

Natural Resources Documentation for Conservation Through People Biodiversity Register(PBR) in Variguntham Village, Telangana, India

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Abstract

The local groups retain traditional wisdom that has been passed down through the years. There are 538 mandals and 130 municipalities in Telangana State. In Telangana State Biodiversity Board (TSBB), has established Biodiversity Management Committees (BMC) in all villages. In People Biodiversity Registers (PBR), locals and technical support organizations document native biodiversity and bio-resources. The village resources, including its socioeconomic, historical, and cultural aspects as well as its natural habitats, are documented by the Biodiversity Management Committee. These habitats include lakes, springs, rare ecological habitat versatility, agro-physiological ecological systems, and ancient distinctive hydrogeological structures made possible by regional methods for managing surface water. The research study of Variguntham village in Telangana, where locals have recorded the bioresources is covered in the article. As a result of the PBR documentation procedure, there are new species identified in communities and agricultural biodiversity. Through PBR four categories have been documented, including 31 type of crops species, 13 type of weeds, 4 types of fruit plants and 13 types of a crop pest. TSBB endeavours to promote historically farmed rice types by giving them a brand identity and recreating ancient customs, etc.

Keywords: Biodiversity management committees(BMC),PBR,Village,Conservation.

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INTRODUCTION

The reality (three-tiered governments beginning from village, developmental unit, then districts) As a result, forest collectors engaged through representative from pharmaceutical companies and indigenous herbalists are the sole people who do have adequate knowledge of a state as well as activities of medicinal herbs plant kinds, even if this is restricted to specific regions. Only information developed on a solid foundation can result in effective action. Because both the prevalence and exploitation of biodiversity vary significantly from region to region such document is really quite local and temporal constrained. This neighborhood information was known as PBR with in Biodiversity Regulation act. It is the most innovative although previously mentioned factors of an entire “Biodiversity Information System

(BIS)” that is being developed on the a global scale. Considering both spiritual and cultural demands, this local community employs traditional wisdom and conserve overall biodiversity of a lands. This local community employs local traditions that conserve that diversity of an environment for both cultural and spiritual purposes. However, neither identification has indeed been made with the help of individuals, incorporating indigenous traditions [6-7 Recording and reporting biological data is required by both the Bio Diversity Act of 2002 in India as well as the requirements of both the Convention on Biodiversity (CBD) for appropriate compensation amongst personnel in the organisation. This elaborated PBR has been incorporated into to the documenting on local biodiversity, relationships, and perception of diversity in the framework of therapeutic as well as other purposes, as well as their ecological

knowledge and views of existing and intended biodiversity management systems [8-10]. In term of spiritual and cultural requirements, each community uses local customs to maintain its planet's variety. Unfortunately, neither assessment has been completed with the assistance of people, particularly indigenous customs [6-7]. Diverse information was recorded. A set of PBR has been originally established in 1996 with the support of the a community for environmental Organizations including academic institutions at the regional community college level. As a result of the current situation as well as the increasing availability and abilities of advanced information and communication technology techniques, the software has indeed been enhanced to the point where the majority of the info produced can indeed be gathered and structured to use a reasonable system for managing data.

Study area

Variguntham is a hamlet in Medak's Kulcharam mandal. Medak district is one of 31 districts of Telangana, and it was established on October 11, 2016. Medak district headquarters are located in Sangareddy and cover an area of 2765 square kilometres, with a population of 7,67,428 according to 2011 Census statistics. Variguntham is situated at 17.93650N, 78.17070E, 210 metres above sea level. The communities cover a total land area of 1218 hectares. There are 22 hectares of non-agricultural land and 343.5 hectares of irrigated land.



Figure.2: Location of Variguntham village

PBR Proforma. National Biodiversity Authority (NBA), New Delhi formats have been undertaken to understand the indigenous knowledge regarding flora, fauna, livelihood options, perceptions, and motivations. The NBA consists of four formats and the data was documented by the below methods.

1. Interviews: Information related to the history of the village, local institutions and decision-making, people landscape aspects, and biodiversity were collected from village chiefs and knowledgeable individuals through personal interviews. Local communities were shown local field guides on various taxa (e.g. birds, mammals, butterflies, and reptiles) and asked to list the species found in their village, their local names and uses, and their current status.

2. Group discussions: It was conducted with village elders and knowledgeable individuals. Discussions were mainly held to validate the information gathered at various levels.

3. Field visits: Field visits were carried out with members of the village, BMC council and local knowledgeable individuals to document the bio-resources of the village. For the fauna survey opportunistic documentation was carried out and species observed were recorded.

4. Village BMC council meetings: The village BMC council meeting was conducted at the village council involving all the stakeholders. The village council members and the village development board members were present at the meeting along with women group members. Village health workers and other officials were also present during the meeting. This meeting helped to understand various issues about the conservation

Medak District



Figure.1: Medak district map

Methodology

The basic methodology was to approach the local people directly using individual, and group discussions, and the data was collected as per the

of the conserved area and to identify possible solutions to tackle the problems.

Extensive interviews were conducted by using an interview schedule which consists of both open and closed-ended questionnaires. Group discussions and resource mapping were the other tools used to collect primary data. The secondary data was collected from the reports of the forest department, census data, and reports published by various agencies. The information was collected by visiting the village in person.

1. Primary data collection
2. Secondary data collection
3. Process in PBR Preparation.

Primary data collection

Primary data is data that is collected by a researcher/data collector from first-hand sources, using methods like surveys or interviews. The primary data for PBR was collected in the prescribed format

Researcher took help of the local people, local leaders, representative of public, Panchayat member, BMC members and related government field level institutes, field officials line department and krishi vigyanan Kendra. The researcher have carried out the checklist of commonly known flora and fauna of the villages consisting of two seasons, the data was collected for one year consisting of two seasons.

Secondary data collection

Secondary data is the data that have been already published, collected and readily available from other sources. The secondary data was collected as per the requirement of specified formats.

The secondary data was collected by researcher. The data was collected during the 2018-2019 from the sources as per the required format. The researcher consulted the office of line departments (Agriculture, forest, horticulture, animal husbandry), Tahsildar office, grampanchayat and revenue office. The scientific data/technical data was collected with help of various departments, University, journals/ Research articles/TSBB data banks.

Process in PBR Preparation

Step1; Interaction with already formed BMC by the TSBB in Variguntham village.

Step2; Sensitization of the public about the study, survey and possible management of the natural resource.

Step3; Interaction with knowledgeable members in the identification and collection of data on biological resources and traditional knowledge.

Step4; Collection of data. Data collection includes a review of literature on the natural resources of the districts, Participatory Rural Appraisal (PRA) at the village level, household interviews, individual interviews with village leaders and knowledgeable individuals, household heads, key actors of the panchayat raj institutions and NGOs and direct field observations.

Step5; Analysis and validation of data in consultation with the technical support group and BMC.

Step6; Preparation of PBR according to NBA formats.

Step7; Data analysis and report.

RESULTS AND DISCUSSION

PBR preparation involves collecting material gathered through field investigations into the PBR document. This same process of field investigation includes the following components, identifying different biodiversity users group, identifying knowledgeable individuals in different aspects of the distribution of biodiversity, interviewing individuals and groups with members representing different user groups, mapping the study site landscape, visiting representative elements of this terrain, and also to document the species that are present in the village as per the people knowledge, according to the NBA Format.

Population composition

According to the 2011 census, the total population of Variguntham Panchayat was 2743, out of which 1334 are males and 1409 are females. This

panchayat includes consists of 582 households.

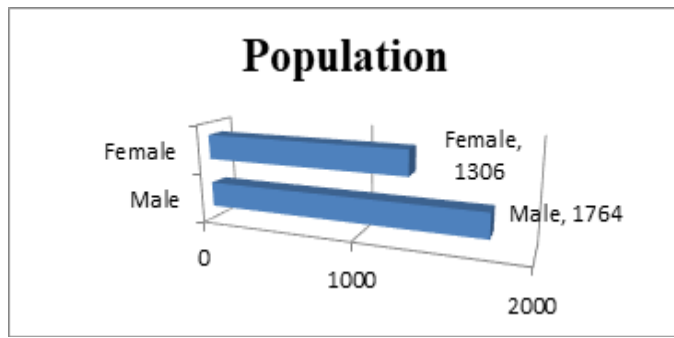


Fig.3: Population

Socio-Economic profile

The village population can be divided into three categories based on their reliance on the local biodiversity: those who depend on agriculture, secondary who depend on wood fuel collectors and cattle grazers, both of which are directly reliant on the biodiversity in the area, and some private and government employees, as well as some drivers, maintenance workers, and other occupations, who depend on the biodiversity in the area indirectly. The village’s annual average income varies from 3000 and 8,000.

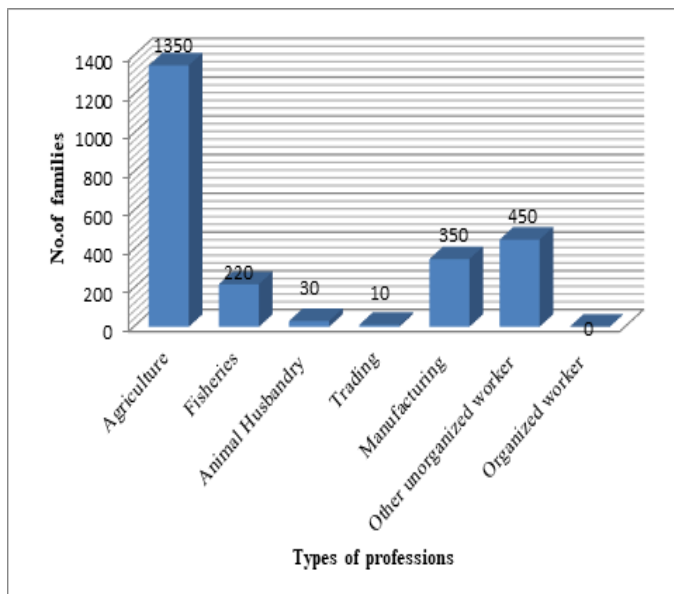


Figure.5: Number of families engaged in various profession.

Education and literacy

Within the limits of the this panchayat, there really are three main classes: one elementary, one middle, and one high school. The majority of individuals such as the tribespeople, want to send their children to school since they believe it will

assist him escape the impoverished economic situation. Males represent 55.02 percent of a village’s literate rate, whereas females represent 35.34 percent.

Socio-cultural Aspects

The villagers’ festivities and religious practices demonstrate its rich cultural heritage, and Bathkamma and Bonalu are rejoicing in the this community.

Soil and Water

The Plateau is just where Variguntham is located. It contains a range of soil types, include sandy loams, loamy sands, and sandy clay loams. Mangoes, cotton, maize, groundnuts, paddy, and other fruit and vegetable crops can be grown on these types of soil. The total average annual rainfall is 886.9mm.

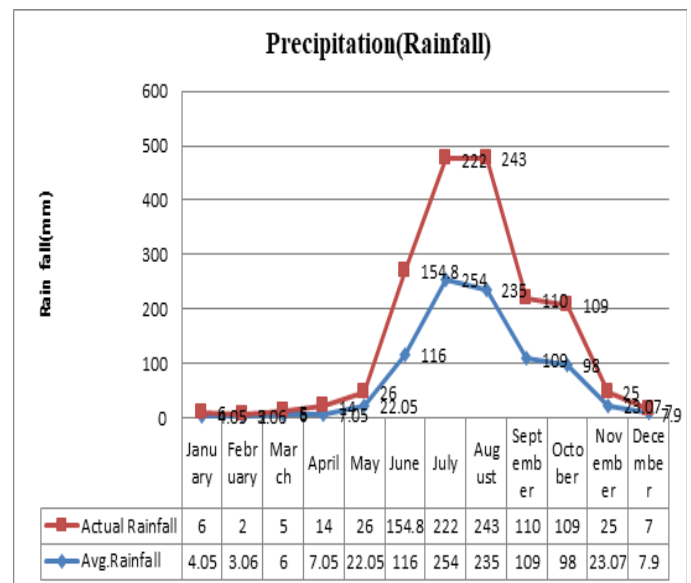


Figure.6. Precipitation(Rainfall) in mm

The main source for drinking water in the towns and villages is aquifer. People living in the majority of village areas think that local access to drinking water is good to excellent (quantity of bore wells: 05, refilling stations: 06, amount of pumping stations: 03, overall volumes of water storage tank: 06, major water tanks: 04, minor storage tanks: 02).

The biodiversity data was collected according to the NBA Format:

The following data on Agrobiodiversity is given in table 2

Table. 2: Data collection on Agro Biodiversity of Variguntham village

<u>Crop</u>		<u>Weeds</u>	
<u>Scientific Name</u>	<u>Local Name</u>	<u>Scientific Name</u>	<u>Local Name</u>
<i>Oryza sativa</i>	Vari	<i>Eragrostis tenella</i>	Piichi gaddi
<i>Cajanus cajan</i>	Kandulu	<i>Chloris barbata</i>	Uppu gaddi
<i>Syzygium cumini</i>	Alla neredi	<i>Datura metel</i>	Ummeta
<i>Spinacia oeracea</i>	Pala Kura	<i>Parthenium hysterophorus</i>	Vayari bhama
<i>Gossypium Sps</i>	Patti	<i>Achyranthes aspera</i>	Uthareni
<i>Vigna radiata</i>	Pesara	<i>Tridax procumbens</i>	Gaddi chamanti
<i>Manzifera indica</i>	Mamidi	<i>Cyperus rotundus</i>	Tunga musta
<i>Phoenix sylvestris</i>	Eetha	<i>Cynodon dactylon</i>	Garika
<i>Phyllanthus emblica</i>	Usiri	<i>Tephrosia purpurea</i>	Vempalli
<i>Zea maize</i>	Makka	<i>Solena heterophylla</i>	Adavi donda
<i>Criticum velgera</i>	Jonna	<i>Cleome Gynandra</i>	Vaminta
<i>Sorghum bicolor</i>	Jonna	<i>Phyllanthus amarus</i>	Nela usari
<i>Zizyphus Jujoba</i>	Regu pandlu	<i>Citrullus colocynthis</i>	Verri puchakaya
<i>Carica papaya</i>	Boppai	Total	13
<i>Cocos nucifera</i>	Kobbari kaya	Fruit Plants	
<i>Tamarindus indica</i>	Chinta	Scientific name	Local name
<i>Borassus flabellifer</i>	Tati	<i>Mangifera indica</i>	Mamidi
<i>Lycopersicum esculentus</i>	Tameta	<i>Psidium guajava</i>	Jama
<i>Solanum melongena</i>	Vankaya	<i>Carica papaya</i>	Boppai
<i>Luffa acutangula</i>	Birakaya	<i>Punica granatum</i>	Daanima
<i>Allium cepa</i>	Vullipaya	Total	04
<i>Abelmoschus esculentus</i>	Benda	Pest of Crops	
<i>Moringa oleifera</i>	Munaga	Scientific name	Local name
<i>Hibiscus cannabinus</i>	Gongura	<i>Nilaparvata lugens</i>	Aggi tegulu
<i>Rumex vesicarius</i>	Chukka kura	<i>Scirphophaga incertulus</i>	Kandom purugu
<i>Coriandrum sativum</i>	Kottimera	<i>Nilparvata lugens</i>	Dooma
<i>Coccinia grandis</i>	Dondakaya	<i>Waphalocrosis medimalis</i>	Aakuchuta purugu
<i>Mentha spicata</i>	Pudina	<i>Psara bipuntalis</i>	Akkuannupurugu
<i>Murraya koenigii</i>	Karvaypaku	<i>Luecinodes</i>	Kandam purugu
<i>Lagenaria siceraria</i>	Sorakaya	<i>Bemisia tabaci</i>	Tella domma
Total		<i>Spodoptera litura</i>	Ladday purugu
31		<i>Xanthomonas axonopodis</i>	Akku purugu
		<i>Earis spp</i>	Machala purugu
		<i>Amrasea abiguttula</i>	Pacha doma
		<i>Bipolaris turcicum</i>	Akku purugu
		<i>Meloidogyna incognita</i>	Veeru purugu
		Total	13

Agro-biodiversity

Agriculture is the backbone of Variguntham’s economy. Rainwater collection resources are used by farms for irrigation. A most significant food crop is rice. Additional notable crops are corn, oilseeds, and textiles. A crops from each of the five families: Poaceae, Malvaceae, Fabaceae, Cucurbitaceae, and Solanaceae is presented in Table 2’s information regarding agro - ecosystems. Agricultural forms (31 kinds), herbicides (13 kinds), fruit crops (04 kinds), and agricultural insects are indeed the 4 types in agro - ecosystems (13 kinds).





Figure.7:Cissus Vitiginea



Figure.10: Pergularia dae



Figure.8: Hyptis suaveolens



Figure.9: Ipomoea obscura

Majority of the plants belong to

Timber Plants - Meliaceae, Moraceae, Anacardiaceae, Lamiaceae

Medicinal plants - Moraceae, Fabaceae, Arecaceae, Amaranthaceae, Sapindaceae

Ornament plants - Asteraceae, Asparagaceae, Malvaceae

Fumigatory plants - Meliaceae, Euphorbiaceae, Fabaceae family.

Variguntham village high medicinal values plants were found which are

Ipomoea obscura (CONVOLVULACEAE) - For an urgent stomachache, half a teaspoon of leaf extract was given three times in two hours.

Cissus vitiginea (VITACEAE) - Stem bark paste is used topically to wounds for wounds.

Pergularia daemia (ASCLEPIADACEAE) - For stomachaches, take 3-4 tablespoons of aerial parts extract twice daily.

Hyptis suaveolens (LAMIACEAE) - Invasive weed which spreads in affected regions and open forests. Extract of leaves (12-15 ml) was consumed three times daily treating snake bites, while leaf decoction was topically as an ointment.

Table.3. Data Collection on wild plants medicinal species biodiversity of Variguntham Village.

<u>Medicinal plants</u> <u>Scientific Names</u>	<u>Local names</u>	<u>Fumigatory Plants</u> <u>Scientific Names</u>	<u>Local names</u>
Azadirachta indica	Veepa	Azadirachta indica	Veepa
Chrysanthemum sp	Chamanthi	Achyranthes aspera	Uttareni
Tagetes erectus	Banthe	Tamarindus indica	Chinta
Rosa	Gulabi	Ricinus communis	Aamudam
Jasminum	Mallae	Total	04
Ocimum sanctum	Tulasi		
Crossandra infundibuliformis	Kanakambaram	<u>Timber Plants</u>	
Portulaca grandiflorum	Table Rosa	<u>Scientific Names</u>	<u>Local names</u>
Polianthes tuberosa	Sampenga	Tectona grandis	Tewak
Cocos nucifera	Cobbara chettu	Tamarindus indica	Chinta
Nerium oleander	Gannaru	Mangifera indica	Mamidi
Hibiscus rosa-sinensis	Mandaram	Azadirachta indica	Veepa
Phyllanthus emblica	Vusari	Ficus benghalensis	Marri
Phoenix dactylifera	Yeeta	Ficus religiosa	Raavi
Borassus flabellifer	Thati	Ecalyptus globulus	Jamaoil chettu
Moringa oleifera	Munaga	Delonix regia	Gulmohar
Butea monosperma	Modhuga	Acacia nilotica	Tumma
Ficus benghalensis	Marri	Hardwickia binata	Vepi
Ficus glomerata	Medi	Leucaena leucocephala	Subabul
Ficus religiosa	Raavi	Butea monosperma	Moduga
Prosopis cineraria	Jammi	Total	12
Pithecolobium dulce	Cheema chinta	<u>Ornamental Plants</u>	<u>Local names</u>
Tamarindus indica	Chinta	Chrysanthemum Sp	Chamanthi
Tectona grandis	Teak	Tagetes Erectus	Banthe
Syzygium cumini	Neeradu	Rosa	Gulabi
Senna auriculata	Tangedu	Jasminum	Mallae
Phyllanthus niruri	Nella usiri	Ocimum Sanctum	Tulasi
Tribulus terrestris	Pallarukaya	C. Infundibuliformis	Kanakambaram
Cissus quadrangularis	Nallaru	Portulaca Grandiflorum	Table Rosa
Ocimum tenuiflorum	Tulasi	Polianthes Tuberosa	Sampenga
Abrus precatorius	Guruvinda	Cocos Nucifera	Cobbara chettu
Achyranthes aspera	Uttareni	Nerium Oleander	Gannaru
Aeerva lalata	Pindi kura	Hibiscus Rosa-Sinensis	Mandaram
Agava americana	Kalabanda	Total	11
Aloe vera	Manchi Kalabanda		
Cleome viscosa	Kukka vamintaku		
Datura metel	Umetha		
Eclipta prostrata	Gunta garage aku		
Tinospora cordifolia	Tippateega		
Diplocyclos palmatus	Lingadonda		
Calotropis gigantea	Jilladu		
Abutilon indicum	Thuthurabenda		
Dodonaea viscosa	Bandera aku		
Allamanda cathartica	Allamanda		
Datura metel	Ummatha		
Hibiscus rosasinensis	Mandaram		
Ipomoea obscura	Golamadditiga		
Cissus vitiginea	Kuddudinnae		
Pergula riadaemia	Gutaguta,		
Hyptis suaveolens	Peddinguvakoora		
Total no.	50		

Domestic animal biodiversity

Cattle, dogs, and chickens are the animal groups that have been kept under domesticated by a significant section of the people in the Variguntham village clusters for many generations. Goat, sheep, and poultry are usually bought for your meat. Following table shows those groups within which the majority of farm animals belong: Bovidae, Canidae, and Phasianidae.

There really are three distinct types of cultivated biodiversity. There really are six different types of mammal, single type of bird, and two types species reptile.

A type of wild biodiversity has been named. Shrubs species include 9, Herbs 4, Tubers 4, Grasses 4, Climbers 2, Fumigate Plants 4, Timber Plants 12, Medicinal Plants 50, Ornamental Plants 4, and Trees Among these, there are 40 Shrub species.

Table 4: Data collection on wild relative plant biodiversity of Variguntham village

Trees <i>Tamarindus indica</i> <i>Ficus venghanensis</i> <i>Syzygium cumini</i> <i>Pithacalobium dulce</i> <i>Phyllanthus emblica</i> <i>Tectona grandis</i> <i>Ficus religiosa</i> <i>Prosopis cineraria</i> <i>Senna auriculata</i>	<i>Chinta</i> <i>Marri</i> <i>Neeradu</i> <i>Cheema chinta</i> <i>Vusari</i> <i>Teak</i> <i>Raavi</i> <i>Jammi</i> <i>Tangedu</i>	Shrubs <i>Heliotropium indicum</i> <i>Senna auriculata</i> Grass <i>Cynodon dactylon</i> <i>Desmostachya bipinnata</i> <i>Cymbopogon citratus</i> <i>Cynodon dactylon</i> Tubers <i>Urginea indica</i> <i>Ipomoea batatas</i> <i>Maerua oblongifolia</i> <i>Niru pippali</i> Climbers <i>Coccinia grandis</i> <i>Tinospora cordifolia</i>	<i>Danti</i> <i>Tangedu</i> <i>Garika gaddi</i> <i>Dabha gaddi</i> <i>Nimma gaddi</i> <i>Garika</i> <i>Addaviulli</i> <i>Moram gadda</i> <i>Bhuchakra gadda</i> <i>Gloriosa superba</i> <i>Donda</i> <i>Tippa tiga</i>
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Table.5: Data collection on domesticated animal biodiversity of Variguntham village

S No	Mammals	Birds		Reptiles		
	Local name	Scientific name	Local name	scientific name	Local name	scientific name
1	Pilli	<i>Felis sylvestris catus</i>	Kodi	Gallus Domesticus	Frog	Rana hexadactyla
2	Mekalu	<i>Capra aegagrushircus</i>			House	Hemidactylus flaviviridis
3	Yeddulul	<i>Bos taurus</i>			lizard	
4	Aavulu	<i>Bos bubalis</i>				
5	Barrelu	<i>Ovis aries</i>				
6	Gorrelu	<i>Canus lepus familiaris</i>				
6	Kukalu					
Total	6		1		2	

Table.6: Various types of biodiversity species in Variguntham village

Agro Biodiversity		Wild biodiversity	
Type	No	Type	No
Crop	31	Shrubs	09
Weed	13	Herbs	04
Fruit Plant	04	Tubers	04
Pest of Crops	13	Grasses	04
		Climbers	02
Domesticated biodiversity		Fumigate plant	04
Type	No	Timber plants	12
Mammals	06	Medicinal plants	36
Birds	01	Ornamental plants	04
Reptiles	01	Trees	09

Wild animal biodiversity

In additional the monkeys and wild pigs, surrounding forests are habitat to various snake species, reptiles, birds, fox, and other animals that damage agriculture.

Conclusions

PBR contains in-depth knowledge and information on regional bio - resources, as well as conventional knowledge about such materials' uses in medical as well as other fields. So order to encourage livelihood dependent upon diversity and contribute towards conservation of biodiversity, PBR documentation is required. Of that kind information might very well also serve as a benchmark for integrating local issues in to the making plans, trying to identify indigenous knowledge owners and describing their expert knowledge, trying to regulate direct exposure to bio - resources, and trying to educate a next production concerning conventional conservation practices as well as there own effectiveness inside the actual life.

REFERENCES

[1.] Rautaray, O.P., Pradhan, R.N., Behera, P. and

- Sahu, H.K., 2014. People's biodiversity register [PBR]: a community based new venture in Odisha to document natural resources. *Environ Ecol Res*, 2(8), pp.285-290.
- [2.] Gadgil, M. and Seshagiri Rao, P.R., 1998. *Nurturing biodiversity*. Centre for Environment Education.
- [3.] Gadgil, M., Seshagiri Rao, P.R., Utkarsh, G., Pramod, P. and Chhatre, A., 2000. New meanings for old knowledge: the people's biodiversity registers program. *Ecological Applications*, 10(5), pp.1307-1317.
- [4.] Gadgil, M., Achar, K.P., Bhat, H., Bhat, P.R., Deshmukh, S. and Dolke, A., 2006. Ecology is for the people: a methodology manual for people's biodiversity register. *Centre for Ecological Sciences/Indian Institute of Science, Bangalore*. 233p.
- [5.] Gupta, A.K. and Sinha, R., 2002. Contested Domains, Fragmented Spaces: rights, responsibilities and rewards for conserving biodiversity and associated knowledge systems. *Traditional ecological knowledge for managing biosphere reserves in south and central Asia*, pp.161-181.
- [6.] Gupta, A.K., 1999. Conserving biodiversity and rewarding associated knowledge and innovation systems: Honey bee perspective. Bern: Paper presented at the World Trade Forum.
- [7.] Hansen, S.A. and VanFleet, J.W., 2003. A handbook on issues and options for traditional knowledge holders in protecting their intellectual property and maintaining biological diversity. *Washington, DC*.
- [8.] Ministry of Environment and Forest notification The Gazette of India April, -15, 2004.
- [9.] People's Biodiversity Register: Documenting biodiversity for natural resource management Gokhale Y.1*, Gadgil M.2, Achar K. P.2 , Gunaga S.2 , Heda N.2 , Nayak M.2, Patgar S2 ., Pandharipande K.3, Mohan H.4, Dolke Y5 ., Gurnule K. Perspectives on Biodiversity - A Vision for Mega diverse Countries. Published by Ministry of Environment and Forests, Govt. of India. 2005. Pg.375-396.
- [10.] Berkes F, Kislalioglu M, Folke C, Godgil M 1998. Exploring the basic ecological unit: Ecosystem-like concepts in traditional societies. *Ecosystems*, 1: 409-415.
- [11.] Bhattacharya P, Hayat SF 2004. Sustainable NTFP management for rural development: A case study from Madhya Pradesh. *International Forestry Review*, 6(2): 161-168.
- [12.] Chambers R 1983. *Rural Development: Putting the Last First*. London: Orient Longman. Chandrashekara UM, Sankar S 1998. Ecology and management of sacred groves in Kerala, India. *Forest Ecology and Management*, 112: 165-177.
- [13.] Duffield G 1999. Intellectual Property Rights and Plant Genetic Resources with Particular Reference to Seeds and Plant Varieties.
- [14.] Gland: IUCN. Forest Resources. Online (Retrieved on May 3, 2006).
- [15.] Gadgil M 1982. Conservation of India's living resources through biosphere reserves. *Current Science*, 51: 547- 550.
- [16.] Gadgil M 2006. *Methodology Manual for People's Biodiversity Register*. Chennai: National Biodiversity Authority.
- [17.] Gadgil Madhav "Srushtigyaan, A Methodology Manual for Documenting People's Priorities for Biodiversity and Conservation." Online (Retrieved on December 22, 2005). Gadgil M, Berkes F 1991. Traditional resource management systems, *Resource Management and Optimisation*, 18 (3 4): 27 141.
- [18.] Gadgil M, Berkes F, Folke C 1993. Indigenous knowledge for biodiversity conservation, *Ambio*, 22: 151 156. Ghat Utkarsh "Documenting Traditional Knowledge: People's Biodiversity Register." Online (Retrieved on December 21, 2005).
- [19.] Grimmett R, Inskipp C, Inskipp T 2001. *Birds of Indian Subcontinent*. Singapore: Oxford University Press. Kanowski PJ, Gilmour DA, Margules CR, Potter CS 1999. *International Forest Conservation: Protected Areas and Beyond*. Canberra: Commonwealth of Australia. Kunte, K. 2000. *Butterflies of Peninsular India*. Hyderabad: Universities Press.
- [20.] Malhotra KC, Bhattacharya Prodyut 2010. *Forest and Livelihood*. Hyderabad: CESS.
- [21.] Martin GJ 1995. *Ethnobotany: A Method's Manual*. London: Chapman and Hall. MoEF 2009. *India's Forth National Report to the Convention on Biological Diversity*. New Delhi:

- MoEF, Govt. of India.
- [22.] Pandey DN “Traditional Knowledge Systems for Biodiversity Conservation.” Online (Retrieved on December 23, 2005).
- [23.] Saha, R. and Bhattacharya, P., 2011. Biodiversity Register and Indigenous Knowledge: A Case Study of Baigachak Area, in Dindori District of Madhya Pradesh. *Journal of Biodiversity*, 2(2), pp.127-140.
- [24.] Protection of Biodiversity and Traditional Knowledge-The Indian Experience. Online (Retrieved on May 3, 2006)
- [25.] Sharma, B.D., 1997. Tide Turned: The Making of Self Rule in the First Central Law in the Wake of Bhuria Committee Report. *Sahayog Pustak Parivar, New Delhi.*
- [26.] Sahayog Pustak Parivar. Soils of the State. Online (Retrieved on May 5, 2006)