

GOVERNMENT OF KERALA

Abstract

Forests & Wildlife Department- Manual of Participatory Forest Management (PFM) for identifying, Mappings, Recommendation & Declaration for Gene Pool Conservation Area (GPCA) in Natural Forests Approved – Orders issued.

FOREST & WILDLIFE (E) DEPARTMENT

G.O. (Ms). No.71/05/ F&WLD.

Dated, Thiruvananthapuram, 10.06.2005

Read: Letter No. WGDP-GPCA/04 dated 30.09.04 from the Principal Chief Conservator of Forests, Thiruvananthapuram

ORDER

The Principal Chief Conservator of Forests as per his letter read above has forwarded to Government a draft Manual of Participatory Forest Management procedure for identifying mapping, recommendations and declaration of Gene Pool Conservation Area (GPCA) in natural forests for formal approval of Government

Government have examined the matter in details and are pleased to approve the Manual of Participatory Forest Management procedure for identifying, mapping, recommendations and declaration of Gene Pool Conservation Area (GPCA) in natural forests appended to this order subject to the conditions that expenditure towards implementation of the activities described in the Manual will be met from the existing annual Budgetary provisions for Bio-diversity conservation in the allocation for Forest department

(BY ORDER OF THE GOVERNOR)

K.SULEKHA,
Deputy Secretary

The Principal Chief Conservator of Forests Thiruvananthapuram.
The Accountant General (A&E/Audit), Kerala, Thiruvananthapuram
Stock File, Office Copy

Forwarded/By Order

Section Officer

**Manual of PFM Procedure
For
Identifying, Mapping, Recommendation & Declaration
Gene-pool Conservation Area (GPCA) in Natural Forests**

I. Introduction

Context

The Western Ghats is recognized as one of the major biodiversity hotspots in the world. These forests harbour more than 4000 species of flowering plants and among them about 1500 are endemic. In Kerala 3872 flowering plants have been reported of which 1272 are endemic and 159 species have been classified under different threat categories. About three fourth of the flowering plants constitute a potential resource base with actual or potential value. It is estimated that 1000 species can be used as ornamental plants; besides, there are 900 medicinal plants, 450 wild edibles, 175 gums, resins and dyes, 165 timber or wood, 150 spices, 14 bamboo and reeds and 11 canes (Pushpangadan *et al* 1997). The potential utilization patterns of the listed plant resources often overlap, as one species is found useful for two or more purposes. Hardly 10-15% of these plant resources have been exploited while the rest remain as a potential gene-pool as yet untapped. Among the resource species medicinal plants are the most collected species from the forests of Kerala. (*A Brief Outline of Biodiversity Conservation Strategy and Action Plan for Kerala-2003*). If this is the wealth of flowering plants, the diversity of other life forms is equally mind boggling.

The reckless destruction of forests in the past has decimated major part of these biodiversity resources and we are left with only small islands of flora and fauna richness, fragmented and in need of constant attention for their continued existence. The impact of the present indiscriminate interactions enjoyed by stakeholder communities in forests on the wild biodiversity is yet to be properly understood. The Protected Areas cover 25% of the forest area of the State, but these contribute to conservation of only a limited spectrum of our wild biodiversity. The forests outside the Protected Areas are very much open to uninhibited human interactions.

Participatory Forest Management (PFM) is now an accepted approach of the State Forest Department. This approach allows stakeholders to protect and sustainably manage the biodiversity resources in their stake areas. The local stakeholder communities, jointly with the Forest Department, are responsible for preparing and implementing detailed management plans for Forest Protection and Management. Therefore, it is the responsibility of the Forest Department to equip the local stakeholder communities in performing this task to perfection. This is the only viable answer to the crisis confronted by the wild biodiversity. The **Manual of PFM Procedure for Identifying, Mapping, Recommendation & Declaration of Gene-pool Conservation Area (GPCA) in Natural Forests** is an attempt to equip the local stakeholder communities and the Forest Department in protection and conservation of our invaluable wild genetic resources for posterity.

Concept

GPCA under PFM is an attempt to find convergence of two levels of knowledge systems, (1) scientific and (2) local. Scientific knowledge on biodiversity is the universally accepted system of understanding plants and animals. It uses a universal measure and therefore is less subjective. Local knowledge on the other hand is more subjective. It evolves through intimate association with plants and animals and the meaning of biodiversity for local communities may spread over cultural, spiritual, social, utilitarian and economic values. Local knowledge may also throw light on local distribution, abundance/rarity (past and present) with regard to the

components of biodiversity. The attempt here is to work together for a synthesis of these two levels of understanding and fix priorities for joint action for biodiversity conservation.

The Vana Samrakshana Samithees (VSSs) go through the procedure of micro planning for their management areas. They have a notion of conservation of biodiversity based on local knowledge and set out priority locations in their micro plans. These priorities may not be exactly as that of the scientific community. The scientific community should try to understand local knowledge, local priorities and their biodiversity conservation strategy. The scientific community should apply modern scientific viewpoint and set out priorities for biodiversity conservation in the micro plan area of VSS. The interaction of local knowledge with modern scientific knowledge will create a common pool of understanding which will in-turn generate the concept of PFM-GPCA. The management plan of PFM-GPCA should elaborate the strategies for biodiversity conservation as a joint endeavour of local and scientific communities.

The scientific community can start the work on the foundations of existing local knowledge and work towards final delineation and management plan of PFM-GPCA. There is freedom in the end to re-align PFM-GPCA areas so that the synthesis of local knowledge and modern scientific knowledge is satisfactorily achieved.

Once the PFM GPCAs are established, this could open up vistas for in-situ conservation of rare endangered and threatened species with peoples' participation. Ex-situ conservation programmes are also possible in association with VSS and scientific institutions. An entire range of activities for bio-diversity conservation can emerge out from this foundation.

Projects for GPCA identification, mapping, declaration and associated in-situ and ex-situ conservation programmes can be developed and submitted to appropriate agencies by the FDA

Definitions

Gene-pool

It is the dynamic *in-situ* evolving collection of biota occurring in a specific bioclimatic/topographic location. The term gene-pool could be applied with respect to a specific population of a species, an entire species population, a biotic community or a natural ecosystem. For discussion in this workshop we are using the term gene-pool to refer to the total collection of species in the non-oceanic parts of the biosphere, specifically in the forest areas. The concept of gene-pool includes cultivars, wild relatives of domesticated plants and animals and feral species. Within the identified, ecologically circumscribed gene-pool there could be exploited species, currently unexploited but potentially directly usable species as well as species which may have no directly usable value but the inter relationships of which are critical for many other species to survive (eg. Support for an epiphyte etc...).

GPCA Nomenclature

The VSS has a register number such as **VSS Reg. No. abc-x/year**. The GPCA can be named as **GPCA abc-x/year – z/year** (z representing the sequential number of GPCA in the concerned VSS and year means the year of approval of GPCA by the Conservator of Forests).

Stakeholders

The people who directly or indirectly use any component of biota of a specific tract are stakeholders. The people who may not use it at all but are geographically close to it are also stakeholders.

The insights, knowledge, information, perceptions, attitudes (cultural, historical) of stakeholders must be brought in. There may be consumers who are distant but to whom the NWFP material reach unprocessed or processed but whose knowledge at that level of consumption also be incorporated. All these different categories of knowledge, information and experiences should be considered equally important. In this participatory evaluation of the gene-

pool, potential future needs, values and attitudes should be brought in as much as possible. They include not merely material utilitarian values but also aesthetic, recreational and spiritual values.

Threat

Perception of threats to the gene-pool can be extremely varied. It could have an anthropogenic source. It need not be directly anthropogenic at all. It could be on one species alone or it could, through destabilizing inter-specific relationships, threaten one species or a whole ecosystem. It could be edaphic changes or climatic consequences. Any factor affecting stability or viability by reducing numbers or making the habitat unstable for a species, community or ecosystem is considered a threat to the gene-pool. All the threats cannot be countered and for many we have no solutions. A threat could be actually identified directly and its consequences correlated with the cause. We can also trace causative factors by monitoring consequences. Threat may be perceived but details of consequences could remain unknown. Threat could be acting only for a short time or may be acting continually. The threat factor and consequences may be distanced in time and space but we can trace them through biogeochemical processes. Sometimes the latency period could be so much that it is recorded only much later. Only a close monitoring of the gene-pool as comprehensively as possible over an adequate length of time will help us in identifying accurately the threats to it. Threat could be edaphic, climatic, geological and it could be consequences of exotic, introduced or invasive species. It could stem from human population build up or changes in local natural resource consumption patterns. Factors such as legal, administrative, policy changes, economic, scientific or political trends, which could be local, regional or global can also have serious impact on the gene-pool.

National Green Corp

The National Green Corps Programme (NGCP) was one of the outcomes of the Coimbatore Charter on Environment and Forests held during 29-30 January 2001. The NGCP is implemented through Eco-clubs, which are constituted in schools and colleges spread all over the State. The main objectives of the NGCP are (1) to make children understand our environment and environmental problems, (2) to provide environmental education opportunities for school children, (3) to utilize the unique position of school children as conduits for awareness to the larger Society (4) to facilitate children's participation in decision making related to environment and development (5) to bring children in to direct contact with the environmental problems facing the Society they live in and make them think and contribute solutions for them (6) to involve children in action based programmes related to their immediate environment. About 100 schools in every district have functional eco-clubs with 30 to 50 children. Eco-clubs can be constituted in colleges and therefore graduate, post graduate and even postdoctoral fellows can become members of Eco-clubs. Each Eco-club is provided with a kit of resource material and a token money as grant from the MoEF. Organizing nature awareness programmes, nature and environment monitoring, conservation campaigns, afforestation and such other activities promoting nature conservation are the functional areas of Eco-clubs.

The well-developed existing network of Eco-clubs in schools and colleges can effectively support the Forest Department and Vana Samrakshana Samithees. Expertise of scientists in research institutions, professors (retired or otherwise) and other experienced persons in the informal sector willing to associate with the programme will join hands with Forest Department and VSSs to make the programme a continuing activity.

The National Green Corp with its wide spread presence and in its capacity as an official programme of the MoEF will be integrated with this activity at the field level.

Panel of Scientific Experts

A panel consisting of experts on field biology, ethno botany, forest ecology and other directly relevant scientific fields will be constituted and will advise and impart training to the KFD, VSS and Eco-clubs associated with GPCA Programme. The panel will be approved by the

Principal Chief Conservator of Forests and renewed every five years with necessary additions and deletions. The panel will have an optimum size of 15 members drawn from scientific and academic institutions and non-government organizations. They will assist the activity at State, Circle and Division/FDA levels.

PFM Micro Plan

The VSS and Forest Department jointly prepare a document containing the resource base, dependence of stakeholders on the resources, prescriptions for forest protection, sustainable resource management and mutual commitments of the Forest Department and the VSS. This document is termed the Micro plan for PFM and hence the PFM Micro Plan.

List of Abbreviations used

PFM	-	Participatory Forest Management
NWFP	-	Non Wood Forest Produce
RET	-	Rare Endangered and Threatened Species
IUCN	-	International Union for Conservation of Nature and Natural Resources
MoEF	-	Ministry of Environment and Forests
KFD	-	Kerala Forest Department
FDA	-	Forest Development Agency
VSS	-	Vana Samrakshana Samithy
KIRTADS	-	Kerala Institute for Research, Training and Development Studies of Scheduled Castes/Scheduled Tribes
FRLHT	-	Foundation for Revitalization of Local Health Traditions
NGCP	-	National Green Corp Programme

II. Administration

A. State Level Committee

Name of the Committee: GPCA Steering Committee

Constitution of the Committee:

Chairman: PCCF

Member Secretary: CCF (E&TW)

Members: CCF (Planning), CCF (WL), CCF (D), Regional CCFs,

2 representatives nominated by the Chairman from leading NGOs.

2 subject experts nominated by Research Institutes/Universities on request.

Director, KIRTADS

Mandate:

- Approval of Strategic plan
- Guiding and Monitoring
- Ensuring steady flow of funds for the implementation of the programme
- Issue of guidelines for monitoring, review and evaluation of the implementation of the programme.
- Coordination with governmental, research, academic institutions and NGOs,
- Amendments to Division Working Plans for incorporating GPCA
- Approval of the panel of scientific experts and circle wise short listing them for assisting in fieldwork and Circle/Division Level Committees.
- Publishing Annual Reports

Periodicity of meeting

Committee shall meet once in an year

B. Circle level Committee

Name of the Committee: GPCA monitoring Committee

Constitution of the Committee:

Chairman: Regional CCF

Member Secretary: CF

Members: CF (Working Plan and Research), All territorial DFOs in the Circle, All Working Plan Officers within the Circle, One NGO with expertise in the field to be nominated by the Chairman, One scientist representing University/research institutions from the panel approved by the State Level Steering Committee.

Mandate:

- Assess the activities of the implementation Committee
- Monitor the GPCA & NWFP Management
- Scrutinize the PFM micro plans and Projects submitted by the Implementation Committee and recommend for approval by the Conservator of Forests.
- Scrutinize and suggest revision of micro plans for scientific management of GPCA & NWFP
- Scrutinize and recommend GPCA Management Plan for approval of the CF
- Preparation of scientific reports

Periodicity

The Committee shall meet at least once in 6 months

C. Division/FDA level Committee

Name of the Committee: GPCA Implementation Committee

Constitution of the Committee:

Chairman: Divisional Forest Officer

Members: Working Plan Officer of the Division if any, All ROs and concerned Dy ROs in the Division.

One scientist representing University/research institutions from the panel approved by the State Level Steering Committee.

Presidents and Secretaries from 5 different VSS in the Division nominated by the Chairman for a period of two years.

Five tribal representatives from the VSSs in the Division. The tenure shall be two years

Women representatives nominated by the Chairman representing at least 30% of the number of VSS. The tenure shall be two years.

Two nominees of the National Green Corp. The tenure shall be two years.

Mandate:

- Approve and implement the action plan for constitution of GPCAs
- Recommend proposals for creation of GPCAs
- Monitor the GPCA activities
- Monitor the maintenance of relevant scientific data base
- Identification of specialized studies
- Prepare reports on scientific outputs

Periodicity

The Committee shall meet once in three months

III. Exploration, Identification, Mapping, Recommendation, Declaration and Incorporation in Working Plan

1. Preparation

Step –1.1 Selection of VSS where GPCA will be identified – by Division/FDA Level Committee

Step –1.2 Preliminary exploration (Action at VSS level)

(Note: If VSS exists, the micro plan of the VSS can be taken as the report of the pioneer team).

- **Step 1.2.1** Form a Pioneer Team which will, through intimate interactions with the tribal community, sensitize them to the concept of GPCA. The members of this team should be carefully selected for every micro plan area. But a few who are interested to volunteer could join the team wherever they have some prior knowledge of the area or contact with the particular tribal people. The team should have a forest official (may be the person in charge of the VSS), a person who is knowledgeable about the geography/ecology/flora-fauna/ and the people of the area – the person/s could be local Vaidyan/teacher/scientist/sociologist one or two people involved in conservation action/nature education and also a person preferably from the community who can act as a facilitating link between the team and the people. The team should have at least two women.
- **Step 1.2.2** The team should study maps, all available information on the area, collect pictures of the RET species which could be found in the area and be fully equipped before going to the area.
- **Step 1.2.3** The Forest Department will arrange a 3-4 day camp – or a stay-in workshop for the team and representatives from the community. One can begin the camp by late afternoon. After the first introductory interactions, the whole idea of GPCA could be introduced and the plan for the next two days chalked out. On the second day, the whole team can go for a nature-walk (along a predetermined path covering various bio-resources). It can be a leisurely walk with the people in their range of collection of bio-resources. It should evolve into a learning experience for the team from the people's knowledge and also possible ways of depending on bio-resources without decimating it. RET should also include their traditional cultivars, wild and edible plants or animals which they consume as food, or medicine and all the NWFP they collect/collected for sale, any sacred plant, tree, animal of importance to them and also the area which they think should be conserved (as sacred?) from all exploitation.
- **Step 1.2.4** After returning from this nature-walk, in the evening, there could be an open group discussion, a feedback session on the day, and also a deeper, more intimate interaction on the very idea and the philosophy behind conservation of invaluable ecosystems and bio-resources. One can then show them pictures of the RET species and check whether they have seen them in their area, and also whether they have disappeared and if so why and so on. One should be able to elicit their perceptions on the idea of conservation, their worldview. Both men and women, young and old and even children should be encouraged to talk about how they perceive the natural world and the place of humans therein.
- **Step 1.2.5** On the 3rd day there should be a map drawing exercise and their depiction of the natural features on the ground, paths, streams, hills, undisturbed forests, their range of collection and so on. They can thus indicate potential GPCA sites on this map and

suggest the means of demarcating the area with natural features, which they can follow. Thereafter organize a walk, in the indicated GPCA area and discussions on the importance of such a preservation plot for the wild species and representative ecosystems or areas rich in the wild germplasm of valuable NWFP and so on.

Step-1.3 Preparation by Scientific Community--Collection of Background Scientific Information

Categories of forests and biodiversity information relevant in the context of identifying GPCA and various possible literature sources as preparatory scientific information. The GPCA may be identified taking into consideration any or few of the following components

- Primary forests— Evergreen, moist/dry deciduous types
- Unique eco-systems like *Myristica* swamps, shola forests, high elevation grassland, wetlands, mangroves.
- Species richness, endemism, rarity, threatened status.
- Species diversity, genetic diversity, migratory pathways of wild animals.
- Cultural, spiritual values, ecosystem-people values.

Possible Literature source:

- *Working plans/ Management Plans*
- Annual reports
- Flora/fauna reports
- Scientific reports (FRLHT Reports,.....)
- Red Data Book IUCN Guideline Book
- Oral documented local knowledge of people
- People Biodiversity Registers
- Panchayath development reports
- Census reports
- Wildlife Census reports
- Websites
- Check lists of Birds, Plants, etc.
- PFM Micro Plan

2. Fieldwork

Introduction

Scientific specialization required

Composition of scientific specialization to be associated with the fieldwork.

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> ➤ /Ecologists ➤ (plant & animal taxonomists) ➤ Local Vaidhyan or Healer ➤ Parataxonomists ➤ Experts from Scientific Institutions | } | One person from each field as given in the box |
|--|---|--|

Various criteria/parameters to be applied for qualifying a site as GPCA

- The GPCA should be identified based on scientific information collected from the field
- Extent - The team will decide the extent according to site-specific information and feasibility for management.
 - Sufficient buffer areas should be demarcated around the GPCA

Mapping

The micro plan area may have a size of 10-15 sq.kms or even 20 sq.kms on the average. The technical team can sub-divide the micro plan area into field-identifiable (along natural boundaries following local information) subunits of less than 2 sq.kms. These subunits can be named following local knowledge or if locality-wise names do not exist number system can be used. Important landmarks in the subunits can be located in the field and their positions recorded on map using Geographical Positioning System (GPS).

The criteria and parameters, which are significant for qualifying the area as GPCA should be mapped against each subunit using appropriate colours and symbols. It is necessary to adopt uniform colour and symbol to signify the criterion. These colour and symbol codes are to be developed and adopted. This aspect is very important but we could not attempt this owing to lack of time in the workshop.

Method of incorporating and highlighting the criteria/parameters in the map of the micro plan area.

- Apply uniform code for each criterion for whole state (Colour/symbol) } Use GIS mode. Symbols can be taken as suggested by FIP.

Order of significance is as follows

Rank	1- Uniqueness	<u>(RET)</u>
	2- Threatened status	IUCN, REGIONAL, LOCAL
	3- Endemism	
	4- Species richness	
	5- Genetic richness	
	6- Cultural/Social/Ecosystem-people value	

Step 2.1 Prepare historic time-line and list forest/biodiversity resources, in the micro plan area. Plants/animals abundant in the past and rare/extinct locally at present. Local information/scientific information—(Rapid Assessment method)

Collect Local information by

- Semi structured interview
- Preparation of timeline chart
- Resource mapping
- Historic/mental map
- Transect walk
- Secondary data
- Ethnic knowledge

Prepare detailed Note based on information collected from above

Scientific information

Prepare note on available scientific information based on available Aerial photographs, Satellite data, GIS information and other background information

Prepare the comparative note as follows

Local Information	Scientific Information
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Step 2.2 Prepare checklist of species used/destroyed for personal/commercial uses. Local information/scientific information—(Rapid Assessment method)

Collect Local information by

- Semi structured interview
- Interview / survey with local folk practitioners and merchants
- Seasonal calendar
- Secondary data
- Resource flow chart

Scientific information:

- Conduct reconnaissance survey on availability / quantity and removal of species.

Prepare the table as follows:

<u>Species removed/destroyed</u>	<u>Method of collection/destruction</u>	<u>Quantity removed/destroyed</u>	<u>Suggested action for conservation</u>

Step 2.3 Prepare checklist of rare, endangered flora and fauna (locality-wise).

Compare the local and scientific information (1) checklist of RET species (2) Flora/fauna associations (3) Forests associations. Local information/scientific information.

Prepare the table as follows:

Scientific information	Corresponding local information, if any
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Step 2.4 Identify the existence of critical breeding grounds of RET species, etc calling for special attention

Collect Local information by

- Semi structured interview
- Seasonal calendar

Scientific information based on literature (RET- IUCN, REGIONAL, LOCAL LEVELS in the micro plan area) -Rapid Assessment method

- Prepare checklist on endemic / RET species
- Prepare distribution pattern of RET species
- Identify forest types/ associations
- Mapping of forest types /associations
- IUCN red data criteria for valuing RET species (what is to be done? Evaluation can be done on population status of species and designating the status according to IUCN criteria like vulnerable, rare, threatened etc.)
- Evaluate (Assess possible?) inter relationships and inter dependency of flora and fauna (How to evaluate-explain)- Within short period of time it may not be possible as well as it may not be possible in all the cases
- Conduct rapid biodiversity assessment, calculate biodiversity indices. (Specify appropriate indices) (Whatever the indices going to be used for mapping have to be collected)

Prepare the table as follows:

Scientific information	Local information	Remarks

3. Ranking and Recommendation

Step 3.1 Ranking of Sites for GPCA, final grading from the rank list, selection from the final graded list and recommending GPCA for approval.

The following criterion may be relevant

- a. Ecological Value
 - i. Uniqueness/rarity/significance of habitat
 - ii. Species richness
 - iii. Diversity
 - iv. Old growth forests
 - v. Endemism
 - vi. RET species (IUCN, REGIONAL, LOCAL)
 - vii. Density
 - viii. Basal area
 - ix. Threat (High-Medium-Low): Fragmentation, Degradation (this is important, but is not an ecological value)

- b. Resource value and dynamics
 - i. Enumeration of resource species (Richness of resource species)
 - ii. Population structure
 - iii. Impact of exploitation
 - iv. Gravity of threats to the bio-resources in the micro plan area

- Step 3.1.1 Constitute the following team consisting of (1) Scientific Community (2) local experts representing VSS (3) KFD personnel for the following work:
- Step 3.1.2 Develop Criterion using ideas generated by the above three categories of participants.
- Step 3.1.3 Assign a value of 1 to 100 depending on the significance attached (by the team) to each criterion identified as above
- Step 3.1.4 Consider each identifiable sub-unit in the micro plan area and list important criterion against each subunit area
- Step 3.1.5 Create the matrix as follows:

Site Criterion	Site I	Site II	Site II	Site IV
C 1				
C 2				
C 3				
-				
-				
Total				

Signature of Team members

Step 3.1.6 Identification of periphery in the field.

- Method of identification of periphery

The boundary of the GPCA area will be provisionally located and described clock wise with drawing (not to scale). Approximate area will be assessed in hectares and entered.

Name the GPCA (Provisional)

The VSS has a register number such as *VSS Reg. No. abc-x/year*. The GPCA will be temporarily named as **GPCA abc-x/year-z (provisional)**. *z* represents the sequential number of GPCA in the concerned VSS.

4. Management Plan Preparation

Step 4.1 Participatory listing of short-term and long-term threats to the GPCA and the species therein - criteria and indices as part of bench mark data collection of GPCA and preparation Participatory Management/Protection Plan for GPCA.

- **Identify threats:** Existing scientific and other literature particularly dealing with the environment will help us in identifying at the global, regional or local level threats to gene-pools. Trends which have been existing and acting over sometime can be assumed to continue acting and could be threats. For example, population growth, unregulated tourism, desertification etc are continually acting threats. Already well identified threats have to be listed out from published sources and presented to stakeholders. Their adverse consequences on the gene-pool will have to be explained to them. The feedbacks from them must be collected and channeled into corrective action.

The local population, user group or people who have knowledge regarding the area, its biodiversity, its ecology or gene-pools should be requested to share their perceptions, concerns and information. This local picture should be put into larger macro framework. National and global trends will definitely influence local threats drastically.

Resource flow systems have to be traced to identify distant stakeholders or power centers, which could affect the viability of the gene-pool. These market or consumer or power centers have to be identified explicitly as they could exert tremendous consumptive pressure on species or products from ecosystems. Personal knowledge is important. Culturally or historically pre-oriented people may have latent in them knowledge invaluable to protect the gene-pool. It is not necessary they are part of the local community. Geographically they need not be associated with the particular gene-pool.

In identifying threats other sections of the governmental machinery, which have the potential for large scale impact on the environment (eg. PWD, KSEB) should be associated. People's elect representatives at various levels depending on situational suitability must be brought in.

Threats to individual species and threats to entire gene-pools need not always overlap. Threats to individual species are often easier to identify and rectify. Threats to gene-pools or ecosystems are far more complex and difficult to identify and next to impossible to correct. We know nothing of ecological process and how they act over time.

Threats

Short Term	Long Term	Signed by (1) Scientific Community (2) local experts representing VSS (3) KFD personnel

Step 4.2 Prepare participatory management / protection plan for GPCA keeping in view the threats

Goals and Objectives

Name and Registration number of VSS

Forest type, altitude, Gene-pool significance of the area

Extent and map 1:4,000 scale, Boundary description of GPCA, Buffer area

Management of GPCA and buffer area

- Participatory identification, demarcation, value recognition of the Gene-pool.
- Awareness of future portents if current trends continue.
- Stock taking of current status of Gene-pool and pressures on it
- Long term implications of eco-degradation
- Self regulatory possibilities
- Outside help - local, administrative, institutional etc.
- Regeneration intervention planning
- Increasing buffering protection by larger, extensive linkages (eg. with adjacent VSS)
- Exploring additional non-consumptive utility values.
- Enhancing potential by cultural adaptations
- Feed back correction with Government agencies eg. Forest Department.
- Protection

Documents to be appended

- Qualifying criteria/parameters of the GPCA
- Map of micro plan area of VSSs showing GPCA area
- Time line and trends (step 2.1 document)
- Transect walk details (step 2.1 document)
- Checklist of NWFP (step 2.2 document)
- Checklist of RET species (flora and Fauna) and forest associations (step 2.3 document)
- List of critical breeding ground of RET species (step 2.4 document)
- Ranking and selection of GPCA (step 3.1 document)
- Provisional name with temporary boundary description (step 3.1.6 document)
- List of threats to GPCA (step 4.1 document)
- Name and designation of the field work team

5. Recommendation, Declaration and Incorporation in Working Plan

Step 5.1 The Scientific Community will present the GPCA management plan at a VSS General Body meeting convened for the purpose. The field officers including the Ranger shall be present at this meeting. The recommendation will be finalized.

Step 5.2 Recommendation for approval and declaration of GPCA

Step 5.2.1 VSS President, Ex-officio Secretary, Deputy Ranger/Section head will sign and present the documents along with necessary enclosures recommending constitution of GPCA to the Range Officer.

Step 5.2.2 The Range Officer will submit the documents to the Division/FDA level Implementation Committee

Step 5.2.3 The Division/FDA level Implementation Committee will scrutinize and recommend to the Circle level Monitoring Committee with comments.

Step 5.2.4 The Circle level Monitoring Committee will scrutinize and recommend. The Conservator of Forests will approve the plan and declare the GPCA, assign name as provided under *GPCA Nomenclature (see Definitions)* and report to the CCF (Planning) with intimation to Regional CCF.

Step 5.2.5 CCF (Planning) will present the details to the Steering Committee.

Step 5.3 Procedure to be adopted by CCF (Planning) to incorporate PFM GPCA in the working plan

➤ **Divisions where Working Plan Revision is in progress**

GPCA management /protection plan to be incorporated in the working plan as annexure. The GPCA to figure in the protection-working circle in the part II of the working plan prescriptions. The working plan is to be got approved by GOI.

➤ **Division with approved current working plans:**

GPCA management/ Protection Plan to be got incorporated to the working plan for GOIs approval.

IV Implementation

Step 6.1 Conservator of Forests will communicate to the Division level implementation committee.

Step 6.2 Identification of periphery and demarcation in the field.

➤ Method of identification of periphery

A starting point with the symbol  will be fixed. The symbol located at the starting point will have 0 inscribed within the triangle. Distances will be measured in the clockwise direction to the next *Corner Point*. The corner point will be demarcated with the symbol with inscription 1,2,3,4 etc. inside the triangle. This will continue until the starting point is reached. GPS could be used with advantage to transfer the field positions to geographical map. The geographical map of 1:4,000 scale will show the corresponding symbols and the distances between two corners and the angular measurements at each corner inside the GPCA area. The GPS measurements at each corner point will be recorded on the map. The extent of area in the GPCA will be recorded in hectares.

The location indicating the GPCA will be recorded on the division map of 1:50,000 scale.

The extent of GPCA in hectares, code number and symbol  will be inscribed therein.

➤ Demarcation in the field

- a. Banding Red band with white line in the middle on trees
- b. Rock engravings/Corner Stones Red band with white line in the middle in the clockwise direction with an arrowhead. The code number of GPCA will be inscribed pointing towards the arrowhead.

V Monitoring, Review and Evaluation

Monitoring, Review and Evaluation will be jointly done by VSS, Forest Department and Scientific Community.

GPCA Steering Committee will approve the formats and procedures for Monitoring, Review and Evaluation.