

F330109- The Bhimashankar Strategy - towards a region-wide community conservation programme in the north Western Ghats of India

Project country, site and period: India- Bhimashankar Wildlife Sanctuary, June 2009-December 2012

Participating organizations: Applied Environmental Research Foundation (AERF), S.P.Jain Institute for Management Research, Mumbai, India

Project Aim: To promote the use of conservation agreements as a long-term conservation strategy in the Western Ghats and to raise continual support through sponsorships.

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Summary

The Bhimashankar Wildlife Sanctuary (BWLS) -project site, located in North Western Ghats is popularly known for pilgrim tourism, healthy population of giant squirrel (*Ratufa indica*) and indigenous community –*Mahadeo Koli*. Like most of the protected areas in India, there is serious degradation of forest taking place in the buffer zone of the BWLS due to demand for wood fuel and conversion forests for agriculture. Similarly, over dependence on single crop has made the local communities economically vulnerable and thus for short term gains they often make choices that have detrimental effect on biodiversity. These were the findings of future conservationist award project. The CLP team thought about approaches for making conservation economically attractive and socially sustainable in order to reverse the forest degradation. Thus it was decided to use conservation agreement model on pilot scale in BWLS. The project could successfully implement the incentive based conservation approach which was supported through other livelihood strategies. The team could ensure protection to 25 hectares of private forests over period of 10 years through conservation agreement. In addition, the project built capacity of local communities in sustainable collection of medicinal plants using FAIRWILD certification protocol in 4 villages benefitting 100 households.

Introduction

The Bhimashankar Wildlife Sanctuary (BWLS) is one of the few protected areas in the north Western Ghats– part of a global biodiversity hotspot (see www.biodiversityhotspots.org). The Western Ghats is a mountain range that runs parallel to the entire western coast of peninsular India. South westerly winds bring heavy rainfall in this region from June to October. The unique biogeography of the region therefore supports an immense amount of biodiversity – 1700 plant and 350 animals endemic to the region [1]. Forest types range from dry deciduous to evergreen. The BWS is a small PA 130 sq.km in area and supports two major forest types including seasonal cloud montane forests [2]. The BWLS is composed of forest fragments of various sizes interspersed with human habitation. A very peculiar feature of this Wildlife sanctuary is that it is also a very well known pilgrim destination and about half a million tourists visit this place every year. As regards, conservation significance, BWLS is an important bird area and known for healthy population of giant squirrel (*Ratufa indica*) which is endemic to the Western Ghats. Moreover, sanctuary is treasure trove of many commercially important medicinal plants.

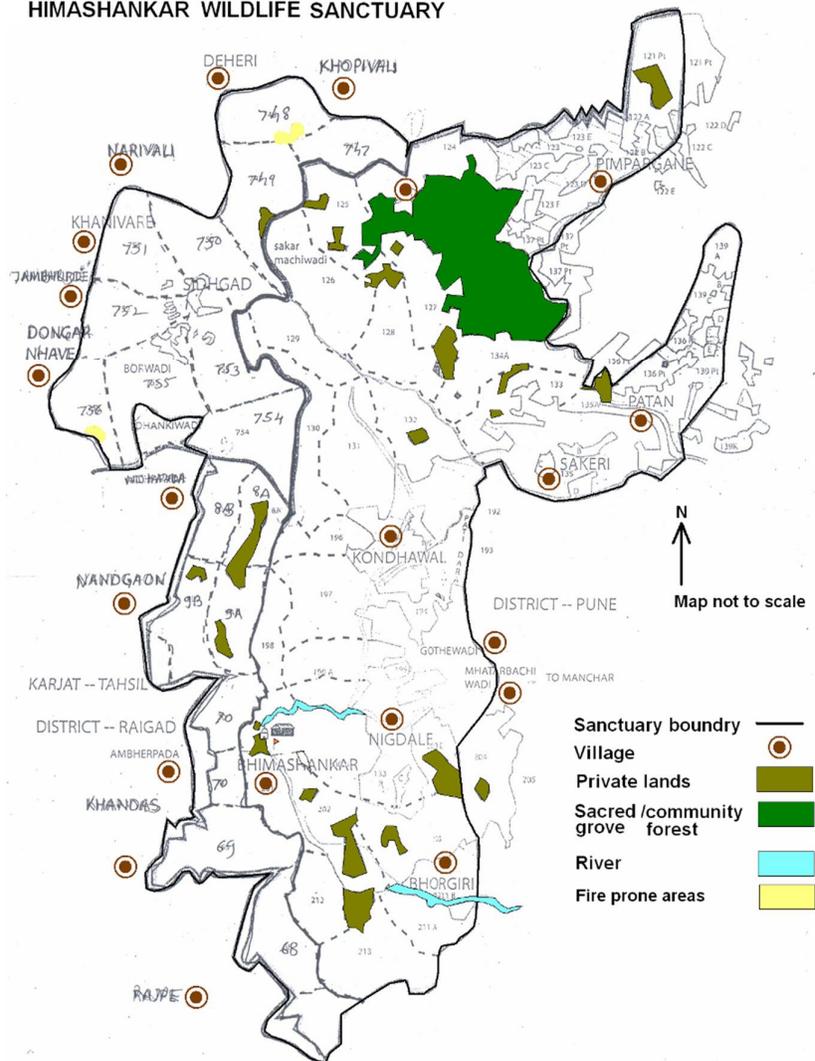
Two major threats to BWLS are 1) local demand for natural resources 2) unsustainable tourism [2]. Throughout India, for communities living in and around PAs their livelihoods are intricately linked to forests [7]. The balance between local communities and their use of forests is now tipping towards overexploitation. Increasing incidences of human-wildlife conflict and illegal trade of high conservation value species provide sufficient evidence for this state of affairs. BWLS is not an exception to this. In BWLS, 15 hamlets depend on the forests for firewood, fodder, timber and NTFPs sold locally. There is constant fight between the Govt and local communities over access to resources and thus poaching, illegal harvesting of rare and endemic medicinal plants has become

commonplace. Changing behavior to sustainable utilization needs to make economic sense for these resource users [6].

In India and barring some exceptions globally, buffer zone management and corridor conservation are considered as the most important but are unfortunately weakest links in conservation. It is that way, because there is relatively little engagement of the proponents of conservation with the communities living and operating in these important landscapes. This aspect of conservation-engaging communities positively in conservation - is exactly the focus of the CLP supported project in Bhimashankar Wildlife Sanctuary in India. CLP team through use of direct incentives tried to address key conservation issues such as degradation of forests and livelihood insecurity. It was realized that conservation can pose significant challenges to the communities residing inside the sanctuary such as crop depredation, frequent encounter with wild animals and limited access to forests. Thus in order to convince the local community in favor of conservation, it was absolute necessary for the CLP team to come up with strategies and approaches that could successfully deal with the problems faced by communities due to strict conservation regime. For the CLP team, key partners of the project included local community members with significant forest ownership in the buffer zone of BWLS, traders of medicinal plants and forest department.

Map of Bhimashankar Wildlife Sanctuary and intervention sites

HIMASHANKAR WILDLIFE SANCTUARY



Project team

a) **Sameer Punde**-Team leader -Sameer has M.Sc. in conservation biology from Durrell Institute for Conservation and Ecology, University of Kent, UK. At the time when project commenced he had experience of 5 years in conservation research. He left the project in between to pursue a career with Saudi Wildlife Department in 2011. Currently, he is pursuing a Ph.D. at the University of Queensland, Australia. He was responsible for planning and execution of the project activities.

b) **Dr.Archana Godbole**- team member- Archana is founder Director of AERF , has a Ph.D. in Ethnobotany and over 20 years of experience in working with local and indigenous communities across India. She provided guidance in project implementation and also helped in sorting out the administrative issues.

c) **Jayant Sarnaik** – team member- Jayant is founder member and deputy director of AERF. He has over 15 years of experience in community based conservation. He was

responsible for developing alternative livelihood strategies and designing of incentive mechanism for effective targeting. The project leadership was transferred to him after Mr. Punde's exit in early 2011.

d) **Avadhoot Velankar**- team member- Avadhoot has M.Sc. in wildlife sciences from Wildlife Institute of India. Prior to the project, he had overall experience of 3 years in conservation research. He conducted some field research as part of his responsibility towards the project before leaving to pursue PH.D. in early 2011.

e) **Rahul Mungikar**- team member – Rahul has post graduate degree in plant taxonomy and he made some significant contribution to the project by completing forest surveys, training of guides, mapping of forests on private lands and participating in the CLP training. He completed his Ph.D. an year later and now works as scientific consultant to State Biodiversity Board in Maharashtra.

f) **Umesh Hiremath**- Umesh has M.Sc. in Zoology and had over 6 years of experience in wildlife conservation before he took over the responsibilities of project in August 2011. He was instrumental in completing most of the pending project activities in time and in fact lot of community interest in conservation related activities. He still continues to work with AERF as senior field researcher and mostly spends his time in BWLS.

g) **Kundlik Kondhawale** – Kundlik is member of local indigenous community- Mahadeo Koli and worked as community co-ordinator, research assistant for most of the project period. His contribution and help proved very critical for the outcomes of the project. He still works as community co-ordinator with AERF.

Aim and objectives

The project had following aims and objectives as mentioned in the sanctioned proposal.

- To establish and test conservation agreements in at least 2 villages bordering the BWS following a model developed by Conservation International
- To induce community action for conservation work through zoning of 'use' & 'no-use' areas, selective firewood collection, controlled grazing and reforestation over a minimum area of 5ha in at least 2 villages in 2 years in exchange for community benefits such as energy efficiency stoves, fodder plantations etc.
- To promote the use of conservation agreements as a long-term conservation strategy in the Western Ghats and to raise continual support through sponsorships
- To build capacity of the AERF (a local NGO) to develop and use conservation agreements in the long-term

We had to revise our strategy especially with respect to demarcating use and no-use areas due to the fact that local communities had enough experience of that approach being residents of protected area.

Similarly, we had to think hard for developing solutions to the problems communities faced due to so called conservation regime – crop depredation, increased encounter with wildlife etc and thirdly, we had to work on making sustainable biodiversity use economically attractive.

Methodology

CLP team needed to use different tools and techniques in order to identify opportunities for engaging local community members in dialogue on conservation of forests in general and especially on privately owned lands. CLP team used methods such as baseline surveys, focus group methods, and livelihood analysis for effective targeting of the beneficiary. It also helped us know the dependence of local communities on forests and different use of the forest by the communities.

GIS techniques were used to map areas under private ownership and their connectivity with the protected area system. Questionnaire surveys were used to collect information on livelihood alternatives of the communities. Feasibility study was also carried out in order to know the potential of conservation agreement model in actually delivering conservation outcomes. Significant amount of time was spent on developing low cost techniques for reducing the damage due to crop raiding by wild animals. Similarly, an exhaustive resource assessment of *Terminalia chebula* – an economically important medicinal tree was carried out to understand its role in local economy. The resource assessment was carried out on private lands in Dhagewadi and Shindewadi hamlets of village Kondhwal with two objectives

- a) This resource plays an important role in livelihoods of local communities and thus value addition in it would make the community interested in the overall conservation initiative planned by CLP team.
- b) The T.chebula resource if harvested sustainably has the potential for ensuring sustainability of the Conservation agreement model.

Approach used in resource assessment: *Terminalia chebula* trees were identified with the help of local villagers and recorded longitudinal and latitudinal co-ordinates as well as mean sea level (MSL) in meters, with the help of Global Positioning system. The measurements of the tree were taken in terms of tree trunk girth at breast height (GBH) in centimeter as well as tree height in meter. In cases of multy trunk tree with the branching below breast height, the every trunk was considered as separate tree. The trees with the GBH below 50 cm were excluded from the present study. While analyzing the data, the populations

were grouped according to the jurisdiction of hamlets as well as below and above the 1000 mean sea level (msl).

Lastly but importantly, capacity building sessions were conducted in sustainable collection of medicinal plants, running of low carbon tourism facility and responsible tourism.

Outputs and results

The social and ecological surveys carried out by the CLP team yielded following outputs and results. In order to prioritize forests on private lands for conservation, CLP team carried out assessment to know current uses of the privately owned lands and forest resources by the community.

1) Utilization of community lands :

a) Grazing:

Farmers generally graze their live stock on their own lands (in private forest) . Live stock has considerably decreased compared to what is was about decade ago and thus forests have recovered on these lands. Livestock suffers major problem of disease outbreak, during rainy season. During cropping period grazing is monitored personally by the owner, otherwise except goats, cattle are left alone in the private forest during the day

Table: Total livestock by respondents from villages in BWLS

Sr. No.	Village	Wadi	Respondents	Cows	Bullocks	Buffalos	Goats
1	Kondhwal	Dhagewadi	2	5	4	2	15
		Shindewadi	2	17	4	8	0
		Main	2	0	2	1	40
2	Nigdale	Mhatarbachiwadi	1	2	3	0	10
		Ghotewadi	1	1	2	2	0
3	Rajpur		1		2	1	12
4	Terungan		1	0	0	0	0

b) Shifting Cultivation:

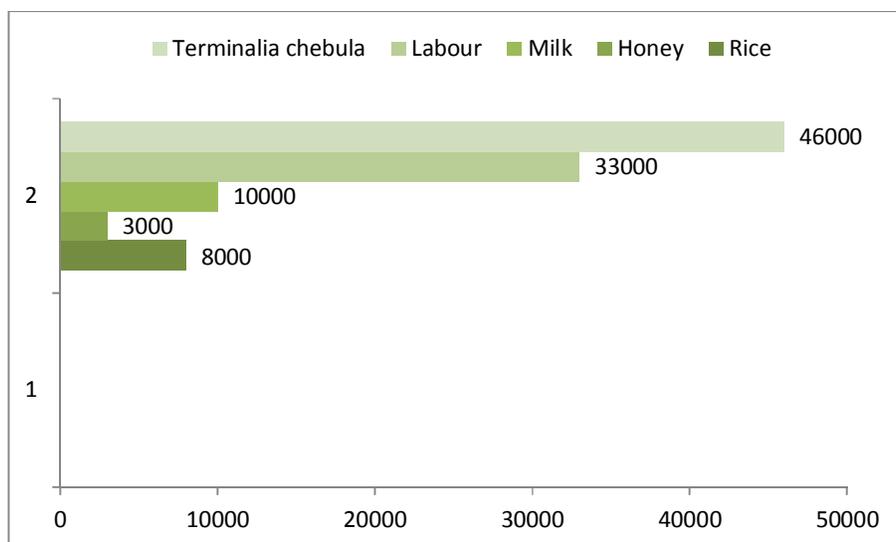
For generations, the local farmers were practicing shifting cultivation to grow traditional varieties of millet viz. finger millet, Warai and Sawa. Currently, the rotation cycle is of seven years including 1 to 3 year of cropping period followed by 4 to 6 years of follow period. From last five years, farmers reported considerable decrease in this practice. Various reasons are contributing to this particular state of affairs , youngsters are well literate and are compensating the monetary losses by doing a small business at Bhimashankar during

month of ***Shravan*** - an important period of worshipping Lord Shiva. On an average 2 to 3 persons per family are engaged in a short term business and earn a minimum of Rs. 10,000 to 15,000 per family per Year.

c) **Collection of *Terminalia chebula* - a major NTFP from BWLS:** an opportunity for value addition /creating incentive for conservation. The Bhimashankar Wildlife Sanctuary is known for abundance of *Terminalia chebula* trees. Fruits of this tree find applications as colorant in tannery industry and in preparation of one of the important medicines in Ayurveda- *Triphala churna*. Thus it is a well established commodity in both these markets. Moreover , the local community is engaged in collection of T.chebula fruits since long. After knowing the link between income generations through harvesting of T.chebula fruits, the CLP team carried out survey to understand socio-economic impact of collection of these fruits on local community. It was realized that there was substantial scope for value addition and sustainable collection if proper market linkages were established. The use of FAIRWILD certification scheme backed by a long term purchase agreement with Pukka Herbs created enabling conditions for promoting this activity. The survey was carried out in village Kondhwal in BWLS in collaboration with a team of interns from S.P.Jain College of Management Research , Mumbai. The Kondhwal village is divided into 4 hamlets namely Kondhwal, Dhagewadi, Shindewadi and Gavandewadi.

We conducted a survey across all the four hamlets collecting 39 samples out of approximately 150 families across all hamlets. Gavandewadi is the largest of all with around 60-70 homes. Both Kondwal and Dhagewadi have respectively 30-35 homes while Shindewadi is the smallest with 6-7 homes. The people mainly cultivate rice for survival and depend on other sources of income such as *T.chebula* fruits, wage labour, milk from cattle. Some young people are employed in small towns or cities, but they repatriate little income.

Distribution of income in Indian Rupees /annum by source



Results of the resource assessment are mentioned below.

Sampling Effort: The two private forest areas under the jurisdiction of hamlets of Kondhwal village namely Shindewadi and Dhagewadi were partly assessed for the distribution as well as biological observations of natural populations of *Terminalia chebula* trees. In total 130 trees from Shindewadi and 1209 trees from Dhagewadi were assessed.

Table 1: Sampling efforts as per hamlet jurisdiction as well as mean sea level.

MSL	Dhagewadi	Shindewadi	% Dhagewadi	% Shindewadi
800-900	26	90	2.10	69.23
900-1000	9	0	2.91	0.00
>1000	1174	40	94.98	30.77
Total	1209	130	100.00	100.00

It was found out that there is direct correlation between mean sea level, location of the trees, their physical growth and yields. It helped in identifying the trees for harvesting, selection of sites and beneficiaries for conservation.

Biological attributes: The period of observations coincided with that of yearly defoliation cycles as well as reproductive phases of the tree.

Table 1: Status of Yearly cycles of defoliation as well as reproductive phases below 1000 msl:

<1000msl	Dhagewadi	Shindewadi	MEAN	STDEV	STDERR
>80% Defoliation	82.86	87.78	85.32	3.48	2.46
% Sprouting	0.00	10.00	5.00	7.07	5.00
% Foliation	25.71	22.22	23.97	2.47	1.75
% Flowering	25.71	52.22	38.97	18.74	13.25
% Fruiting	22.86	0.00	11.43	16.16	11.43

Table 2: Status of Yearly cycles of defoliation as well as reproductive phases above 1000 msl:

>1000msl	Dhagewadi	Shindewadi	MEAN	STDEV	STDERR
>80% Defoliation	96.77	82.50	89.63	10.09	7.13
% Sprouting	8.76	35.00	21.88	18.56	13.12
% Foliation	79.76	25.00	52.38	38.72	27.38
% Flowering	89.88	30.00	59.94	42.34	29.94
% Fruiting	47.87	0.00	23.94	33.85	23.94

The data indicates that trees situated above 1000 MSL are producing excellent yields. This data have very high significance while selecting beneficiaries and trees for sustainable collection.

Achievements and impacts

Conservation agreements in Bhimashankar Wildlife Sanctuary - a real success story with potential for replication at regional level. Against all odds, the CLP team finally implemented the conservation model in two villages from BWLS and secured long term protection of 63 acres of forests on privately owned land. The incentives were a suite of things which include combination of above mentioned support, cash as well as LED solar lamps for all the farmers who signed the contract for a period of ten years. The incentives were decided upon after extensive consultation with the land owners and after discussing in detail provisions of the contract. The contract was translated in local language and was read out loudly by a community leader for the rest of agreement holders. Sufficient amount of time was given for discussing the agreement and questions. A whole day was spent on completing the process of signing a contract and distribution of incentive. In addition, through setting up of low carbon tourism facility, three families of marginal farmers get sustainable income by managing the visitors. The project could actually see completion of feasibility of FAIRWILD certification project and total 60 families from 5 hamlets will receive direct benefits of sustainable collection over the next five years.

Conclusions

The CLP project did prove that along with incentives, true understanding of conservation and social issues along with capacity to develop a sustainable solution is critical for success. Moreover, the experience of implementing conservation agreement model in Bhimashankar Wildlife Sanctuary also tells us about amount of investment that is necessary to actually conserve important corridors and buffer zones and that incentives do work if designed to suit the local requirement. It is also realized that direct incentives alone would not be sufficient and additional sources of income need to be generated based on the natural capital through sustainable use for ensuring the sustainability of this success.

Problems encountered and lessons learned

CLP team faced two almost insurmountable challenges while implementing the project- a) general hatred and negative attitude towards conservation among the community created through involuntary restrictions as regards access to and use of natural resources imposed by the forest department b) incentive based environmentally insensitive development activities carried out for ages by development

NGOs in the region. c) Lack of understanding about the problems associated with conservation due to the biased view that conservation is beneficial to everybody independent of their socio-economic situation and/or geographical setting.

In the future

The opportunities created by the CLP supported project for conservation and sustainable livelihoods have been fully leveraged to raise additional resource to increase the impact of the work. The participating organization AERF secured funding from DARWIN Initiative and KNCF to implement the FAIRWILD certification project. Moreover, additional 10 hectares have been brought under conservation agreement through support from CEPF and Credit Suisse- a multi national bank with office in Pune.

Appendices

A full account of income and expenditure

Itemized expenses	Total CLP BUDGET (USD)	Total CLP EXPENSE (USD)	Total CLP EXPENSE (INR)
PHASE I - PROJECT PREPARATION			
Administration			
Communications (telephone/internet/postage)	\$ 150	\$ 529	21,759.00
Books and printing journal articles/materials	\$ 200	\$ 278	11,430.00
Insurance	\$ 150		
Visas and permits	\$ 200	\$ 24	1,000.00
Team training (Please detail:)	\$ 100	\$ 148	6,101.00
Reconnaissance	\$ 180		
Medical supplies/first aid	\$	\$	

	50	4	150.00
Equipment			
Scientific/field equipment and supplies (Please detail:	\$ 1,000	\$ 577	23,729.00
Photographic equipment (Please detail: Batteries)	\$ 400		-
Camping equipment (Please detail main items:)	\$ 900	\$ 360	14,791.00
Field guides	\$ 100	\$ 268	11,015.00
Maps	\$ 500	\$ 107	4,412.00
Boat/engine/truck	\$ 1,200	\$ 559	23,000.00
Fuel			
Other (Please detail:)			
PHASE II - IMPLEMENTATION EXPENSES			
Insurance	\$ 200		
Transportation			
Fuel	\$ 1,500	\$ 473	19,439.00
Field vehicle maintenance			
Accommodation for team members and local guides	\$ 1,000	\$ 2,073	85,247.00
(Please detail: During transportation (\$50 per day for 4 people * 8 days in the cities) 400.00			
In the field (\$210 per week for 6 people * 12 weeks) 2520.0)			
Food for team members and local guides	\$ 3,500	\$ 871	35,817.00
(Please detail: Food in field (\$210 per week for 6			

people * 12 weeks) 2520.00)			
Transportation	\$ 4,000	\$ 4,910	201,928.00
Customs and port duties	\$ 200		
Workshops	\$ 300	\$ 291	11,958.00
Outreach/education activities and materials (brochures, posters, video, t-shirts, etc.) (Please detail:	\$ 500	\$ 477	19,610.00
posters (150 items) 150			
t-shirts (50 items) 100)			
Other (Please detail: Conservation Agreement)	\$ 7,000	\$ 6,582	270,672.00
PHASE III - POST-PROJECT EXPENSES			
Administration	\$ 200	\$ 1,120	46,066.00
Report production and results dissemination	\$ 200	\$ 50	2,048.00
Other (Please detail: Project Website)	\$ 1,000		
Total	\$ 24,730	\$ 19,701	810,172.00
		41	
Financial Information:-			in INR
	Grant Received from CLP in INR		1,016,959.00
	Total Grant Received:-		1,016,959.00
	Less :- Expenses up to		

	31/03/2013	810,172.00
	Balance with AERF as on 31/03/2013	206,787.00
	Balance in USD on 31/03/2013	3446.00

List of farmers who signed the conservation agreement in BWLS along with property details

Name of the farmer	Resident	Location of the forest	Area in SQ Meters
Chindu Sakharam	Gothewadi	Nigdale Valley	42898
Walkoli Shantaram Kokate	Nigdale	Mhatarbachiwadi	33313
Shantaram Ganpat	Gothewadi	Hand Umbar	33216
Lohakare Pandurang Kurhade	Nigdale	Dhakobachi Mach	20722
Manohar Devaji	Mhatarbachiwa di	Umbar Wadi	19643
Talane Kisan Asawale	Mhatarbachiwa di	Garmal	19419
Dinkar Wable	Shindewadi	Shindewadi	9953
Dinkar Wable	Shindewadi	Shindewadi	8734
Ganpat Dulagi	Mhatarbachiwa di	Gothewadi	7527
Damase Ashok Joshi	Gawandewadi	Waras Wadi	5973
Ganpat Chandu	Terungan	Mhatarbachiwadi	6118
Gaware Ganpat Chandu	Phata	Mhatarbachiwadi	6228
Gaware Gawande	Bhimashankar	Jambhuldari	54094
			252876(25.2876 hectares)

Management of Human Wildlife Co-Existence:

This was the most interesting aspect of the work carried by the CLP team members especially Mr.Umesh Hiremath. In and around protected areas in India, human-wildlife conflict have become commonplace. Bhimashankar Wildlife Sanctuary being no

exception, actually providing practical alternatives and solutions to the community members getting affected from crop raiding was only option to secure their buy in for conservation. The CLP team could deliver on this account is by no means a small achievement.

In BWLS, main occupation for local community is agriculture. The main crop grown is seasonal paddy and other crops such as finger millet and sawa (traditional crop). All crops are prone to depredation by wild animals, mainly wild boars during night and Hanuman langurs during day time. Wild pigs cause more crop damage than the any other wild fauna in BWLS. Farmers are practicing crop guarding by traditional methods during day as well as at night.

Due to frequent incidences of crop raiding by wild animals, farmers have lost interest in agriculture.

As a result, though the landholdings per family are more, the land under crops is very less per family. Wild pigs have been causing severe damage leading to considerable reduction in crop yield. Affected farmers are not applying for the compensation to Forest Department though they are timely made aware by the forest officials in village meetings due to illiteracy , and thus almost no success with compensations .

The CLP team spotted an opportunity to win the confidence of community for conservation work and implemented following activities with remarkable success.

Activities planned and implemented to tackle the crop raiding issue:

- 1) Introduced new innovative, low cost and practically viable techniques, such as low Cost Wire Fence, LED Torches etc.
- 2) Conducted group discussion and demonstration and familiarization of techniques.
- 3) Promoted torches by providing door to door service and made available at lowest cost of Rs. 300 against retail price of Rs. 315.
- 4) Peoples were made aware to apply for the crop compensation against the losses occurred by the wild pigs. They were provided with the ready application format.

Farmers benefiting from the above activities

6 persons from Shindewadi, 10 persons from Kondwal, 3 persons from Gawandewadi, 2 persons from Mhatarbachiwadi and one person from Rajpur purchased torches with the assistance of the field staff. Twenty persons from Gawandewadi managed to purchase torches in time. One person each from Nigdale and Mhatarbachiwadi were provided with the low cost wire fence.

Village	Name of the Person
Shindewadi	Manohar V. Karote
	Lakshuman Bhoir
	Kalu Wable
	Dhawala Wable
	Dinkar Chandu Wable*
	Ganpat Dulaji Damase
Kondwal	Lakshuman Karote
	Ananta Karote

	Sandeep Date
	Shantaram Kalu Damase
	Chandar Damase
	Baban Karote
	Kalu Maruti Damase
	Date
	Shantaram B. Karote
	Pandurang Damase
Gawandewadi	Santaram Ramchandra Damase
	Ashok Joshi*
	Shankar Damase*
Mhatarbachi Wadi	Kundlik kondawale
	Ganpat D. Damase
Rajpur	Dattu P. Kokate
	*Persons who purchased their own torches after demonstration and proper guidance

Though it seems very simple, the solutions offered to local communities to tackle crop raids by wild boars made huge impact as far securing buy in for conservation agreements in BWLS. Most importantly, it help built solid trust with farming community.

Photo gallery



Terminalia chebula fruiting ,



Shantaram Kokate – project beneficiary



Buffer zone of BWLS ,



Shindewadi- a hamlet of village Kondhwal.



A discussion with local community members



Community meeting with Pukka Herbs, *Terminalia chebula* collection



Traditional drying of *Terminalia chebula*, collection of fruits from the ground



Conservation agreement holders with non-cash incentive- LED lamp