

 <p>ISSN NO. 2320-5407</p>	<p>Journal Homepage: - www.journalijar.com</p> <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)</p> <p>Article DOI: 10.21474/IJAR01/12112 DOI URL: http://dx.doi.org/10.21474/IJAR01/12112</p>	 <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR) ISSN 2320-5407</p> <p>Journal Homepage: http://www.journalijar.com Journal DOI: 10.21474/IJAR01</p>
---	--	---

RESEARCH ARTICLE

DIVERSITY OF ANGIOSPERM CLIMBER SPECIES IN POINT CALIMERE WILDLIFE AND BIRD SANCTUARY, TAMIL NADU

M. Padma Sorna Subramanian¹ A. Saravana Ganthi² and K. Subramonian³

1. Siddha Medicinal Plants Garden, CCRS, Mettur, Salem, Tamil Nadu.
2. Department of Botany, Rani Anna Govt. College for Women, Tirunelveli, Tamil Nadu.
3. Department of Botany, The MDT Hindu College, Tirunelveli, Tamil Nadu.

Manuscript Info

Manuscript History

Received: 25 September 2020
Final Accepted: 28 October 2020
Published: November 2020

Key words:-

Climbers, Lianas, Point Calimere Wild Life and Birds Sanctuary, Medicinal Uses

Abstract

Climbers are currently understood to have a range of important ecological functions in forest dynamics. Climbers are already recognized as an important group for tropical biodiversity, playing a key role in ecosystem level processes and providing resources for pollinators and dispersers. The present study is an attempt to document different climber species and their uses in Point Calimere Wildlife and Birds Sanctuary, Tamil Nadu, India. The present study recorded 53 herbaceous climbers and 21 lianas from all the forests types of Point Calimere Sanctuary, covering 25 families. Considering all climbers and lianas, 40 species are stem twiners, 2 species are branch twiners, 4 are spiny Climbers, 19 species are tendril climbers and 8 species are hook climbers. Most of the lianas are distributed in scrub forests and many climbers are recorded in wet lands. 53 medicinal climbers are recorded in the study area. Roots and leaves are widely used to treat diseases. To obtain a better comprehension of the floristic, ecological and biogeographical patterns of climbing species at a global scale, it is of the utmost importance that future studies include an increased number of subtropical and temperate sites.

Copy Right, IJAR, 2020,. All rights reserved.

Introduction:-

The angiosperms, or flowering plants, are the largest, highly diversified, and most successful major group forming the dominant vegetation on the planet earth. Christenhusz and Byng (2016) recorded the currently known, described and accepted number of flowering plant species to 295,383 with 74,273 monocots and 210,008 are eudicots. In India, about 20,000 flowering plants are recorded so far including cultivated/naturalised ones with approximately 15% endemic species. Climbers are rooted in the ground but need support for their weak stems (Richrds, 1952). Climbers are classified into various categories such as scrambles, root climbers, twines and tendril climbers. Climbers are part of biological spectra of forest ecosystems. They not only form an important structural component but also play an important ecological role in the forest dynamics and nutrient recycling within these ecosystems (Sarvalingam and Rajendran, 2015). However, in many forest inventories during the last decades, lianas are ignored (Dallmier and Comiskey, 1998) in contrast to herb, shrubs and trees. The present study focuses on diversity of climbers and their economical importance in the Point Calimere Wildlife and Bird Sanctuary, Tamil Nadu, India.

Corresponding Author:- M. Padma Sorna Subramanian

Address:- Siddha Medicinal Plants Garden, CCRS, Mettur, Salem, Tamil Nadu.

Study area

The Point Calimere, the renowned wildlife and bird sanctuary located in Nagapattinam district of Tamil Nadu, spreads across an area of 30 sq.km and comprises sandy coastal, saline swamps, sand dunes (the highest of them 23ft tall), tidal mud-flats, shallow seasonal ponds and thorn scrub forests around the backwater. It is a protected area along the Palk Strait where it meets the Bay of Bengal at Point Calimere and a Ramsar site. Point Calimere sanctuary is the home to black bucks, its flagship species, along with feral pony, spotted deer, bonnet macaque, jackal, wild boar, mongoose, black-naped hare, and Indian star tortoise. The Vedaranyam salt swamp, the largest in Tamil Nadu, that runs 7 to 8 km wide to a length of 48 km along the coast from Point Calimere, is one of the richest regions of biodiversity in the country. Several historical sites like Ramarpadam, Modimandapam and Old Chola lighthouse are located in the Sanctuary. Sanctuary receives rain under the influence of both southwest and northeast monsoons. The region receives an annual rainfall of 1500 mm (Map 1).

Methodology:-

Field trips were carried out in whole areas of the Point Calimere Wildlife and Bird Sanctuary in various seasons. The climbers are collected and identified with the help of floras (Gamble and Fischer (1915 -1936), Mathew (1981 – 1988) and Daniel and Umamaheswari (2001). The details like name (family, plant name, and local name), locality, date of collection, habit and habitat, uses, distribution and salient features like association were recorded in an elaborate field book. The voucher specimens are housed in Medicinal Plants Garden, CCRS, Mettur, Salem, Tamil Nadu. Information on nomenclature and family was taken from an online botanical database Tropicos (2017). For the uses and common names, Useful plants of India (1986) and Yognarasiman (2000) were referred.

Observation And Discussion:-

The present study recorded 53 herbaceous climbers and 21 lianas from all the forests types of Point Calimere Sanctuary, covering 25 families. In dicotyledons, there are 23 families containing 60 genera and 71 species. In monocotyledons, there are 2 families containing 3 genera and 3 species; considering all climbers (C) and lianas (L), 40 species are stem twiners, 2 species are branch twiners, 4 are spiny climbers, 19 species are tendrils climbers and 8 species are hook climbers (Table 1). In *Cardiospermum* petiole modified into tendrils, whereas in *Cissus* and *Cyphostemma* axillary tips are modified into tendrils. In *Passiflora*, branch and peduncle are modified into tendrils. In *Strychnos minor* modified branchlet ends into tendrils. Thorns act as hook to climb over the support in *Ziziphus oenoplia* and *Scutia myrtina*. Inflorescence axis modified into hook in *Aristolochia indica*. *Hugonia mystax* is straggling climber with spiral hooks. Some geophytic plants such as, *Dolichos trilobus* consists of root with a fascicle of 3-6 tuberous rootlets. Fleshy tubers present in *Trichosanthes tricuspidata*, *Cyphostemma setosum*, *Asparagus racemosus* and *Gloriosa superba*.

Distribution of climbers at Point Calimere

Vegetation of the area of study can be classified into sea-shore vegetation, aquatic vegetation, dry evergreen vegetation and mangrove vegetation. *Grewia oppositifolia*, *G. umbellifera*, *Capparis sepiaria*, *Cissus quadrangularis*, *Coccinia grandis*, *Mukia maderaspatana*, *Azima tetraantha*, *Cansjeera rheedii*, *Pergularia daemia*, *Basella alba*, *Asparagus racemosus* and *Gloriosa superba* are frequent in the scrub forests of Ramarpadam. *Dioscorea pentaphylla* is scarce in the evergreen forest. *Cassytha filiformis*, *Aristolochia indica*, *Ipomoea marginata*, *Sarcostemma secamone*, *S. acidum* *Ctenolepis garcinii*, *Corallocarpus epigaeus*, *Passiflora foetida*, *Cardiospermum halicacabum*, *Teramnus labialis* and *Dolichos trilobus* are found common along water channels and near water bodies such as Nadupallam, Nallathaneerkulam etc., *Aganosma cymosa*, *Ipomoea marginata* and *Canavalia virosa* are frequent along railway tracts. *Hugonia mystax* is less common along the abandoned railway tract. *Cissampelos pareira*, *Cocculus hirsutus*, *Pachygone ovata*, *Tinospora cordifolia*, *Cissus vitiginea*, *Abrus precatorius*, *Clitoria ternatea* are common over bushes in varied forest types.

Two villages are located inside the area of study, Kodikkadu in the north and Kodikkarai near angular extreme of Point Calimere are connected by road. *Jasminum sambac*, *Jasminum officinale* are planted in the household gardens. *Trichosanthes tricuspidata* is common in well drained soil. *Citrullus colocynthis*, *Mucuna pruriens* and *Caesalpinia bonduca* are common in the coastal vegetation. *Ctenolepis garcinii*, *Rhynchosia minima*, *Lablab purpureus*, *Cardiospermum canescens* and *Ipomoea obscura* forms mats over other vegetation during the monsoon period.

Endemics

Asparagus racemosus is reported as a threatened species in Southern Western Ghats (Sarvalingam et al. 2012; Uma and Parthipan, 2015). *Celastrus paniculatus* recorded as nearly threatened (Gritto et al., 2012) and *Gloriosa superba* identified as a endangered in Western Ghats (Amalraj et al., 1991; Sukumaran and Raj, 2007; Gritto et al., 2012). The medicinal climber *Hemidesmus indicus* reported as a depleted species in Western Ghats (Amalraj et al., 1991; Matthew, 1981- 1988; Sukumaran and Raj, 2007). *Aristolochia indica* recorded as rare species in Southern Western Ghats (Murugeswaran et al., 2014; Sharma and Thokchom, 2014).

Exotics

Biodiversity loss caused by invasive species may soon surpass the damage done by habitat destruction and fragmentation. Biological invasions are an important component of human-caused global environmental change. Invasive alien species are now a major focus of global conservation concern. The decisions need to be made on whether benefits derived from the invasive spread of an alien species outweigh the reduced value of ecosystem services (Sudhakar Reddy et al., 2008). The present study reported invasive species such as *Ipomoea obscura*, *Ipomoea pes-tigridis*, *Clitoria ternatea* and *Passiflora foetida*.

Economical importance

The people who dwell in Point Calimere jungles are presently called “Seenthil Valayars”. It is said the name Seenthil Valayars came because these people are known to consume the climber Seenthil (*Tinospora cordifolia*) stems. *Mucuna pruriens* seeds are edible after processing by the native forest dwellers. *Lablab purpureus*, *Momordica charantia*, *Momordica dioica* and *Canavalia virosa* fruits are used as vegetable. *Dioscorea pentaphylla* tubers are edible. *Basella alba*, *Ipomoea obscura* and *Ipomoea marginata* young leaves used as spinach. *Ziziphus oenoplia* fruits are edible. India has about 265 climber species, of which 125 are woody and the rest are herbaceous. About 100 species are medicinal in nature (Chaudhuri, 2007). Climbers are widely used in traditional systems of medicine (Eilu and Bukenya-Ziraba, 2004). 53 medicinal climbers are recorded in the study area (Table 2). Roots and leaves are widely used to treat diseases.



Source: District Forest Office, Nagapattinam.













		
Cissampelos pareira	Cocculus hirsutus	Toddalia asiatica
		
Olax scandens	Cissus vitiginea	Cyphostemma setosum
		
Mucuna pruriens	Sarcostemma acidum	Pergularia daemia
		
Gloriosa superba	Azima tetraantha	Cassytha filiformis

Table 1:- Climbers of Point Calimere Wildlife and Birds Sanctuary.

S. No.	Botanical name	Family	Tamil name	Mode of climbing	Nature of climbing organ (modification)	Habit
1.	Abrus precatorius L.	Fabaceae	Kuntri	Twiner	Stem	C
2.	Aganosma cymosa (Roxb.) G. Don.	Apocynaceae	Saraikkodi	Twiner	Stem	L
3.	Aristolochia indica L.	Aristolochiaceae	Ishvari, Karudakkodi	Hook climber	Inflorescence axis	C
4.	Asparagus racemosus Willd.	Asparagaceae	Thannirvittan Kizhangu	Spiny twiner	Leader axis and branches	C

5.	Azima tetraantha Lam.	Salvadoraceae	Mul Chankan	Spiny straggler	Leader axis and branches	C
6.	Basella alba L.	Basellaceae	Pasalaikeerai	Twiner	Stem	C
7.	Caesalpinia bonduc (L.) Roxb.	Fabaceae	Kazharchi kottai	Hook climber	Prickles on stem & leaf rachis	L
8.	Canavalia virosa (Roxb.) Wight & Arn.	Fabaceae	Koliavarai, Kattu thummattai	Twiner	Stem	C
9.	Cansjera rheedii Gmel.	Opiliaceae		Spiny Climber	Leader axis and branches	L
10.	Capparis brevispina DC.	Capparaceae		Twiner & straggler	Leader axis of main stem and branches	L
11.	Capparis sepiaria L.	Capparaceae	Thorati	Twiner & straggler	Leader axis of main stem and branches	L
12.	Capparis zeylanica L.	Capparaceae	Aathandai	Twiner & straggler	Leader axis of main stem and branches	L
13.	Cardiospermum canescens Wall.	Sapindaceae	Mudakkartan	Tendrill climber	Petiole modified	C
14.	Cardiospermum halicacabum L.	Sapindaceae	Mudakkartan	Tendrill climber	Petiole modified	C
15.	Cassytha filiformis L.	Lauraceae	Erumaikkottan	Twiner	Stem	C
16.	Ceropegia candelabrum L.	Apocynaceae	-	Twiner	Stem	C
17.	Ceropegia juncea Roxb.	Apocynaceae	Somakodi	Twiner	Stem	C
18.	Cissampelos pareira L., var. hirsuta (DC.)	Menispermaceae	Ponmusuttai	Twiner	Stem	C
19.	Cissus quadrangularis L.	Vitaceae	Pirandai	Tendrill climber	Axillary tips	C
20.	Cissus vitiginea L.	Vitaceae	Naralai	Tendrill climber	Axillary tips	C
21.	Citrullus colocynthis (L.) Schrad.	Cucurbitaceae	Aartu thummatti; Varikumatti	Tendrill climber	Stem	C
22.	Clitoria ternatea L.	Fabaceae	Kakkartan	Twiner	Stem	C
23.	Coccinia grandis (L.) Voigt.	Cucurbitaceae	Kovai	Tendrill climber	Stem	C
24.	Cocculus hirsutus (L.) Diels	Menispermaceae	Kattukkodi	Twiner	Stem	C
25.	Corallocarpus epigaeus (Rottl.) C.B. Clarke	Cucurbitaceae	Kollankovai	Tendrill climber	Stem	C
26.	Ctenolepis garcinii (Burm. f.) C.B. Clarke	Cucurbitaceae	Nypa	Tendrill climber	Stem	C
27.	Cyphostemma setosum (Roxb.) Alston	Vitaceae	Pulinaralai	Tendrill climber	Axillary tips	C
28.	Dalbergia coromandeliana Prain	Fabaceae	-	Hook climber	Hooks and twisted branches	L
29.	Derris scandens (Roxb.) Benth.	Fabaceae	Takil	Hook climber	Hooks and twisted branches	L
30.	Dioscorea pentaphylla L.	Dioscoreaceae	Vallaikodi	Twiner	Stem	C

31.	Diplocyclos palmatus (L.) C.	Cucurbitaceae	Iviralikkovai	Tendrill climber	Stem	C
32.	Dolichos trilobus L.,	Fabaceae	Minnikizhangu	Twiner	Stem	C
33.	Gloriosa superba L.	Colchicaceae	Kalappaikizhangu, Kanvalipoo	Tendrill climber	Leaf tip	C
34.	Grewia oppositifolia Buch.	Malvaceae	Unnu	Twiner & straggler	Leader axis of main stem and branches	L
35.	Grewia umbellifera Beddome	Malvaceae	-	Twiner & straggler	Leader axis of main stem and branches	L
36.	Hemidesmus indicus (L.) R.Br. var. indicus	I. APOCYNACEAE	Nannari	Twiner	Stem	C
37.	Hugonia mystax L.,	Linaceae	Mothirakanni	Hook climber	Hooks and twisted branches	C
38.	Ichnocarpus frutescens (L.) R. Br.,	Apocynaceae	Utharkodi, Paravalli	Twiner	Stem	L
39.	Ipomoea marginata (Desr.) Verdc.	Convolvulaceae	Siruthazhi	Twiner	Stem	C
40.	ipomoea pes-tigridis L.	Convolvulaceae	Punaikkirai, Pulisuvadi	Twiner	Stem	C
41.	Ipomoea obscura (L.) Ker Gawler	Convolvulaceae	Thazhi	Twiner	Stem	C
42.	Jasminum angustifolium (L.) Willd.	Oleaceae	Kattumalligai	Twiner	Stem	L
43.	Jasminum officinale L.	Oleaceae	Pitchi	Twiner	Stem	C
44.	Jasminum sambac (L.) Ait.	Oleaceae	Malligai	Twiner	Stem	C
45.	Kedrostis foetidissima (Jacq.) Cogn	Cucurbitaceae	Appakkovai	Tendrill climber	Stem	C
46.	Lablab purpureus (L.) Sweet,	Fabaceae	Mochai. Kattu avarai	Twiner	Stem	C
47.	Leptadenia reticulata (Retz.) Wight & Arn.	Apocynaceae	Paala kodi, Keerappalai	Twiner	Stem	C
48.	Momordica charantia L.	Cucurbitaceae	Pagal	Tendrill climber	Stem	C
49.	Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Pazhupagal	Tendrill climber	Stem	C
50.	Mucuna pruriens (L.) DC.,		Poonaikatchi, Poonaikali	Twiner	Stem	C
51.	Mukia maderaspatana (L.) M. Roem.	Cucurbitaceae	Musumusukkai	Tendrill climber	Stem	C
52.	Ola scandens Roxb.	Olaaceae	Kadalaranji	Twiner	Branch	L
53.	Pachygone ovata (Poir.) Miers ex Hook. f. & Thoms.	Minispermaceae	Kattukkodi	Twiner	Stem	C
54.	Passiflora foetida L.	Passifloraceae	Jimikkipoo, Poonaipidukku	Tendrill climber	Branch and peduncle	C
55.	Pentatropis capensis (L.f.) Bullock	Apocynaceae	Uppilankodi, Uppilikodi	Twiner	Stem	C
56.	Pergularia daemia	Apocynaceae	Uttamani,	Twiner	Stem	C

	(Forssk.) Chiov.		Veliparuttii			
57.	<i>Pisonia aculeata</i> L.	Nyctaginaceae	Karumpoolathi	Hook climber	Stem	L
58.	<i>Rhynchosia minima</i> (L.) DC.	Fabaceae	Kattukanam	Twiner	Stem	C
59.	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Convolvulaceae	Musuttai, Budhikirai	Twiner	Stem	C
60.	<i>Salacia chinensis</i> L.	Hippocrateaceae	Ponkorandi	Twiner	Leader axis or branch	L
61.	<i>Sarcostemma acidum</i> (Roxb.) Voigt	Apocynaceae	Kodikalli	Twiner	Stem	C
62.	<i>Sarcostemma secamone</i> (L.) Bennet	Apocynaceae	Manipalai, Usipalai	Twiner	Stem	C
63.	<i>Scutia myrtina</i> (Burm. f.) Kurz,	Rhamnaceae	Thoradi	Hook climber	Stem and thorns	L
64.	<i>Solanum trilobatum</i> L.	Solanaceae	Thuthuvalai	prickly scrambling climber	Leader axis and branches	C
65.	<i>Strychnos minor</i> Dennst	Loganiaceae	Kodikanchiram	Tendrill climber	Modified branchlet ends	L
66.	<i>Teramnus labialis</i> (L. f.) Spreng.	Fabaceae	Kattulundu	Twiner	Stem	C
67.	<i>Tiliacora acuminata</i> (Lam.) Miers,	Minispermaceae	Perunkattukkodi	Twiner	Stem	L
68.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook. f. & Thoms.	Minispermaceae	Seenthil	Twiner	Stem	C
69.	<i>Toddalia asiatica</i> (L.) Lam.	Rutaceae	Milagaranai	Prickles curved straggler	Prickles of main stem and branches	L
70.	<i>Trichosanthes cucumerina</i> L	Cucurbitaceae	Peipudal	Tendrill climber	Stem	C
71.	<i>Trichosanthes tricuspidata</i> Lour.	Cucurbitaceae	Perumkorattai, Saveri	Tendrill climber	Stem	C
72.	<i>Tylophora indica</i> (Burm. F) Merr.	Apocynaceae	Naaipalai, Nanjaruppan	Twiner	Stem	C
73.	<i>Wattakaka volubilis</i> (L.F) Stapf.	Apocynaceae	Perun Kurinja	Twiner	Stem	L
74.	<i>Ziziphus oenoplia</i> (L.) Mill,	Rhamnaceae	Soorai kodi	Hook climber	Stem and thorns	L

Table 2:- Medicinal importance of climbers.

S. No.	Botanical name	Medicinal uses
1.	<i>Abrus precatorius</i>	The leaves and roots sweet
2.	<i>Aganosma cymosa</i>	Useful in diseases of paraplegia, sciatica and neuralgia
3.	<i>Aristolochia indica</i>	Root, stem used as antidote and anti-inflammatory
4.	<i>Asparagus racemosus</i>	Root tubers tonic, diuretic and galactagogue
5.	<i>Azima tetraantha</i>	Juice of the leaves used to relieve cough and phthisis
6.	<i>Caesalpinia bonduc</i>	Leaves and bark used as febrifuge, emmenagogue, anthelmintic
7.	<i>Capparis brevispina</i>	Root barks stomachic
8.	<i>Capparis zeylanica</i>	Root bark sedative, stomachic, used in cholera.
9.	<i>Cardiospermum canescens</i>	Plant useful in rheumatism
10.	<i>Cardiospermum</i>	Leaves used to relieve gastritis

	halicacabum	
11.	Cassytha filiformis	Plant used in bilious affections, urethritis
12.	Ceropegia juncea	Leaves used in skin diseases
13.	Cissampleos pareira var. hirsuta	Root diuretic, antiperiodic, used in urinary troubles
14.	Cissus quadrangularis	Plant used in bone setting, the juice prescribed in scurvy.
15.	Cissus vitiginea	Crushed stem bark is used to heal wounds
16.	Citrullus colocynthis	Fruit pulp considered drastic hydragogue, cathartic.
17.	Clitoria ternatea	Roots cathartic and diuretic
18.	Coccinia grandis	Root, stem, leaf. Fruit used in skin diseases, ulcers, stomatitis, diabetes and asthma.
19.	Cocculus hirsutus	Whole plants used as cooling agent.
20.	Cyphostemma setosum	Tubers useful in piles
21.	Diplocyclos palmatus	Whole plant used in constipation and as aphrodisiac
22.	Dolichos trilobus	Roots used for constipation, ophthalmia and skin diseases
23.	Gloriosa superba	Root tubers used as tonic, stomachic and anthelmintic
24.	Hemidesmus indicus var. indicus	Root used in urinary diseases, and in glandular swellings
25.	Ichnocarpus frutescens	Root as a substitute for Hemidesmus root.
26.	Ipomoea pes-tigridis	Leaf poultice is used to heal cuts and wounds
27.	Jasminum angustifolium	Leaf juice given as an emetic in poisoning
28.	Jasminum officinale	Useful in making garlands, also useful in eye diseases, headache and skin diseases
29.	Kedrostis foetidissima	Root is useful in piles
30.	Leptadenia reticulata	Plants useful in habitual abortion, stimulant and restorative
31.	Mucuna pruriens	Root, seed useful in diarrhoea, hemiplegia, filariasis and as aphrodisiac
32.	Mukia maderaspatana	Root, leaf used in fever, diseases of kapam, and abdominal disorders
33.	Oxalis scandens	Bark used in anaemic conditions due to fevers
34.	Pachygone ovata	Whole plants used as cooling agent
35.	Passiflora foetida	Fruits emetic. Fruit decoction used in asthma and biliousness
36.	Pentatropis capensis	Plant used in general debility
37.	Pergularia daemia	Whole plant useful in convulsions, asthma and in worm infestation
38.	Phyllanthus reticulatus	Bark used in rheumatism, dysentery and venereal diseases
39.	Pisonia aculeata	Roots expectorant, diuretic and laxative, used in asthma
40.	Rhynchosia minima	Leaves used as an abortifacient
41.	Salacia chinensis.	Roots used in diabetes; decoction given in amenorrhoea and venereal diseases.
42.	Sarcostemma acidum	Dried stem emetic
43.	Sarcostemma secamone	Decoction of the plant useful in sore throat
44.	Scutia myrtina	Leaf poultice is applied to hasten parturition
45.	Solanum trilobatum	Leaf used to treat tuberculosis, respiratory problems and bronchial asthma.
46.	Teramnus labialis	Seeds useful in fever and in pain
47.	Tiliacora acuminata	Used as a cure for snakebite
48.	Tinospora cordifolia	Stems are medicinal having antidiabetic properties.
49.	Toddalia asiatica	Root bark used as diaphoretic, stomachic, and antipyretic
50.	Trichosanthes cucumerina	Fruit febrifuge, bitter tonic, emetic, emmenagogue and cathartic
51.	Trichosanthes tricuspidata	Fruits used in migraine.
52.	Tylophora indica	Leaves and roots used in asthma, bronchitis and whooping cough
53.	Wattakaka volubilis	Plant juice used as a sternutatory

Discussion:-

Similar to present study, previous reports on climber diversity at Southern Western Ghats of Coimbatore (Sarvalingam and Rajendran, 2015), in Rajshahi region, Bangladesh (Rony Rani et al., 2019), Araucaria forest of

Rio Grande do Sul State, Brazil (Guilherme Dubal dos et al., 2014), temperate forests of the Americas (Annik Schnitzler et al., 2016) and in North Andaman Forest, India (Asutosh Ghosh, 2013) also recorded taxonomic and ecological diversity of climbing plants. DeWalt et al. (2000), Muthuramkumar and Parthasarathy (2001), Perez-Salicrup et al. (2001), Phillips et al. (2002), Parthasarathy et al. (2004), Rice et al. (2004), Phillips et al. (2005). DeWalt et al. (2006), Ghosh, (2013) reported on the lianas diversity in various forests.

The bird's congregation of the Point Calimere Sanctuary depends on the forest canopy. The canopy of the scrub jungle is significantly mated by the lianas. The lianas provide habitat for the migratory birds. In these nests, the birds had skirted Point Calimere in their route towards Sri Lanka. The loss of green cover certainly drastically damages the bird's life. Though it is a protected area, chemical companies and small-scale shrimp farms around the wetland have started to pose a threat to the biodiversity and ecosystem of the sanctuary. Strict environmental regulations should be imposed and salt pan and other aquaculture practices, unregulated economical activities around the sanctuary should be prohibited. This effective action will help in maintaining species diversity and composition to provide suitable breeding sites in the sanctuary.

Acknowledgement:-

Authors are thankful to the Dr. K. Natarajan, Head and Professor, Department of Botany (Rtd.), St. Xavier's College, Palayamkottai for providing available research facilities.

References:-

1. Amalraj, V.A., Velayudhan, K.C. and Abraham, Z. (1991): Threatened medicinal plants in Western Ghats In: CK Karunakaran (ed) Proc. Of the Symposium on rareendangered and Endemic Plants of Western Ghats: 215-20.
2. Annik Schnitzler, Javier Amigo, Brack Hale and Christophe Schnitzler (2016): Patterns of climber distribution in the temperate forests of the Americas. *Journal of Plant Ecology* 9(6): 724–733.
3. Asutosh Ghosh (2013): Taxonomic Diversity Of Climbing Plants Of North Andaman Forest, India. *Indian Journal of Plant Sciences*. 2 (4):.20-43.
4. Chaudhuri AB (2007): Endangered medicinal plants. Daya Publishing House, New Delhi, p: 155.
5. Christenhusz, M.J.M. and Byng, J.W. (2016): The number of known plants species in the world and its annual increase. *Phytotaxa*. 261(3): 201–217.
6. Dallmier, F. and Comiskey, J.A. (1998): Forest biodiversity research, monitoring and modelling Conceptual background and Old World case studies, Man and the Biosphere Series Volume 20.UNESCO, Paris, France: Parthenon Publishing Group, New York, New York.
7. Daniel, P. and Umamaheswari, P. (2001): The Flora of the Gulf of Mannar, Southern India. Botanical Survey of India, Coimbatore.
8. Dewalt, S.J., Ickes, K., Nilus, R., Harms, K.E. and Burslem, D.F.R.P. (2006):. Liana habitat associations and community structure in a Bornean lowland tropical forest. *Plant Ecology*. 186: 203–216.
9. Dewalt, S.J., Schnitzer, S.A. and Denslow, J.S. (2000). Density and diversity of lianas along a chronosequence in a central Panamanian lowland forest. *Journal of Tropical Ecology*. 16(1): 1-19.
10. Eilu, G. and Bukenya-Ziraba, R. (2004): Local use of climbing plants of Budongo forest reserve, Western Uganda. *J. Ethnobiol*. 24:307–327.
11. Gamble, J.S. and Fischer. C. E.C. (1921-1935): Flora of Presidency of Madras Vol. I, II and III. London, Adlard and Son Ltd.
12. Ghosh, A. (2013): Diversity and distribution of climbing plants in littoral forest of North Andaman, Andaman Islands, India. *Indian Journal of Plant Sciences*. 2(3): 35-42.
13. Gritto, M.J., Aslam, A. and Nandagopalan, V. (2012): Ethnomedicinal survey of Threatened plants in Pachamalai hills, Tiruchirapalli district, Tamilnadu, India. *Int. J. Res. Ayur. Pharm*. 3(6):844-846.
14. Guilherme Dubal dos, Santos Seger and Sandra Maria Hartz (2014): Checklist of climbing plants in an Araucaria forest of Rio Grande do Sul State, Brazil *Biota Neotropica*. 14(4): e20140062.
15. Matthew, K.M. (1981- 1988): Flora of Tamil Nadu Carnatic. The Raphinat Herbarium, Tiruchirapalli, India.
16. Murugeswaran, R., Rajendran, A., Venkatesan, K., Hafiz, C. and Aslam, M. (2014): Diversity of Unani Medicinal Plants in Southern Western Ghats of Coimbatore District, Tamil Nadu, India. *International Journal of Herbal Medicine*. 2(1):29-38.
17. Muthuramkumar, S. and Parthasarathy, N. (2001): Tree-liana relationships in a tropical evergreen forest at Varagalaiar, Anamalais, Western Ghats, India. *Journal of Tropical Ecology*. 17(3): 395-409.

18. Parthasarathy, N., Muthuramkumar, S. and Reddy, M.S. (2004): Patterns of liana diversity in tropical evergreen forests of peninsular India. *Forest Ecology & Management*. 190(1): 15-31.
19. Perez-Salcrup, D.R., Sork, V.L. and Putz, F.E. (2001): Lianas and trees in a liana forest of Amazonian Bolivia. *Biotropica*. 33(1) 34 -47.
20. Phillips, O.L, Martinez, R.V., Aroyo, L., Baker, T.R., Killeen, T., Lewis, S.L., Mahli, Y., Mendoza, A.M., Neill, D., Vargas, P.N., Alexiades, M., Ceron, C., DI Flores, A., Erwin, T., Jardim, A., Palacios, W., Saldias, M. and Vinceti, B. (2002): Increasing dominance of large lianas in Amazonian forests. *Nature*. 18: 770 -774.
21. Phillips, O.L., Martínez, R.V., Mendoza, A.M., Baker, T.R. and Vargas, P.N. (2005): Large lianas as hyperdynamic elements of the tropical forest canopy. *Ecology*. 86(5): 1250 -1258.
22. Rice, K., Brokaw, N. and Thompson, J. (2004): Liana abundance in a Puerto Rican forest. *Forest. Ecology and Management*. 190(1): 33 -41.
23. Reddy, M.S. and Parthasarathy, N. (2003): Liana diversity and distribution in four tropical dry evergreen forests on the Coromandel Coast of south India. *Biodiversity and Conservation*. 12: 1609-1627.
24. Richards, P. (1952): *The Tropical Rain Forest* (Cambridge University Press, Cambridge)
25. Rony Rani, Rafiul Islam, A.K.M. and Mahbubur Rahman, A.H.M. (2019): Diversity of Angiosperm climber species in Rajshahi region, Bangladesh. *Int. J. Adv. Res.* 7(11): 522-536.
26. Sarvalingam, A., Rajendran, A. and Sivalingam, R. (2012): Documentary of woody flora and its usage in Maruthamalai Hills of the Southern Western Ghats of Coimbatore district, India. *Research in Plant Biology*. 2(1):7-14.
27. Sarvalingam, A. and Rajendran, A.(2015): Climbing Plants of the Southern Western Ghats of Coimbatore in India and Their Economic uses. *American-Eurasian J. Agric. & Environ. Sci.* 15 (7): 1312-1322.
28. Sharma, S. and Thokchom, R. (2014): A review on endangered medicinal plants of India and their conservation. *Journal of Crop and Weed*. 10(2):205-218.
29. Sukumaran, S. and Raj, A.D.S. (2007): Rare Endemic Threatened (RET) Trees and Lianas in the Sacred Groves of Kanyakumari District. *Indian Forester*. 133:1254-66.
30. Sudhakar Reddy, C., Bagyanarayana, G., Reddy Vatsavaya, K.N. and Raju, S (2008): *Invasive Alien Flora of India National Biological Information Infrastructure, US Geological Survey, USA.*
31. Tropicos, (2017). Botanical information system at the Missouri Botanical Garden, Saint Louis, Missouri, US. Available at <https://www.tropicos.org/home>.
32. Uma, R. and Parthipan, B. (2015): Survey on medico-botanical climbers in Pazhayaruriver bank of Kanyakumari District, Tamilnadu. *J Medicinal Plants Studies*. 3(1):33-6.
33. *Useful Plants of India* (1986). National Institute of Science Commission, New Delhi.
34. Yoganarasimhan (2000). *Medicinal plants of Tamil Nadu*. Interline Publishing Private Ltd., Bangalore India: pp. 90 – 91.