

Diversity of Edible Lianas in the Sacred Groves of the Foot Hills of Southern Western Ghats

T. Sindhu Biravi¹, N. Maybel Starlin¹, R. Mary Sujin² and S. Sukumaran¹

¹Department of Botany, Nesamony Memorial Christian College (Affiliated to Manonmaniam Sundaranar University, Tirunelveli), Marthandam, Tamil Nadu, India – 629 165.

²Department of Botany and Research Centre, PTMTM College (Affiliated to Alagappa University, Karaikudi), Kamuthi, Tamil Nadu, India – 623 604.

ABSTRACT

Sacred groves are segment of landscapes containing trees and other forms of life and geographical features that have been preserved by the ethnic communities based on their religious beliefs. The present study on wild edible lianas on selected sacred groves of the foot hills of southern Western Ghats show that, there are 49 lianas belonging to 38 genera possess edible uses. The local people who conserve these groves and they are also having a very good knowledge of such edible plants. The present paper describes the studies on some sacred groves highlighting the edible lianas associated with the sacred groves, which could provide a powerful tool for ensuring biodiversity conservation through community participation.

Key words: Edible lianas; Sacred Groves; southern Western Ghats

Introduction

Sacred groves are tracts of virgin forest with rich diversity, which have been protected by the local people for centuries for their cultural and religious beliefs and taboos that the deities reside in them and protect the villagers from different calamities. Dedication of forests to a god or goddess is a potent example of an indigenous conservation practices, devised by native inhabitants to put an end to the unrestricted utilization of community forests (Ray *et al.*, 2022). It has been observed that several ethnobotanically important plants that are not to be found in the forest are abundant in the sacred groves. The concept and beliefs of sacred trees and groves of forests are one of the best practices to conserve the natural resources (Khan *et al.*, 2008; Kandari *et al.*, 2014). Since most of the groves are located near human settlements, with the passage of time, human disturbances increasing progressively on them creating considerable changes in the extent of the sacred groves, in their vegetation structure, peoples' perception towards them and the religious beliefs and taboos but some of the sacred groves are still undisturbed but majority is in different stages of degradation. Therefore, a holistic understanding of the current status, structure and function of sacred grove is essential for assessing their ecological role and formulating strategies for their conservation (Khan *et al.*, 2008; Deepa *et al.*, 2016).

International organizations recognize the importance of sacred groves and place them into the context of sustainable development and also emphasize to conserve biodiversity through the protection of sacred groves (Singh *et al.*, 2014). The significance of ethnobotanically important plants from Western Ghats region is well known to the world. The Western Ghats due to varied edapho-climatic condition is eco-rich with enormous demand and heritage of wild

edible and medicinal plants (Sukumaran *et al.*, 2021). Traditionally, wild edible plants are integral part of food sources of the tribals and rural peoples and are considered as the oldest food stuff of peoples and provide primary dietary constituents of their daily life (Sreekumar *et al.*, 2020). As such, the historical, cultural, environmental, religious, and spiritual aspects may be important predictors of socioeconomic factors to explain the importance of culturally salient plants. In terms of biological well-being, edible plants also have some traditional and modern use in nutraceuticals (Namrata *et al.*, 2011; Kumar *et al.*, 2018). Therefore, the impact of socio-economic and cultural aspects on the knowledge and use of plant species has been the focus of several ethnobotanical studies (Brintha and Jeeva, 2022; Jayakumar *et al.*, 2022). Therefore, present study was conducted in selected sacred groves of the foot hills of southern Western Ghats to investigate and document the utilization of edible plants by various local communities with special emphasis on lianas.

Materials and Methods

As a part of the ethnobotanical survey of the sacred groves of the foot hills of southern Western Ghats, a qualitative survey was conducted to record the liana diversity. A sum of 50 man-days spent on the field to record the liana wealth of sacred groves. A total of 201 miniature sacred groves are located in the study area (Sukumaran and Jeeva, 2008; Sukumaran *et al.*, 2008). Sacred groves housed large number of temples and local deities, among them Nagaraja and Esakkiamman temples (Tamil) are notable and visited by large number of people during festival seasons. All the woody climbers growing in the selected sacred groves were collected and identified up to species level with the help of regional floras and available checklists (Gamble & Fischer 1921–1935; Nair & Henry 1983; Matthew 1991). Author citation followed The Plant List (<http://theplantlist.org>) and POWO (2021).

Ethnobotanical data was gathered from the local participants, especially from elderly people through semi-structured questionnaires. The information collected included the general information regarding the sacred groves and the associated deity, floral diversity and the ethnobotanical uses of lianas as well as their socio-cultural, ecological, economical and food values.

Results and Discussion

A total of 49 edible lianas belonged to 38 genera and 24 families were reported from the sacred groves of the study area (Table 1). Leguminosae was the dominant family represented by 6 species under 5 genera, followed by the family Capparaceae occupied the co-dominant position in terms of species composition (4 species). Five families (Annonaceae, Apocynaceae, Rubiaceae, Convolvulaceae and Dioscoreaceae) had 3 species each, Cucurbitaceae, Passifloraceae, Euphorbiaceae, Rhamnaceae, Asclepidaceae and Piperaceae had 2 species each, whereas the remaining families (Asparagaceae, Elaeagnaceae, Gnetaceae, Myrsinaceae, Olacaceae, Rutaceae, Smilacaceae, Solanaceae, Verbenaceae and Vitaceae) were monospecific (Figure1).

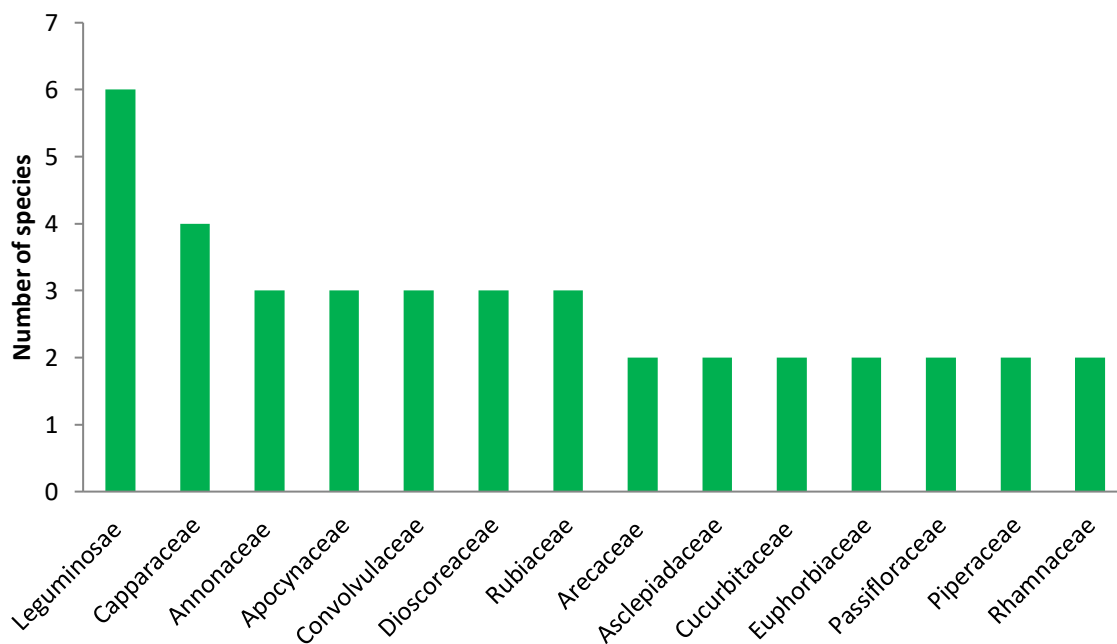


Table 1. Wild edible lianas of the study area.

Sl.No.	Botanical name	Family	Common name	Local name	Useful parts	Uses
1	<i>Adenia hondala</i> (Gaertn.) de Wilde	Passifloraceae	Hondala	Mithavalakeerai	young shoots and leaf stalks	Young shoots and leaf stalks can be cooked and eaten.
2	<i>Artabotrys hexapetalus</i> (L.f.) Bhandri	Annonaceae	Tail grape	Manoranjitham	Flower	The flowers are used to scent tea. The flowers are used to prepare a stimulating tea-like beverage
3	<i>Asparagus racemosus</i> Willd	Asparagaceae	Satawari	Sathaveli	Tender young shoots	Cooked as a vegetable
4	<i>Bridelia stipularis</i> (L.) Blume	Euphorbiaceae	Climbing bridelia	Kanjikottom	Seed	Seed oil could be used for edible purposes.
5	<i>Caesalpinia bonduc</i> L.	Leguminosae	Yellow Nicker, Gray nicker, Fever nut	Kalichchikkai	Seed	The oil from the seeds is used for cooking
6	<i>Calamus rotang</i> L.	Arecaceae	Rotang, Rattan Cane	Perambu	Fruit	Edible
7	<i>Calamus thwaitesii</i> Becc.	Arecaceae	Rattan Cane	Vanchi	Fruit	Edible
8	<i>Canavalia ensiformis</i> (L.) DC.	Leguminosae	Horse Bean, Jack bean	Kattu Avarai	Young seedpods, seed	Young seedpods - raw or cooked, Unripe seeds are cooked and eaten like broad beans

9	<i>Canthium coromandelicum</i> (Burm.f.) Alston	Rubiaceae	Wild Jasmine	Mullukarai, Seng aarai	Leaves	They are eaten in salads and also used as a vegetable
10	<i>Capparis brevispina</i> DC.	Capparaceae	Indian Caper	Adanda	Fruit	Used to make the pickle
11	<i>Capparis sepiaria</i> L.	Capparaceae	Wild Caper Bush	Karunjuri	Leaves, Fruit	Cooked and added to soups
12	<i>Capparis spinosa</i> L.	Capparaceae	Flinders rose, Caper bush	-	Flower, young fruit	The immature flower buds are pickled and used as a flavouring in sauces, salads. The young fruits and tender branch tips can also be pickled and used as a condiment
13	<i>Capparis zeylanica</i> L.	Capparaceae	Ceylon caper	Adondai	Fruit	Raw or cooked
14	<i>Carissa spinarum</i> L.	Apocynaceae	Wild Karanda	Chirukila	Fruit	Raw or cooked
15	<i>Ceropegia bulbosa</i> Roxb.	Asclepiadaceae	Bulbous Ceropegia	Kharpude	Tuber	Tubers are rich source of carbohydrates and eaten either raw or cooked
16	<i>Ceropegia candelabrum</i> L.	Asclepiadaceae	Candlestick Ceropegia	Nattuvalli	Tuberous roots	The tuberous roots are edible and are eaten especially by the poorest, raw or cooked.

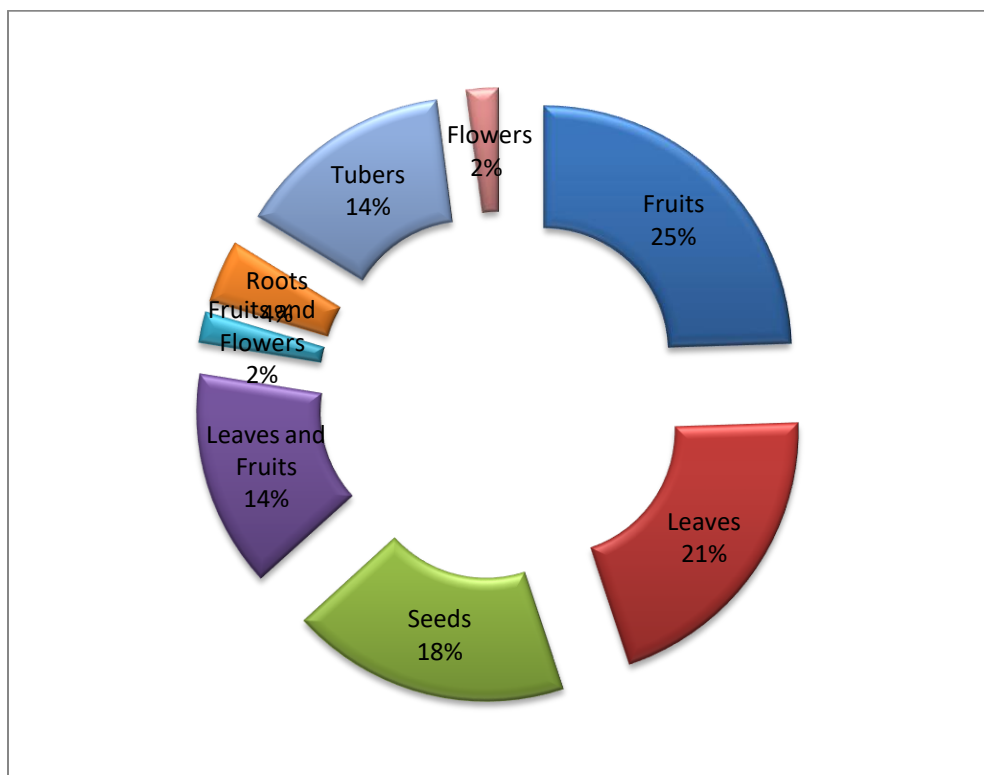
17	<i>Cissus quadrangularis</i> L.	Vitaceae	Veldt Grape	Perandai	Leaves and young shoots	The leaves and young shoots are used in the preparation of pappads and curries
18	<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Ivy gourd, Scarlet gourd	Kovai kaai	Young and tender green fruits	They used as raw in salads or cooked and added to curries, etc.
19	<i>Desmos chinensis</i> Lour.	Annonaceae	Dwarf Ylang-Ylang	Mano ranjitam	Leaves	The leaves are used in brewing liquor
20	<i>Dioscorea oppositifolia</i> L.	Dioscoreaceae	Chinese yam, Cinnamon Vine	Kaymai-kari, malaiyankilanku	Yam	Tubers cooked and eaten
21	<i>Dioscorea alata</i> L.	Dioscoreaceae	Purple yam	Rasavakku Kilangu	Root	Root boiled and used as a vegetable
22	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Air yam	Panna pilangu	Aerial tubers	Cooked and consumed
23	<i>Dregea volubilis</i> (L.f.) Benth. ex. Hook. f.	Apocynaceae	Sneeze Wort, Cotton milk plant	Kotippalai.	Young shoots and leaves	Eaten in salads and curries
24	<i>Elaeagnus conferta</i> Roxb.	Elaeagnaceae	Wild Olive	Kulangai	Fruit	Eaten raw
25	<i>Embelia ribes</i> Burm.f.	Myrsinaceae	False Black Pepper	Vayuvilangam	Fruit, Young leaves and shoots	Eaten raw
26	<i>Gnetum ula</i> Brongn.	Gnetaceae	Joint Fir	Oodaivalli	seed	Roasted seeds are eaten

27	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	Apocynaceae	Indian Sarsaparilla	Nannari	root	Syrup extracted from the root is utilized as a flavouring agent
28	<i>Ipomoea alba</i> L.	Convolvulaceae	Moon flower	Naganamukorai	Young leaves	Steamed and eaten as a vegetable or used in curries, soups, stews, etc.
29	<i>Ipomoea mauritiana</i> Jacq.	Convolvulaceae	Giant Potato	Nilappicani	seed	The seeds are used for coagulating milk
30	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Yellow-Throated Morning Glory	Chirudali	Leaves	Cooked and eaten as a vegetable or added to soups
31	<i>Lantana camara</i> L.	Verbenaceae	Lantana	Unnichedi	Leaves, Fruit	The aromatic leaves are used to make a tea. The ripe black fruits are eaten raw.
32	<i>Morinda umbellata</i> L.	Rubiaceae		Manjanattikkodi	Fruit	Eaten raw when fully ripe, or cooked
33	<i>Mucuna pruriens</i> (L.) DC.	Leguminosae	Velvet bean	Punaikali	Seed	The immature seed pods and the seeds in them are soaked then cooked and eaten as a vegetable or mixed with salt and taken as a snack
34	<i>Mukia maderaspatana</i> (L.) M.Roem.	Cucurbitaceae	Wild cucurbit	Musumuskkai	Fruits, leaves and tender shoots	Ripe fruits are consumed directly.

35	<i>Mussaenda frondosa</i> L	Rubiaceae	Wild mussaenda	Velli-matantai	Leaves	The leaves and the sepals are eaten as a salad.
36	<i>Olox scandens</i> Roxb. /	Olacaceae	Parrot Olox	Kataliranci	Fruits and leaves	leaves are used as vegetable in constipation
37	<i>Passiflora foetida</i> L.	Passifloraceae	Love-in-a-mist	Punaipazham	Fruit	Fully ripe fruit - eaten raw and also used to make drinks.
38	<i>Phyllanthus reticulatus</i> Poir	Euphorbiaceae	Black-honey shrub	Karumpoolathi	Fruit	The fruits are edible.
39	<i>Piper mullesua</i> Buch.Hamex.D.Don	Piperaceae	Hill Pepper	Kattukurumulagu	Fruits and flowers	Ripe fruits eaten raw. Flowers added to vegetables and curries as a flavouring agent.
40	<i>Piper nigrum</i> L.	Piperaceae	Black Pepper	Kurumilagu	seeds	An essential oil obtained from the seed is used as a flavouring various foods.
41	<i>Pueraria phaseoloides</i> (Roxb.) Benth.	Leguminosae	Tropical Kudzu	Thottapayer	Tuberous root	The tuberous root can be eaten
42	<i>Pueraria tuberosa</i> (Willd.) DC. Leguminosae	Leguminosae	Indian kudzu	Nilapoosani	Tuber	Raw or cooked
43	<i>Smilax zeylanica</i> L.	Smilacaceae	Kumarika	Arakkappalai	Leaves	Leaves are used as vegetable.
44	<i>Solanum trilobatum</i> L.	Solanaceae	Purple Fruited Pea Eggplant	Thuduvai	Fruit, Leaves	The fruit is edible and cooked and eaten as a vegetable

45	<i>Spatholobus parviflorus</i> (DC.)Kuntze	Leguminosae	Bando Lata	Pilacchi Valli, Yanai-t-tatippu	Seed	An oil obtained from the seeds can be used for cooking
46	<i>Toddalia asiatica</i> (L.) Lam.	Rutaceae	Orange Climber	Kattu-Milaku	Fruit, whole plant	Fruit - raw, All parts of the plant are used to flavour foods
47	<i>Uvaria zeylanica</i> L.	Annonaceae		Pulican	Fruit	Eaten in raw
48	<i>Ventilago madraspatana</i> Gaertner	Rhamnaceae	Red Creeper	Surulbattaikkoti	Seed	An oil expressed from the seed is used for cooking
49	<i>Ziziphus oenoplia</i> (L.) Mill.	Rhamnaceae	Wild Jujube	Suraimullu	Fruit	Eaten raw

Wild edible lianas were consumed for various plant parts, i.e., leaves, fruits, seeds, roots, tubers, leaves/fruits and fruits/flowers. They are either eaten raw (mainly fruits) or cooked as vegetables. Most of the wild edible lianas belonging to angiosperms (48 species) and a gymnospermic liana (*Gnetum ula*) were also recorded. Fruits (12 species) were the most commonly used edible part in the study area.



The present study focuses on edible wild lianas on the sacred groves of the foot hills of southern Western Ghats. Documentation of such wild edible plants forms from ethnobotanical approach is important for enhancing the understanding of indigenous knowledge systems (Sawian *et al.*, 2007; Jaykumar and Brintha, 2022; Malarvizhi *et al.*, 2022). The consumption of these species by the indigenous people may be of considerable significance. So, the wild food plants are not exclusive to the indigenous community, rather, they are essential parts of the diets of the entire local population (Jeeva, 2009). These plants resources are genetically important for future agricultural research (Kayang, 2007).

Moreover, the collection and consumption of wild fruits have played an important role in indigenous community for their day to day life. Mostly women and children are engaged in collection of wild edibles. About 80% of the wild edibles are drawn from sacred groves and other forest areas and sold in the market by poorer community for income (Sawian *et al.*, 2007). These wild products being lesser-known and less available have a good market value. However,

the influence of wild fruit collection of indigenous community in daily life has been reduced with the introduction and cultivation of cultivated fruits and the changes in their life styles.

Conclusion

Sacred groves in southern Western Ghats are rich sources and best repository of ethnobotanically important plants with many economically important species. It is an excellent example of unique traditional way of *in situ* conservation of different plant species.

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