
ETHNOBOTANY OF COASTAL KARNATAKAMJ Bhandary^{1*} & KR Chandrashekar²

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Abstract

Coastal Karnataka region of India, comprising of three districts called Dakshina Kannada, Uttara Kannada and Udupi, is ethnobotanically very rich owing to its floristic and cultural diversity. This is justified by the fact that many ethnobotanical studies have been reported from this area. However, all these studies are concerned only with documentation of traditional knowledge and diversity of medicinal plants and the diverse non-medicinal uses of plants have not received any scientific attention so far. Therefore, this study was undertaken to document the diversity of plants used for edible and fodder purposes.

Plant specimens and associated traditional Information was gathered from the knowledgeable elders belonging to the different indigenous tribal and non-tribal communities of the study area. A total of 37 species of angiosperm plants used for non-medicinal purposes, as piscicidal plants and for making house-hold materials, by the different traditional and tribal communities were documented during the present study. Among them, 18 species are used as piscicides and 19 species are used for making of baskets, mats and other traditional artefacts used in daily lives. This study confirms that the traditional communities of the study locality have considerable traditional knowledge about non-medicinal uses of local plants. However, the practical use of wild plants for the studied traditional purposes has gradually decreased due to lack of interest in the newer generation and availability of modern alternatives.

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Introduction:

The indigenous people's understanding of plants has manifested itself in several ways. It varies from using plants as sources of medicine, food, fiber and such other things on one hand, to protecting individual species or patches of entire forest on religious and other faith grounds, on the other. The discerned knowledge of the former kinds are of direct survival value to the people themselves while the latter practices ensures protection of valuable plants and ecosystems involving them. A kind of balance between human kind and nature which ensures the survival of both was, perhaps, thus achieved.

The indigenous plant-dependent knowledge systems such as using plants for medicine, edible products, weaving, etc., is the outcome of native peoples deep and discerning acquaintance with nature. Such a knowledge which has amassed over years, has been passed on verbally over many generations. However, of late, so precious a knowledge is in danger of being lost for ever due to the rapid socio-economic changes, especially in the rural and remote areas inhabited by the traditional communities. This threat has warranted the need to document and conserve as much as possible of the invaluable traditional plant knowledge and world-wide attempts are being made in this direction, including India.

The information gathered through this kind of ethno-botanical studies may provide leads to the development of economically useful plant products, such as pharmaceuticals, dietary supplements, pesticides, etc. Besides, such understandings may provide insights to the indigenous ways of resource management and conservation. Proper documentation of such information is also essential to ensure just compensation and legal defense for indigenous knowledge at the backdrop of the concept of Intellectual Property Rights and Patents.

Coastal Karnataka, a culturally and floristically diverse region between the Western Ghats and the Arabian sea, is a rich repository of traditional plant-based knowledge owing to its floral richness and ethno-cultural diversity. Information pertaining only to two types of non-medicinal uses of plants namely as piscicides and for making different house-hold articles like mats, baskets, containers, etc., by the different traditional cultures of Coastal districts of Karnataka, gathered during an ethnobotanical exploration of this area, is summarized in this article.

Study Area and its People:

Coastal Karnataka, comprising of three revenue districts, namely Dakshina Kannada, Udupi and Uttara Kannada, is a diversified region lying to the western edge of the State of Karnataka in India (Fig. 1). Situated between latitudes $12^{\circ}28' - 15^{\circ}31' N$ and longitudes $74^{\circ}32' - 75^{\circ}4' E$, it is a narrow belt of land that lies between the Western Ghats and the Arabian Sea having an average width of 50 - 80 km. and a length of 267 km. The total geographical area is 19,753 sq km. This region receives heavy rainfall, in the range of 2,500 - 3,000 mm, and it harbors different types of vegetation such as littoral, scrub, moist deciduous and evergreen. The littoral and the scrub forests are found along the coastal belt, the moist deciduous forests mainly in the inland plateaus extending to the foot of the Western Ghats and the evergreen forests localized only in the ghats.

Total population of this area is 43,63,617 with an average density of 253 persons per sq km. According to the Census of India, 2001, Dakshina Kannada has the highest density at 337 persons. Udupi district's density is 290 persons and Uttara Kannada has 132 persons per sq km. The people of the region represent a mixture of rich ethnic and cultural diversity. Besta, Brahmin, Bunt, Devadiga, Gudikar, Idiga, Kumbara and others are the

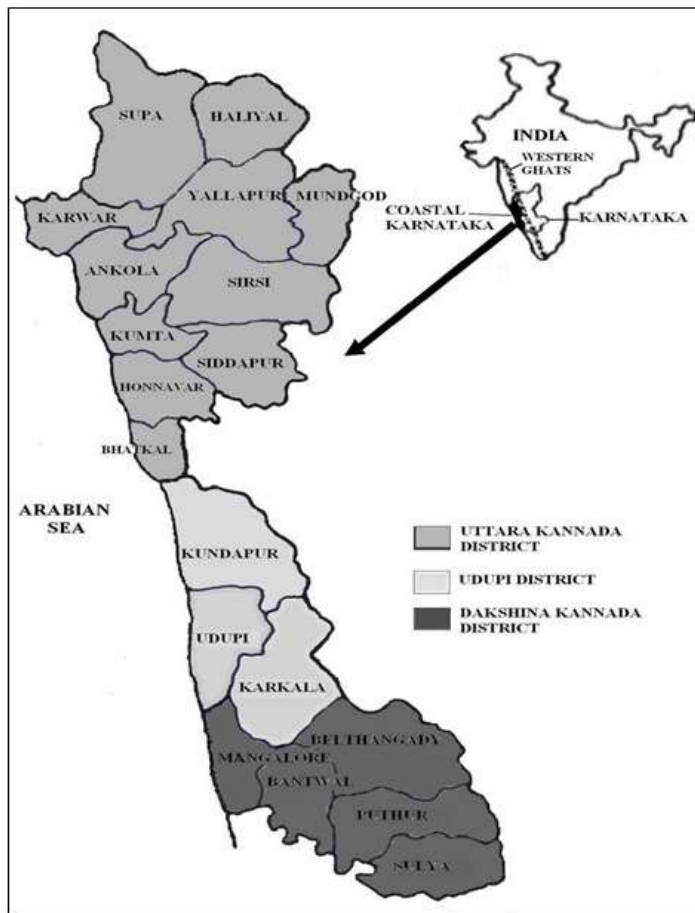


Fig. 1. Map of the Study Area showing Coastal Karnataka

predominant non-tribal indigenous communities while Koraga, Kunbi, Malekudiya, Gowli, Halakki Vokkaliga and Siddi are the important tribal groups inhabiting this region. The area is still predominantly agrarian with about 80 % of the population employed in agriculture and allied activities including growing cash crops of coconut (*Cocos nucifera*), areca nut (*Areca catechu*) and other horticultural products. More than 70 % of cropland is under cereals with paddy (*Oryza sativa*) as the principal crop. Fishing is the other major source of livelihood with about 1,00,000 people directly engaged in this activity. Kannada, Tulu, Konkani and marati are the major languages spoken.

Methodology:

Practicing local herbalists or 'nati vaidya's and other knowledgeable elderly people belonging to various non-tribal communities and three of the tribes, namely the Koraga, the Malekudiya and the Halakki vokkaliga form the local guides and source of information for this study, which was the part of a ongoing comprehensive ethnobotanical documentation project started in 1995. Information gathered between the period 1995 and 2003 is currently reported. During this period, a total of 150 herbalists and elders have been repeatedly visited in their own localities, during different seasons. After obtaining their consent, information regarding their medico-botanical practices is recorded with the help of questionnaire-based interviews, open-ended field discussions and also by observation of their actual treatment practices, wherever possible. Simultaneous to the recording of information on various aspects of treatment practices such as diseases treated, method of treatment, vernacular names of plants used, method of herbal collection and medicine preparation, etc., herbarium materials of the plants were also gathered with the help of the local guides. They were identified with the help of local floras (Gamble 1967, Cooke 1967, Saldanha 1984) and deposited in the Herbarium of Department of Applied Botany, Mangalore University.

Results and Discussion:

People belonging to various indigenous communities of Coastal Karnataka possess a very rich knowledge about medicinal and non-medicinal uses of plants occurring in their surroundings. This is indicated by the fact that they were found to be using many plants for

various uses like human medicine, veterinary medicine, edible, fodder, piscicidal and for making house-hold artefacts like mats, baskets etc. Number of species used for each of these categories is provided in Table 1. Further, only ethnobotanical plant uses with regard to piscicidal and house-hold artefacts making or in material culture are discussed, as other ethnobotanical aspects have been already reported ((Bhandary & Chandrashekar 2001, 2003, 2011; Bhandary *et al.* 1995, 1996).

Table 1. Number of plant species, genera and families used for different medicinal and non-medicinal purposes by traditional communities of Coastal Karnataka, India:

Sl. No.	Use Purpose	Number of species used	Number of genera	Number of families
1	Human Medicine	342	301	34
2	Veterinary Medicine	64	56	27
3	Edible	76	62	41
4	Piscicidal	18	18	15
5	Fodder	21	18	13
6	Making of house-hold artefacts (Material Culture)	19	19	16

Plants used as piscicides

Fishes form an important component of the food of the people of Coastal Karnataka. Rural folk use a variety of local plants either to kill or stupefy fishes, in addition to different types of fish traps, in their fishing activity. These piscicidal plants are commonly employed to catch fishes from shallow and stagnant fresh water bodies, such as ponds, pools and streams. In this primitive method of fishing, sufficient quantity of crushed or finely chopped plant material is added to water which is then thoroughly churned. This action aids in the release of ichthyotoxic substances from the plant material to water. Fishes killed or

inactivated by the activity of such substances are then either handpicked or collected using nets or fish traps. Eating of such fishes is claimed harmless to human body. Plants which are commonly used as piscicides by the people of Coastal Karnataka are listed in table 2.

Table 2. Plants used as piscicides by traditional communities of Coastal Karnataka, India

SI No.	Name of Species and Family	Local Name(s)	Part(s) Used
1	<i>Adenia hondala</i> (Gaertner) W.J. de Wilde (Passifloraceae)	Irolu kande	Root
2	<i>Allophyllus rheedii</i> (Wight) Radik. (Anacardiaceae)	Mooji kabar tappu	Fruit
3	<i>Anamirta cocculus</i> (L.) Wt. & Arn. (Menispermaceae)	Chiplu kotte	Seed
4	<i>Barringtonia racemosa</i> (L.) Spreng. (Lecythidaceae)	Samudra phala	Fruit / Stem bark
5	<i>Canthium coromandelicum</i> (Burm. F.) Alston (Rubiaceae)	Kaare	Fruit
6	<i>Catunaregam spinosa</i> (Thunb.) Tirvengadam (Rubiaceae)	Kaare	Fruit
7	<i>Cerbera odollum</i> Gaertner (Apocynaceae)	Thende	Fruit
8	<i>Croton tiglium</i> L. (Euphorbiaceae)	Jaapala, Byari bithu	Fruit
9	<i>Derris scandens</i> (Roxb) Benth. (Fabaceae)	Madengi booru	Stem
10	<i>Euphorbia nerifolia</i> L. (Euphorbiaceae)	Kalli	Stem
11	<i>Falconeria insignis</i> Royle (Euphorbiaceae)	Kanappati	Stem
12	<i>Guidonia esculenta</i> (Roxb.) Baill (Salicaceae)	Modia	Stem bark
13	<i>Hopea parviflora</i> Beddome (Dipterocarpaceae)	Karmar	Stem bark
14	<i>Hydnocarpus pentandra</i> (Buch.-Ham.) Oken (Achariaceae)	Soorante	Fruit
15	<i>Pandanus kaida</i> Kurz (Pandanaaceae)	Mundovu	Fruit
16	<i>Piper nigrum</i> L. (Piperaceae)	Adde munchi	Stem
17	<i>Sapindus trifoliatus</i> L. (Sapindaceae)	Narvolu	Fruit
18	<i>Strychnos nux-vomica</i> L. (Loganiaceae)	Kayer	Fruit

Plants used in material culture

Throughout the world, plants are the basis of human material culture. Most indigenous societies which traditionally have lacked the metals and synthetic materials ubiquitous in modern society, rely almost entirely on plants for their material needs. The

number and variety of uses to which indigenous people put plants is astonishing, ranging from woven cords and plant adhesives of sufficient strength to hold large ocean going rafts together to arrow poisons (Balick & Cox, 1996).

A variety of containers and baskets woven from plant parts are used as household articles in Coastal Karnataka. Processed fibrous stems of woody climbers such as *Getonia floribunda* Lam. (Combretaceae), *Pristimera indica* (Willd) A. C. Sm. (Celastraceae) and *Calamus rotang* L. (Arecaceae) are the mainly used plant materials. Mats woven from dried and processed leaves of *Pandanus odoriferand* *Borassus flabellifer* are used in most of the traditional houses. A complete list of these and other plants used in basket making and such other weaving practices is given as table 2.

In fact, weaving baskets, containers and mats from plants and supplying them to the peasant communities was the main life sustaining occupation of one of the tribes of Dakshina Kannada, the **Koragas**. Both men and women of this tribe participate in gathering the plant materials from the nearby forests, processing them and in weaving the artefacts (Fig. 2). In olden days, these products were directly supplied to the farmers in exchange to food stuffs. However, presently, they are sold through middlemen in the local market for monetary prices.



Fig. 2. A basket prepared from the stems of *Pristimera indica*, locally called *maderi* (A), and a Koraga tribal weaving basket from processed stems of *Getonia floribunda* (Engir, B).

The indigenous agrarian communities of Coastal Karnataka prepare and use a variety of implements widely used in their agricultural activities, from plants. Ploughing implements such as **noga**, **naayer** and **palaya** are made from the wood of commonly growing and easily accessible trees like *Anacardium occidentale* L. (Anacardiaceae), *Mangifera indica* L. (Anacardiaceae) and *Strychnos nux-vomica* L. (Loganiaceae). These implements form an intimate part and parcel of most of the rural agricultural houses and occupy a place of honor in the cultural life of the local people.

Table 3. Plants used for making baskets, mats and such other artefacts by the traditional communities of Coastal Karnataka, India

Sl No.	Name of Species and Family	Local Name(s)	Part(s) Used
1	<i>Acacia pennata</i> (L.) Willd. (Fabaceae)	Chende	Stem
2	<i>Bambusa bambos</i> (L.) Voss (Poaceae)	Bedru, Bidiru	Stem
3	<i>Borassus flabellifer</i> L. (Arecaceae)	Thaari	Leaf
4	<i>Bridelia stipularis</i> (L.) Blume (Phyllanthaceae)	Banda naru	Stem
5	<i>Calamus rotang</i> L. (Arecaceae)	Bettha	Stem
6	<i>Careya arborea</i> Roxb. (Lecythidaceae)	Daddala	Stem bark
7	<i>Caryota urens</i> L. (Arecaceae)	Indu	Stem, Leaf
8	<i>Dalbergia volubilis</i> Roxb. (Fabaceae)	Parantolu	Stem
9	<i>Getonia floribunda</i> Lam. (Combretaceae)	Engir	Stem
10	<i>Helicteres isora</i> L. (Malvaceae)	Kayyolu naar	Stem
11	<i>Ichnocarpus frutescens</i> (L.) W. T. Aiton (Apocynaceae)	Per ballu	Stem
12	<i>Jasminum malabaricum</i> Wt. (Sphenocleaceae)	Adroli	Stem
13	<i>Leea indica</i> (Burm.f.) Merr. (Vitaceae)	Nedil	Stem
14	<i>Merremia umbellata</i> (L.) Hall. f. (Convolvulaceae)	Kulovu	Stem
15	<i>Pandanus odorifer</i> (Forssk.) Kuntze (Pandanaceae)	Mundovu	Leaf
16	<i>Pristimera indica</i> (Willd) A. C. Sm. (Celastraceae)	Maderi	Stem
17	<i>Smilax zeylanica</i> L. (Smilacaceae)	Chennere ballu	Stem
18	<i>Strychnos wallichiana</i> Steud. ex. DC. (Loganiaceae)	Ballu Kayer	Stem
19	<i>Uvaria narum</i> (Dunal) Wall. Ex Wight & Arn. (Annonaceae)	Kari maderi	Stem

References:

1. Balick M. Cox PA (1996) Plants, People and Culture – The Science of Ethnobotany. Scientific American Library, New York
2. Bhandary M J, Chandrashekar K R (2001) Treatment for poisonous snake-bites in the ethnomedicine of Coastal Karnataka. J Med Arom Plant Sci 22: 505-510
3. Bhandary MJ, Chandrashekar KR (2003) Veterinary herbal medicine of Coastal Karnataka. J Econ Taxon Bot 27: 645-655
4. Bhandary M J, Chandrashekar K R (2011) Herbal therapy for herpes in the ethnomedicine of Coastal Karnataka. Indian J Traditional Knowledge (Accepted, Manuscript No. IJTK/TK 1380/2009)
5. Bhandary M J, Chandrashekar K R, Kaveriappa KM (1995) Medical Ethnobotany of the Siddis of Uttara Kannada district, Karnataka. India J Ethnopharmacol 47: 149-156
6. Bhandary M J, Chandrashekar K R, Kaveriappa KM (1996) Ethnobotany of the Gowlis of Uttara Kannada, Karnataka. J Econ Taxon Bot 12: 244-249
7. Cooke T (1967) Flora of Presidency of Bombay, Vol I-III. Botanical survey of India, Calcutta
8. Gamble JS (1967) Flora of Presidency of Madras, Vol I-III. Botanical survey of India, Calcutta
9. Saldhanha CJ (1984) Flora of Karnataka, Vol 1. Oxford & IBH Publishers, New Delhi