

INDIGENOUS KNOWLEDGE OF COMMUNITIES OF ACHANAKMAR-AMARKANTAK BIOSPHERE RESERVE IN UTILIZATION, CONSERVATION AND SUSTAINABILITY OF NTFP IN CHHATTISGARH (INDIA).

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Introduction

About 44 tribal communities live in Chhattisgarh state. Over the years of trial and errors, they have accumulated a great deal of knowledge on the utility of surrounding biodiversity. This traditionally occupied knowledge is transmitted by oral means and is mostly acquired through learning-by-doing approaches.

The tribals of Central India are traditionally hunter gatherer communities and depend on the forest for their existence. The people collect Non Timber Forest Products (NTFPs) for trade mainly honey, gums and resin, gooseberry, myrobalans, medicinal roots, etc., which are of seasonal in nature. In the dry tropical Forest of Central India, where there is scarcity of water and opportunities for farming are limited, NTFPs resources are in many cases the only means for survival to tribals for several months in a year. NTFP and its role in socio-economic sustenance of local communities are available (Gupta and Guleria 1982; Prasad and Bhatnagar, 1991; Chopra, 1994; Chandrasekharan, 1997, FAO; 1994; 1988; Prasad and Bhatnagar, 1998). A large numbers of rural families in particular those of agricultural labourers, rural artisans, and marginal and small farmers, are NTFP gatherers. Reporting a study from Raipur district in central India, Chopra (1994) observed that 98 per cent of those interviewed mentioned collection of NTFP as a secondary source of livelihood. In Sheopur district of Madhya Pradesh, a primitive tribe Saharias in 60 villages are totally dependant on NTFP collection for their livelihood support (Bhattacharya, 2000).

Recently, probably as a consequence of the worldwide promotion of 'sustainability' and 'equitability' in the development business, some changes have occurred in the attitude of foresters towards local knowledge, Forest development now seems to attach great importance to 'indigenous people' and their 'traditional knowledge or indigenous knowledge' which is defined as "the unique, traditional, local knowledge existing within and developed around the specific conditions of men and women indigenous to a particular geographic area." (Grenier, 1998).

The perception, that NTFPs are more accessible to

rural populations, especially to the rural poor (Saxena, 2003) and that their exploitation is more benign than timber harvesting (Myers 1988) favoured NTFP becoming economically acceptable ecological option of development. There was also an assumption, often implicit, that making forests more valuable to local users can encourage forest conservation (Plotkin and Famolare, 1992). NTFP-based development was born as a new development paradigm capable of accommodating many conflicting needs of local livelihoods and of global markets; of balancing regional developmental aspirations with that of national growth and above all that of environment and of development.

In recent years both research and policy debate have increasingly considered reliance on NTFPs as a livelihood strategy, with many commentators highlighting a high dependence on forests and NTFPs especially amongst asset-poor households (Shackleton *et al.*, 2001; Fisher, 2004). Rural households throughout the developing world rely to varying degrees on a range of products and species collected from the surrounding ecosystems (Shackleton *et al.*, 2002; Angelsen and Wunder, 2003). These are used either for direct household consumption or sold in local, regional and national markets and when included into rural livelihood strategies, help reduce peoples' vulnerability to risks (Neumann and Hirsch, 2000). The products and species used can be diverse. In certain cases the income from these products (as both a direct cost saving and through their sale) has been found to be more than or on a par with other sources of income (Cavendish, 2000; Dowie, 2001). Additionally, the potential income from NTFPs has been seen to be comparable with other land-use options motivating proponents to consider whether or not transformative land-use options (e.g. agriculture) make long-term economic sense.

It is important that scientists dealing with local knowledge try to go beyond compiling summaries of knowledge to aim at reporting more globally on the local science that underlies management systems, including its very clear and sometimes major social, political and symbolic components. This does not mean that focused,

utilitarian approaches are not useful but that they are not sufficient. For example, Walker and Sinclair (1998) argue for a series of partial approaches, each focused on a particular compartment of the global environmental knowledge, to fully understand local knowledge, somewhat similar to the 'deconstruction' process commonly used in anthropological research (Godelier, 1984).

Study area

The Chhattisgarh state of India is one of the best representatives of the Deccan Peninsular bio-geographic zone that obtains biodiversity rich deciduous forests. Achanakmar-Amarkantak Biosphere Reserve (BR) is situated between the parallels of latitude 21°15' North and 22°58' North and the meridians of longitude 81°25' East and 82°5' East. Total area of the BR is 3,835.51 km², out of which, 1,224.98 km² falls in Madhya Pradesh State and the remaining area of 2,610.53 km² falls in Chhattisgarh State. About 44% geographical area of Chhattisgarh state is under various types of forests with rich plant diversity, of these many species are of ethnobotanical importance. Most of the area of the proposed Achanakmar-Amarkantak BR is either dense or open or degraded and blank forest with rich biodiversity along with agriculture fields in between. The reserve forest in the BR is about 66% of the total geographic area of the BR. Zonation of proposed BR is determined on the basis of existing Indian Wildlife Protection Act and no new restriction have been imposed.

Material and Methodology

The data were collected with qualitative interviews, semi-structured or unstructured interviews, informal conversations and structured questionnaires. Interviews were conducted in and around Achanakmar-Amarkantak Biosphere Reserve to study the indigenous knowledge in utilization, conservation and sustainability of NTFP in the indigenous communities of Biosphere Reserve. The study was carried out in the twenty villages (10 villages in the interior of AABR constituted Block I) and (10 villages in the exterior/ periphery region constituted Block II) of Achanakmar-Amarkantak Biosphere Reserve (AABR). Two to five respondents were selected from each hamlet depending upon the demographic composition and also recognized resource persons of hamlets. Interviews were selected based on being identified as established NTFPs harvesters. The main target of respondents were NTFPs harvesters irrespective of their gender, age and caste but some non harvesters were also interviewed as some of the non harvesters may hold more indigenous knowledge in context of NTFPs extraction, utilization, conservation

and sustainability, storing, grading and value addition, etc. The main aim was to maximize the amount and quality of TEK obtained from respondents rather than the representative. The traditional knowledge provided by the local communities was documented, analyzed and cross-checked with local people in the PRA meetings.

Results

All the 74 respondents (35 from Block I and 39 from Block II) were assured before interviewees that this part of research has nothing to do with the rights or restrictions on the NTFPs extraction in order to get the abundant and real information because earlier it was observed that respondents were reluctant to give real information in dilemma of some imposition or restrictions. Harvesters, indigenous knowledge were compiled in a tabular form (Table 1 and Table 2) and efforts were made to bring out all aspects which touched objectives of our study.

It is observed that several primitive tribal population like Gond, Baiga, Kanwar, Uraon, Bharia and Pahadi korwa of Achanakmar-Amarkantak Biosphere Reserve possess fairly good indigenous knowledge of ethno-botany with having a higher indigenous knowledge of Rutaceae, Euphorbiaceae, Caesalpiniaceae and Combretaceae (Fig. 3) but least knowledge about conservation practices. However, ever since it has been nominated as protected area conservation awareness has augmented to some extent. But, serious attempts have not been made so far to document the invaluable indigenous knowledge of primitive tribal groups of Chhattisgarh. The tribal possess some conservation knowledge about *Bauhinia variegata* Linn., *Dendrocalamus strictus*, *Diospyros melanoxylon* Roxb and *Shorea robusta* Gaertn.

This important knowledge has value for anthropologists, scientists and planners for formulating tribal development alternatives. The indigenous knowledge offers new models for development that are both ecologically and socially sound (Posey, 1985). The main objective for the promotion of indigenous knowledge is its effective use for sustainable development (Quiroz, 1996).

It is also observed that contemporary interventions in forestry like Joint Forest Management (JFM) or Community Forest Management have also influenced tribal's relationship with the forest, with other villages and their own knowledge. Tribal's indigenous knowledge of forest conservation and regeneration is also gradually disappearing. The community forest management scheme of the Chhattisgarh State Forest Department has neglected the

indigenous knowledge of the tribal. In the interest of conservation and to obtain sustained revenue from non-timber forest products, it is necessary for the government to involve the local tribals in the management of forest. There is an urgent need to document the existing indigenous knowledge of the Primitive Tribal Groups of Chattisgarh and evaluate their value for bio-diversity conservation. The efforts in this direction should be well coordinated between government agencies such as Forest department and academicians like, Anthropologists, Botanists, Geographers and N.G.O's at large.

Variation was observed in indigenous knowledge in both of Blocks (Block I and Block II) in context of utilitarian, conservation and sustainability. It was observed that respondents from each Block possess almost same level of traditional knowledge in utilitarian aspect. However, much variation has been recorded in conservation and sustainability concern, even though some of the respondents from Block II seem unaware of these terms and their meaning and some respondents were unable to distinguish between conservation and sustainability. In due course of study most of the respondents were lenient towards the utilitarian questionnaires and were quite comfortable while answering the same but seem to be reluctant when it comes to conservation and sustainability questionnaires despite of all over efforts to make them comfortable. All 74 respondents were finding with indigenous knowledge from both of the Blocks (35 from Block I and 39 from Block II). However, a large gap or better to say a missing link has been formed in other two aspects of the research. There are certain factors for this gap but distance and awareness were the two main significant factors for this big gap. 14 respondents from Block I were formed to have conservation indigenous knowledge whereas only 2 respondents from Block II were having some knowledge in conservation. In context to sustainability only 9 respondents from Block I and 2 respondents from Block II answered.

Moreover, major respondents about 52.7% from age group of 60-80 i.e. 39 were found having indigenous knowledge and it decrease with the other two young generation groups like 20-40 and 40-60, this indicates that IK is decreasing with the new age groups. Therefore, it is necessary to document it before it is lost completely with new generation and emphasis should be also laid for promotion of the same.

Discussion

In mega-diverse countries like India, where the Indigenous Knowledge (IK) system is much more profound than that of some other parts of the world that

are not so rich in biodiversity, this phenomenon can easily be observed. The relationship between the communities, biodiversity and associated IK is so intrinsic that they form part and parcel of one synergistic whole. Traditional practices (read customs and customary practices) of the communities have played an instrumental role in maintaining this synergistic relationship.

Although efforts to protect indigenous knowledge (IK) in India is gaining momentum, there exist differences in perspectives, as far as the current debates and discussions pertaining to the use and protection of biodiversity and associated IK is concerned. While some are putting emphasis on the 'commercialisation' aspect of biodiversity and IK, others view the subject matter more holistically that the community, their traditions and biodiversity together form a complete and sustainable system. However, in general, people said that NTFP collection decreased with time in Biosphere Reserve since a ban has been imposed on tendu patta (*Disypros melanxylon*) and mahul leaves (*Bauhinia valii*) collection due to which commercialization also declines in the Biosphere region. They also submitted that NTFP plays an important source of income for sustaining their daily needs, since there is continuous threat of loss in yields from cultivation due to depredation of wild buffalos, monkey, etc.

Further debate and discussion, as well as research is required in order to converge the existing differences in viewpoints, and in order to draw out elements for law/policy making on the protection of IK, which are best, suited to the communities.

Since, better late than never, some appreciable efforts have been initiated by the various agencies like forest department has launched VRIKSHAMITRA MAHABHIYAN- largest campaign for environment protection and awareness and World Wildlife Fund (WWF) has also launched save tiger to make the communities of Achanakmar-Amarkantak Biosphere Reserve aware about the conservation but alone campaigning will not fulfill the vision of Biosphere Reserve Objectives.

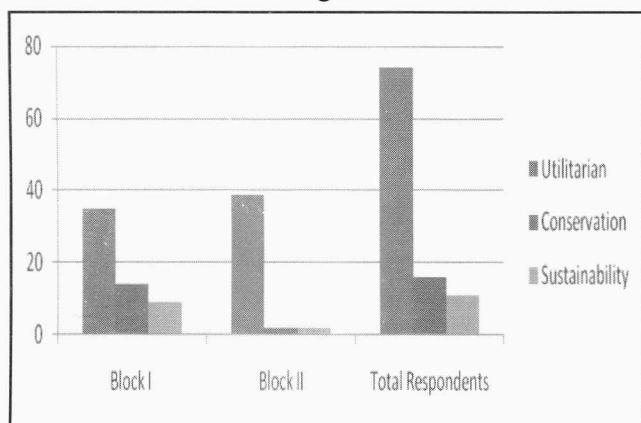
It is fortunate to observe that interest in the role of indigenous knowledge in sustainable development has increased in the past ten years in many countries as well as in Intergovernmental Organizations and NGOs. Nevertheless indigenous knowledge continues to be largely disregarded in development planning, it plays only a marginal role in biodiversity management and its contribution to society in general is neglected. Furthermore, indigenous knowledge is being lost under the impact of modernization and of ongoing

globalization processes. There is a need to protect and further develop the knowledge generated and perpetuated by local communities through awareness-raising, training programmes, international property rights arrangements, and validation procedures.

During our survey we felt the utmost need of

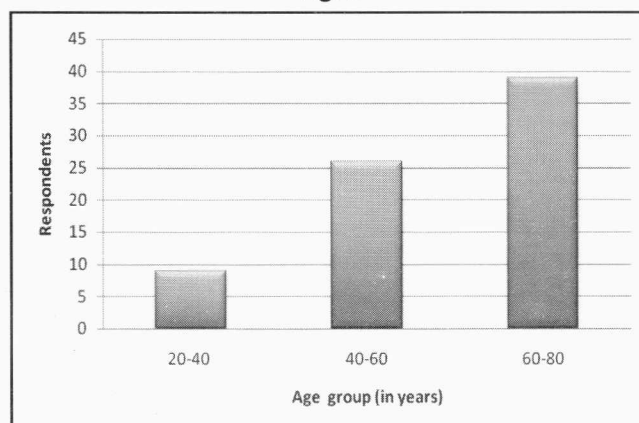
massive awareness campaigning for the stipulated objectives of 'Man and Biosphere' (MAB) programme in the entire region of Achanakmar-Amarkantak Biosphere Reserve that must be participatory and implemented at the grassroots level for the communities living in and around of the Achanakmar-Amarkantak Biosphere Reserve.

Fig. 1



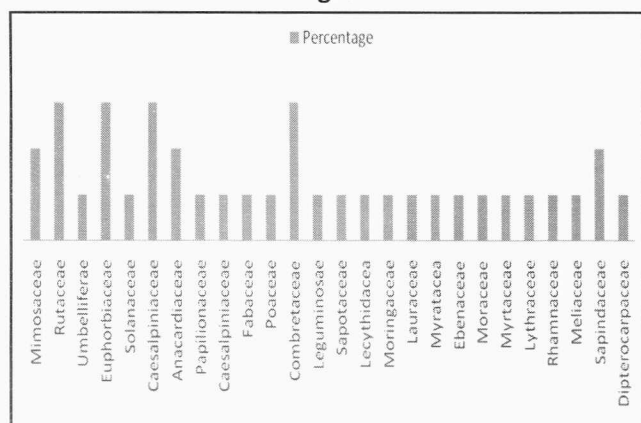
Indigenous knowledge among respondents

Fig. 2



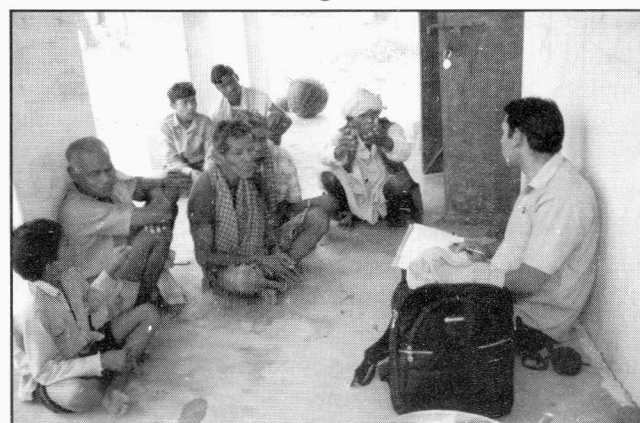
Indigenous knowledge among age groups

Fig. 3



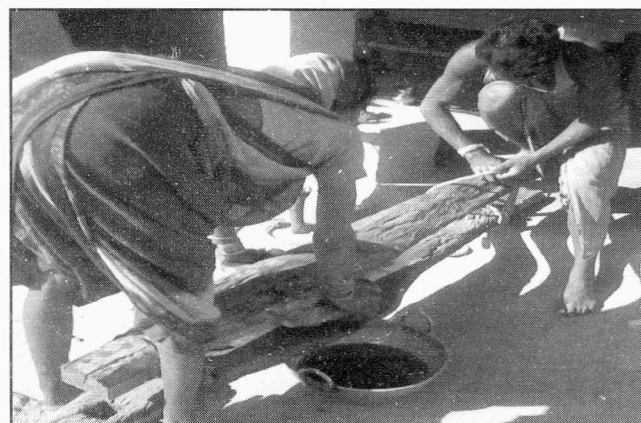
Utilitarian Indigenous Knowledge family wise

Fig. 4



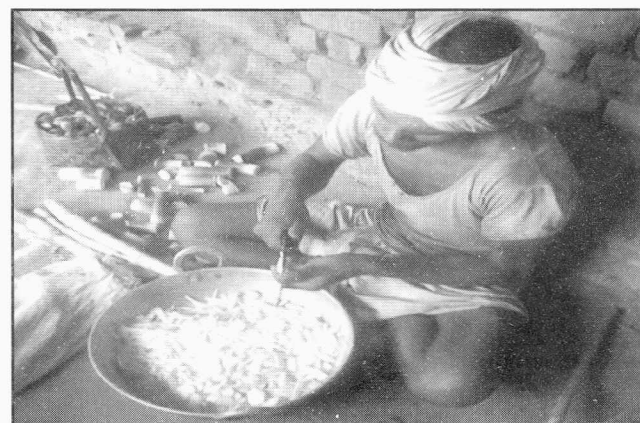
Interviewees with communities

Fig. 5



A Gond family extracts oil from Mahu (*Madhuca indica* J.f.Gmel) seeds by indigenous method

Fig. 6



A Bagia cuts Bans (*Dendrocalamus strictus* Roxb.) into small to cook as vegetable.

Table 1
Summary of harvesters indigenous knowledge.

Particular	Block I	Block II	Indigenous Knowledge
Utilitarian	35	39	All 74 respondents show possession of IK in utilitarian of NTFPs, their uses for various purposes and their storage.
Conservation	14	2	16 respondents were having some sort of IK in conservation. 14 harvesters from Block I admitted that there has been loss of certain species and some other are threatened. Therefore we are concerned about the loss of biodiversity and had initiated some efforts by our own level like campaigning about the same.
Sustainability	9	2	11 respondents were having some knowledge of sustainability but they hardly apply it.

Sources: Research Field survey.

Table 2
Indigenous uses of some plants species.

Botanical Name	Local Name	Parts used	Family	Utilitarian IK	Conservation IK	Uses
<i>Acacia arabica</i> (Lamk.) Willd.	Babool	Leave, Fruits, Bark	Mimosaceae	Yes	No	Leaves are astringent and beneficial to the eye, Fruit of the plant is coagulant, Extract of the bark is mixed with honey is applied in the eyes to relieve conjunctivitis and to stop lacrimation.
<i>Acacia nilotica</i> (L) Benth Brenan	Babul	Leaves, Bark, Twigs	Mimosaceae	Yes	No	Bark, twigs is embarked and its liquid juice is extracted and is applied for Tooth ache.
<i>Aegle marmelos</i> Correa	Bel	Fruit	Rutaceae	Yes	No	Used in dysentery and diarrhea.- Fruits are good tonic for brain. Leaves are good in diabetes
<i>Bauchanania lanzan</i> Spreng.	Chironji	Fruit	Anacardiaceae	Yes	No	Fruit is edible
<i>Bauhinia variegata</i> Linn.	Kachnaar	Bark	Caesalpiniaceae	Yes	Yes	Used in dysentery and piles, skin disorders.
<i>Butea monosperma</i> (Lamk.) Taub.	Palas	Flowers	Papilionaceae	Yes	No	Flowers are used in burning sensation and useful in skin diseases, fruits cure diseases related to urine, piles, worms, abdomen etc. Fruits are aphrodisiac and anthelmintic.
<i>Careya arborea</i> Roxb.	Kumbhi	Bark	Lecythidaceae	Yes	No	Bark is grinded and dipped in water for 1 -3 minutes and is extracted in glass which controls and cures dysentery and diarrhea.
<i>Cassia fistula</i> Linn.	Amaltas	Flowers, Leaves	Caesalpiniaceae	Yes	No	Leaves and flowers are used in ringworms and other skin infections.
<i>Chloroxylon swietenia</i> DC	Buruta	Leaves	Rutaceae	Yes	No	To keep mosquito away from their body, they rub the leaves.

Contd...

Botanical Name	Local Name	Parts used	Family	Utilitarian IK	Conservation IK	Uses
<i>Citrus aurentium</i> Linn	Khatta nibu	Juice	Rutaceae	Yes	No	It removes constipation, cures nausea, vomiting, thirst, bad taste of mouth and indigestion.
<i>Cleistanthus collinus</i>	karra	Fruit	Euphorbiaceae	Yes	No	Fruits are used as poison for fishing.
<i>Coriandrum sativum</i> Linn	Dhania	Leaves	Umbelliferae	Yes	No	Seeds are carminative, stomachic.
<i>Datura stramonium</i> Linn.	Dhatura	Fruit	Solanaceae	Yes	No	Fruits are used in skin related disorders, Seeds are employed in headache
<i>Dalbergia sisoo</i> Roxb.	Sisham	Bark	Fabaceae	Yes	No	Wood used to make handle of axe
<i>Dendrocalamus strictus</i> Roxb.	Lathi bans	Whole Plant	Poaceae	Yes	Yes	Young stem used as special vegetable.
<i>Diospyros melanoxylon</i> Roxb	Tendu	Leaves	Ebenaceae	Yes	Yes	Tender Leaves used for Bidi (Cigarette) making, species used for curing snakebite
<i>Ficus bengalensis</i> L.	Bargad	Fruits, leaves, bark	Moraceae	Yes	No	Cough, body ache, dysentery, cut-wounds, scorpion bite
<i>Litsea glutinosa</i> (Lour.) C.R.Robins.	Maida	Bark	Lauraceae	Yes	No	Bark is grinded and is mixed with curd to cure for dysentery and diarrhea.
<i>Madhuca indica</i> J.f.Gmel.	Mahua	Flowers, Fruits	Sapotaceae	Yes	No	Flowers are decocted for 3 - 4 days and juice extracted is used for liquor. Oil is extracted from fruits which is used in cooking and also in massage on body to reduce dryness of skin.
<i>Melia azadirachta</i> Linn.	Bakain	Bark, Fruit	Meliaceae	Yes	No	Bark is antifungal, it cures eczema and boils, ulcers and stomachache.
<i>Moringa oleifera</i> Lam	Munga	Fruits, leaves	Moringaceae	Yes	No	Fruits and leaves are special vegetable for the maternal women to overcome from weakness.
<i>Phyllanthus emblica</i> Linn.	Amla	Fruits	Euphorbiaceae	Yes	No	Used for the indigestion,
<i>Pisidium guajava</i> L.	Beheia	Leaves	Myrtaceae	Yes	No	Leaves are used to cure blisters in mouth.
<i>Pterocarpus marsupium</i> Roxb	Bijaka, Beejasaal	Pods, Flowers	Leguminosae	Yes	No	Used in leprosy, leucoderma and other skin diseases. Cure diabetes and ulcer
<i>Ricinus communis</i> Linn.	Arandi	Leaves, Fruits,	Euphorbiaceae	Yes	No	It cures cough and headache. Good in rheumatism, fever and urinary disorders
<i>Sapindus laurifolius</i> Linn	Reetha	leaves, bark	Sapindaceae	Yes	No	it is used as shampoo, promotes hair growth.

Contd...

Botanical Name	Local Name	Parts used	Family	Utilitarian IK	Conservation IK	Uses
<i>Schleichera oleosa</i> (Lour.) Oken	Kusum	Fruit, Leaf Fruits edible	Sapindaceae	Yes	No	Lac cultivation, Leaves as fodder.
<i>Semecarpus anacardium</i> Linn	Bhilwa	Fruits	Anacardiaceae	Yes	No	Oil extracted from burned stony fruit is used to fill cracks of heels
<i>Shorea robusta</i> Gaertn.	Sal	Seed, Shoots	Dipterocarpaceae	Yes	Yes	A young shoot juice used as fish poison. Seeds are source of oil used in lamps & cooking
<i>Syzygium cumini</i> Linn.	Jamun	Seed	Myrtaceae	Yes	No	15 gm powder of seeds is used for 3-4 days to cure diabetes.
<i>Tamarindus indica</i> Linn.	Emli	Fruits	Caesalpiaceae	Yes	No	Fruits are dipped in water till its ingredients are mixed and taken as sherbet during intense hot days of summer.
<i>Terminalia arjuna</i> (Roxb. ex DC.)	Kahua	Bark	Combretaceae	Yes	No	bark is used as tonic to avoid heart problems
<i>Terminalia chebula</i> Linn	Harad	Fruits	Combretaceae	Yes	No	Fruits are used as purgative, roasted fruits are used for a week, twice a day to cure cough. Very popular treatment for curing cough.
<i>Terminallia chebula</i> Retz.	Harra	Fruits	Combretaceae	Yes	No	Pulp is purgative and used in all intestinal disorders.
<i>Woodfordia fruticosa</i> Linn	Dhawai	Leaves	Lythraceae	Yes	No	Paste of fresh leaves is used to cure many skins diseases.
<i>Zizyphus numularia</i> (Burm.f.) Wt. & Arn. Prodr	Ber	Bark	Rhamnaceae	Yes	No	15 ml extract of bark is used for 7 day, thrice a day to cure diarrhea.

Sources: Research Field survey.

Summary

Indigenous knowledge plays an important role in sustainable development, being planned by scientists and planners who are striving for tribal development. The present paper examines indigenous knowledge and its importance in utilization, conservation and management of natural resources among primitive tribal populations like Gond, Baiga, Kanwar, Uraon, Bharia and Pahadi korwa of Chattisgarh with special reference of Achanakmar-Amarkantak Biosphere Reserve. There is an urgent need to document the existing indigenous knowledge of these deserted groups before it is totally lost and also to evaluate its value for bio-diversity conservation. Indigenous knowledge may contribute to improved development strategies in several ways such as by helping identify cost-effective and sustainable mechanisms for poverty alleviation that are locally manageable and meaningful; by a better understanding of the complexities of sustainable development in its ecological and social diversity; and by helping to identify innovative pathways to sustainable human development that enhance local communities and their environments.

Key words: Achanakmar-Amarkantak Biosphere Reserve (AABR), ethnobotanical, Indigenous Knowledge, Non Timber Forest Products (NTFP), Tribals.

छत्तीसगढ़ (भारत) में गैर-प्रकाष्ठ वनोपजों के उपयोग संरक्षण और दीर्घकालिक उपलब्धता बनाए रखने में अचानकमार
अमरकंटक जीवमण्डल संरक्षित क्षेत्र में बसते समुदायों का देशज ज्ञान

शब्बीर अहमद भट व सुभाषचन्द्र तिवाड़ी

सारांश

दीर्घकालिक विकास में जिसे वैज्ञानिकों और आयोजकों द्वारा आयोजित किया गया है, जो आदिवासियों के विकास के प्रयास में लगे हुए हैं,

देशज ज्ञान की महत्वपूर्ण भूमिका रहती है। प्रस्तुत अभिपत्र, प्राकृतिक संसाधनों के उपयोजन, संरक्षण और प्रबन्धन में छत्तीसगढ़ के आदिम जनजाति समुदायों जैसे गोंड, बैगा, कनवार, ओराँओ, भारिया और पहाड़ी कोरवों में मिलते देशज ज्ञान और उसके महत्व का अचानकमर अमर कंटक जीवमण्डल संरक्षित क्षेत्र के विशेष सन्दर्भ में परीक्षण करता है। इन उजड़ते समुदायों के वर्तमान देशज ज्ञान को पूर्णतया विलुप्त हो जाने से पूर्व उसे प्रलेखित करने तथा जैव विविधता बनाए रखने में उसका मूल्यांकन करने की तत्काल आवश्यकता है। देशज ज्ञान कई तरीकों से परिष्कृत विकास समरनीतियां तैयार करने में योग दे सकता है जैसे गरीबी उन्मूलन के लिए लागत-प्रभावी और दीर्घकाल तक टिकती यांत्रिकता का पता लगाने में सहायता करना, जिनका स्थानीय प्रबन्धन किया जा सके और अर्थवान भी हों, पारिस्थिकीय और सामाजिक विविधता दीर्घकाल तक टिकाऊ विकास की जटिलताओं की अच्छी समझ उत्पन्न करनी हो, टिकाऊ मानव विकास के लिए नए-नए मार्गों का पता लगाने में सहायक होना जो स्थानीय समुदाय और उनके पर्यावरण को उन्नत बनाते हों।

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