

# SAMVADANA, KARANJA (LAD)

## **River-Fish-People: Intervening Positively for Sustainable Future**

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Project Proposal for Sir Dorabji Tata Trust

**Dr. Nilesh Heda**

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**Abstract:** Riverine resources, particularly fishes, are most fragile elements in the ladder of biodiversity. Due to destruction of these resources livelihood of dependent people is in jeopardy. Conservation of riverine resources through people's participation is basic theme of the intended project. The best way to do this is by creating knowledge base, providing sustainable livelihood for resource dependent people and networking local people, related government departments and academia. The important objectives of project involve building knowledge base and capacity of local people, awareness generation, generation of sustainable livelihood and advocacy. These objectives will be completed by ecological fieldwork, creation of community institutions, providing revolving fund for aquaculture and advocacy wherever necessary. In first phase, Adan river basin and associated villages will be chosen; in long run, entire Vidarbha region will be included. The intended outcomes of project include generation of knowledge base about local wetland resources, and securing sustainable livelihood through aquaculture.

# River-Fish-People: Intervening Positively for Sustainable Future

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## 1. Background:

Fishes are most threatened biodiversity element in the ladder of life. Freshwater fishes are thought to be the world's most threatened group of vertebrates after amphibians. Unless they are protected, 20 % of the world's freshwater fishes may become extinct in the next 25-50 years (Moyle et al. 1992). The future extinction rate of fresh water animals is predicted to be almost 5 times greater than that for terrestrial animal and 3 times that of coastal marine animals (Saundersen et al. 2001).

Inland freshwater wetlands of India are rich repositories of biodiversity and are crucial for the livelihood and survival of millions of people. Unfortunately, these vital ecosystems are facing serious threats from development activities and they are disappearing from the landscape at an alarming rate. Recent studies show that, over last one decade 38% of wetlands of size of more than 2 hectare have disappeared from the Indian landscape.

The cascading effect of this ecological meltdown is directly on the local communities who depend on these resources for subsistence. There are 387 communities of fisher folk throughout the length and breadth of India dependent on 191,024 kilometres of rivers and canals and numerous wetlands and reservoirs (Anonymous 2002). These communities have been evolved over the period to sustainably harness the goods and services from the wet land. These wetland dependent communities are of two kinds viz. Specialist (those of *Bhoi* and *Dhimar*) dependent completely and opportunistic (e.g. *Gond*) dependent partially. Both these communities are dependent on wetlands in various degrees and both are the victims of recent changes.

The eastern Maharashtra, part of central Indian *Deccan* plateau, is a land of great diversity both ecological as well as ethnic. This part (also known as *Vidarbha* region) is mosaic of various contrast ecosystems like dry deciduous forest, scrubland, grassland, agricultural land, important river basins and natural and manmade water bodies. The rain fed rivers of this region are adobe of about 100 fish species (Although, the area is largely unexplored in terms of fish inventorying surveys). The area is inhabited by both, Dravidian like *Gond*, *Korku* etc as well as historical populations like Muslims. These various communities occupied their own ecological niches and dependent on array of resources for livelihood. *Dhimar*, *Bhoi*, *Kewat* are depends since millennia on water bodies for various goods and services. Due to destructions in these natural ecosystems livelihood of these dependent communities is in jeopardy.

Present concept note is about putting various ecological, economic and management related components in order and exploration of livelihood option for the fishing communities of this area. The major portion of this project is to learn lesson about **River-Fish-People** by building knowledge base, so that this experience can be utilize on other spatial scales for better sustainable future.

## **2. Problems Identified:**

Since long ago, I am involved with fishing communities of Eastern Maharashtra. During my PhD fieldwork, I had a privilege to work with these communities and observed their condition keenly. During this period, I observed following situations and problems:

- 1) Fish fauna is depleting with accelerating rate due to spread of invasive species, habitat destruction, increasing anthropogenic pressure, destructive fishing methods of the non-traditional fishermen, construction of dams and discriminated management of the riverine resource including water. Thus, Tilapia [*Oriochromis mossambica (Peters)*] fishes are increasing in *Kathani* River. Tilapia is invasive alien species of fresh water fish very much harmful to local fish fauna. Due to dam construction, downghat section of *Adan* River is changing in to mere ditches. Unfair use of river water by rich farmers leading to unavailability of water for fishes to perish. According to knowledgeable individuals river *Adan* was ones Perennial River but after dam construction and increased use of water pumps the river becomes annual and hardly flows for the period of 6 to 8 months.
- 2) The riverine habitats are eroding due to over use of water for irrigation, dam construction, pollution, un-regulated sand excavation, agriculture run off, siltation due to deforestations and excessive growth of hydrophytes.
- 3) Due to above problems, livelihood of traditional fishermen is in jeopardy. Thus, ones the master of river now working in the big cities like *Pune, Surat* as a labour due to drastic declining of fish fauna.
- 4) There is need to shift to the other alternative methods of the livelihood like fish culture.
- 5) There is a lack of data on the availability, threats to the habitat and species and availability of the lakes and ponds for the fish culture.
- 6) Discrimination is another important man-induced factor which, depriving traditional fishing communities from the resources. Thus, in the downside of *Adan* dam due to over



3) Sincere implementation of the laws and government resolutions and whenever necessary advocacy.

Local resource dependent people such as fishermen are victims of recent industrial revolution and widespread destruction of aquatic biodiversity. These communities possess practical knowledge about the resources and conservation. Today, a growing body of literature attests not only to the presence of a vast reservoir of information regarding plant and animal behavior but also to the existence of effective indigenous strategies for ensuring the sustainable use of local natural resources (Johnson 1992). These strategies include multiple species management, resource rotation, succession management, landscape patchiness management and other ways of responding to and managing pulses and ecological surprises (Berkes et al. 1999). In short, all over the globe, the usefulness of traditional knowledge is increasingly appreciated (Turner et al. 1999; Pierotti and Wildcat 1999).

It was noted that, if livelihood of these communities were in danger then it would affect surrounding biodiversity by exploitation. There are many examples of these kinds of vicious circle e.g. destructive fishing techniques used by traditional fishermen.

There is another dimension to this situation, lack of knowledge about the two things viz. **Resources** and **laws**, making situation worst. Thus, every year, state fisheries and irrigation department auction water bodies to local people, but there is no mechanism of the information disbursement (how many water bodies? Distribution, their biological characteristics, auction value etc), because of this, those wealthy people who have access to information are benefited. Thus, for effective development, information dissemination in local language is essential. Agriculture may not be suitable for fishermen as historically they are 'fishermen' and not 'agriculturist'. In addition, recent episodes of farmer's suicides in this area created need of development of other sectors like aquaculture.

Angler's communities since antiquity depend on natural water bodies for their subsistence. Recent destruction in these natural entities creating first direct influence on these communities thus along with conservation there is a need to explore secure, eco-friendly livelihood options. These options should be as possible as analogous to their traditional skill. The traditional skill of fishing communities is fishing thus fish culture might be a best option

for them. Off course, such options should be community chosen thus require studies regarding community aspirations about the development and sustainable future.

#### **4. Specific Objectives, rational, output and method:**

##### **a) Activities:**

Preparation of status report of *Bhoi* people's occupation for *Adan* river basin: economics of fishing, livelihood status, health problems, education problems, problems of fish culture, inventory of problems facing by people at State Fishery Department. Understanding attitudes of government department, way of working of government machinery related to fish-people-river, problems with local fishermen. Aspirations of local people regarding future, livelihood options.

##### **b) Rational:**

There is no information on the status of the livelihood of people, their problems, and developmental aspirations in the *Adan* river basin. Lack of understanding about actual social, ecological and economical scenario leads into poor, visionless attempts of development. Such attempts often against ecological sustainability e.g. culture of the ecologically harmful species of the fishes (e.g. *Oriochromis mossambica*). In addition, lack of information leads to discrimination and inequitable sharing of resources and benefits.

##### **c) Time line:**

1 to 12 months.

##### **d) Measurable outputs:**

Status report in *Marathi* and *Hindi* language and in CD form and as web version. Status report will include: 1) History 2) Identification of stakeholders 3) Identification of project partners 4) Identification of problems 5) Identification of community aspirations of development 6) Identification of conflicts and consensus 7) Establishment of study groups 8) Creation of future developmental agenda.

**e) Methodology:**

- 1) **Group Discussion:** Workshops will be arranged with fishing community member, NGO personals, government departments etc. Informally group discussion meetings will be arranged in various villages.
- 2) **Individual Interviews:** Individual interviews of knowledgeable individuals and government department's officers.
- 3) **Socioeconomic surveys:** Socioeconomic surveys will be carried out.
- 4) **Field visits:** Field visits will be arranged in basin area.

#### ***4.1 Status report on Biodiversity:***

**a) Activities:**

Preparation of status report on present condition of wet land and fishes. Inventorying of fish culture ponds for *Washim* district. Simple data base on various ponds suitable for fish culture, their biological characteristics, initially for Washim district (upper reaches of *Adan* River) and latter on will extend to *Yeotmal* district. Culture fishes suitable for fish culture. Wild fishes suitable for fish culture. Exploring possibilities of growing local indigenous species as a part of fish culture. Documentation of unsustainable fishing techniques.

**b) Rational:**

Sound management of the natural resource depends on the good information, the information on the present condition and ongoing changes of the natural resources (Gadgil et al. 2006). There is no or scanty information on the status of the various biodiversity elements and habitats, fish culture ponds etc. Thus, for immediate benefit of the local people, it is very much meaningful to prepare a small database on the availability of various water bodies available for fish culture. Unfortunately, such kind of database is not available with fisheries or irrigation department. For effective social mobilization, capacity building and awareness generation of local people it is very much essential to have knowledge base on the status of local resources. With this in hand, in future, baskets of socially meaningful projects can be immerge which can be beneficial for local people.

**c) Measurable outputs:**

Status report in *Marathi* and *Hindi* and in CD form also uploading on web. Status report will include: 1) Document on history. 2) Inventory of key species. 3) Status report on the abundance and changes in the local fishes. 4) Inventory of habitats. 5) Identification of problems related to species and habitats. 6) Identification of water bodies for fish culture. 7) Data base on the wetland of Washim district. 8) Maps. 9) Lists of destructive fishing techniques and 9) Future developmental agenda.

**d) Timeline:**

1 to 12 months.

**e) Methodology:**

- 1) **Group Discussion:** Workshops will be arranged with fishing community member, NGO personals, government departments etc. Group discussion meetings will be arranged in various villages.
- 2) **Individual Interviews:** Individual interviews of knowledgeable individuals and government department officers will be arranged.
- 3) **Field visits:** Field visits will be arranged in the river basin.

## ***4.2 Laws, GRs, privileges:***

**a) Activities:**

Preparation of repository of laws and GRs, related to wet land and fishing communities. Dissemination of this material in local language in the form of small booklets, posters, web site, CDs. Capacity building of local fishing communities regarding laws, privileges.

**b) Rational:**

There are many laws and time-to-time issued government resolutions for fishing community's welfare. To fetch these benefits there is need to prepare a repository of various laws and GRs in local language. To overcome the problem of discrimination (ecological and social) sound implementation of GR and law is essential. In order to build the confidence of local people it essential to build capacity of local people and institutions regarding laws.

**c) Timeline:**

1 to 12 month.

**d) Measurable outputs:**

1) Small booklets on laws, GRs in *Marathi*. 2) A website on project objective and publication of various laws for wider public 3) Capacity building workshops for local people.

**e) Methodology:**

- 1) Web search
- 2) Library search
- 3) Meetings with government departments (e.g. fishery department and irrigation departments)
- 4) Workshops

**4.3 Community structures:**

**a) Activity:**

Establishment of fishing groups, Self Help Groups (*SHGs*), disbursement of revolving fund.

**b) Rational:**

As per my discussion with local people, main problem in the fish culture is lack of funds. As an example, in 1975 on *Adan* river a dam has been built. Before that, there was free-range fishing by fishermen of the area. Initially, the auction of dam for fish culture has been given to local Fishermen's Cooperative Society. The society is created by the group of local fishermen through collaborative fund. There were 100 members in the society and approximately 450 families of fisher folks depended on the same for livelihood. On 10 Rs. Per kilogram members was harvesting the fishes and liberally can sell the fishes in the open market. In 2003, a drought has been broken up in the area, which destroyed culture fisheries in this region. In 2004, government auctioned this dam. Due to last year's drought, people were unable to pay the auction money (300000.00 Rs. For 5 years) thus auction has been given to a contractor from Akola. Now, people have to fish on 15 Rs. Per kilogram and forced to sell the same to contractor.

Thus, financial security is important for the sustainable future of these communities. Through this project, on pilot scale, I would like to set up groups of local people. These groups are expected to culture fishes in small ponds (1 to 2 hectare area); a revolving fund is given to these groups. After some time, group will return the fund to another group.

**c) Timeline:**

12 to 14 month.

**d) Measurable outputs:**

1) Establishment of four groups 2) Disbursement of amount.

**e) Methodology:**

- 1) Meetings with local people.
- 2) Workshops

#### **4.4 Scientific Fish Culture:**

**a) Activity:**

To provide scientific inputs into fish culture.

**b) Rational:**

Many environmental factors affect fish culture. Thus, scientific inputs are essential. These kinds of inputs will be provided to selected groups (4 groups).

**c) Timeline:**

14-22 month.

**d) Measurable outputs:**

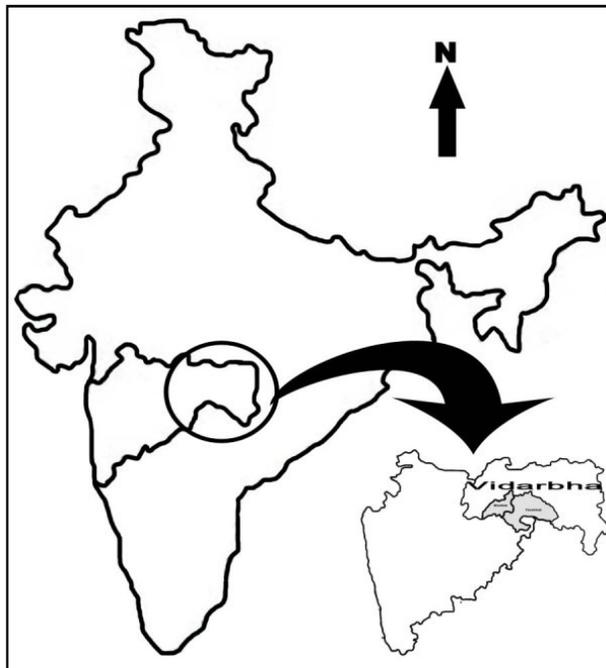
1) Fish culture in four ponds 2) Workshops for scientific fish culture 3) A booklet on scientific fish culture in *Marathi* language.

**e) Methodology:**

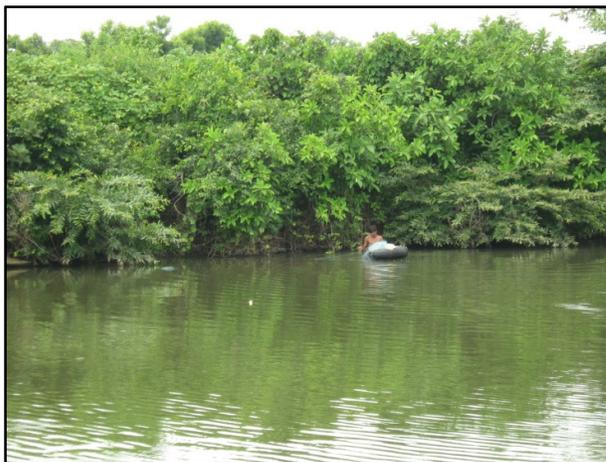
- 1) Fish culture capacity building workshops

2) Field visits by fish culture experts

## 5. Study and action area:



**Figure 3** Position of study area (India-Maharashtra state-Vidarbha region-Adan basin)



**Figure 2:** River Adan at Ramgaon in Karanja Taluka, Washim District

Basin approach will be considered for the study. Mention of politically defined region in the note is only to clarify the position of area. Those villages will be selected which are situated on the bank of river and with traditional fishing communities. *Adan* river basin and associated villages of fishermen will be an impact area. *Vidarbha* region, the eastern most part of *Maharashtra*, is traversed by important river basins like *Tapti*, *Godavari* and sub-basins like *Waingangā-Painganga-Wardha*, *Purna* etc.

The main river *Godavari* is largest river of the

Peninsular India. *Adan* river basin (Long  $77^{\circ}.22'$  Lat  $20^{\circ}.17'$  to long  $78^{\circ}.21'$  Lat  $19^{\circ}.9'$ .) will be selected for the study. River *Adan*, the tributary of *Painganga* is about 210 km long rises in the *Washim* district and flowing through *Yeotmal* district united with river *Painganga*.

*Washim* and *Yeotmal* districts have been

chosen as an impact area. Four villages along the river will be chosen for actual, grass root

implementation of the project.

## 6. Beneficiary:

### 6.1 Indirect Beneficiary:

Fishermen, other people, students, researchers, fisheries department, irrigation department.

**Approximate numbers:** All concerned people of Adan river basin.

**Benefits:** Knowledge base about local resources. Knowledge base about laws, knowledge about government resolutions.

### 6.2 Direct Beneficiary

- **Aquaculture groups**

**Approximate numbers:** Four groups X 16 families X 5 people = 320 people.

**Benefits:** Financial assistance, management of ponds and aquaculture.

- **Other people who will attain aquaculture capacity building workshops**

40 people.

- **Exposure visits**

40 people.

## 7. Overall methodology:

Overall methodology can be categorised in to three kinds viz. *filed surveys, interaction with communities* and *building database*.

### 7.1 Field Surveys:

#### a) Participatory Field surveys:

This will be especially applied to understand the riverine habitat and for inventorying people's knowledge about landscape ecology. Joint field visit will also be important for inventorying of the local fish fauna and riparian vegetation.

#### b) Participatory Mapping:

This will be especially applied for mapping of the different habitat types to which people assigned some names. A large blank map (4 X 4 feet) will be prepared on the paper as well

as on the land, and people will fill this map with the help of bold marker pen and different sized pebbles respectively.

In addition, wherever available satellite images will be used for the advance studies.

## 7.2 Interaction with communities:

### a. Nâdi Pârikramâ (River March):



**Figure 4: Bhoi people: Traditional fisher folk of this area**

At the starting of the project a river march will be arranged from its origin to the end. During this stride, villages along the river will be visited; various meetings will be arranged along the way. A public invitation will be issued in the local newspapers to invite various interested individuals, nature lovers to this walk. The walk will be an important event for the future work, as it will create awareness and interest of common people in river and fish conservation.

### b. Village selection criterion:

Through *River march*, interested villages will identified. A workshop will be arranged (First workshop) and key individuals will be invited from these villages. Those villages, which will show their interest, will be selected for the future work.

### c. People's Involvement:

People's involvement will be secured through serious of meetings at various villages. Every meeting will be start with slide or film shows so that people can gather. During initial phase information about various useful laws, government resolutions will be provided to people, so that immediately the information can be used for their daily pursuit.

In order to facilitate people's involvement periodic exposure visits will be arranged. Such exposure visits will be arranged at places where through community initiatives people have managed natural resources and using natural resources sustainably.

### d. Study groups:

To achieve above tasks in every village a study groups will be set up. Study groups will be a group of local people who are interested in the study of various issues. Study group members will be given regular exposure and various study group members across villages; will meet regularly at different places to discuss their experiences.

Practically, from every village (for four villages), one person will be appointed as a salaried person, who will full time assist in sampling, rapport building with local people and other project related work.

**e. Workshops:**

Workshops at various places will be arranged in which community people will be invited along with various government officials of concerned departments, NGOs, social activists etc.

**7.3 Building database:**

Initially PEBINFO, an open source database prepared by *Indian Institute of Science, Bangalore* will be used. I was personally involved in the development of this database. Along with English, the database is in local languages also. In later phase, this database will be modified for present work. Help of voluntary IT experts will be taken for the same.

**8. Impact Assessment:**

Following criterion will be used to evaluate the success of the project. Based on the answers of the questions given in the bracket, evaluation of project will be done.

- At the end of the project, if people get water bodies surrounding them for fish culture and if poverty lowers down then it will be success of project. (How many water bodies auctioned to local people for the fish culture?).
- If a database (primarily for the local people in local language) of the local resources is prepared and people benefited from the same for the sustainable use, then project will be successful. (Have computerised database prepared? Is it functional? Are local youths using the same?).
- Relationship building between fisheries department/irrigation department and local people.

### 9. Time line:

Briefly, the project will spread over 2 years. First 12 months will be utilized for understanding problems, building awareness, building team, identification of villages, creation of water body data base, creation of picture of wetland ecology of this area etc. Second year will be for fish culture and actual implementation of livelihood options.

Sr. No.	Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Setting of official necessities:	✓																							
2	Appointments of project Assistant		✓																						
3	Development of survey forms, data base forms		✓																						
	Nadi Parikrama		✓											✓											
4	Setting up study group		✓	✓																					
5	Workshops: Status report	✓								✓															
6	Institutionalization workshops												✓	✓											
7	Data collection: Status reports.	✓	✓	✓	✓	✓	✓	✓	✓	✓															
8	Surveys		✓	✓																					
9	Writing & publication of status report.										✓	✓	✓												
10	Establishment of community													✓	✓	✓									



## 10. Budget:

Total project cost estimated is **1149600.00** Rupees; year wise, head wise and unit cost shown in following table.

- Expenditure for first year: **579800.00**
- Expenditure for second year: **569800.00**

Sr. No.	Head	Amount per month and rational	First Year	Second Year	Total of 2 years
<b>1. Administrative Costs</b>					
1.1	<b>Salaries</b>				
1.1.1	<b>Project director</b>	15000.00	180000.00	180000.00	360000.00
1.1.2	<b>Area coordinator 2 (3000 Rs per month. Part time from fishing community)</b>	6000.00	72000.00	72000.00	144000.00
1.2	<b>Office expenses</b>	200.00	2400.00	2400.00	4800.00
1.2.1	<b>Postage courier</b>	200.00	2400.00	2400.00	4800.00
1.2.2	<b>Telephone-Internet</b>	1000.00	12000.00	12000.00	24000.00
1.2.3	<b>Accounting and office head</b>	1000.00	12000.00	12000.00	24000.00
1.2.4	<b>Travel Expenses</b>	4000.00	48000.00	48000.00	96000.00
	<b>Total Administrative Costs</b>	<b>27400.00</b>	<b>328800.00</b>	<b>328800.00</b>	<b>657600.00</b>
<b>2. Programme Expenses</b>					
2.1	Nadi Parikrama (2 times)		<b>20000</b>	<b>20000</b>	<b>40000.00</b>
2.2	workshops 2 local level workshops x 40 people x 2 day x 400/- per (including travel, food, honorarium)	Regarding status Report (1st Month and 9th Month)	64000.00	0.00	64000.00
2.3	Preparation of status and action report surveys 5 x 8000/- per survey of 8 days each.	Regarding status Report	40000.00	0.00	40000.00
2.4	Training to improve fish culture 2 x 3 days x 20 persons x 400/- day	Fish Culture	48000.00	0.00	48000.00

2.5	Documentation, report writing, photography, video shooting		10000.00	40000.00	50000.00
2.6	Institutionalization workshops of CBOs. 2 x 2 days x 20 people x 400/- per day	Establishment of community structure	0.00	32000.00	32000.00
2.7	Exposure visits 2 X 20 people X 1500	Capacity building	30000.00	30000.00	60000.00
2.8	Financial assistance to community members 20000/- per group x 4 groups each year.	Fish Culture	0.00	80000.00	80000.00
2.9	Monitoring & Evaluation meetings 6 x 10 people x 2 days x 200/- per day (Per year 3 meetings).	Project evaluation. Advisory comity members will be invited for the evaluation.	24000.00	24000.00	48000.00
2.10	Publications newsletter and small booklet.		15000.00	15000.00	30000.00
<b>Total programme expenditure</b>			<b>251000.00</b>	<b>241000.00</b>	<b>492000.00</b>
<b>Total project cost</b>			<b>579800.00</b>	<b>569800.00</b>	<b>1149600.00</b>

**Table 2: Detail of budget (In INR)**

## **11. Explanation of Financial Information:**

- 1) Salary of Project leader:** As project leader do not have any other source of income and will be fulltime on project, expecting modest salary. His earlier salary was + 18000 Rs. Per month.
- 2) Salary of Project Assistant: Two** Project assistants will be chosen from the fishing community. They will be part time. He/she will be assist in organizing meetings at villages, data generation, rapport building, sampling etc.
- 3) Workshops:** Two + two, two days workshop of about 40 and 20 people respectively. Each workshop will require following necessities: Food + Lodging + transport + Honorarium + workshop stationary+ Audio Visuals+ Postage etc.

- 4) **Travel:** In-project area travel only.
- 5) **Publication:** Publication of results and other capacity building material in the form of small booklets in local language and in English. Launching of a web site. Data base distribution.
- 6) **Community support:** During the project period, CBOs will be set up. 25000 Rs will be given to each comity as “seed money”. Comity will give that amount to needy individual as low interest loan for fish culture. At the end of year, people will return the amount to comity, and comity will give amount to another individual. Thus this kind of fund will be revolve and multiply. In comity, all people of the village will be member. Comity will decide who is needy by community consensus and set up laws of disbursement and recovery. *NGO or project people will not involve in the process of the decision-making.* CBOs will open a bank account and manage it as per the laws of Government of India.
- 7) **Honorarium:** This will be given to fish experts who will help in fish identification, data base help, for social activists who will visit villages with project staff.

## 12. Personal Summary (Project Director):

**Nilesh Kamalkishor Heda**

**Age:** 32 Years

**Education:** M.Sc. (Zoology) PhD (Fish Ecology, Traditional knowledge)

**Previous work and past achievements:**

- **Doctoral Work:** Wet land ecology and fish diversity. Involved study of two rivers of the Central India (*Adan* and *Kathani*) looking for the fish diversity structure. PhD work also involved documentation of traditional knowledge of the fishing community.
- **Past Work:** Worked for **Centre for Ecological Sciences, Indian Institute of Science, Bangalore** on ‘People’s Biodiversity Register’ and ‘millennium ecosystem assessment’ project (MA) from February 2002 to March 2004. From April 2004 to March 2007 worked for the creation of “People’s Biodiversity Register (PBR)” with the students and teachers of the central India in same institute. Contributed in the development of Biodiversity RDBMS.
- April 2007 to October 2007: Worked for **Agharkar Research Institute (ARI), Pune (Maharashtra)** as research associate for Vigyan Prasara, Department of Science and

Technology (DST) funded project. Responsibilities involved ecological studies with students and traditional people and preparation of material on the biodiversity for common people.

- **Publications:**

- Gokhale Y., Gadgil M., Achar K. P., Gunaga S., Heda N., Pandharipande K., Mohan H., Dolke Y. and Gurnule K. (2005). ***People's Biodiversity Register: Documenting biodiversity for natural resource management.*** In *Perspectives on Biodiversity-A Vision for Megadiverse Countries*. Ministry of Environment and Forests, GOI. 375-396 pp.
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- Heda N. ***Saranga.*** Poetry book. Mrudgandha Publication. Pp 60. (Marathi).
- Heda N. (2007): ***Fresh water fishes of Central India: field Guide.*** Vigyan Prasar, DST, GOI. In Press.
- Heda N. K. and K. M. Kulkarni (2006). ***Herbal Fish Stupefying Plants Used by the Gond Tribal of Mendha Village of Central India.*** Submitted to Journal of traditional knowledge on 20 September 2006.

- Heda N. K. and K. M. Kulkarni. 2007. ***Fish Diversity Studies of the Two Rivers of North-eastern Godavari Basin***. Paper submitted to 'Zoo Outreach' in April 2007.

**Experience as a team leader:** Having experience of working with many grass root NGOs and research organizations. Closely associated with fishing communities. Working with local people for conservation and biodiversity study issues. Headed team of NGOs, local people and about 13 schools colleges (while working for CES, IISc, Bangalore). Arranged many workshops for the capacity building of the students, teachers, grass-root NGO workers, local people etc. Having experience in fish sampling, interviewing people, coordinating student's team, database preparation and its testing.

### 13. Summary of Host NGO:

**Name of organisation:** SAMVEDANA®

**Date organisation established:** 28 October 2001

**Status:** Non-profit, Non-Governmental.

**Charity number:**

- **Society Registration Number:** MAHA 1006/01 (28 October 2001)
- **Trust Registration:** F18610 (Nagpur) (10 December 2001)
- **12 A Registration Number (Income Tax Act 1961):** 83/20/05-06 (1 April 2005)

**Summary of NGO work:**

Please look in to attach reports.

### 14. Project Team:

#### 14.1 Advisory comity:

Sr. No.	Name and address	Expertise
1	Dr. Subramaniam K.A. Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560012	Ecology

2	Prof. K.C. Malhotra, Retired professor of anthropology, Noida	Anthropology
3	Mr. Mohan Hirabai Hiralal, VRIKSHAMITRA, Chandrapur	Social Activist
4	Devaji Navalu Tofa, At. Mendha (Lekha), Post. Hetti, Ta. Dhanora, Dist. Gadchiroli Maharashtra	Community leader
5	Dr. Sanjay Kharat	Fish Biologist
6	Mr. Manoharrao Bhrushundi, Retired Fisheries officer Govt. Of Maharashtra, Hanuman Nagar, Nagpur	Culture fishery, laws, GRs.

**Table 3: Advisory comity**

### **14.2 Other:**

Sr. No.	Name and address	Expertise
1	Kaustubh Pandharipande	NGO head
2	Ad. Sumant Bandale	Law
3	Mr. Raghunandan Velankar	Natural Resource Management
4	Mr. Vipin Sone	Zoologist
5	Mrs. Ruchita Heda	Computer
6	Mr. Subhashrao Bavne	Local fisherman
7	Mr. Vishnu Bavne	Local fisherman
8	Mr. Pravin Soniwal	Zoologist

**Table 4: Other Team Member**

## **15. Selected Bibliography:**

Anonymous. 2002. **Orphans of the River**. Article: 'Down to earth'. February 15, 2002. 29 – 37.

Berkes F., J. Colding and C. Folke. 1999. **Rediscovery of traditional ecological knowledge as adaptive management**. Ecological Applications. **10**(5): 1251-1262.

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Johnson M. 1992. **Research on Traditional Environmental Knowledge: Its development and role**. *In*: Lore. (Ed. Johnson M.). Dane cultural Institute. Pp 190.

Moyle P.B. and R.A. Leidy. 1992. **Loss of biodiversity in aquatic ecosystems: evidence from fish faunas**. *In*: Conservation Biology: the Theory and Practice of Nature Conservation, Preservation, and Management. (Ed. Fiedler P.L. & S.A. Jain). Chapman and Hall, New York. 128–169.

Pierotti R. and R. Wildcat. 1999. **Traditional Ecological Knowledge: The Third Alternative (Commentary)**. Ecological Applications. **10**(5):1333–1340.

Saundersen D., J. Meeuwig and A. Vincent. 2001. **Freshwater protected areas: Strategies for conservation**. Conservation biology. **16** (1) 30-41.

Turner N., T.M. Ignace and R. Ignace. 1999. **Traditional Ecological Knowledge and Wisdom of Aboriginal people in British Columbia**. Ecological Applications. **10**(5):1275–1287.

Gadgil M. et al. 2006. **Ecology is for the people: a methodology manual for People's Biodiversity Register**. National Biodiversity Authority, Chennai. Pp 233.

## **16. Attachments:**

- 1) NGO letter
- 2) NGO Registration certificate
- 3) Copy of certificate pertaining to income tax exemption under S.12 A.
- 4) 3 years audited statements
- 5) 3 years annual report