

## Wild Edible Plants Of The Sacred Groves Of The Foothills Of Southern Western Ghats

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**Abstract** - The South Western Ghats are blessed with rich vegetation which comprises of ethnobotanical and economically important plants. Ethnobotanical survey was conducted in 48 tribal settlements; the field survey was carried out during the years 2018-2020 among the *Kanis* residing in and around the Kanniyakumari Wildlife Sanctuary, southern Western Ghats. The investigation revealed that a total of 50 wild edible fruit plants belonging to 31 families and 41 genera were found to be used as food by the inhabitants of the study area. Among the 50 species of edible plants collected from this area 49 species belong to Angiosperm and one species is Gymnosperm. Nineteen species of edible plants are eaten raw or ripe and 31 plants are cooked food. Results of the present study revealed that the wild edible plants of the sacred groves of the foothills of southern Western Ghats are used as supplementary, seasonal or survival food sources of *Kanis*, and hence play a role in combating food insecurity.

**Keywords:** Edible plants; Ethnobotanical survey; Food security; Sacred groves

### INTRODUCTION

The South Western Ghats are blessed with rich vegetation which comprises of ethnobotanical and economically important plants. An organism of the vegetable kingdom suitable by nature for use as a food, especially by human beings. Not all parts of any given plant are edible but all parts of edible plants have been known to figure as raw or cooked food: leaves, roots, tubers, stems, seeds, buds, fruits and flowers. The most commonly edible parts of plants are fruit, usually sweet, fleshy, and succulent. Many edible plants are commonly cultivated for their nutritional value and referred to as vegetables.

Food and nutritional security are the key issues in developing countries due to insufficiency and poor access to food (Adebooye and Phillips, 2006; Andersen *et al.*, 2003; Bhatt *et al.*, 2017; Toledo and Burlingame, 2006). Globally, ethnobotanical surveys on underutilized, wild and non-cultivated plants indicate that more than 7000 species have been used for human food (Grivetti and Ogle, 2000). Likewise, 1069 species of wild fungi consumed worldwide are important sources of protein and income in rural areas (Boa, 2004).

Conservation and sustainable use of biodiversity has traditionally been recognized as a key step to combat hunger and malnutrition in developing countries (Negi *et al.*, 2011; Toledo and Burlingame, 2006).

Traditional knowledge has been used for centuries by indigenous local communities to manage natural resources under local laws, customs, and traditions. Many traditional societies all over the world revere and worship nature and consider certain plants and animals sacred. The sacred groves in the Western Ghats are small patches of ancient forest dedicated to local animistic deities (Gadgil and Vartak 1976; Chandran, 1992). These groves are a rich source of fruit bearing trees and small water bodies and act as habitat for several birds and reptiles. The present paper presents a case study of select sacred groves of Kanniyakumari wildlife sanctuary and the aim of the study was to document the tradition of sacred groves could protect many indigenous as well as ethnobotanically important plants for ensuring biodiversity conservation through community participation.

## Study area

Kanniyakumari Wildlife Sanctuary is located in the Southwestern tip of Western Ghats. The predominant tribal inhabitants of the foothills of Southern Western Ghats are Kanis, belonging to the southern tribal zone. They are distributed along the Southeastern slopes, mostly in the higher range of the Western Ghats, in large numbers. The natural vegetation of this region represents biomes ranging from Southern Thorn Forests, Dry Deciduous and Moist Deciduous, Semi Evergreen Forest to Evergreen Sholas with Grassy Downs. In due recognition of tremendous biological potential, Kanniyakumari forest division was declared as Kanniyakumari Wildlife Sanctuary in 2002 (Plate 1).



**Plate 1. Study site of Kanniyakumari wild life Sanctuary**

Kanis are black, slim and very attractive to look at with round head, curly hair and broad nose. They are generally short in stature with average height of 5 foot with markedly negroid features. They have their own dialect, a corrupt form of Tamil and Malayalam, 'Malaibashai', the hill language. Usually the Kanis supplement their diet by gathering roots and tubers from the forest. They eat tubers like *Manihot esculenta*, *Dioscorea oppositifolia*, *Ceropegia spiralis*, etc. They generally depend on wild edible plants and seeds for their food. Wild as well as cultivated tubers form their staple food. They do not eat beef. Seeds of *Artocarpus heterophyllus*, fruits of *Ochlandra travancorica*, fruits of *Baccaurea*

*courtallensis*, endosperm of *Mangifera indica*, cotyledons of *Entadardoidii*, and steam-cooked seeds of *Cycas circinalis* are eaten by the tribes.

## Methodology

In order to explore the knowledge of edible wild plants used by Kani tribes, an ethnobotanical survey was conducted in 48 tribal settlements; the field survey was carried out during the years 2018-2020 among the Kanis residing in and around the Kanniyakumari Wildlife Sanctuary. Plant samples were collected by trekking in the forest and some of the plants were identified in the field itself. Photographs were taken. During collection the taxa were classified according to their habit: herb, shrub, tree, liana and climber. Plant samples were collected for the preparation of voucher specimens. Voucher specimens were deposited in the Department of Botany and Research Centre, Scott Christian College, Nagercoil. The Angiosperm Phylogeny Classification (APG 111, 2009) was followed to classify the taxa. The plant specimens were identified with the help of local and regional floras (Gamble and Fischer, 1956; Nair and Henry, 1983). In order to check the spelling, eliminate the use of older synonyms and ensure uniform nomenclature all plant names were verified using The Plant List (2013).

## Result and Discussion

An inventory of wild edible fruit plants was made by field survey and means interviewing the tribal households of this region regarding the indigenous use of such resources. The tribal communities of Kanniyakumari have a long history of wild fruit gathering, many of them are eaten raw and ripe whereas few species are consumed during times of food scarcity. Some species are also cooked in to vegetables or pickled and shelved for many days to eat with day meals. A few species are also used as beverages and as cool drinks.

The investigation revealed that a total of 50 wild edible fruit plants belonging to 31 families

and 41 genera were found to be used as food by the inhabitants of the study area. These species have both dicotyledons and monocotyledons. Among the 50 species of edible plants collected from this area 49 species belong to Angiosperm and one species is Gymnosperm. *Costus pictus* L. leaves are used to treat high medicinal value in diabetes. *Arenga wightii* sap are extracted from the palm is used to treat white discharge in women. The flowering and fruiting phenology gave vital information on the seasonal availability of wild edible plants. About 19 wild edible plants were consumed raw and 31 plants are cooked food.

Family-wise distribution of edible plants shows that the family Moraceae and Fabaceae was the dominant family in terms of species richness (4 species), followed by Dioscoreaceae, Anacardiaceae, Apocyanaceae, Rhamnaceae and Arecaceae (3 species), Rutaceae, Solanaceae, Lamiaceae, Phyllanthaceae, Piperaceae, Myrtaceae and Sapotaceae (2 species), whereas, 13 families (Annonaceae, Araceae, Caesalpiniaceae, Cycadaceae,

Passifloraceae, Poaceae, Cucurbitaceae, Costaceae, Clusiaceae, Combretaceae, Liliaceae, Myristicaceae and Smilacaceae) are monospecific (Table 1; Plate 2).



*Aegle marmelos* (L.) Correa      *Annona muricata* L.      *Artocarpus hirsutus* Lam.



*Caesalpinia mimosoides* Lam.      *Gloriosa superba* L.      *Piper nigrum* L.



*Cycas crinialis* L      *Zizphus rugosa* Lam      *Phyllanthus emblica* L

## Plate 2. Edible plants of the sacred groves in Kanniyakumari wild life Sanctuary

Due to short duration or short shelf life of wild edibles, the plants are consumed immediately or preserved (sun/shade dried) for use when nothing fresh is available either in the wild or homestead (Sundriyal and Sundriyal, 2003; Sawian *et al.*, 2007; Jeeva, 2009; Geetha *et al.*, 2015; Brintha and Jeeva, 2022). The *Phyllanthus emblica* is the most common species eaten raw, which is a rich source of vitamin C. Similarly, dried fruits are stored for future use, which is highly medicinal and used to cure cold, cough and other throat infections (Saini *et al.*, 2022). Moreover, the *Phyllanthus emblica*, *Terminalia bellirica* and *Terminalia chebula* are jointly used in the preparation of famous Ayurvedic medicine known as ‘Triphala’. Ayyanar and Ignacimuthu (2011) and Sukumaran *et al.* (2021) have reported that maximum species of medicinal plants are being used by the Kanis of Western Ghats.

Sukumaran and Raj (2010) reported Folklore medicinally important plant frequently used by the tribal communities of sacred groves in Kanniyakumari district. A total of 34 medicinal plants from 33 genera 29 families were enumerated. Most of the plants are used for earache, skin disease, fever, cold, headache, cough and ulcer. 29 families, 26 families monospecific. Plants of Rutaceae largely represented (4 species) followed by Euphorbiaceae and Sapotaceae.

## Conclusion

Sacred Groves are not only the important repositories of ethno-medicinal edible plants species, but also act as an important element of biological diversity which are rich in floras and faunas. Sacred groves in general are found both in urban and rural areas. The Sacred groves of urban areas are sparsely populated due to deforestation and desertification, but the Sacred groves of the forest areas are densely populated which includes vast strips of land inhabited by climbers, herbs, shrubs and trees, with the presence of a village deity and is mostly situated near a perennial water source.. Conservation of Sacred groves are community based on religious faiths and beliefs. Through the present study we hope to convey that the surveys conducted on these sacred groves highlighting the medicinal plants associated with the sacred groves, which could provide a powerful tool for ensuring biodiversity conservation through community participation.

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**Table 1. Commonly available wild edible plants in the selected sacred groves of study area**

| S. No | Botanical Name                       | Local name       | Common name            | Family        | Mode of utilization |
|-------|--------------------------------------|------------------|------------------------|---------------|---------------------|
| 1.    | <i>Aegle marmelos</i> (L.) Correa    | Vilvam           | Bael                   | Rutaceae      | Raw and             |
| 2.    | <i>Anana scosmosus</i> (L.) Merr.    | Prethipazham     | Pine apple             | Anacardiaceae | Raw                 |
| 3.    | <i>Anacardium occidentale</i> L.     | Kollampazham     | Cashew                 | Ancardiaceae  | Raw                 |
| 4.    | <i>Annona muricata</i> L.            | Mullumuthri      | Graviola               | Annonaceae    | Raw                 |
| 5.    | <i>Arengawightii</i> Griff.          | Alzathengu       | Indian sagopalm        | Arecaceae     | Beverage            |
| 6.    | <i>Artocarpous altilis</i> Fosberg.  | Karichakkai      | Breadfruit             | Moraceae      | Cooked              |
| 7.    | <i>Artocarpus heterophyllus</i> Lam. | Chakkapazham     | Jack Fruit             | Moraceae      | Raw and cooked      |
| 8.    | <i>Artocarpushirsutus</i> Lam.       | Aynipazham       | Wild Jack              | Moraceae      | Raw and cooked      |
| 9.    | <i>Bambusa bambos</i> (L.) Voss.     | Muzha            | giant thorny bamboo,   | Poaceae       | Cooked              |
| 10.   | <i>Caesalpinia mimosoides</i> Lam.   | Appata           | Pansi                  | Fabaceae      | Cooked              |
| 11.   | <i>Cassia occidentalis</i> L.        | Peyathuvarai     | coffee senna           | Fabaceae      | Cooked              |
| 12.   | <i>Caryota urens</i> L.              | Chazhai          | solitary fishtail palm | Arecaceae     | Beverage            |
| 13.   | <i>Capsicum annum</i> L.             | Kantharimulagu   | Chilli                 | Solanaceae    | Cooked              |
| 14.   | <i>Carissa carandas</i> L.           | Nullipazham      | Karaunda               | Apochynaceae  | Raw                 |
| 15.   | <i>Ceropegia elegans</i> Wall.       | Kammanamkizhangu | Elegans<br>ceropegia   | Apocynaceae   | Cooked              |
| 16.   | <i>Cycas cricinalis</i> L.           | Chazhankai       | Sago palm              | Cycadaceae    | Cooked              |
| 17.   | <i>Coccina grandis</i> (L.) Voigt    | Kovakkai         | Ivy gourd              | Cucurbitaceae | Raw and cooked      |
| 18.   | <i>Costus pictus</i> L.              | Sugar leaf       | Yellow crepe           | Costaceae     | Raw                 |

|     |  |                 |                        |                |        |
|-----|--|-----------------|------------------------|----------------|--------|
|     |  |                 | ginger                 |                |        |
| 19. | <i>Plectranthus amboinicus</i> L.              | Navrapachallai  | Indian borage          | Lamiaceae      | Cooked |
| 20. | <i>Colocasia esculenta</i> (L.) Schott         | Neellapalli     | Wild Taro              | Araceae        | Cooked |
| 21. | <i>Dioscorea oppositifolia</i> L               | Kavalakizhanku  | Lesser yam             | Dioscoriaceae  | Cooked |
| 22. | <i>Dioscorea pentaphylla</i> Linn.             | Noorakizhangu   | Five Leaf Yam          | Dioscoriaceae  | Cooked |
| 23. | <i>Dioscorea wallichii</i> Hook.f.             | Neduvankizhangu | Yam Dioscorea          | Dioscoriaceae  | Cooked |
| 24. | <i>Entada pursaetha</i> Dc.                    | Parandaikai     | Sea Bean               | Fabaceae       | Cooked |
| 25. | <i>Ficus carica</i> L.                         | Vittipazham     | Common<br>fig, Anjeer  | Moraceae       | Raw    |
| 26. | <i>Garcinia gummi-gutta</i> (L)<br>Roxb.       | Kodampuli       | Cambodge Tree          | Clusiaceae     | Cooked |
| 27. | <i>Gloriosa superba</i> L.                     | Kalapaikzhengu  | Chenkanthal            | Liliaceae      | Cooked |
| 28. | <i>Hemidismus indicus</i> (L)<br>R.Br.exSchult | Narunattiveru   | Indian<br>Sarsaparilla | Apocyanaceae   | Cooked |
| 29. | <i>Mangifera indica</i> L                      | Mampazham       | Mango                  | Anacardiaceae  | Raw    |
| 30. | <i>Mimusops elengi</i> L.                      | Ellaenthi       | Tanjong tree,          | Sapotaceae     | Raw    |
| 31. | <i>Murraya koenigii</i>                        | Karivabillai    | Kari leaf              | Rutaceae       | Cooked |
| 32. | <i>Myristica fragrans</i> Houtt.               | Jathikkai       | Nutmeg                 | Myristicaceae  | Cooked |
| 33. | <i>Manilkara kauki</i> (L.)Dubard              | Elengi          | Tanjong tree           | Sapotaceae     | Cooked |
| 34. | <i>Mucuna pruriens</i> (L)DC.                  | Koinkankai      | Velvet Bean            | Fabaceae       | Cooked |
| 35. | <i>Occimum sanctum</i> L                       | Tulsi           | Holy basil             | Lamiaceae      | Cooked |
| 36. | <i>Phyllanthus emblica</i> L                   | Nelli           | Indian<br>Gooseberry   | Phyllanthaceae | Raw    |
| 37. | <i>Phyllanthus<br/>indofischeri</i> Bennet     | Kattunelli      | Emblicmyrobalan        | Phyllanthaceae | Raw    |
| 38. | <i>Piper nigrum</i> L.                         | Nallamilagu     | Black Pepper,          | Piperaceae     | Cooked |
| 39. | <i>Piper betle</i> L.                          | Vettillai       | Betel vine             | Piperaceae     | Raw    |
| 40. | <i>Passiflora foetida</i> Linn                 | Kurangupazham   | Love-in-a-mist         | Passifloraceae | Raw    |



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|     |  |               |                      |                 |         |
|-----|--|---------------|----------------------|-----------------|---------|
| 41. | <i>Smilax zeylanica</i> L.                   | Theralli      | Kumarika             | Smilacaceae     | Cooked  |
| 42. | <i>Solanum trilobatum</i> L.                 | Thoothuvalai  | Pea Eggplant         | Solanaceae      | Cooked  |
| 43. | <i>Syzygium cumini</i> (L.) Skeels           | Naval         | Java Plum            | Myrtaceae       | Raw     |
| 44. | <i>Syzygium caryophyllatum</i><br>(L.)Alston | Karinijara    | South Indian<br>plum | Myrtaceae       | Raw     |
| 45. | <i>Tamarindus indica</i> L.                  | Puzhi         | Tamarind             | Caesalpiniaceae | Cookies |
| 46. | <i>Terminalia catappa</i> L.                 | Vatham        | Indian almond        | Combretaceae    | Raw     |
| 47. | <i>Ziziphus jujuba</i> Mill                  | Ilanthai      | Indian Jujube        | Rhamnaceae      | Raw     |
| 48. | <i>Ziziphus rugosa</i> Lam                   | Thodalipazham | Wild Jujube          | Rhamnaceae      | Raw     |
| 49. | <i>Ziziphus nummularia</i> L                 | Kattuillanthi | WildJujube           | Rhamnaceae      | Raw     |
| 50. | <i>Phoenix loureiroi</i> Kunth               | Chittenthal,  | Dwarf date palm      | Arecaceae       | Raw     |