

Conserving Biodiversity of Yerramalais of Kurnool District, Andhra Pradesh, India, through People's Biodiversity Registers Program

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ABSTRACT

Ecological degradation and its corollary -biodiversity loss- pose a serious threat to development. The program of People's Biodiversity Registers (PBR) is an attempt to promote folk ecological knowledge and wisdom. A program "PBR" for in-situ conservation of biological diversity involving local communities has been initiated in recent years. PBR helps in building an open and transparent information system on biodiversity resources from village level upwards. The register contains comprehensive information on availability and knowledge of local biological resources, their medicinal and other traditional knowledge associated with them. The main objective of this paper is to create awareness in villagers regarding how to preserve, protect biodiversity and equitably make use of TDK of medicinal plants. The process of preparation of PBRs, as well as the resultant documents, could serve a significant role in promoting more sustainable, flexible, participatory systems of management and in ensuring a better flow of benefits from economic use of the living resources to the local communities. Indigenous people (Sugalis) are playing an important role in conservation of TDK of Yerramalais. Knowledge about 38 different types of medicinal plants used by indigenous people for various diseases like leucoderma, snake bite, scorpion sting, jaundice, wounds, rheumatism are recorded.

KEY WORDS

People's Biodiversity Register (PBR); Traditional knowledge (TDK); Yerramalais; Sugali.

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INTRODUCTION

India is known for its rich heritage of biodiversity. Conserving biodiversity is basic to our survival and well-being and using it sustainably, forms part of the Indian culture and lifestyle. The Earth's biological resources are vital to humanity's economic and social development.

As a result, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never

been as great as it is today. Species extinction caused by human activities continues at an alarming rate.

Regrettably, much of this heritage is being rapidly eroded today. We live in exciting times, with technological developments transforming the world around us as never before. Communication has become easy; information in large measures is becoming readily accessible. Yet, in the midst of all these developments, we remain a biomass-based civilization.

Many Indians continue to lead lives as ecosystem people, tied closely to the resources of their environment to fulfill many of their requirements.

India's ecological resource base is under threat, with extensive destruction of natural habitats, widespread degradation of agro-ecosystems and a growing burden of air and water pollution. Simultaneously, India's knowledge base of uses of biodiversity is also being eroded, with the younger generation becoming increasingly alienated from the natural world. This calls for a committed scientific and technical effort, an effort in which all segments of India's population must participate actively. Finally, we need to ensure that the fruits of this progress reach all our people. Ecological problems coupled with unequal access to resources results in human ill-being and threats to the livelihood security of the world's poorest (Pandey, 1996; Balvanera et al., 2001).

The development of modern science and technologies notably biotechnology and information technologies have increased the value of biodiversity and associated knowledge including traditional knowledge (TDK). The growing importance of biodiversity, bio-resources and associated knowledge is fairly well understood. Scientific research on human-environmental interactions is now a budding sustainability science (Kates et al., 2001). The concept recognises that the well-being of human society is closely related to the well-being of natural ecosystems. The intellectual resources on which the sustainability science is building on need to take into account the knowledge of local people as well.

Local knowledge helps in scenario analysis, data collection, management planning, designing of the adaptive strategies to learn and get feedback, and institutional support to put policies into practice (Getz et al., 1999). Traditional knowledge on biodiversity conservation in India is as diverse as 2753 communities (Joshi et al., 1993) and their geographical distribution, farming strategies, food habits, subsistence strategies and cultural traditions.

In spite of the value of traditional knowledge for biodiversity conservation and natural resource management there still is a need to further the cause. The following consideration may be useful in this respect. People's biodiversity registers are a case in point (Gadgil, 1994, 1996; Gadgil et al., 2000). The program of People's Biodiversity Registers promotes folk ecological knowledge and wisdom by devising a formal means for their maintenance and by creating new contexts for their continued practice. PBRs document traditional ecological knowledge

and practices on use of natural resources, with the help of local educational institutions, teachers, students and NGOs working in collaboration with local institutions.

Such a process and the resulting documents could serve a significant role in "promoting more sustainable, flexible, participatory systems of management and in ensuring a better flow of benefits from economic use of the living resources to the local communities" (Gadgil et al., 2000).

People's Biodiversity Register

The "People's Biodiversity Registers (PBR)", a program now mandated by the Biological Diversity Act 2002, was initiated in India in 1995. Preparation of the People's Biodiversity Registers is a novel activity that will involve people at the grass roots in a scientific enterprise.

The Register shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them, along with data about the local people and practitioners using the biological resources. PBR is envisioned as a tool that will facilitate the local bodies in conservation related decision-making.

The process of PBR development itself lets the people explore the biodiversity and related knowledge. This itself helps in imparting 'resource literacy', much needed for the conservation process. Most importantly, the PBR is also a tool for educating the younger mind on conservation education and ethics and the rich heritage. Through the PBR local knowledge only partially disclosed, for instance, a claim that a particular medicine woman knows of a cure for asthma.

It also helps in motivating the community in preparing the community Biodiversity registers for their hamlet, awares of medicinal plants among people, prepares action plan regarding cultivation of endangered and threatened medicinal plants in restricted, protected lands, creates a park exclusively of medicinal plants close to the village.

It also develops local body, to act like a watchdog, to prevent smuggling, excess cutting or collection of medicinal plants. It also passed a resolution that people should take permission and clearance from Gram Panchayat when collecting medicinal plants and also when cutting trees.

MATERIALS AND METHODS

STUDY AREA FOR PBR. Gummitham thanda (Fig. 1) is located in North-Eastern part of Kurnool district. The study area has an undulating and degraded topography. Gummitham thanda is a tribal village present at the foot-hill zone of the Gani reserve forest of Eastern Ghats in Oravakal mandal of Kurnool district, Andhra Pradesh, India.

Gani RF is evergreen forests including rivers, streams and lakes. The village consists of dominant Sugali tribes and other tribal people (languages for primary education: Telugu; spoken languages: Sugali). This thanda is also a hotspot for medicinal plants and home to several traditional healers.

METHODOLOGY. After study areas were selected, field investigators were chosen from among degree college science teachers. Many of these people are from nearby localities, and have considerable previous familiarity with the study sites. PBR of Gummitham thanda was established in December 2008. The preparation of People's Biodiversity Registers (PBRs) involves the active support and cooperation of a large number of people who need to share their common as well as specialized knowledge. One of

the first steps for preparing a PBR is to organize a group meeting to explain the objectives and purpose of the exercise.

Different social groups in the village need to be identified for purpose of data collection from those groups. The documentation process includes information gathered from individuals through detailed questionnaire, focused group discussion with persons having knowledge. The field investigating teams worked closely with, and often included, some of the local residents.

Collecting information on biodiversity and its uses from the local people in this area is a task that needs the person carrying out the documentation to be in the field for a long duration. This is required to win the complete confidence of the local people. Even the most knowledgeable local informant would not be able to explain half his information unless one is out in the field with him and able to see things first hand.

DOCUMENTATION OF TRADITIONAL KNOWLEDGE (TK) RELATED TO BIODIVERSITY. Documentation of knowledge of individuals with regard to biodiversity and its uses is an important part of PBR.

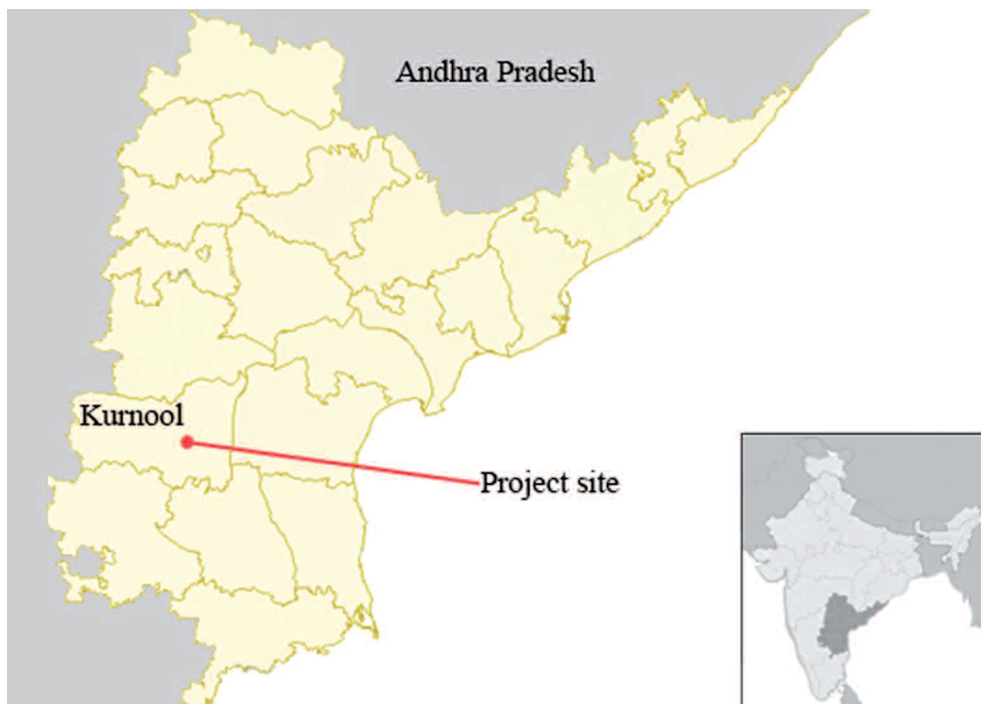


Figure 1. Gummitham thanda (project site), North-Eastern part of Kurnool district, Andhra Pradesh, India.

List of Knowledgeable individuals: Local				
Name	Age group	Sex	User Group	Expertise -related to Biodiversity
D.Gangu Naik	51-60	M	Agriculturist	Agriculture
E.Bharthi Bai	31-50	F	Agriculturist	Folk-Medicine
S.Ramesh Naik	31-50	M	Agricultural labour	Basket weaving
D.Srinivas	51-60	M	Trader	Fish Trading
Smt.Parvathi	51-60	F	Craftsman	Folk-Medicine
Smt. Malathi Bai	31-50	F	Horticultural labour	Basket weaving
List of Knowledgeable Individuals: External				
Name	Age group	Sex	User Group	Expertise -related to Biodiversity
N.Gangu Naik	60 above	M	Researcher	Ecological history
R.Raja Goapl	31-50	M	Researcher	Zoologist
N.Karanakar Reddy	31-50	M	Social Worker	Ecological history
T.Anjaiah	31-50	M	Researcher	Plant specialist
Vara Lakshmi	31-50	F	Researcher	Fish specialist
Sarala Devi	31-50	F	Social Worker	Plant specialist

Table 1. List of Knowledgeable individuals: local and external.

Name of the occupation	12-20 years age	20-50 years age
Pastoralism	50	20
Agriculture	10	25
Liquor-selling	10	20
Fire wood collection	40	20
Casual labour	30	35
Attached agricultural	35	30
Honey -collection	30	40

Table 2. Occupations of the villagers of Gummitham thanda.

Every effort should be made to identify the persons with proven knowledge of local biodiversity; special attention should be given to the elderly persons who can also provide information on the biodiversity which was available in the past

but no longer seen at present. In some cases focus group discussion may be held for the purpose of documentation.

It is important to keep in mind some of the issues related to PBR. It is to be undertaken in a participatory mode involving varying sections of village society. While documenting, the knowledge and views of both genders are to be recorded. Information provided by people need to be collected, analysed and crosschecked by the members. The document should be endorsed by the Biodiversity management committee and later publicized in the Gram Sabha/Gram Panchayat. The document is periodically updated with additional and new information.

The study team (2008-2011) consists of 5 principal investigators two were college teachers, and three school teachers: S. Khaleel Basha (Project Co-ordinator), C. Santanna (Project Assistant), S. Satis

Naik (Field Assistant), N. Gangadar (Science Teacher), G. Naga Maddeleti (Social Worker).

List of local knowledgeable individuals (six people), List of external knowledgeable individuals (six), external occupational mobility of the villagers and background information of the village are recorded (Tables 1-2). This preparation of PBR has followed the method of Srishtigyan manual (Chhatre et al., 1998).

RESULTS

Many widespread trends are observed in the preparation of Gummitham thanda village PBR, representing the entire spectrum of ecoclimatic and socioeconomic conditions of this diverse village.

SOCIO-ECONOMIC PROFILE OF THE VILLAGE AND ITS PEOPLE. Gummitham thanda is a small village of 100 households. The population is approximately 380 out of which more than 80% are Sugalis and 20% other castes. The study team is headed by Project coordinator and other members. The local knowledgeable group consists of agriculturists, traders, craftsmen etc. The external knowledgeable group consists of research scholars of different branches, social workers. Occupational mobility like Pastoralism is highest between age range 12-20.

The main background information of the village are as follows: total area 4703 hectares, irrigated agricultural area 136 hectares, rainfed agriculture area 500 hectares, total agricultural area 600 hectares, streams (10), roads (100), total forest area 1456 hectares, no. of wells (4), no. of bore wells (6), no of houses (100), total population (380) and total domestic animals like cattle (120), buffaloes (50) and chickens (more than 200).

The total number of plants used for different purpose as fuel wood (80) is highest and least for fencing (2). Knowledge about thirty-eight different types of medicinal plants for various diseases like skin diseases, leucoderma, anti-diabetes, snake bite, jaundice, chronic fevers, rheumatism, cough and cold is recorded.

The medicinal plant species are listed alphabetically along with the scientific and local names, part used, purpose for which they are used (Table 3). The document can also be a very useful teaching tool for teaching environmental studies at schools, colleges and university level.

DISCUSSION

The PBR exercise will have to be an enterprise bringing together knowledge of the local people with scientific knowledge. This knowledge base would undoubtedly enhance our abilities to conserve, sustainably use and equitably share the benefits from our rich heritage of biodiversity resources and associated knowledge, at all levels from individual villages to districts, states and the country as a whole.

Along with science, local technologies (Gandhi, 1982) and people's knowledge systems such as ethno-forestry have an important role to play for biodiversity conservation and sustainability. Village communities and other small-scale societies residing continuously over a territory create, transmit and apply comprehensive knowledge about the resources contained in the territory. In villages where women take active part in natural resource management including agriculture and forestry they develop repositories of local knowledge that is continuously applied, tested and improved over time (Harding, 1998).

By acknowledging and making use of peoples' knowledge we shall also promote the principle of equity of knowledge (Pandey, 1998). Equity of knowledge between local and formal sciences results in empowerment, security and opportunity for local people. If the state and formal institutions incorporate people's knowledge into the resource management decisions, it reduces the social barriers to participation and enhances the capacity of the local people to make choices to solve the problem. Collective wisdom can help in the planning and implementation of suitable programs for managing the agroforests. This results in ecological, economic, and social security.

CONCLUSIONS

Traditional societies have accumulated a wealth of local knowledge, transmitted from generation to generation. Experience has taught them how the water, trees, and other natural resources should be used and managed to last a long time.

Equity of knowledge can also enhance the security in its broadest sense. By capitalizing on the collective wisdom of formal and traditional sciences, we

SNO	SCIENTIFIC NAME	VERY NAME	FAMILY	PART USED	MEDICINAL USE
1	<i>Abutilon indicum</i>	tutturu benda	Malvaceae	Leaves	demulcent, rheumatism
2	<i>Althaea rosea</i>	japali theetham	Malvaceae	Root	astigent
3	<i>Abrus precatorius</i>	guriginja	Fabaceae	Root	cough, cold
4	<i>Aristolochia indica</i>	Nall eswari	Aristolocaceae	Root	sorpion bite, moggotted wounds
5	<i>Ammania buccifer</i>	agnijawal	Lythraceae	Whole plant	snake bite
6	<i>Andrographis paniculata</i>	nelavemu	Acanthaceae	Whole plant	fever, cough, bronchitis, diabetic
7	<i>Argyreia nervosa</i>	samudra pala	Convolvulaceae	Root	rhematism
8	<i>Bauhinia variegata</i>	madapaku	Fabaceae	Flowers	luxative, leucoderma, vaginal discharge
9	<i>Butea monosperma</i>	Moduga	Fabaceae	Seed	anthelminitic, herpis, aphrodisiac
9	<i>Cassia italica</i>	nelavemu	Caesalpinaceae	Whole plant	jaundice, allergy, measles
10	<i>Caesalpinia bonduc</i>	gaccha	Caesalpinaceae	Seed	diabetics, spleen and blood disorders
11	<i>Costus speciosus</i>	Koingi	Costaceae	Rhizome	antiinflammatory, antiarthritic activity
12	<i>Cissampelos pareira</i>	advibanka teega	Menispermaceae	Root	antiperiodic, purgative, snake-bite
13	<i>Cardiospermum halicacabum</i>	buddha kakara	Sapindaceae	Root	laxative, rheumatism, piles
14	<i>Calotropis gigantea</i>	Tella gilledu	Asclepiadaceae	Root	wound healing
15	<i>Capparis sepiaria</i>	nall uppi	Capparaceae	Stem bark	tuberculosis
16	<i>Cassia fistula</i>	rela	Caesalpinaceae	Leaves	bone fracture
17	<i>Cissus vitiginea</i>	adavi draksha	Vitaceae	Stem	repellent
18	<i>Cadaba fruticosa</i>	sekurirhi	Capparaceae	Leaves	oral cortaseptice, antifertility
19	<i>Corallocarpus epigaeus</i>	pamudonda	Cucurbitaceae	Root tuber	smake bite
20	<i>Coldenia procumbens</i>	papavinasanam	Boraginaceae	Leaves	rhematic swellings
21	<i>Decalepis hamiltonii</i>	nannari	Asclepiadaceae	Root powder	antidiabetic, blood purofier, appetizer
22	<i>Gyrocarpus americana</i>	tella poliki	Hernandiaceae	Stem bark	cancer
23	<i>Gymnema sylvestre</i>	podapatri	Asclepiadaceae	Leaves	antidiabetic, livertonc, cardio-tonic
				Flower	diuretic, rheumatism
				Leaves	hoarseness, aphrodisiac

SNO	SCIENTIFIC NAME	VERY NOME	FAMILY	PART USED	MEDICINAL USED
24	<i>Hyptis suaveolens</i>	danti tulasi	Lamiaceae	Leaves	antispasmodic, anti-rheumatic
25	<i>Helicteres isora</i>	gubada	Sterculiaceae	Seed, Root	diabetic,
26	<i>Leonotis nepetifolia</i>	ranaberi	Lamiaceae	Whole plant	febrifuge
27	<i>Justicea adhatoda</i>	addasaram	Acanthaceae	Leaf	antispasmodic, asthma
28	<i>Rhinacanthus nasutus</i>	nagamalle	Acanthaceae	Root	anti tumour
29	<i>Physalis minima</i>	buddha bhusha	Solanaceae	Fruit	diuretic
30	<i>Pterocarpus marsupium</i>	yegi	Fabaceae	Heart wood	leucoderma, urine astringent
31	<i>Strychnos nux-vomica</i>	Mushti	Loganiaceae	Wood, Root	fever, rheumatism
32	<i>Tiliacora acuminata</i>	kappa theega	Menispermaceae	Root	scorpion bite
33	<i>Tragea plukenetii</i>	duradagendaku	Euphorbiaceae	Root	scorpion bite
34	<i>Tinospora cordifolia</i>	tippa teega	Menispermaceae	Stem	jaundice, chonic fever
35	<i>Wrightia tinctoria</i>	palkodisa	Apocynaceae	Stem bark	skin diseases
36	<i>Wattakaka volubilis</i>	peddagurja	Asclepiadaceae	Leaf	snake bite
37	<i>Waltheria indica</i>	nallbenda	Sterculiaceae	Root	internal haemorrhage, thirst
38	<i>Xanthium indicum</i>	shankeswari	Asteraceae	Whole plant	diabetes

Table 3. List of medicinal plants used by Sugalis of Yerramalais forest.

shall be able to help people address the problem of global warming as well as to manage the risks they face because of the destruction of the local resources.

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