Distribution and Utilization Patterns of Forest Resource by inhabitants in Tadoba-Andhari National Park (MS), India

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ABSTRACT

Tadoba Andhari Reserve is the largest national park in Maharashtra. The total area of the reserve is 625.4 square kilometres. Extensive floristic exploration of forest resources such as Non-Timber Forest Products (NTFP's) was carried out in some villages besides the Tadoba-Andhari National Park, Chandrapur district, Maharashtra which includes as the potential use of some edible, medicinal and fibrous plants, fruit, seed, mushroom and grasses by local inhabitants. Information on the use of NTFP's plants was obtained through structured questionnaires, complemented by free interviews and informal conversations. The study documented 89 various plant species belonging to 46 families with documented information on the various therapeutic application, Wild Edible fruits; ethno-medicines, wild edible plants.

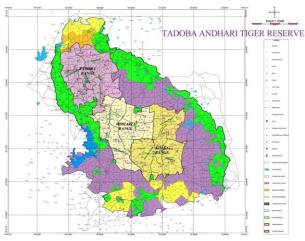
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Keywords: Tadoba-Andhari National Park, Chandrapur district, Non-Timber Forest Products (NTFP's)

INTRODUCTION

Wild plants are important parts of biodiversity and their exploitation has become a valuable livelihood strategy and fall back option for rural households during periods of nutrition, medicinal, gum, shelter, commercial and worship (Bell, 1995). Despite the primary reliance of agricultural societies on domesticated plants and animals for food, the tradition of consuming wild plants has not been completely erased. Millions of people, particularly tribal and rural communities in many developing countries still collect and consumed a wide variety of wild plant resources to meet their food, medicinal, worshiping God and fodder requirements (Balemie and Kebebew, 2006; Bharucha and Pretty, 2010; Food and Agriculture Organization of the United Nations (FAO), 2004), Tadoba reserve is of 116.55 square kilometres and Andhari Wildlife Sanctuary created in 1986 with an area of 508.85 square kilometres. The reserve also includes 32.51 square kilometres of protected forest and 14.93 square kilometres of other areas. Tadoba reserve covers the Chimur Hills, and the Andhari sanctuary covers Moharli and Kolsa ranges. Maharashtra, one of the western states of India has oldest and richest cultural traditions of using plants for various ethno botanical, medicinal, worship and food purposes. Its diverse topography has permitted the survival of traditional knowledge related to plant resources

used by locals as vegetable, medicines, decorative, household purpose. Tadoba-Andhari National Park comprises mainly Gond, Pardhan, Dhivar, Mana tribes. Therefore, there is an urgent necessity to document traditional knowledge, focusing on the maintenance of this important cultural practice. The study can provide a baseline data helpful for prioritization of conservation through sustainable use and management of the resources.



(Map Source:mahatadobatiger)

MATERIAL AND METHOD

Study area

For the present study, there are 16 villages were selected which residing near the forest and close to the boundary and plays main role in the Tadoba-Andhari National Park (20°10′0″North latitudes 79°24′0″ East longitudes). Villages such as Moharli, Kondegaon, Bhamdari, Junona, Palasgaon, Sitarampeth, Katol-Tukum, Gosri, Mudhole, Ashta, Dhanoli, kokevada, Arjuni, Ramdegi, Mesa and nearby villages had been

visited for the documentation of utilization of many forest resources by the local inhabitants. All the selected villages visited regularly from November 2014 to December 2015 in the Tadoba-Andhari National Park. The data on use pattern of NTFPs of wild tubers, leaves; fruits and flowers were collected through questionnaire, focus group discussions and personal interviews with traditional healers and knowledge holders. The plants were identified as per pertinent literatures like Dicot Flora of Chandrapur Forest Division (Moghe,1993) Flora of Nagpur District (Ugemuge, 1986) and Flora of the Presidency of Bombay (Cooke, 1958). The unidentified plants were collected in polythene bags and taken into the laboratory for identification.

RESULT AND DISCUSSION

The selected 16 villages were visited and data from the various loacal medicine man were collected and documented in questionnaire form. During the survey, about 89 plant species of 46 families has been recorded. The utilization pattern and distribution of various forest resources also recorded. The identified plants were documented with its botanical name, local name, family and their various importances. 35 informants of various ages in different villages of the site provided information on plant species used as food, ethno-medicines, fibre and religious worship. Other diseases like skin diseases and anti asthmatics, piles, antidiabetic. vomiting, jaundice, inflammatory, antidysentrics and body pain, snake bites, anti rheumatics cured by herbal formulations of various plants by local inhabitants (Table No. 1).

Table No. 1: List of Forest Resources Utilized by Local Inhabitants in TATR

S.	Botanical Name	Local	Family	Part	Recipe/	Occurrence	Locality
No		Name		Used	Uses/Purpose		-
1.	Andrographis paniculata	Bhue	Acanthaceae	Fruits,	Used as	Forest	1,2,3,4,5,6,7,8,9,1
	(Burm.f.)	Neem		Flower,	medicine as		0,11,12,13,15,16
				Stem	appetiser		
2.	Agaricus sp. mushroom	Kekode	Agaricaceae	Whole	Cooked as	Forest	1,2,3,4,5,6
					vegetable		
3.	Crinum sp.	Dhor	Amayralldaceae	Roots,	Medicine on	Forest	1,16
		kanda		Leaf	Animal's		
					injury.		
4.	Achyranthes aspera L.	Kutra	Amaranthaceae	Root	Used as	Forest	1,2,3,4,5,6,7,8,9,1
					medicine on		0,11,12,13,15,16
					piles		
5.	Mangifera indica Linn.	Amba	Anacardiaceae	Fruit	Eaten raw,	Forest	1,3,5,6,7
					Pickle,	boundaries	
					Soft drink.		

Table 1: Continued...

S. No	Botanical Name	Local Name	Family	Part Used	Recipe/ Uses/Purpose	Occurrence	Locality
6.	Buchanania lanzan Spreng.	Char	Anacardiaceae	Fruit, seed	Used in sweet milk products	Forest Boundaries	1,2,3,4,5,6
7.	Semecarpus anacardium Linn.	Bibba	Anacardiaceae	Fruit seed	Eaten raw, Seed oil is used on pain.	Forest	1,2,3,4,5,6,7,8,9, 10,11,12,13,15,1 6
8.	Annona squamosa Linn.	Sitafal	Annonaceae	Ripe fruit	Eaten raw.	Forest	1,2,3,4,5,6,7,8,9, 10,11,12,13,15, 16
9.	Ferula asafoetida L.	Hing	Apiceae	Fruit	Used in pickles, various dishes	Forest	1,2,3,4,5,6
10.	Plumeria rubra L.	Champa	Apocynaceae	Leaf	Leaf extract is used on pain	Forest	1,2
11.	Wrightia timctoria R.Br.	Kuda	Apocynaceae	Fruit	Medicinal	Forest	1,2,3,4,5,6
12.	Phoenix sylvestris (Linn.) Roxb.	Sindhi	Araceae	Branch	Decoration, Broom.	Forest	1,2,3,4
13.	Amorphophallous Blume ex Decne.	Suran	Araceae	Corm	Cooked as vegetable and medicine on body pain	Forest	1
14.	Colocasia esculenta (L.)	Dhopa	Araceae	Leaf	Used to make food items	Forest	1,2,3,4,5,6
15.	<i>Dregea volubilis</i> (L.f) Benth.	Ekdori	Asclepiadaceae	Flower, Fruit	Pickle, Cooked as vegetable.	Near Forest boundaries	1,2,3
16.	Calotropis gigantea R.Br	Rui	Asclepiadaceae	Flower, soil near to root, milk latex	Worshiping god Hanuman, Tonsils, Psyllium.	Forest	1,2,3,4,5,6,7,8,9 ,10,11,12,13,15 ,16
17.	Tridax procumbens L.	Kambar modi	Asteraceae	Leaf	Crushed leaves are applied on wounds	Forest boundaries	1,2,3,4,5,6,7,8,9 ,10,11,12,13,15 ,16
18.	<i>Dolichandrone falcata</i> Seem.	Medshing	Bignoniaceae	Stem Bark	Decoction for rheumatic pain	Forest	1,2,7,8,9
19.	<i>Oroxylum indicum</i> (L.) Vent.	Tetu	Bignoniaceae	Legume	Cooked as vegetable.	Near Forest boundaries	1,2,3,4
20.	Tamarindus indica Linn.	Chinch	Caesalpiniaceae	Leaf, Fruit	Pickle, Soup	Forest	1,3
21.	Cassia fistula L.	Bahava	Caesalpiniaceae	Yellow flower, Legume	Medicine	Forest	1,2,3,4,5,6,7,8,9
22.	Bauhinia racemosa (Linn.)	Apta	Caesalpinceae	Leaf	During <i>Dashera</i> (sona).	Forest	1,2,3,4,5,6,7,8,9 ,10,15
23.	Celastrus paniculata Willd.	Malkamu ni	Celastraceae	Leaf	Cooked as vegetable	Forest	1,2,3,4,5,15
24.	Maytenus emarginata (Willd.)	Bharati	Celastraceae	Root	Used as medicine on piles	Forest	1,2,3,4,5,6,7,8,9 ,10,11,12,13,15 ,16
25.	Cochlospermun religiosum (L)Al.	Gongal	Cochlospermace ae		Medicine on Jaundice.	Forest	1,2,3,4,5,6,7,8
26.	Terminalia catappa L.	Desi Badam	Combretaceae	Ripe fruit	Eaten raw	Forest	1,2,3,4,5,6,7,8,9 ,10,15
27.	<i>Terminalia arjuna</i> (Roxb.) Wt.&Arn	Arjun trees	Combretaceae	Bark	Anticancer	Forest	1
28.	Terminalia bellirica Roxb.	Behada	Combretaceae	Fruit	Medicine	Forest	1,2
29.	Phyla nodiflora L.	Bopli	Convolvulaceae	Leaf	Used in skin diseases like psyllium.	Forest boundaries	1
30.	Ipomoea fistulosa Mart. Ex.	Beshram	Convolvulaceae	Leaf, Stem	Veterinary medicine	Forest-lake	1
31.	Cuscuta reflexa Roxb	Amarvel	Cuscutaceae	Whole plant	Baldness	Forest	1,5

Table 1: Continued...

S. No	Botanical Name	Local Name	Family	Part Used	Recipe/ Uses/Purpose	Occurrence	Locality
32.	Dioscorea bulbifera L.	Mataru	Dioscoreaceae	Tuber	Edible, Medicinal.	Forest	1,2,3,4,5,6
33.	Diospyros melanoxylon Robx.	Temburni/ Tendu	Ebenaceae	Ripe fruit, leaf	Edible, Beedi making	Forest	1,2,3,4,5,6
34.	Antidesma acidum Retz.	Jondhurli	Euphorbiaceae	Fruit	Eaten raw	Forest	1,2,3,4,5,6
35.	Cleistanthus collinus Benth.	Garadi	Euphorbiaceae	Leaf, Fruit	Leaf extract is used on animals injury, Fish poison	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
36.	Euphorbia hirta Linn.	Dudhi	Euphorbiaceae	Latex Root	Used in skin diseases like leucodermal spot. Paste of root given with honey to nursing mother to increase milk.	Forest	1,2,3,4,5,
37.	Emblica officinalis Gaertn.	Awala	Euphorbiaceae	Fruit	Eaten raw, Paste made from fruits and seeds of groundnut make a good lotion for problems of dry skin	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
38.	Bridelia hamiltoni L.	Kudurshi	Euphorbiaceae	Fruit	Edible	Forest	1,6
39.	Pterocarpus marsupium Roxb.	Raktachand an/ Bija	Fabaceae	Stem bark	Medicine, Skin injury, Cosmetics.	Forest	1,2,3,4,5,6
40.	Butea monosperma (Lamk.)	Palas	Fabaceae	Fruit, Leaf	Dye, Colour, Leaf-plate making, Used during festival of <i>Pola</i>	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
41.	Atylosia scarabaeoides L.	Rantur	Fabaceae	Flower, Fruit	Cooked as vegetable	Forest	1,2,3,4,5,6,12,1 5
42.	Sesbania grandiflora Pers.	Heti	Fabaceae	Flower	Cooked as vegetable	Forest boundaries	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
43.	Abrus precatorius(Linn)	Gunj	Fabaceae	Leaves	Use in chewing	Forest	1,2,3
44.	Mucuna pruriens L.	Khaj khujli	Fabaceae	Leaves, seed	Cattle sex tonic	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
45.	Leonotis nepetifolia (L.) R.Br	Deepmal	Lamiaceae	Root	Skin diseases	Forest	1,2,3,4,5,6
46.	Smilax macrophylla(Roxb)	Masala pan	Liliaceae	Leaf	Cooked as vegetable	Forest	1,2,3,4,5,6
47.	Asparagus racemosus Willd.	Marbat	Liliaceae	Rizome	Anti- inflammatory	Forest	1
48.	Strychnos nux-vomica L.	Kuchali	Loganiaceae	Seeds	Medicine on Dog, Scorpion bites.	Forest	1,2,3,11,12,13
49.	Ammannia baccifera Linn.	Dhan bhaji	Lythraceae	Young leaf	Used to make paratha.	Forest	1,2,3,4,5,6,
50.	Lagerstroemia parviflora Roxb.	Lendi	Lythraceae	Bark, Leaves	Dyeing	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
51.	Sida acuta Brum.	Bala	Malvaceae	Whole plant, root	Used as Broom Used as sex tonic	Forest	1

Table 1: Continued...

	1: Continued						
S. No	Botanical Name	Local Name	Family	Part Used	Recipe/ Uses/Purpose	Occurrence	Locality
52.	Hibiscus sabdariffa L.	Lalambadi	Malvaceae	Leaves	Cooked as vegetable	Forest boundaries	1,2,3,4,5,6,7,8,9 ,10,11,12,13,15
53.	Soymida febrifuga A.Juss.	Rohan	Meliaceae	Bark	Medicine for fever	Forest	1,2,3,4,5,6,7,8 ,15,16
54.	Azadirachta indica A.Juss.	Neem	Meliaceae	Leaf, Fully ripe Fruit	Eaten raw, Medicines, Leaf in controlling store grain pest.	Forest boundaries	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
55.	Acacia nilotica (L) Del.	Babul	Mimosaceae	Whole tree used	Fencing	Forest boundaries	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
56.	Acacia leucophloea Roxb. Willd.	Hiwar	Mimosaceae	Stem	Gum	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
57.	Pithecellobium dulce (Roxb.) Benth	Chinchbila i	Mimosaceae	Aril of seed	Eaten raw	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
58.	Acacia nilotica L.Del	Babul	Mimosaceae	Stem	Veterinary medicine	Forest boundaries	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
59.	Ficus religiosa Linn.	Pipal	Moraceae	Receptacl es	15-20 receptacles taken with local liquor just before one week of menses.	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
60.	Ficus benghalensis L.	Wad/Barig ad	Moraceae	Fruit Latex	Eaten by people for seminal weakness. Used in rheumatism.	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
61.	Ficus racemosa Linn.	Umber	Moraceae	Ripe fruit	Eaten raw, Kunbi worship tree during marriage ceremony.	Forest	1,2,3,4,5,6,7, 8,9,10,15
62.	Eucalyptus globulus L.	Nilgiri	Myrtaceae	Leaves	Oil	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
63.	Syzygium cumunii (Linn.) Skeels.	Jhambul	Myrtaceae	Ripe fruit	Eaten raw	Forest	5,7,8,9,16
64.	Nelumbo nucifera Gaertn.	Kamal	Nelumbonacea e	Kokambe (unripe seed)	Edible	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
65.	Olax scandens Roxb	Araktondi	Olacaceae	Tender leaves	Edible as vegetable	Forest	1,2,3,6
66.	Hemidesmus indicus var.pubescens(Wight & Arn.)	Anantmul	Periplocaceae	Root, latex	Use in Fever, Wound.	Forest boundaries	5,6
67	Dendrocalamus strictus (Roxb).	Bamboo- karka	Poaceae	Tender green shoot	Cooked as vegetable	Forest	1,2,3,4,5,6
68.	Dicanthium annulatunm(Forssk.)	Marval	Poaceae	Whole grass	Tying bundles(bhara), Fodder	Forest along streams	1,2,3,4,5,6,7, 8,9,10,15
69.	Themeda quadrivalvis (L)Ktze.	Pohani gavat	Poaceae	Whole grass	Hut, fodder, Tying	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
70.	Aristida adscensionis L.	Truli	Poaceae	Whole grass	Shade, Tent	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16

Table 1: Continued..

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S. No	Botanical Name	Local Name	Family	Part Used	Recipe/ Uses/Purpose	Occurrence	Locality
71.	Ziziphus oenoplia (Linn.) Mill	Yeroni	Rhamnaceae	Ripe fruit	Eaten raw.	Forest openings	1,2,3
72.	Ziziphus glaberrima Sant.	Ranbor	Rhamnaceae	Ripe fruit	Eaten raw	Forest	1
73.	Gardenia gummifera Linn.	Kudmudi	Rubiaceae	Fruit	Cooked as vegetable	Forest	1,5,6,11,12,13
74.	Tamilnadia uliginosa(Retz)	Phetra	Rubiaceae	Flower, Fruit	Cooked as. Vegetable.	Forest	1,2,3,4,5,6
75.	Canthium parviflorum Lamk.	Katbor	Rubiaceae	Ripe fruit	Eaten raw	Forest	1,2,3,4,5,6
76.	Borreria articularis (L.) Will.	Madangha ti	Rubiaceae	Root	Use in snake bite and scorpion sting	Forest	1,2,3,4,5,6
77.	Chloroxylon swietenia DC.	Bhera	Rutaceae	Root	Used as medicine on piles, Insect repellent	Forest	1,2,3,4,5,6,7, 8 ,13,15,16
78.	Aegle marmelos (Linn.) Corr.	Bel	Rutaceae	Ripe Fruit , Leaf	Eaten raw, Soft drink, Worshiping God <i>Shivji</i> .	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
79.	<i>Limonia acidissima</i> Linn	Kawat	Rutaceae	Ripe fruit	Eaten raw, pickle, Soft drink, chutteny, Soup.	Forest	1,2,3,15
80.	Sapindus emarginatus Vahl.	Ritha	Sapindaceae	Fruit	Washing cloth & hairs	Dense forest	1,2,3
81.	Dodonaea viscosa Jacq.	Lokhandi/ Zilbuli	Sapindaceae	Root, Whole plant	Used as medicine on piles, Fencing	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
82.	Madhuca longifolia (koen.) Macbr	Mahua	Sapotaceae	Fruit, Flower	Eaten raw, Preparation of drink	Near Forest boundaries	1,2,3,4,6
83.	Datura metel L	Dhatura	Solanaceae	Seed	Used in fever, skin diseases, asthma, hydrophobia and malaria fever	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
84.	Sterculia urens Roxb.	Karu	Sterculiaceae	Stem	Gum	Forest	1,4,5,6,15
85.	Grewia hirsuta vahl	Ghaturli	Tiliaceae	Fruit, leaves	Edible	Forest	1,2,3
86.	Typha angustata Chb.	Udsudi	Typhaceae	Whole grass, root	Making hut roof, root wool(khass)	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16
87.	Clerodendrum serratum (L.) Moon	Khanduch akka	Verbenaceae	Leaf	Use in wound healing	Forest	1,2,3,4
88.	Vitex negundo L.	Nirgudi	Verbenaceae	Leaf	Leaf boiled water is use to take bath.	Forest	1,2,7,8,9
89.	Tribulus terrestris L.	Gokharu	Zygophyllaceae	Leaf	Veterinary medicine	Forest	1,2,3,4,5,6,7, 8,9,10,11,12, 13,15,16

Note: Selected Villages- 1. Moharli, 2. Kondegaon, 3. Bhamdari, 4.Junona, 5.Palasgaon, 6.Sitarampeth, 7.Katol-Tukum, 8. Gosri, 9. Mudhole,10. Ashta, 11. Dhanoli, 12. Kokevada, 13. Arjuni, 14. Ramdegi, 15. Mesa,16. Chargaon(Khurd)

CONCLUSION

The results of this study have revealed that traditional knowledge on the use of forest resources is practiced by the rural people in villages near Tadoba-Andhari National Park there is a natural wealth of medicinal knowledge amongst the local inhabitants ,which they are using it in their day to day life. The preservation of this knowledge is due to continued reliance on wild forest plants for various human needs and these species have the potential to become valuable and important alternatives to the usual food crops, artificial fibre and medicines by many households. Therapeutic applications of the plants discussed in the present article used to cure ailments open new vistas researchers to carryout in-depth phytochemical and pharmacological investigations about the plants so as to validate the efficacy of indigenous herbal medicine. Therefore, it is greatly needed to assess these plants for further studies in this regard. The information provided in the paper is limited and there is always a scope to initiate more ethnomedicobotanical study among the ethnic communities of nearby villages to gather information as far as possible Moreover, many of these NTFP's plants of this forest are rapidly shrinking due to population explosion and consequent human activities like construction of roads, housing, agricultural land expansion etc. and also lack of sustainable harvesting practices. It has thus been instrumental for documentation of traditional knowledge related to the intangible cultural heritage concerning traditional plant uses. This type of study could contribute significantly in government policies to improve plants security in forest tribal area and improvement of wild plant, whose potential as source of nutrition, medicinal, fodder, dye, gum, cultural festivals commercial and worship.

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