



Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

Project title	<i>Biodiversity conservation in ancient church and monastery yards in Ethiopia</i>
Country(ies)	<i>Ethiopia</i>
Contractor	<i>University of Wales Bangor</i>
Project Reference No.	<i>162/10/031</i>
Grant Value	<i>£149,091</i>
Start/Finishing dates	<i>1st April 2001 / 31st March 2004</i>
Reporting period	<i>1st April 2002 – 31st March 2003</i>

2. Project Background

The sacred church and monastery lands of the Ethiopian Orthodox Church have survived for many centuries as islands of natural forest biodiversity in a sea of deforested landscape across much of the Ethiopian highlands. For many interesting reasons related to the spiritual values attached to the churches, monasteries and their sacred lands, these biodiversity islands have survived the general pressure for timber and fuelwood gathering that has degraded the surrounding landscape. However, the biodiversity of some of these churchyard forests is currently being depleted due to the pressures created by the continued deforestation of the surrounding areas for fuelwood and timber. Key Ethiopian NGO and government institutions have identified the need for conservation of the important populations of threatened species retained in ancient church and monastery sacred lands. To enable this, the project aims to strengthen institutional capacity through training, expert advice, networking (institutions/local stakeholders), financial support and joint project implementation. Management plans for priority sites and species will be developed and implemented through local participation. Innovative synergistic linkage between spiritual, cultural and environmental value systems will yield success.

3. Project Objectives

Project purpose: Sustainable development in Ethiopia promoted through participatory conservation of the biodiversity of the forests preserved on sacred lands, and their establishment as a resource of value to alleviate local poverty and for the nation as a whole (See Appendix I for Logical Framework).

Project objectives: Strengthen capacity of Ethiopian NGO and government institutions through training, expert advice, enhanced networking (amongst institutions and local stakeholders), financial support and joint project implementation. Successfully implement a project that conserves the biodiversity of sacred lands in situ, and where necessary ex situ with subsequent reintroductions.

4. Progress

Project history and progress summary

This report covers the second year of the project, for the period between 1st April 2002 and 31st March 2003. The project activities began this year with a one-day training workshop, which was conducted in Addis Ababa on 26 April 2002. Between April 2002 and September 2002 fieldwork was carried out by the project team consisting of the project officer employed by the University of Wales Bangor (UWB) and staff of the Ethiopian Wildlife and Natural History Society (EWNHS) to complete first-phase data collection, to test second-phase fieldwork methodology and to enter data collected during the first phase of the project into a database. One MSc student from the University of Wales Bangor (sponsored by the University of Wales Bangor and British Airways) joined the team during the later part of the fieldwork to assist with field data collection. As reported in the 1st year annual report, the first phase field activities were delayed due to a number of logistical and administrative problems. As a result, the first phase fieldwork activities were extended to the current year and the additional manpower was provided in order to make up for the lost time. The project team also participated in the 8th International Congress of the International Society of Ethnobiology (ISE) held in Addis Ababa, 16-18 September 2002 and presented a paper entitled "Knowledge of woody plant resources and their utilisation by the clergy and local communities in Ethiopian church and monastery yards". The 1st year administrative and logistical problems were overcome during the first part of this year, however further problems occurred during the latter part of this year due to the need for a change in the staffing arrangements for the project from October 2002 as described below. Under the new arrangements the project's work on the ground in Ethiopia was carried out by two EWNHS project officers supported by short-term training visits by more senior members of UWB staff. A new EWNHS project officer appointed to the project was selected as a social scientist to complement the natural science expertise of the existing EWNHS project officer. During the transition period fieldwork was interrupted for two months only. During this time the existing EWNHS project officer remained in post providing continuity of project knowledge and activities and fieldwork resumed in December 2002. The high level technical and managerial support provided by UWB during this period included: detailed technical briefing from UWB biodiversity assessment and rural appraisal experts, a three week advisory and training visit to Ethiopia by a UWB expert in participatory biodiversity and resource assessment; and a visit to Ethiopia by the UWB project manager. The second phase of the project field activities has been conducted from December 2002 to March 2003 (and continues) as outlined in the agreed project schedule. Out of the seven focus sites selected for the second phase Participatory Biodiversity Appraisal, fieldwork has been completed for two sites by the end of the 2nd project year. The project team has also completed site accounts for 32 of the 39 sites surveyed during the first phase fieldwork and is working on the remaining seven.

Work Achievements

a) Site accounts of church and monastery grounds assessed during first phase

The UWB project officer in collaboration with Ethiopian counterparts completed accounts for 32 sites out of 39 and a hard copy of these is enclosed. All site accounts will be placed on the project website next year for public access. These accounts are based on data collected during the first phase fieldwork of the project. These include the topography, land use, vegetation type, species composition, altitude, latitude and longitude, area of forest, dominant species in the canopy and the shrub layer, number of woody species and the type of threats facing the forest.

b) Biodiversity assessment in Kondaltiti

This work was carried out by the MSc student from Bangor in collaboration with the project team to make a preliminary test of some of the methodologies of participatory biodiversity appraisal designed for the second phase of the project. This was conducted between June and July 2002 at Kondaltiti Balewold Church and its environs in South West Ethiopia. Data on biodiversity, land use, threats to biodiversity on church lands and values placed on the biodiversity of the church forest and surrounding areas by the local community were collected. Land use processes were described from observations, secondary sources and key-informant interviews. Species checklists were compiled and evaluated in terms of species richness and similarity using Sorenson's Index. The checklists were compared with

local knowledge and perceptions of biodiversity and uses of species were recorded. Biodiversity evaluation fieldwork was conducted with informants stratified by gender and livelihood. Finally an exercise was devised to obtain a scaled species ranking for a number of exotic and native trees of conservation interest that was sensitive to a number of scored-value criteria and species performance relative to the criteria. The study found that the strong conservation values attached to church forest biodiversity are primarily aesthetic and are not exclusive of exotic species – rather that exotics may be preferred to natives for planting. Threats to biodiversity on church land are chiefly related to the changed economic circumstances of the church and the surrounding communities, the introduction of potentially invasive species and lack of regulation on the use of adjacent lands.

c) Selection of study sites for second phase Participatory Biodiversity Appraisal

The following criteria were used to select focus sites for the 2nd phase study:

- representative of ecological, ethnic and administrative regions,
- emphasis on old sites and sites of religious significance
- site accessibility and feasibility for study
- sites with high conservation value
- mixture of churches and monasteries
- mixture of sites with and without threats

Based on the above criteria the following seven sites were chosen:

i) Debre Markos – Aba Asirat, Gojjam

In Gojjem East (Amhara), monastery, high conservation value but highly degraded site with extreme conflict between non-local monastic community and local Orthodox population. Tree cutting threat by local people is very high and the site is highly degraded. Monastery is keen to collaborate to resolve the dispute and restore the vegetation.

ii) Beso Liban – Yekibna Hawariyat, Gojjam

In Gojjem East (Amhara); church, very high conservation value (very species rich and a notable habitat for butterflies), under very low threat. Currently the local community manages to prevent tree cutting, they have even refrained from using timber in the construction of the new church. One of the very few sites where all grazing is banned. Intended as a specific contrast with site 1.

iii) Ziquala – Gebre Maenfeskidus Abo, Shewa East

In Shewa East; monastery, very old, flagship site, high conservation value, pressure of high rate of immigration of new monks, threat of invasive species, heavy protection of monastery grounds. Currently not under threat from tree cutting, but the potential for such activities is very high. Large forestry plantation is present but not used. The cultural significance of the site for two belief systems strengthen its protection.

iv) Eshe – Mihur Eyessus Gedam, Gurage

In Gurage; old monastery where the local bishop often resides. Conservation Value is high, especially as it is the best stand of mature Juniper and Podocarpus encountered. Tree cutting is a threat due to heavy logging to meet the demand of an expanding monastery. The region is heavily populated and relatively recently deforested.

v) Alem-Gena – Geja Georgis, Shewa West

In Shewa West; church, easily accessible from Addis Ababa, an example of a site with highly degraded woodland, in an area of great poverty. On top of a hill therefore very dry with lack of access to water, yet much potential for restoration through planting and the local community is keen to see much of the hill planted with native trees. Important geologically as it has a number of volcanic bubbles.

vi) Debre Benkol Gedam, Tigray

In Central Tigray; old monastery, interesting for land tenure issues, threat from grazing, erosion and crop cultivation. Monastic community grows much of its own food, in contrast with other monasteries. Severe water shortage. Difficult relationship with local community.

vii) Bolososore – Anchucho Medihanealem, Walaita

In Walaita Dawuro; church; important tree stand and one of the last remaining natural stands observed in the region. Under threat from population pressure and religious conflict (orthodox-protestant). The lack of respect between the religious communities is evidenced, e.g., by the trees planted on graves often being removed to be planted near people's houses. There is, however, potential for expansion of the area of woodland because of the local burial practices: a new grave being dug for each body, each planted with trees.

d) Participatory Biodiversity Appraisal

The 2nd phase of the project fieldwork, assessing biodiversity in the seven selected focus sites using Participatory Appraisal methods, began in December 2002 and so far work at two sites has been completed. A large amount of data has been collected and this will be used to develop conservation plans, to be implemented during the 3rd year of the project. A summary of the data collected in the two selected sites are given below:

(i) Aba Asirat Monastery, Western Gojjam,

The monastery is located in a deeply dissected valley at an altitude ranging between 2100 and 2360 m. Its geographical location is 37°45' E, and 10°17' N. The mean annual rainfall is 1300 mm. The entire monastery land and nearby communal land are believed to have been once covered by *Albizia schimperiana*, *Albizia gummifera*, *Prunus africana*, *Acacia abyssinica*, *Apodytes dimidata*, *Ekbergia capensis*, *Ficus* sp., *Schefflera abyssinica*, *Rhus glutinosa* and *Allophylus abyssinicus*. Most of this forest has been cleared in order to obtain fuel wood and other wood products through time. At present shrublands, and coppice regrowth dominate most of the landscape. The size of the monastery forest is now 12 ha. Illegal cutting by the local people continues and the forest is the major grazing land for livestock of the residents of the surrounding area. The forest is also rich in highland biome birds and other wild mammals such as Menelik's bushbuck, bush duiker, anubis baboon, colobus monkey and civet.

Using various Participatory Appraisal tools such as mapping, matrix ranking and scoring, history and timeline study, the biodiversity values and threats to the biodiversity of the monastery forest and the surrounding areas were assessed with different socio-economic groups including the clergy, key informants, farmers and students. Detailed inventory of the flora was also carried out by using a transect sampling method. Height and diameter (DBH) of all trees ≥ 5 cm were measured.

The total number of woody plant species recorded in the area was 84 representing at least 45 families. *Albizia schimperiana*, *Juniperus procera*, *Allophylus abyssinicus*, *Apodytes dimidata* are the dominant woody species. Threatened species of conservation importance identified in order of priority include *Prunus africana*, *Olea europea* subsp. *cuspidata*, *Albizia gummifera*, *Juniperus procera* and *Dombeya aethiopica*.

Using semi-structured interviews the wealth of the community was characterized. Key informants used land as one of the major variables of wealth characterization, with 10-12 ha landholding as very rich and landless as very poor; the results indicated that 56% of the community was in the very rich category and 12% very poor (landless).

When key informants participated in a matrix scoring exercise comparing different use categories (10 categories) of forests, the results showed that the use of the forest of the Aba Asirat monastery for fuelwood (score 30) and holy water (score 30) scored the highest followed by farm implements (score

29) and as a sacred place (score 28). The use of the monastery forest as a sacred place ranked fourth perhaps due to some of the young informants who gave less value to this category. The results of the scoring exercise, comparing the total of the ten use categories, indicated that the forest of the Aba Asirat monastery ranked higher (score 112) than the forests of surrounding areas (score 88) as a result of the additional uses of the monastery forest in particular uses as a sacred place (score 10) and as a source of holy water (score 10).

According to the history and time line study, key informants described the valley area including the Aba Asirat monastery as having been covered with a high density of tree and shrub species at the time of the Italian occupation of Ethiopia (1939-1941); the forest was used as camouflage/cover by the Ethiopian army. The pressure on biodiversity was very low as the population density was low. During the regime of Hailesilase (1941-1973), the area was still covered with a high density of trees. After the Derg took over from Hailesilase in 1974, the proclamation nationalizing rural lands in 1975 changed the very bases of land ownership. The land came under community ownership including some parts of Aba Asirat monastery forest. Land redistribution and a reduced sense of ownership resulting from limited usufructuary rights led to the emergence of a severe sense of tenure insecurity. As a result the monks in the monastery removed all of the trees from the flat part of the monastery forest and sowed crops of maize (*Zea mays*) and tef (*Eragrostis tef*) continuously for three years (1975-1978). The situation resulted in the breakdown of local institutions and opened the way for local people to collect fuelwood despite the Derg's strong forest protection program. People from Chemoga village, which is part of DebreMarkos town (8 km from the monastery) began to frequently collect fuelwood to generate additional income. All interviewees reported that deforestation and degradation of the monastery woodland was further accelerated immediately after the fall of the Derg in 1990. This was symptomatic of the brief period of transition at that time when there was instability and a lack of government control. A lot of the demobilised Derg army settled in DebreMarkos and being amongst the poorest households in the area they engaged in collecting wood as a survival strategy. Although some of them left later on for their respective homes elsewhere in Ethiopia, those who remained, together with the local landless people and widows of the militia, still use the monastery woodland as a source of fuelwood and charcoal for their daily livelihoods.

(ii) Debre Benkol monastery, Tigray

Debre Benkol monastery, in the highlands of Tigray, northern Ethiopia, is located 30 km from Axum town. It was established on the rocky flat top of Benkol mountain. The foot of the mountain is at 2000 m a.s.l. whilst the top of the mountain rises to over 2650 m. Its geographical location is 38° 37' E, and 14° 11' N. The mean annual rainfall is 600 mm and mean annual temperature is 21°C. Both the mountain top and its slopes are believed to have once been covered with dense forest of *Olea europea* subsp. *cuspidata*, and *Juniperus procera*. Most of this forest has since been cleared to obtain fuelwood and other wood products. Today very few *Juniperus* and some *Olea* trees are left in the area surrounding the monastery. All the slope of the mountain is covered with shrubs such as *Dodonaea angustifolia*, *Calpurnia aurea*, *Acokanthera schimperi*, *Pterolobium stellatum*, *Teclea nobilis* and *Euclea schimperi*. Wood cutting is still carried out by the people living in the monastery and residents of the surrounding area. The area of the monastery forest is now 56 ha. The forest is the major grazing land for livestock of the clergy and of the surrounding residents. The forest is also rich with wild animals. Among the common mammals found are bush duiker, bush buck, anubis baboon, other monkeys, aardvark, civet, serval, genet, Abyssinian hayna.

The mapping of the monastery of Debre Benkol and its environs, transect walk, semi-structured interviews and scoring and ranking of species were conducted with the clergy and selected key informants from the community of the surrounding areas. Oral histories of the community and tradition relating to resource use and forest cover were recorded.

Using detail biodiversity inventory of the monastery forest, 44 woody plant species belonging to 27 families were recorded. *Olea europea* subsp. *cuspidata*, *Acacia etbacia*, *Acacia lahai* and *Rhus retinorrhoea* are the dominant woody species. According to the literature (Demel, 1996), among

endemic Afromontane tree species, eight species occur in Ethiopia. However, during the current inventory of Debre Benkol monastery forest, nine endemic Afromontane species and four species of Afromontane near-endemics (Firs, 1992) were recorded. About 192 plant species have been reported to be threatened in Ethiopia (Ensermu et al., 1998). Among these, two species (*Juniperus procera* and *Rhus glutinosa*) were recorded in Debre Benkol monastery. Together with *Cordia africana* (protected by law), *Albizia amara* and *Olea europea* subsps. *cuspidata* (culturally highly valued), *Juniperus procera* and *Rhus retinorrhoea* were identified as threatened species of conservation importance for the area.

Using history and timeline study methods, it was found that Debre Bonkel monastery was, and is still, a place of great religious importance to the Ethiopian Orthodox church. During the regime of Hailesilasse it occupied a pre-eminent position as a source of religious people who teach Orthodox Christianity and its religious influence extended even far beyond its own area into what now comprises Debrelibanos Monastery in Shewa. The monastery used to occupy a very large land area given by emperor Hailesilasse and previous kings. It possessed a vast area of freehold land stretching from Axum in the East, to Shire in the West, Seraye in the North and to the Tekeze river in the south. When the Derg government took power the monastery lost all the land it acquired and was reduced to the current size of 56 ha of forest land as a result of the Derg land proclamation which nationalised all land in Ethiopia. People started cutting the monastery forest intensively as a result of the cultural breakdown which occurred during the Derg regime and this has continued during the very loose land policy of the present government. When the clergy were interviewed to find out whether they valued the monastery building more than the forest they said that “we value the monastery building but a church or a monastery without forest is like a human being without clothes”.

e) Training

(i) Training Workshop: A training workshop was conducted in Addis Ababa on 26th April 2002. The one-day workshop included a mixture of oral presentations of the results of the 1st phase Rapid Biodiversity Assessment (RBA), a field exercise and discussions. The field exercise was conducted in Chancho Egziabiher Ab Church located 20 km north of Addis Ababa in order for the participants to understand what situations the various monasteries and churches are facing and to demonstrate the methodologies employed and constraints encountered during the 1st phase RBA exercise. During the workshop the approach adopted for the selection of the focus sites for the second phase Participatory Biodiversity Appraisal study were discussed and a matrix of 1st phase data was agreed as the basis for selection. A broad range of the government, educational and non-governmental organisations and stakeholders in Ethiopia participated in this training workshop (15 participants). Organisations represented at the workshop included: Environmental Protection Authority, Ethiopian Orthodox Tewahido Church, Ethiopian Agriculture Research Organization, Ethiopian Wildlife Conservation Organization, Ministry of Agriculture, Addis Abeba University, Institute of Biodiversity Conservation and Research and Ethiopian Wildlife and Natural History Society.

(ii) Training on methods of Participatory Biodiversity Appraisal: In January 2003 the two project counterparts from EWNHS received training on various aspects of Social Participatory Appraisal (SPA) and plant inventory techniques. This was carried out for three weeks by the UWB expert, Bianca Ambrose-Oji, including fieldwork in the Chancho area, focusing on the Egziabiher Ab church, with the aim of developing, testing and refining the research protocol to be used in the 2nd phase research whilst providing training to the EWNHS research team.

f) Difficulties encountered during the year

Many difficulties, some quite serious, were encountered during the year, they were:

- Change in staffing arrangements in Ethiopia. The focus of UWB expert input was shifted to more senior staff members, including the addition to the project team of Bianca Ambrose-Oji, an expert in Participatory Rural Appraisal. In addition a new staff member with a social science expertise was

employed by EWNHS to work on the project. During this transition period fieldwork was interrupted but resumed again in December 2002. Bianca's three-week training and advisory visit to Ethiopia has equipped the Ethiopian project staff with the skills to undertake this second phase work. Detailed guidance of plant inventory was also provided by Dr Healey and the project manager made an additional visit to Ethiopia to oversee this transition period. Arrangements were put in place for the previous project officer to consolidate his work and resulting data analysis for the project in the UK. Further additional visits to Ethiopia by expert senior UWB staff are planned during its third year.

- Car: The field vehicle continued to have major breakdowns and as a result field activities have been disrupted a number of times. This has been due to a combination of factors including the bad state of many Ethiopian roads in the countryside and lack of proper garages for maintenance of vehicles.

- Computing: The lack computer availability in the EWNHS delayed the entry and collation of the 1st phase field data. To meet this need one laptop was bought from another UWB budget source and made available to the project team in January 2003.

- Funding: The very tight project budget still remains a major problem. Some of the significant ones have been lack of funds to employ laborers to assist in field activities, and the increasing difficulty in meeting the repair costs of the vehicle.

g) Field methodology

The design of the Social Participatory Appraisal (SPA) to be conducted at the seven selected sites is outlined below and in the diagrams shown as appendices. The methodology has been refined after being tested in two sites (Kondaltiti and Chanco). This is now being developed as a field-guide on biodiversity appraisal for future use by institutions in Ethiopia.

The SPA research objectives have been revised and developed as follows:

1. SPA as data collection

1. Elucidate the values placed on sacred land biodiversity by different stakeholders
2. To discover why sacred land biodiversity has been conserved and if and how this relates to those values and beliefs
3. To elucidate the relationships between these values and religious or spiritual belief systems
4. To understand wider attitudes to conservation
5. To understand wider issues concerned with planting and protection generally

2. SPA as process

To **assess the potential** at each site for initiating a process which:

6. Supports the planting of species of conservation importance
7. Develops in-situ monitoring techniques
8. Leads to the development of conservation management planning

There are a series of research questions associated with each of the data collection objectives as shown in Appendix IV. The linkages between research objectives, research questions and research methods are represented in Appendix II and Appendix III.

h) Work plan for the next reporting period:

April – July 2003

- Second phase field data collection in the remaining five selected focus sites
- Identification of high conservation value and endemic species present in church and monastery forests that appear to be threatened and assessment of their status
- Development of a field guide on biodiversity appraisal

August 2003

- Training of EWNHS staff and stakeholders in ex-situ and in-situ conservation techniques
- Final planning workshop to develop conservation plans for focus sites
- Selection and establishment of one ex-situ conservation site

September 2003 – March 2004.

- Data analysis and write-up of 2nd phase
- Development of conservation plans for the focus sites
- Preparation and submission of three pre-reviewed papers for journals

5. Partnerships

The project team has continued to collaborate with a number of Ethiopian organisations: Institution of Biodiversity Conservation and Research, National Herbarium, Anthropology Department of Addis Ababa University, Ethiopian Agricultural Research Organisation and Ethiopian Orthodox Church Development Agency. The project team has been consistently meeting and discussing project activities with Ethiopian Orthodox Church Development Agency, which is the development wing of the Ethiopian Orthodox church and which is also committed to take over and follow up the implementation of project activities after the end of this current project.

6. Impact and Sustainability

The project team has continued its efforts at promoting the project within the church at the diocese and district levels to ensure continuity of the project activities after the project ends.

7. Outputs, Outcomes and Dissemination

Table 1. Project Outputs (According to Standard Output Measures)

Code No.	Quantity	Description
5	Field training of stakeholders and interested organizations on methods of rapid biodiversity assessment and landscape ecology	In April 2002 a one day training workshop for 15 stakeholders and interested organizations.
6A	Participatory Appraisal Training	Two project workers received training on various aspects of participatory rural appraisal (three-weeks in country training, supported by prior and subsequent advice by e-mail).
15A	National press release, 4 reports in EWNHS newsletters, 2 local press releases.	A project website is regularly being updated. http://members.lycos.co.uk/WoodyPlantEcology/ethiopia/index.html . Other in-country dissemination is being targeted for the third year when there are more substantial outcomes to report.

Table 2: Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	Cost £
Conference Paper	Desalegn Dessisa and P. Binggeli (2002). Knowledge of woody plant resources and their utilization by the clergy and local communities in Ethiopian church and monastery yards.	Program & Abstracts of the Eighth ISE International Congress, p 52.	International Society of Ethnobiology	Free to members
Document	P. Binggeli and Desalegn Dessisa (2003). Site accounts of church and monastery forests.	UWB and EWNHS	UWB, U.K.	<i>Free from web site: http://members.lycos.co.uk/Ethiopianplants/docs</i>
Newsletter	M. Painton (2003). Trees, woodland and religious values in Kondaltiti (Gurage region)	Newsletter of the Ethiopian Wildlife and Natural History Society Jan.- March 2003, 2-3.	EWNHS PO Box 13303 Addis Ababa Ethiopia	Free to members

8. Project Expenditure

Table 3: Project expenditure during the reporting period

Item	Budget	Expenditure
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9. Monitoring, Evaluation and Lessons

Despite the numerous administrative and logistical problems, the project has progressed very well under the circumstances.

10. **Author(s) / Date:** The following staff were the main participants in the project's 2nd year work: Zewge Teklehaimanot, Desalegn Dessisa, Getachew Adane, Pierre Binggeli, Kife Abebe, John Healey, Bianca Ambrose and John Smith. This report was authored by Zewge Teklehaimanot with editorial input by John Healey

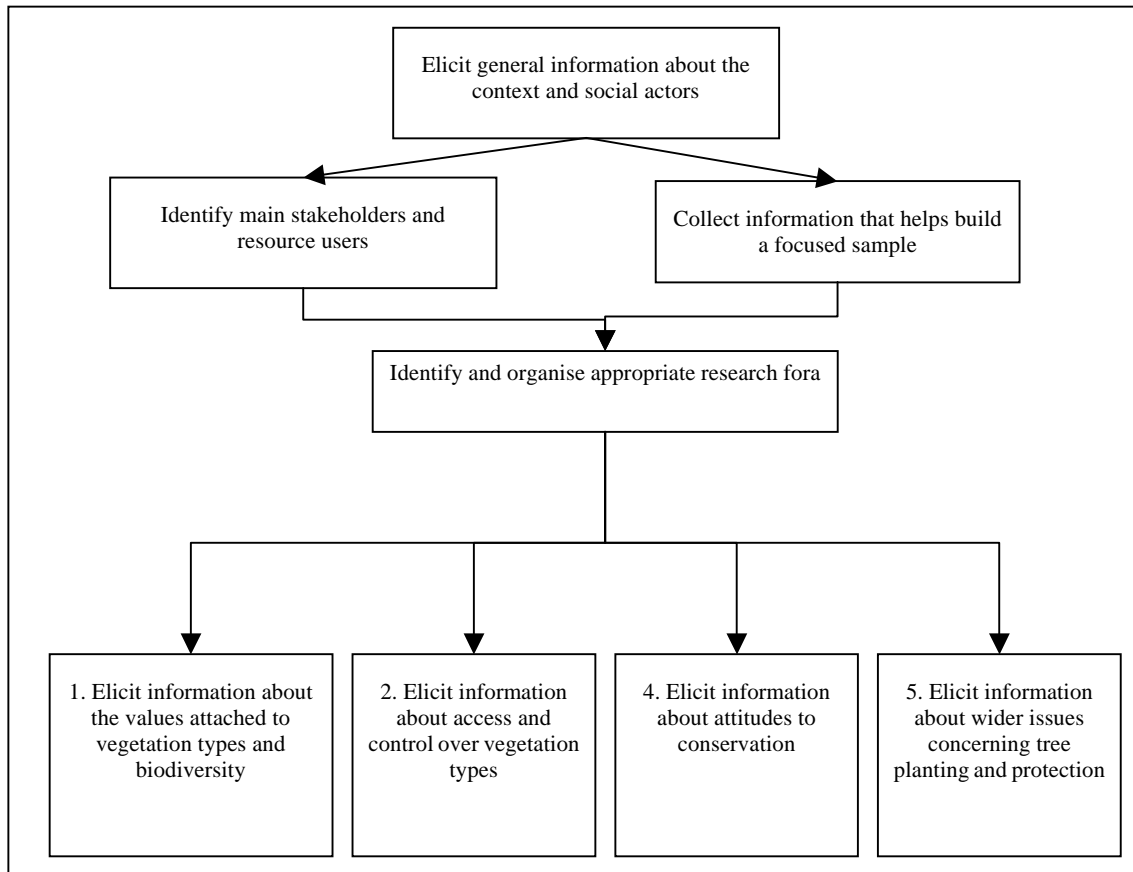
Date 7 April 2003

Appendix I – Project Logical Framework

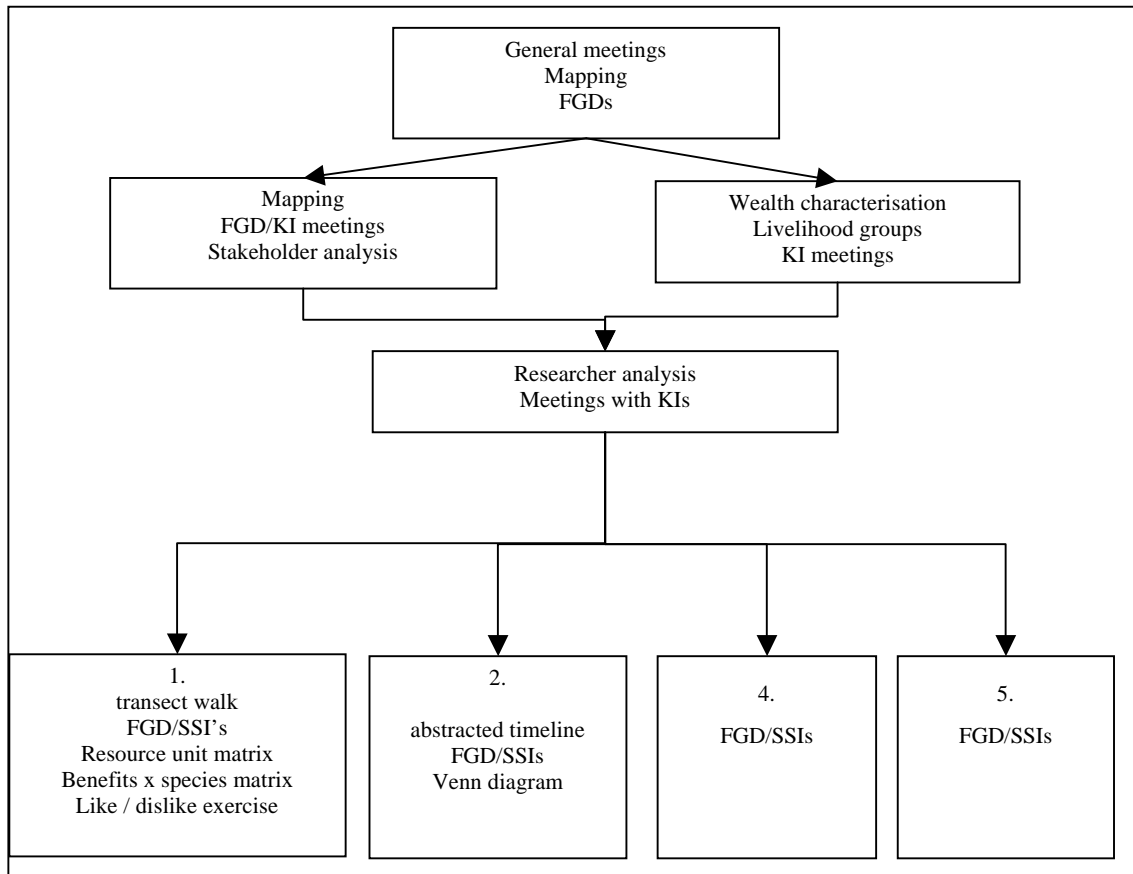
Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal To assist countries rich in biodiversity but poor in resources with the conservation of biological diversity and the implementation of the Biodiversity Convention</p>	Improved conservation of biodiversity and implementation of the Biodiversity Convention	National reporting to UN, independent assessment by international agencies, indicating achievement of targets in terms of species, habitats, training, public awareness etc.	
<p>Purpose Sustainable development in Ethiopia promoted through participatory conservation of the biodiversity of the forests preserved on sacred lands, and their establishment as a resource of value to alleviate local poverty and for the nation as a whole</p>	Maintenance of number of sacred sites retaining forest, maintenance of number of species present in sacred sites, increased rate of tree planting by community of native tree species from sacred sites, eventual reduction in local deficit of forest products	Annual reports of government. agencies, NGOs and church, potential for independent verification via remote sensing interpretation	Sacred-land forests do contain important populations of threatened Ethiopian species; local people are prepared to grow some of the species present and use them as a substitute for further depletion of threatened habitats

<p>Outputs</p> <ol style="list-style-type: none"> 1. Key NGO/government institutions strengthened – 6 Ethiopian staff trained in each of: <ol style="list-style-type: none"> 1.1 participatory species identification & assessment, 1.2 participatory rural appraisal for biodiversity, 1.3 ex-situ conservation, 1.4 in-situ conservation; 2. Management plans for habitats, species and sites; 3. Field-guide on biodiversity identification/appraisal; 4. Three peer-rev. papers; 5. NGO-Gov-Church-community networks strengthened; 6. Wider Ethiopian public informed via media; 7. Ex-situ conservation centre established. 	<ol style="list-style-type: none"> 1. Enhanced capacity/ expertise of institutions/staff in each of these fields; 2. Management plans of sufficient quality held and used by key institutions; 3. Field-guides held and used by key institutions; 4. Papers submitted for publication; 5. Increased collaboration in on-going work & new projects; 6. Enhanced public attitude to/knowledge of biodiversity conservation; 7. Centre exists, is stocked & producing planting material; <p>All by end of project, or earlier if stated in section 13</p>	<ol style="list-style-type: none"> 1., 5., 7. Institutional annual reports, independent reports for/of donor agencies; 2. Copies of plans available from institutions on request; 3. Copies of guides available from institutions on request; 4. Copies of letters of receipt from editorial offices; 6. A public attitude survey could be commissioned, otherwise increase in membership of EWNHS would be an indicator; 7. Centre could be visited. 	<ol style="list-style-type: none"> 1. Trained staff remain working in the conservation sector, institutions retain sufficient staff and resources to remain effective, 2. to implement management plans, 3. to carry out further biodiversity identification/appraisal; 4. Papers published and influence key practitioners; 5. Network members continue to collaborate successfully; 6. Public have means to influence conservation outcomes; 7. Centre operations become sustainable, community willing to purchase and plant the material it supplies.
<p>Activities</p> <ol style="list-style-type: none"> 1. Planning workshop 2. Selection of target sites 3. Local consultation & rapid biodiversity assessment at each 4. Workshop to select focus sites 5. Participatory appraisals 6. Biodiversity inventories 7. Priority species identification and assessment of status 8. Wide-participation workshops to develop conservation plans 9. In-situ conservation work 10. Ex-situ conservation in newly established centre 11. Reintroductions of species to selected sites and provision of planting material to local people 12. Dissemination of outcomes to local people and wider public 	<p>Budget expenditure according to plan</p>	<p>Production of:</p> <ol style="list-style-type: none"> 1. Workshop report 2. List of 40+ sites 3. Report (data on each site) 4. Workshop report containing list of 6 + sites 5. Analysed appraisals 6. scientifically analysed inventories for each site 7. scientific report on status of each priority species (20+) in full technical report 8. Workshop report and full conservation management plan 9. Job sheets detailing work 10. + 11. Centre physically exists, job sheets, EWNHS & IBCR annual reports (with financial accounts) 12. Newsletters, press cuttings, video/audio tapes 	<ol style="list-style-type: none"> 1., 4., 8. Key individuals/ stakeholders attend, recom-mendations written-up into plans and implemented 2. Local co-operation 3., 6. Species identified correctly, threatened species present 5. Appraisals sufficiently informative 7. Status assessment accurate 9., 11. Adequate stakeholder participation, experience assessed & incorporated into plans 10. Institutional support for centre maintained 12. Local people respond, media publish/broadcast project news

Appendix II. Schematic diagram of research process: The link between Research Objectives



Appendix III. Schematic diagram of research process: Methods to meet objectives



Appendix IV. Refined research objectives and questions for Phase 2 social PA

New Objectives	Research Question/s	Method	Sample
1. Elucidate the values placed on sacred land biodiversity by different stakeholders			
1.a. Who are the stakeholders?	<ul style="list-style-type: none"> • How is the community constituted? • How is income/poverty understood? How many strata are there in the community and what proportion of the community do these represent? • Are there any links between livelihood groups and income groups? (How do different wealth groups use the same/different resources) • Do different sections of the community use biodiversity resources across the landscape in different ways? • Who has power and influence within the community? 	<ul style="list-style-type: none"> • FGD • FGD • FGD • Mapping • Venn 	
1.b. How do stakeholders characterise sacred land biodiversity?	<ul style="list-style-type: none"> • What vegetation types do local communities recognise, and how do they classify or characterise these? • How does sacred land vegetation fit into this schema? 	<p>Transect walk</p> <p>FGD in assoc with walk</p>	
1.c. What are the utilitarian values associated with biodiversity	<ul style="list-style-type: none"> • What are the general resource use patterns? • What livelihood and other benefits are derived from these resources? • What are the benefits derived from sacred lands? • What are the links between 'biodiversity' and environmental resources? 	<p>Mapping as above</p> <p>Matrix (might need 2) against uses comparison matrix linked to benefits matrix. Then lead into FGD. Data summary sheet to make info explicit</p>	<p>sample with different wealth livelihood groups</p> <p>characteristics must be recorded during each exercise</p>

1.d. What other values apart from utilitarian values are	<ul style="list-style-type: none"> • What within a church site is being valued; the church buildings? The sacred land? The organisms on that land? • Is there any cultural and symbolic significance attached to different species and vegetation types on sacred land? Are these religious 	<p>Like-dislike exercise from Cameroon ERP project, used as part of the transect walk</p> <p>FGD to explore interesting points to</p>	
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associated with sacred land biodiversity?	and spiritual? <ul style="list-style-type: none"> Are these related to biodiversity in any way? 	come out of this	
I.e. What elements of biodiversity are being valued?	<ul style="list-style-type: none"> Is it particular trees that are of value? Is there a concept of species? Is there a concept of species richness? Are valuations being made using those concepts? 	referring to section 7 in Cameroon protocol document	
New Objectives	Research Question/s	Method	Sample
2. To discover why sacred land biodiversity has been conserved and if and how this is related to those values and beliefs			
2.a Changes to the vegetation and people's attitudes	<ul style="list-style-type: none"> What general changes have there been to the distribution and quality of different types of vegetation over time? Have people's attitudes to different vegetation types (or species) changed over the last 20 (or more?) years? Why have those changes occurred? 	abstracted timeline with additional FGD SSIs with older key informants	
2.b what institutional arrangements protect or regulate vegetation use and m'tmt?	<ul style="list-style-type: none"> Extent to which cutting, fire and grazing were controlled Reasons for decline in protection What institutions have been or continue to regulate access and management of biodiversity resources 	FGD Venn diagram viz. natural resources information abstracted into SHA	
2.c How have sacred sites been effected by changes over time?	<ul style="list-style-type: none"> Have belief systems led to the protection of biodiversity on church sites? Is biodiversity valued in it's own right or as a by-product of sacred status? 	FGD	
3. To elucidate the relationships between these values and religious or spiritual belief systems			
This objective is dependent upon data collected in 1 and 2, and the application of an appropriate and robust analytical framework.			
4. To understand wider attitudes to conservation			
4.a indirect	Information obtained through discussions during transect walk etc.		

4.b direct	<ul style="list-style-type: none"> • What is the attitude of local people to conservation of biodiversity of sacred land? 	FGD	
5. To understand wider issues concerned with planting and protection generally			
5.a Do people plant trees?	<ul style="list-style-type: none"> • Is there any active tree planting on the sacred land? • What is planted and why? • How is it planted? 	FGD to supplement earlier exercises. Conducted with different users/stakeholders.	
5.b. Is vegetation on sacred sites actively managed?	<ul style="list-style-type: none"> • Is there any active management of the vegetation on the sacred land? What vegetation types does this apply to? • Is there any active management of vegetation in other areas? How and Why? What vegetation types does this apply to? • Are trees planted on sacred land protected? How? Why? • Are trees planted in other areas protected? How and Why? 		