradesh (Kingdon Ward 8386).

***Strobilanthes oxycalyxina*** J.R.I. Wood, Edinburgh J. Bot. 51 (2): 250. 1994.

*Type*: India. Arunachal Pradesh, Kingdon Ward 8748 (holo. K).

*Fls.*: December.

*Distribution*: Arunachal Pradesh, Meghalaya. **CHINA**.

*Specimens examined*: **Meghalaya**. Khasi Hills, Dambuk, 2 Dec 1928, F.K. Ward 8748 (K, image K000883172!).

***Strobilanthes panichanga*** T. Anderson, J. Linn. Soc., Bot. 9: 478. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 473. 1884; Kanjilal *et al.*, Fl. Assam 3: 433. 1939. *Asystasia panichanga* Nees, Pl. Asiat. Rar. 3: 90. 1832.

*Type*: Meghalaya. Khasia mountains probably Sylhet FD, 1830, N. Wallich 2387B (K).

*Distribution*: Assam, Meghalaya. **BANGLADESH**.

*Specimens examined*: **Meghalaya**. Khasia mountains, (probably Sylhet FD), 1830, N. Wallich 2387 (K, image K000883200!), N. Wallich 2387B (E, image E00273486!).

***Strobilanthes paniculiformis*** J.R.I.Wood, Kew Bull. 61 (1): 10. 2006. [Fig. 2F]

*Type*: India. Naga Hills, C.B. Clarke 40945 (holo. K; iso. BM, CAL, G, K).

*Fls. & Frts.*: October – February.

*Distribution*: Assam, Nagaland. Endemic.

*Specimens examined*: **Nagaland**. Piffima, 19 Oct. 1885, C.B. Clarke 40945 (K, image K000545689!); Dimapur, Hekishe, 8 Oct. 2016, N. Odyuo & D.K. Roy 136718 (ASSAM!).

***Strobilanthes parryorum*** C.E.C. Fisch., Bull. Misc. Inform. Kew 1928: 142. 1928; Kanjilal *et al.*, Fl. Assam 3: 435. 1939; Wood & Scotland, Kew Bull. 58 (1): 107. 2003.

*Type*: India. Mizoram, Lushai Hills, Darzo, 4600ft., N.E. Parry 155 (holo. K).

*Fls. & Frts.*: January – May.

*Distribution*: Arunachal Pradesh, Assam, Manipur, Mizoram. Endemic.

*Specimens examined*: **Mizoram**. Darzo, 4600ft, March 1927, N.E. Parry 155 (K, image K000883147!).

***Strobilanthes parvifolia*** J.R.I.Wood, Kew Bull. 64(1). 25. 2009.

*Type*: India. Arunachal Pradesh, Lohit Valley, 1600 m, 31 Oct. 1928, Kingdon Ward 8718 (holo. K).

*Fls. & Frts.*: September – October.

*Distribution*: Arunachal Pradesh. **CHINA**.

*Specimen examined*: **Arunachal Pradesh**. Lohit Valley, 1600 m, 31 Oct. 1928, Kingdon Ward 8718 (K, image K000883144!).

***Strobilanthes penstemonoides*** (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 477. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 460. 1884; Kanjilal *et al.*, Fl.

Assam 3: 435. 1939; Wood in Edinburgh J. Bot. 51 (2): 251. 1994. *Goldfussia pentstemonoides* Nees in Wall., PI. Asiat. Rar. 3: 88. 1832.

Type: Nepal, N. Wallich 2340 (CAL, E, K).

Fls. & Frts.: October – March.

Distribution: Arunachal Pradesh, Assam, Nagaland, North Bengal (Darjeeling). **BHUTAN, CHINA, NEPAL**.

Specimens examined: **Arunachal Pradesh**. Upper Siang, Komkar, 13 Apr. 2008, RK Choudhury 16592 (ARUN!). **Sikkim**. Dikchu, 8 Dec. 1997 B.K Shukla 19670 (BSHC!); Legship to Kewzing, 27 Nov. 1989, N.R. Mondal 13720 (BSHC!); Mentam (N.S.), 800m, 12 Dec. 1997 S.K. Jana 20112 (BSHC!); Dikchu, 5 Sept. 1989 N.R. Mondal 11202 (BSHC!); Dikchu, 9 Sept. 1997, B.K Shukla 19609 (BSHC!).

***Strobilanthes polythrix*** T. Anderson, J. Linn. Soc., Bot. 9: 470. 1867; Kanjilal et al., Fl. Assam 3: 425. 1939; Albertson & Wood, Phytotaxa 43: 55. 2012. [Fig. 3A]

Type: India. Meghalaya, Khasia Hills, Garden Collectors 7 (Lecto., CAL; isolect. CAL, BM, K).

Fls. & Frts.: July – September.

Distribution: Meghalaya, Nagaland. Endemic.

Specimens examined: **Meghalaya**. Khasia Hills,?, T. Anderson s.n. (K, image K001096836). **Nagaland**. Palma Lodge, 1886, Prain s.n. (CAL); Dzuko Valley & surrounding Hills, Kujere Forest, 2400m, 2007, A.A. Mao & R. Gogoi 111191 (ASSAM!).

***Strobilanthes pterygorrhachis*** C.B. Clarke, J. Linn. Soc., Bot. 25: 54. 1889. [Fig. 3B]

Type: India. Nagaland, Kohima, 11 Nov 1885, C.B. Clarke 41919 (K, K000883143).

Fls. & Frts.: August – December.

Distribution: Arunachal Pradesh, Nagaland. **CHINA**.

Specimens examined: **Arunachal Pradesh**. West kameng, Maba Mt., 30 Aug. 2011, M. Bhaumik 27193 (ARUN!); Kheti to Jinchha, 22 Aug. 1958, G. Panigrahi 14621 (ASSAM!); Laju Hills, 1600m, 24 Aug. 1958, G. Panigrahi 14697 (ASSAM!). **Nagaland**. Kohima, 11 Nov 1885, C.B. Clarke 41919 (K, image K000883143); Tuensang, 13 Oct. 1981, T.M. Hynniewta 80543 (ASSAM!); Dzuko valley, Lower Jappfu Hills, 2450m, 5 Sept. 2006, A.A. Mao & R. Gogoi 112506 (ASSAM!).

***Strobilanthes pubiflora*** J.R.I.Wood, Edinburgh J. Bot. 51(2): 254. 1994.

Type: Bhutan, J.R.I. Wood 7524 (holo. E; iso. K, THIMPHU).

Fls. & Frts.: September – February.

Distribution: Manipur, North Bengal (Darjeeling), Nagaland, Sikkim.

## **BHUTAN.**

*Specimens examined:* **Meghalaya.** K. & J. Hills, Peak forests, 27 July 1930, P.C. Kanjilal 8272 (ASSAM!); Khasi Hills, 4000ft, Sept. 1881, G. Mann s.n. (ASSAM!).

***Strobilanthes recurva*** C.B. Clarke, J. Linn. Soc., Bot. 25: 52.1889. [Fig. 3C]

*Type:* Kahima, 1885, C.B. Clarke s.n. (Iso. BM, BM000906288).

*Fls. & Frts.:* September – February.

*Distribution:* Manipur, Nagaland. Endemic.

*Specimens examined:* **Nagaland.** Kohima, 30 Oct. 1885, C.B. Clarke 41379c (K, image K000883138).

***Strobilanthes reptans*** (G.Forst.) Moylan ex Y.F.Deng & J.R.I.Wood, Fl. China.

19: 390. 2011. *Ruellia reptans* G.Forst., Fl. Ins. Austr. 44. 1786. *Hemigraphis reptans* (G.Forst.) T.Anderson ex Hemsl., Rep. Voy. Challenger, Bot. 1(3): 173. 1885.

[BM000810986 digital image!].

*Type:* **Melanesia,** Palau Islands, T. Hosokawa 7400 (holo, TAI).

*Fls. :* June - September.

*Frts.:* July - December.

*Distribution:* Arunachal Pradesh. BISMARCK ARCHIPELAGO, BORNEO, CAROLINE IS., GILBERT IS., JAWA, MALAYA, MALUKU, MARIANAS, MARSHALL IS., NANSEI-SHOTO, NEW CALEDONIA, NEW GUINEA, PHILIPPINES,QUEENSLAND, SOLOMON IS., SULAWESI, TAIWAN, TUVALU, VANUATU

*Note:* The species is included based on Sarma *et al.* (2021).

***Strobilanthes rhombifolia*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 461. 1884; Kanjilal *et al.*, Fl. Assam 3: 425. 1939; Wood in Edinburgh J. Bot. 51(2): 255. 1994.

*Type:* India ('Assam'), Jenkins s.n. (lecto. K ex Herb. Hooker).

*Fls.:* December.

*Distribution:* Assam, Mizoram. **CHINA.**

*Specimens examined:* **Assam.** ?, ?, s.coll. s.n. (K, image K000883068!); ?, Jenkins s.n. (K, image K000883067!).

***Strobilanthes rubescens*** T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 469. 1884; Kanjilal *et al.*, Fl. Assam 3: 430. 1939; Wood in Edinburgh J. Bot. 51 (2): 220. 1994. *Strobilanthes boerhaavioides* T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 469. 1884; Kanjilal *et al.*, Fl. Assam 3: 428. 1931. [Fig. 3D]

*Type:* India. Meghalaya, Khasia, 17 Oct. 1835, W. Griffith 6108 (holo. K).

*Fls. & Frts.*: September – May.

*Distribution*: Arunachal Pradesh, Assam, North Bengal (Darjeeling), Meghalaya, Mizoram. **BHUTAN, CHINA**.

*Specimens examined*: **Arunachal Pradesh**. Pangkam village, 8.11.2002, B. Tum 13517 (ARUN!); West Siang, Kamda, 27.11.2010, M. Bhaumik 25522 (ARUN!). **Manipur**. Senapati, Kujeree forest, 2006, A.A. Mao & R. Gogoi 109269 (ASSAM!). **Meghalaya**. Khasia Hills, Moormyi, 17 October 1835, W. Griffith 6108 (K, image K000883220); Cherrapunjee, 26 sept. 1956, G. Panigrahi 3432 (ASSAM!); Pynursla 25 Aug. 1956, G. Panigrahi 3090; Mawmluh, 20 Dec. 1956, G. Panigrahi 4921 (ASSAM!); Mawsmai forest, 13 Sept. 1932, S.R. Sharma 9359 (ASSAM!); Jaintia Hills, 17 Nov. 1969, N.P. Balakrishnan 49957 (ASSAM!); Jarain to Nongtalang, 18 Aug. 1968, N.P. Balakrishnan 46731 (ASSAM!); Jawai to Jarain, 16 Aug. 1968, N.P. Balakrishnan 46108 (ASSAM!). Nagaland. Naga Hills, Sept. 1936, N.L. Bor 19937 (ASSAM!).

***Strobilanthes rufescens*** (Roth) T Anderson, J. Linn. Soc., Bot. 9: 472. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 430. 1884, subsp. *rufescens* J.R.I. Wood in Wood & Scotland, Kew Bull. 58(1): 85. 2003.

*Type*: India. Bengal, ex Calcutta Bot. Gard., Heyne (neo. N. Wallich 2360 (K-W)).

*Fls.*: February.

*Distribution*: Nagaland, Mizoram. **BANGLADESH, MYANMAR**.

*Specimens examined*: India. Bengal, ex Calcutta Bot. Gard., Heyne (Neo. N. Wallich 2360 (K, image K000882836!)).

***Strobilanthes sabiniana*** Nees, Pl. Asiat. Rar. 3: 86. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 454. 1884; Kanjilal *et al.*, Fl. Assam 3: 422. 1939; Wood in Edinburgh J. Bot. 51 (2): 220. 1994.

*Type*: India. Pundua?, N. Wallich 2338 (BM, BM000884899).

*Fls. & Frts.*: January – May.

*Distribution*: North Bengal (Darjeeling), Meghalaya, Mizoram. **BHUTAN, NEPAL**.

*Specimens examined*: Meghalaya. K. & J. Hills, Shella, 23 Feb 1938, G.K. Deka 16439 (ASSAM!).

***Strobilanthes scaber*** T. Anderson, Enum. Pl. Zeyl. 227. 1860; C.B. Clarke in Hook.f., Fl. Brit. India 4: 446. 1884; Kanjilal *et al.*, Fl. Assam 3: 419. 1939.

*Type*: Bangladesh. Silhet, N. Wallich, s.n. (C, C10005216).

*Fls. & Frts.*: January – June.

*Distribution*: Assam, Meghalaya, Tripura. **BANGLADESH**.

*Specimens examined*: **Assam**. Barnadi Wildlife Sanctury, Tankibasti, 205m, 19 Mar. 2012, K. Pagag & N. Sarma 124695 (ASSAM!). **Meghalaya**. Garo Hills,

?, 1 Mar. 1915, U.N. Kanjilal 5786 (ASSAM!); 29 Mar. 1915, U.N. Kanjilal 5395 (ASSAM!); Damra, 15 Mar. 1947, M.M. Srinivasan 21906 (ASSAM!).

***Strobilanthes secunda*** T. Anderson, J. Linn. Soc., Bot. 9: 480. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 468. 1884; Kanjilal *et al.*, Fl. Assam 3: 429. 1939; Wood in Edinburgh J. Bot. 51 (2): 223. 1994.

*Type:* India. Assam, ?, ?, C.J. Simons 23 (K, K001096878).

*Fls. & Frts.:* November – March.

*Distribution:* Arunachal Pradesh, Assam, Meghalaya, Nagaland. **CHINA, MYANMAR.**

*Specimens examined:* **Arunachal Pradesh.** Kurung Kumey, 8 Dec. 2009, S.S. Dash 32655 (ARUN!); Subansiri, 1 Nov. 1978, G.D. Pal 70103 (ARUN!); Upper Subansiri, ?, K. Ambrisht 17236 (ARUN!); East Siang, Pashighat-Aying, 7 Nov. 2013, M. Bhaumik 29532 (ARUN!); West Siang, Kampa Pass, 22 Nov. 2010, M. Bhaumik 25375 (ARUN!); Pasighat, 2 Nov. 1951, G. Deka 23308 (ASSAM!); Mishme, ?, W. Griffith 6122 (K, image K000883232); Lohit, 24 Nov. 1969, J. Joseph 48330 (ASSAM!); Dibang forest, 18 Dec. 1996, A.S. Chauhan 99407 (ASSAM!); Namdapha, Dollu to Pakhan, 700ft., A.S. Chauhan 99525 (ASSAM!). **Assam.** ?, ?, C.J. Simons 23 (K, image K001096878); ?, ?, J.W. Masters s.n. (P, image P00719439); Kakopathar, 15 Dec. 1946, M.M. Srinivasan 22443 (ASSAM!); Digboi forest, Lakhimpur, 24 Nov. 1947, G.K. Deka 22482 (ASSAM!); Pabha Reserve, 9 Feb. 2011, N. Odyuo & D.K. Roy 121129 (ASSAM!); Dulong Reserve forest, 21 Nov. 1957, G. Panigrahi 11307 (ASSAM!); Karbianglong, 3 Feb. 1977, S.K. Borthakur 69131 (ASSAM!). **Nagaland.** Mon, Shangsa village, 28 Nov. 2018, N. Odyuo 132349 (ASSAM!).

***Strobilanthes simonsii*** T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 447. 1884; Kanjilal *et al.*, Fl. Assam 3: 420. 1939; Wood in Edinburgh J. Bot. 51 (2): 224. 1994 & Kew Bull. 64(1). 23. 2009. [Fig. 3E]

*Type:* Bhutan. Deothang (“Dewangari”), Simons s.n. (lecto. K).

*Fls. & Frts.:* February – September.

*Distribution:* Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland. **BHUTAN, CHINA, MYANMAR.**

*Specimens examined:* **Arunachal Pradesh.** Hyuliang, April 2010, R. Gogoi 23051 (ARUN!); Patkai Hills, W. Griffith 249 (BM, CAL); Upper Dihing Reserve (West Block), 8 Jul. 1959, G. Panigrahi 18742 (ASSAM!). **Assam.** Lakhimpur, 17 Jul. 1935, G.K. Deka 13229 (ASSAM!). **Meghalaya.** K. & J. Hills, Shella, 23 Feb. 1935, G.K. Deka 16455 (ASSAM!); Jowai-Jarain, 16 Aug. 1988, N.P. Balakrishnan 42999 (ASSAM!). **Mizoram.** Tuisen, 1300m, April 1927, A.D. Parry 203 (K); South Lushai, 1450m, Aug. 1930, M. L. Wenger 311 (K). **Nagaland.** Dzuko Valley & surrounding Hills, Kujere Forest, 2400m, 2 Sept. 2006, A.A. Mao & R. Gogoi 109436 (ASSAM!); Mon, Tobu village, 2 May

2017, N. Odyuo & D.K. Roy 137261 (ASSAM!).

***Strobilanthes simplex*** J.R.I. Wood, Edinburgh J. Bot. 51 (2): 259. 1994.

Type: India. Nagaland, Kingdon Ward 18867 (holo. BM, iso. ?NY).

Fls. & Frts.: August – December.

Distribution: Nagaland, Manipur. Endemic.

Specimens examined: Nagaland. Naga Hills, Zakhoma, 1524m, 16 Oct 1949, F.F.K. Ward 18867 (NYBG, image NY00431316!; BM, image BM000906332!, BM000898044!).

***Strobilanthes spicata*** T. Anderson, J. Linn. Soc., Bot. 9: 484. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 477. 1884; Kanjilal *et al.*, Fl. Assam 3: 436. 1939; Albertson & Wood, Phytotaxa 43: 56. 2012. ***Strobilanthes phyllocaulos*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 464. 1884; Kanjilal *et al.*, Fl. Assam 3: 428. 1939.

Type: India. Meghalaya, above Nunklow, Khasia Hills, C.J. Simons 429 (Lecto. CAL!).

Fls. & Frts.: August – December.

Distribution: Meghalaya. Endemic.

Specimens examined: Meghalaya. Khasi Hills, Mawflong, January 1850, J.D. Hooker & T. Thomson 1987 (K, image K000883180!); Lawlyngdoh, 21 Aug. 1974, P.K. Hajra 52133 (ASSAM!).

***Strobilanthes subnudata*** C.B.Clarke in Hook.f., Fl. Brit. India 4: 472. 1884; Wood in Edinburgh J. Bot. 51 (2): 261. 1994.

Type: India. Sikkim, J.D. Hooker 29 (lecto. K).

Fls. & Frts.: August – April.

Distribution: North Bengal (Darjeeling), Sikkim. **NEPAL**.

Specimens examined: Sikkim. Lachong, 16 August 1849, J.D. Hooker s.n. (K, image K000883208!).

***Strobilanthes tamburensis*** C.B. Clarke in Hook.f., Fl. Brit. India 4: 454. 1884; Wood in Edinburgh J. Bot. 51 (2): 220. 1994.

Type: Nepal. At the Tambur river, 4000-5000ft, J.D. Hooker *s.n.* (K, K000882949).

Fls. & Frts.: August – November.

Distribution: Arunachal Pradesh. **BHUTAN, NEPAL**.

Note: The species is included based on Wood (1994) who mentioned the occurrences of the species in Arunachal Pradesh (Kingdon Ward 14186).

***Strobilanthes tenax*** Dunn, Bull. Misc. Inform. Kew 1920: 209. 1920; Kanjilal *et al.*, Fl. Assam 3: 424. 1939; Wood in Edinburgh J. Bot. 51 (2): 223. 1994.

Type: India. Arunachal Pradesh, Outer Abor Hills, 1911, I.H. Burkill 56785

(K, K000883132).

*Fls. & Frts.*: February – May.

*Distribution*: Arunachal Pradesh, Assam, Mizoram. **CHINA**.

*Specimens examined*: **Arunachal Pradesh**. Outer Abor Hills, 1911, I.H. Burkill 56785 (K, image K000883132!). **Assam**. Lakhimpur, 4 Feb. 1939, G.K. Deka 18248 (ASSAM!).

***Strobilanthes tibetica*** J.R.I. Wood, Edinburgh J. Bot. 51(2): 262. 1994.

*Type*: Tibet. Kingdon Ward 10942 (holo. BM; iso. E).

*Fls. & Frts.*: August – December.

*Distribution*: Arunachal Pradesh, Nagaland. **TIBET**.

*Specimens examined*: **Arunachal Pradesh**. Delei Valley, 2338-2743m, 26 Nov. 1928, Kingdon Ward 8674 (K). **Nagaland**. Japfo, 2591m, 29 Nov. 1935, N.L. Bor 6508 (K); Dzuko valley, Kujere forest, 2400m, 2 Sept. 2006, A.A. Mao & R. Gogoi 109439 (ASSAM!).

***Strobilanthes thomsonii*** T. Anderson, J. Linn. Soc., Bot. 9: 478. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 467. 1884; Wood in Edinburgh J. Bot. 51 (2): 223. 1994.

*Type*: India. Sikkim. J.D. Hooker s.n. (K, K000883032, K000883031).

*Fls. & Frts.*: September – April.

*Distribution*: Arunachal Pradesh, North Bengal (Darjeeling), Sikkim. **BHUTAN, CHINA, NEPAL**.

*Specimens examined*: **Sikkim**. Dikchu, 13 Dec. 1997, B.K. Shukla 20314 (BSHC!); Way to Netham W.S. 1 Nov. 1999, D. Maity 22226 (BSHC!); ?, J.D. Hooker s.n. (K, image K000883031!, K000883032!).

***Strobilanthes tomentosa*** (Nees) J.R.I.Wood, Kew Bull. 64(1): 16. 2009. *Aechmanthera tomentosa* Nees in Wallich, Plantae Asiaticae Rariores 3: 87. 1832; C.B. Clarke in Hook.f., Fl. Brit. India 4: 428. 1884; Kanjilal *et al.*, Fl. Assam 3: 413. 1939.

*Type*: India. Kumaon, Blinkworth in N. Wallich 2333b (lecto. K-W).

*Fls. & Frts.*: August – December.

*Distribution*: Arunachal Pradesh, Manipur, Meghalaya. **BANGLADESH, BHUTAN, CHINA, LAOS, MYANMAR, NEPAL, PAKISTAN**.

*Specimens examined*: **Arunachal Pradesh**. Dirang -Dzong, 6 Sept. 1938, Kingdon Ward 14204 (BM). **Manipur**. Karong, 1250 m, 14 Nov. 1885, C. B. Clarke 41983 (K, BM). **Meghalaya**. Jaintea Hills, Jawai, 1250 m, 16 Oct. 1867, C.B. Clarke 6004 (K); Nurtiring, 1250 m, 1 Dec. 1871, C. B. Clarke 14576 (K); Mungot, 900 m, 29 Nov. 1871, C. B. Clarke 14825 (K); K. & J. Hills, Raliang, Aug. 1918, U.N. Kanjilal 7391 (ASSAM!); Dumpep, 10 Aug. 1930, P.C. Kanjilal 8344 (ASSAM!).

***Strobilanthes torrentium*** Benoist, Bull. Mus. Natl. Hist. Nat. 28: 188. 1922.  
***Strobilanthes imlayae*** J.R.I. Wood in Edinburgh J. Bot. 51: 242. 1994.

Type: China. Yunnan, Yunnan-sen, Tchong Chan, 2 Nov 1905, F. Ducloux 3433 (holo. P, P00218448; iso. P, P00719460).

Fls. & Frts: August – December.

Distribution: Nagaland, Manipur, Mizoram. **CHINA, MYANMAR.**

Specimens examined: **Manipur.** Sirtioi, 2500m, 18 July 1948, Kingdon Ward

17817 (BM); Ukhral, 1676m, 12 March 1948, Kingdon Ward 17080 (BM).

**Nagaland.** Naga Hills, Takiya, 5500ft, 6 Nov 1935, N.L. Bor 6795 (K, image K000883130!).

***Strobilanthes trichophora*** C.E.C. Fisch., Bull. Misc. Inform. Kew 1932: 202. 1932; Kanjilal *et al.*, Fl. Assam 3: 436. 1939.

Type: India. Meghalaya, Garo Hills, Emangiri, 2000 ft., 1930, N.E. Parry 1076 (K).

Distribution: Meghalaya. Endemic.

Specimens examined: **Meghalaya.** Garo Hills, Emangiri, 2000 ft., 1930, N.E. Parry 1076 (K, image K000882961!, image K000882960!).

***Strobilanthes tubiflos*** (C.B. Clarke) J.R.I. Wood, Edinburgh J. Bot. 51(2): 264. 1994; Wood *et al.*, Kew Bull 58(1): 168. 2003. *Strobilanthes petiolaris* var. *tubiflos* C.B. Clarke in Hook.f., Fl. Brit. India 4: 458. 1884.

Type: India. Arunachal Pradesh (Mishmi Hills), Griffith K.D. 6095 (lecto. K; isolecto. A, BM, P).

Fls. & Frts.: August – January.

Distribution: Arunachal Pradesh, Assam, Meghalaya. **CHINA.**

Specimens examined: **Arunachal Pradesh.** Mishmee, ?, ?, W. Griffith 6103 (K, image K000883129!); Mishmee Hills, Ghalooms, Lohib banks, ?, W. Griffith 6095 (K, image K000883127!; K000883128!). **Meghalaya.** Khasi Hills, Cherrapunjee to Mawmluh, 27 Sept. 1956, G. Panigrahi 3549 (ASSAM!).

***Strobilanthes twangensis*** J.R.I.Wood & D.Borah, Kew Bull., 74: 41. 2019.

Type: Type: India, Arunachal Pradesh, Tawang Distr., Jang, 27°34'631"N 91°59'025"E, 2524 m, 1 Sept. 2018, D. Borah, L. Yama & M. Puranjoy 098 (holo. CAL, iso. ARUN, ASSAM).

Fls. & Frts.: August – January.

Distribution: Arunachal Pradesh. Endemic.

Specimens examined: **Arunachal Pradesh,** Tawang Distr., Jang, 27°34'631"N 91°59'025"E, 2524 m, 1 Sept. 2018, D. Borah, L. Yama & M. Puranjoy 098 (ASSAM!).

***Strobilanthes urophylla*** Nees, Prodr. 11: 192. 1847; C.B. Clarke in Hook.f., Fl. Brit. India 4: 472. 1884; Kanjilal *et al.*, Fl. Assam 3: 433. 1939; Wood in

Edinburgh J. Bot. 51 (2): 221. 1994. [Fig. 3F]

Type: India. Pundua, s.coll. 2344 (K, K000883203).

Fls. & Frts.: May - August.

Distribution: North Bengal (Darjeeling), Meghalaya. CHINA.

Specimens examined: **Arunachal Pradesh**. Tirap F.D., Waka, 26 Aug. 1958, G. Panigrahi 16899 (ASSAM!). **Meghalaya**. Jaintia Hills, Jarain, 20 Nov 1872, C.B. Clarke 18320 (K, image K000883204!); Jarain, 1350m, 19 Aug. 1968, N.P. Balakrishnan 46840 (ASSAM!); Khasi Hills, Peak forest, 29 Sept. 1937, G.K. Deka 15902 (ASSAM!). **West Bengal**. East Himalaya Darjeeling,?, W. Griffith 6125 (K, image K000883202!).

***Strobilanthes violifolia*** T. Anderson, J. Linn. Soc., Bot. 9: 485. 1867; C.B. Clarke in Hook.f., Fl. Brit. India 4: 477. 1884; Albertson & Wood, Phytotaxa 43: 58. 2012. *Echinacanthus andersonii* C.B. Clarke in Hook.f., Fl. Brit. India 4. 415. 1884. *Echinacanthus pumilio* C.B. Clarke in Hook.f., Fl. Brit. India 4. 415. 1884.

Type: India. Sikkim, Ratong to Yoksum, 25–5000', T. Anderson 1051 (Lecto., CAL).

Fls. & Frts.: August – January.

Distribution: Manipur, Meghalaya, North Bengal (Darjeeling), Sikkim. NEPAL, BHUTAN, THAILAND.

Specimens examined: **North Bengal**. Darjeeling, Pomong, 3000ft., 31 Oct 1870, C.B. Clarke 13633 (BM, image BM000950014!). **Meghalaya**. Khasi Hills, Cherra Coal Hills, C.B. Clarke 17801 (BM, image BM000950012!).

## Endemism

Out of 76 *Strobilanthes* taxa recorded from Northeastern India during the present study, 19 taxa are found to be endemic to the region. These are: *Strobilanthes adnatus* C.B. Clarke (Assam, Meghalaya, Mizoram & Nagaland), *S. asymmetrica* J.R.L Wood & J.R. Benn. (Manipur, Mizoram), *S. borii* J.R.I. Wood (Nagaland), *S. clarkei* J.R.I. Wood (Manipur, Nagaland), *S. decipiens* J.R.I. Wood (Nagaland, Mizoram), *S. denticulata* (Nees) T. Anderson (Arunachal Pradesh, Assam, Meghalaya, Nagaland), *S. elongata* C.B. Clarke (Arunachal Pradesh, Assam, Meghalaya, Nagaland), *S. glabratus* Nees (Arunachal Pradesh, Assam, Meghalaya), *S. khasiana* (Nees) T. Anderson (North Bengal (Darjeeling), Meghalaya), *S. maculata* T. Anderson (Assam, Meghalaya, Mizoram), *S. monadelpha* Nees (Arunachal Pradesh, Meghalaya), *S. paniculiformis* J.R.I. Wood (Nagaland), *S. parryorum* C.E.C. Fisch. (Arunachal Pradesh, Assam, Manipur & Mizoram), *S. polythrix* T. Anderson (Meghalaya, Nagaland), *S. recurva* C.B. Clarke (Manipur, Nagaland), *S. simplex* J.R.I. Wood (Nagaland, Manipur), *S. spicata* T. Anderson (Meghalaya), *S. twangensis* J.R.I. Wood & D. Borah (Arunachal Pradesh), *S. trichophora* C.E.C. Fisch. (Meghalaya).

## **Conclusion**

Many of the *Strobilanthes* species recorded from Northeastern India are known only from collections made many years ago. The reason of their paucity may be their continued loss & fragmentation of natural habitats, unsustainable agriculture & forestry practices, urbanization, land use changes & the spread of invasive alien species & climate change. Therefore special conservation plans should be implanted to conserve this beautiful genus. The present work may be the pillar for further inclusive taxonomic investigation in the genus *Strobilanthes* in any part of Northeastern region of India. It will be helpful for field Botanist to rediscover many of the poorly known species in the region.

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**Fig. 2.A.** *Strobilanthes affinis* (Griff.)  
Terao ex J.R.I. Wood & J.R. Benn.



**Fig. 2.B.** *Strobilanthes brunonianiana*  
Nees.



**Fig. 2.C & D.** *Strobilanthes hamiltoniana* (Steud.) Bosser & Heine.



**Fig. 2.E.***Strobilanthes maculata* T. Anderson.



**Fig. 2.F.***Strobilanthes paniculiformis* J.R.I.Wood.



**Fig. 3. A.***Strobilanthes polythrix* T. Anderson.



**Fig. 3. B.***Strobilanthes pterygorrhachis* C.B. Clarke.



**Fig. 3. C.** *Strobilanthes recurva* C.B. Clarke.



**Fig. 3. D.** *Strobilanthes rubescens* T. Anderson.



**Fig. 3. E.***Strobilanthes simonsii* T. Anderson.



**Fig. 3. F.***Strobilanthes urophylla* Nees.