# Biodiversity conservation in ancient church and monastery yards in Ethiopia

**First Annual Report**
**1 April 2001 – 31 March 2002**


The Darwin Initiative for the Survival of Species

**University of Wales, Bangor**
**United Kingdom**

**Ethiopian Wildlife and Natural History Society**
**Addis Ababa, Ethiopia**

# *Darwin Initiative for the Survival of Species*

# *Annual Report*

## 1. Darwin Project Information

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

## 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 as a result of 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.

No changes in the objectives have been made over the last year. However, due to local administrative hurdles in Ethiopia, IBCR could not participate directly in the project. They informed us that they could not officially sign the project schedule document and proceed with its implementation but they were fully committed to support EWNHS. This was reported to the Darwin Secretariat at the time (07/09/01) and it was agreed (21/09/01) to transfer the financial channel from IBCR to EWNHS and the participation of IBCR be channelled via EWNHS.

## 4. Progress

### Project history and progress summary

This report covers the first year of the project, which officially began on 1st April 2001. The project contract was, however, not signed until the end of April 2001. The project leader travelled to Ethiopia in May 2001 to initiate the project. The project officer was appointed in July and he started his duties in Ethiopia on the 1st August 2001. Thus, the project activities in the field began four months after the official starting date.

The project activities began with a workshop, which took place in Addis Ababa (1-2 August 2001).

After a period of literature search and networking, preliminary 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). This phase aimed at training of counterparts, setting up methodology and obtaining necessary understanding of both biodiversity, and ecological and social systems. From October 2001 until February 2002 fieldwork of the first phase was carried out.

Both fieldwork and training have been delayed due to a number of major problems, these are outlined below. However, since early 2002 the project team has been able to make up for lost time and, apart from the delayed Participatory Appraisal Training, activities have been carried out as outlined in the agreed project schedule.

### Work Achievements

**Workshops:** The project activities began with a workshop, which took place in Addis Ababa (1-2 August 2001, see Workshop proceedings for details). The aims of the workshop were:

- To get acquainted with one another,
- To enhance networking amongst institutions and stakeholders, and
- To discuss and define more precisely the work to be undertaken.

A broad range of the government, educational and non-governmental organisations concerned with biodiversity conservation and stakeholders in Ethiopia participated in this 1st planning workshop in order to initiate a network of collaboration (Workshop proceedings, p.32). At the workshop the historical and theological background of the project was discussed as well as the criteria for the selection of the first phase study sites.

**Rapid biodiversity assessment:** Rapid biodiversity assessment was carried out in 39 church and monastery yards, this work included the identification and enumeration of every woody plant within each. In addition to the 39 sites, data on the presence and absence of woody species was also recorded at other sites (N = 10) visited but which were not included in the formal survey either because informants could not be obtained or the sites did not fulfill site selection criteria. Over 230 species of woody plants were recorded at the 39 sites stretching throughout Ethiopia where the Ethiopian Orthodox Churches are present, i.e. between 6°N and 14°N. Some of the results of preliminary analysis of the findings are presented in Appendix II and III.

**Ethnobotany:** At each site where Rapid Biodiversity Assessment was carried out, using 9 key (knowledgeable) informants from the clergy and local community, the identity of the woody species as well as the uses of the plants was determined. Informants also provided quantitative information on mammals and to some extent on bird species, present in the church and monastery yards. Due to the size of the dataset and the need for further careful statistical analysis only an overview of the results can be provided here.

In total 339 people were interviewed. Most of the plants referred to by informants were trees and they were used, in decreasing order of importance, for:

- construction
- fuelwood
- household implements
- farm implements
- medicine
- food
- religious purposes (crosses, religious sticks, drums, carvings)

Shrub species were used for:

- roofing
- house construction
- brooms
- floor cover during religious festivals
- dye

A few non-woody plants were recorded and these were used in medicine.

In general local communities knew the local plant resources. Roughly half of the woody species present in the church and monastery forest/woodland was used and generally these species would be common. *Cordia africana* and *Podocarpus falcatus* are extensively harvested and this harvesting is unsustainable. With the exception of *Olea europaea* and sometimes *Podocarpus falcatus* and *Ficus thonnigii*, woody species are not propagated or planted. In general informants from church forest/woodlands appeared to be more knowledgeable than those from monasteries. In most monasteries many monks are not locals and seem to have a poor knowledge of the indigenous flora and of plant uses. In general the communities were keen to see native trees planted, but would only consider planting if outside help became available. However, they identified water shortage and lack to seedlings as problems to be addressed if planting is to be carried out.

Investigation of the social interactions between various stakeholder groups (e.g. clergy, local farmers, other religions), as they affect the use and management of the forest resources, were also a major component of the field work.

**Training:** During October and November 2001 six staff members from the EWNHS were trained in plant and vertebrate identification techniques. The two project counterparts from EWNHS also received training on various aspects of landscape, vegetation and population ecology and interview techniques.

**Difficulties encountered during the year**

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

- Visa and work permit: a work permit has not yet been obtained for the Project Officer and as a consequence a visa has to be applied for on a 1-2 months basis. This means that the Project Officer has to be in Addis to carry out these formalities. As a result 2-3 working days a month are lost in the process. This also limits work in the countryside due to time constraints. It was learnt that this applies to all foreign nationals working in Ethiopia and the Immigration Authority of Ethiopia is currently working on a new regulations that can overcome this difficulty.
- Site selection: Since the original site selection carried out by local counterparts prior to the Project Officer's appointment was inadequate as 2/3rds of the sites did not contain natural forests, remedial action had to be taken.
- Counterpart: Despite the careful selection criteria adopted, the project's progress was greatly affected by one of the counterparts proving to be unsuitable for the project.
- Car: Despite the field vehicle having been carefully selected, it has been plagued by a variety of major breakdowns. This has been due to a combination of factors including the bad state of many Ethiopian roads in the countryside. These breakdowns have seriously disrupted the fieldwork schedule.
- Computing: Due to lack of funds no dedicated computer was made available until several months into the project, thus delaying the analysis of results.
- Funding: from the above points it is clear that this project is running on a very tight budget and this seriously disrupts the work.
- Meeting people: networking with local scientists, clergy and NGOs has been time-consuming and at times impossible. This activity takes much longer than expected but has been pursued with dedication because it is so essential for the success of the project.

**Field methodology**

Field methodology, and the Rapid Biodiversity Assessment especially, gained in scope and accuracy through numerous interactions with a number of scientists including other staff members of the University of Wales not originally involved in the project.

Site selection: A more effective site selection procedure was achieved via the participation of the church and Ethiopian research organisations at a variety of levels including:

Ethiopian Orthodox Church Development Agency (both in Addis Ababa and in various regional capitals)

Ethiopian Orthodox Church offices at the Diocese and district levels.

Scientists at the National Herbarium

**Work plan for the next reporting period:**

April 2002

Second planning workshop

Field training of stakeholders and interested organizations on methods of rapid biodiversity assessment and landscape ecology

May 2002.

1. Final selection of sites to be investigated in greater detail during the second phase of project.
2. Participatory Appraisal Training for 6 EWNHS staff and related researchers will be carried out.

June 2002.

Fieldwork of the second phase to be initiated.

July - August 2002.

During the rainy season data analysis and write up of the first phase of project.

August - December 2002.

Second phase fieldwork continued.

September 2002.

Paper to be presented at the 8th International Congress of Ethnobiology, in Addis Ababa, Ethiopia. The results of the ethnobotanical research carried out during the first phase of this project will be presented.

December 2002.

Identification of high conservation value and endemic species threatened and assessment of their status

January – March 2003.

Data analysis and write-up of 2nd phase.

February 2003.

6 EWNHS staff and related researchers and 10 stakeholders trained in ex-situ conservation.

## 5. Partnerships

Unforseen administrative hurdles in Ethiopia have prevented the formal involvement of IBCR, but this has not prevented an informal relationship.

The tightness of the budget has caused some difficulties between the UWB and the EWNHS especially in relation to the high costs caused by a car that breaks down on a very regular basis, but these matters have been sorted out thanks to everyone's efforts and ingenuity.

The project team has been able to collaborate with a number of Ethiopian organisations:

National Herbarium: the project team has been in close contact with Dr Tamrat Bekele who has carried out a survey of church forests and woodlands in one region of Ethiopia. Various staff members at the herbarium have provided valuable advice and expertise in botanical taxonomy. In return, the project is providing the National Herbarium with essential botanical specimens. These collections are seasonal and from areas not normally visited during standard botanical collections. Some of these collections will be of use for the completion of the Flora of Ethiopia and Eritrea currently been carried out by the National Herbarium staff.

Ethiopian Orthodox Church Development Agency: much knowledge and advice have been gained and provided through a number of meetings.

Lutheran Federation: Over the past few years this organisation has been actively involved in protecting one monastery yard. They have provided the project team with much insight into how to go about setting up an applied conservation project.

Anthropology Department of Addis Ababa University: invaluable information regarding the interactions between different faiths in conserving Ethiopian forests and woodlands has been provided. Future collaboration, mainly in terms of student projects, is now envisaged.

Ethiopian Agricultural Research Organisation: currently setting up links with a GTZ funded project which is looking at the natural regeneration of trees in woodlands/forests, including church and monastery yards.

## 6. Impact and Sustainability

Much effort has been spent promoting the project within the church at the diocese and district levels. Also, the project team has been visiting a number of regional governmental departments. This approach was deemed important as both the church and political administrative regions are highly decentralised.

For the general public the project team gave an open lecture, as part of the monthly lecture series that the EWNHS organizes. This generated much interest and a report of the lecture was subsequently published (Bradley, D. (2001) Biodiversity conservation in ancient church and monastery yards in Ethiopia. Ethiopian Wildlife and Natural History Society - Indoor and Outdoor Notice of Events, including Reports 59, 2-3.).

The project team's skills and intellectual resources have been made freely available to an Ethiopian MSc. student who is about to complete his thesis in a selected number of churchyards in one region of Ethiopia.

## 7. Outputs, Outcomes and Dissemination

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

| Code No. | Quantity | Description |
|---|---|---|
| 5 | 6 project workers each receive training in plant and vertebrate species | In late 2001 six staff members from the EWNHS were trained in plant and vertebrate identification. Instead of having a solid two-week training session, much of the training took place as part of the Rapid Biodiversity Assessment fieldwork. This procedure had to be implemented because a) no staff from IBCR was available and b) because of the varying commitments by the EWNHS staff, all being involved in their own field projects. |
| 6A | 2 project workers will receive additional training on theoretical aspects of landscape, vegetation and population ecology for two weeks | Two project workers received training on various aspects of landscape, vegetation and population ecology. Instead of a solid two weeks and considering the fieldwork difficulties this training was carried out in-situ during fieldwork. Also time otherwise lost during our numerous breakdowns in the field was used to train the two field workers in these aspects of ecology. |
| 14A | | One workshop was organised and run and the proceedings of the workshop have been published. |
| 15A | National press release, 4 reports in EWNHS newsletters, 2 local press releases. | 4 reports have been published in EWNHS newsletters.<br>A project website has been set up and is regularly being updated.<br>http://members.lycos.co.uk/WoodyPlantEcology/ethiopia/index.html<br>Contact has been established with a journalist from one Addis Ababa daily newspaper, and this needs to be further |

| | | |
|---|---|---|
| | | pursued in order to get a feature article published. This informal approach, as opposed to press releases that usually require money in order to get an article published, has been pursued as it is the only potential avenue to get press coverage. |
| 6A | Participatory Appraisal Training | During the course of the first phase of field-work training was provided to 2 EWNHS staff in interview techniques. However, formal training in Participatory Appraisal has been rescheduled to the early part of 2002/2003. |

**Table 2: Publications**

| **Type *** (e.g. journals, manual, CDs) | **Detail** (title, author, year) | **Publishers** (name, city) | **Available from** (e.g. contact address, website) | **Cost £** |
|---|---|---|---|---|
| newsletter | Anon. (2001) Biodiversity conservation in ancient church and monastery yards in Ethiopia. | Newsletter of the Ethiopian Wildlife and Natural History Society Jan.-March 2001, 1-2. | EWNHS<br>PO Box 13303<br>Addis Ababa<br>Ethiopia | Free to members |
| Workshop proceedings | Anon. (2001) Proceedings of the workshop on the Biodiversity conservation in ancient church and monastery yards in Ethiopia. | University of Wales, Bangor and the Ethiopian Wildlife and Natural History Society, Addis Ababa. | EWNHS<br>PO Box 13303<br>Addis Ababa<br>Ethiopia | Free from:<br>z.teklehaimanot@bangor.ac.uk<br>or web site:<br>http://members.lycos.co.uk/WoodyPlantEcology/docs/e-proc1.rtf |
| Workshop Proceedings | Binggeli P. (2001) Workshop discussions. In Proceedings of the workshop on the Biodiversity conservation in ancient church and monastery yards in Ethiopia, pp. 26-31. | University of Wales, Bangor and the Ethiopian Wildlife and Natural History Society, Addis Ababa. | EWNHS<br>PO Box 13303<br>Addis Ababa<br>Ethiopia | Free from web site:<br>http://members.lycos.co.uk/WoodyPlantEcology/docs/e-proc1.rtf |
| Newsletter | Desalegn Desissa (2001) Cheleleka (Mogle) mountain walk, 4-11-2001. | Ethiopian Wildlife and Natural History Society - Indoor and Outdoor Notice of Events, including Reports 58, 2. | EWNHS<br>PO Box 13303<br>Addis Ababa<br>Ethiopia | Free to members |

| | | | | |
|---|---|---|---|---|
| Newsletter | Desalegn Desissa (2001) Traditional Oromo religion. | Ethiopian Wildlife and Natural History Society - Indoor and Outdoor Notice of Events, including Reports 58, 6. | EWNHS<br>PO Box 13303<br>Addis Ababa<br>Ethiopia | Free to members |
| Newsletter | Desalegn Desissa, P. Binggeli & J. Smith (2002) Aba Hailegebresilasse - Lalibela's tree planting monk. | Newsletter of the Ethiopian Wildlife and Natural History Society Jan.-March 2002, 4-6. | EWNHS<br>PO Box 13303<br>Addis Ababa<br>Ethiopia | Free to members<br>Or web site:<br>http://members.lycos.co.uk/WoodyPlantEcology/docs/e-lalibela.rtf |

In addition the project officer has written articles relating to Ethiopia and his activities as part of his involvement with the Ethiopian Wildlife and Natural History Society. They are:

Binggeli P. (2001) Langano trip, 20-21 October 2001. Ethiopian Wildlife and Natural History Society - Indoor and Outdoor Notice of Events, including Reports 57, 8.

Binggeli P. (2002) Beekeping in Ethiopia: history, status and outlook - Lecture by Dr Jurgen Greiling. Ethiopian Wildlife and Natural History Society Notes and Records 59, 2.
http://members.lycos.co.uk/WoodyPlantEcology/docs/e-bee.rtf

Binggeli P. and Desalegn Desissa (2002) *Lantana camara* - the invasive shrub that threatens to drive people out of their land. Newsletter of the Ethiopian Wildlife and Natural History Society (in press).
http://members.lycos.co.uk/WoodyPlantEcology/docs/e-lantana.rtf

Richardson D.M., Binggeli, P. and Schroth, G. (in press) Plant invasions - problems and solutions in agroforestry. In Schroth G., Fonseca, G., Harvey, C.A., Gascon, C. Vasconcelos, H. and Izac A.M. (Eds) Agroforestry and biodiversity conservation in tropical landscapes.

## 8. Project Expenditure

**Table 3: Project expenditure during the reporting period**

| Item | Budget | Expenditure |
|---|---|---|
| Salaries (specify) | | |
| UWB – P Binggeli | | |
| ARC – J Smith | | |
| EWNHS – 2 project assistants | | |
| Rent, rates heating lighting etc | | |
| Office administration costs | | |
| Capital items/equipment | | |

| |
|---|
| Others |
| Travel and subsistence |
| Plant propagation consumables |
| Other field consumables |
| Conferences, seminars and workshops |
| Total |

## 9. Monitoring, Evaluation and Lessons

Over the past year the project team has managed to publicize and disseminate the findings of the project using methods as outlined in the project proposal. In addition the team has set up a project website with regularly updated web pages and has also given a public lecture.

The research work has progressed very well, as proposed, and some of the data collected has been quantitative as opposed to being simply qualitative (i.e. not just species identification but also population size of each species encountered).

Due to the numerous field vehicle breakdowns and associated logistical difficulties, the team had now learnt to be highly flexible regarding the fieldwork schedule.

The team has also learnt from its difficulties in meeting people and networking and will thus waste less time in the coming year to continue and strengthen these essential activities.

## 10. Author(s) / Zewge Teklehaimanot, Pierre Binggeli, Kinfe Abebe and John Healey

**Date 22 May 2002**

## Appendix I – Project Logical Framework

| Project summary | Measurable indicators | Means of verification | Important assumptions |
|---|---|---|---|
| **Goal** To assist countries rich in biodiversity but poor in resources with the conservation of biological diversity and the implementation of the Biodiversity Convention | 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. | |
| **Purpose** Sustainable dev-elopment in Ethiopia promo-ted 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 | 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 |

| | | | |
|---|---|---|---|
| Outputs<br>1. Key NGO/government institutions strengthened – 6 Ethiopian staff trained in each of:<br>1.1 participatory species identification & assessment,<br>1.2 participatory rural appraisal for biodiversity,<br>1.3 ex-situ conservation,<br>1.4 in-situ conservation;<br>2. Management plans for habitats, species and sites;<br>3. Field-guide on biodiversity<br>identification/appraisal;<br>4. Three peer-rev. papers;<br>5. NGO-Gov-Church-community networks strengthened;<br>6. Wider Ethiopian public informed via media;<br>7. Ex-situ conservation centre established. | 1. Enhanced capacity/ expertise of institutions/staff in each of these fields;<br>2. Management plans of sufficient quality held and used by key institutions;<br>3. Field-guides held and used by key institutions;<br>4. Papers submitted for publication;<br>5. Increased collaboration in on-going work & new projects;<br>6. Enhanced public attitude to/knowledge of biodiversity conservation;<br>7. Centre exists, is stocked & producing planting material;<br>All by end of project, or earlier if stated in section 13 | 1., 5., 7. Institutional annual reports, independent reports for/of donor agencies;<br>2. Copies of plans available from institutions on request;<br>3. Copies of guides available from institutions on request;<br>4. Copies of letters of receipt from editorial offices;<br>6. A public attitude survey could be commissioned, otherwise increase in membership of EWNHS would be an indicator;<br>7. Centre could be visited. | 1. Trained staff remain working in the conservation sector, institutions retain sufficient staff and resources to remain effective,<br>2. to implement management plans,<br>3. to carry out further biodiversity identification/ appraisal;<br>4. Papers published and influence key practitioners;<br>5. Network members continue to collaborate successfully;<br>6. Public have means to influence conservation outcomes;<br>7. Centre operations become sustainable, community willing to purchase and plant the material it supplies. |
| Activities<br>1. Planning workshop<br>2. Selection of target sites<br>3. Local consultation & rapid biodiversity assessment at each<br>4. Workshop to select focus sites<br>5. Participatory appraisals<br>6. Biodiversity inventories<br>7. Priority species identification and assessment of status<br>8. Wide-participation workshops to develop conservation plans<br>9. In-situ conservation work<br>10. Ex-situ conservation in newly established centre<br>11. Reintroductions of | Budget expenditure according to plan | Production of:<br>1. Workshop report<br>2. List of 40+ sites<br>3. Report (data on each site)<br>4. Workshop report containing list of 6 + sites<br>5. Analysed appraisals<br>6. scientifically analysed inventories for each site<br>7. scientific report on status of each priority species (20+) in full technical report<br>8. Workshop report and full conservation management plan<br>9. Job sheets detailing work<br>10. + 11. Centre physically exists, job | 1., 4., 8. Key individuals/ stakeholders attend, recom-mendations written-up into plans and implemented<br>2. Local co-operation<br>3., 6. Species identified correctly, threatened species present<br>5. Appraisals sufficiently informative<br>7. Status assessment accurate<br>9., 11. Adequate stakeholder participation, experience assessed & incorporated into plans<br>10. Institutional support for centre maintained<br>12. Local people respond, media publish/broadcast project |

| | | | |
|---|---|---|---|
| species to selected sites and provision of planting material to local people<br>12. Dissemination of outcomes to local people and wider public | | sheets, EWNHS & IBCR annual reports (with financial accounts)<br>12. Newsletters, press cuttings, video/audio tapes | news |

**Appendix II. Rapid biodiversity assessment**

| Zone/Diocese | District/Woreda | Church/Monastery | C/M | Age | | Number of species | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Church | Wood | Total | Outer | Outer exotic | Inner | Inner exotic | ≤5 indiv. |
| Fiche Sellale | Chancho | Chancho Egzabiher Ab | C | recent | relict | 33 | 24 | 2 | 19 | 4 | 3 |
| Fiche Sellale | Fiche | DebreLibanos Gedam | M | old | relict | 62 | 45 | 0 | 17 | 6 | 5 |
| Fiche-Sellale | Sendafa | Itissa Abune Tekilehymanot | M | old | relict | 41 | 34 | 4 | 7 | 5 | 8 |
| Fiche-Sellale | Sendafa | Itissa Mariyam Gedam | M | medium | relict | n.a | n.a | n.a. | 28 | 5 | n.a. |
| Gojjem East | Beso Liban | Yekibna Hawariyat | C | medium | relict | 62 | 52 | 0 | 20 | 1 | 6 |
| Gojjem East | DebreMarkos | Aba Asirat | M | medium | relict | 51 | 43 | 0 | 21 | 0 | 6 |
| Gojjem West | Bahir Dar | Robit Debresina Bata | C | medium | relict | 40 | 23 | 0 | 20 | 1 | 4 |
| Gojjem West | Bahir Dar | Abune G/Menfeskidus Andinat | M | medium | relict | 47 | 40 | 0 | 10 | 0 | 3 |
| Gonder North | Aderkay | Acholake Eyessus | C | medium | relict | 39 | 34 | 0 | 14 | 1 | 2 |
| Gonder North | Aderkay | Beri Mariyam | C | medium | relict | 23 | 18 | 0 | 14 | 1 | 1 |
| Gonder South | Addis Zemen | Tara Gedam | M | old | relict | 43 | 36 | 0 | 11 | 1 | 3 |
| Gonder South | Addis Zemen | Zelalem Silasse | C | medium | relict | 46 | 40 | 0 | 25 | 2 | 2 |
| Gurage | Bui | Kondaltity Bale Weld | C | medium | relict | 33 | 29 | 0 | 20 | 2 | 6 |
| Gurage | Bui | Midrekebd Gebremenfeskidus | M | old | relict | 30 | 25 | 3 | 13 | 3 | 4 |
| Gurage | Eshe | Mihur Eyessus Gedam | M | old | relict | 31 | 28 | 0 | 17 | 4 | 1 |
| Gurage | Eshe | Emmanuel | C | recent | relict | 27 | 21 | 0 | 12 | 1 | 3 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shewa East | Ziquala | Gebre Menfeskidus Abo | M | old | relict | 34 | 27 | 2 | 23 | 4 | 2 |
| Shewa North | Ankober | Tekilehymanot | M | mediu m | relict | 43 | 34 | 0 | 19 | 0 | 1 |
| Shewa North | Miratina Jeru | Zena Markos | M | mediu m | relict | 48 | 42 | 1 | 16 | 2 | 3 |
| Shewa West | Alem-Gena | Geja Georgis | C | mediu m | relict | 36 | 26 | 2 | 15 | 4 | 6 |
| Shewa West | Menagesha | Menagesha Medanealem | M | mediu m | relict | 37 | 34 | 2 | 3 | 1 | 4 |
| Tigray Central | Lay-Machew | Abune Tedros | C | mediu m | relict | 34 | 30 | 0 | 17 | 1 | 2 |
| Tigray Central | Tach-Machew | Bokel Gedam | M | old | relict | 36 | 22 | 0 | 20 | 1 | 2 |
| Tigray Eastern | Atsibi Wemberta | Kidus Georgis | C | mediu m | relict | 39 | 36 | 0 | 18 | 0 | 5 |
| Tigray Eastern | Atsibi Wemberta | Atsibi Silasse | C | mediu m | relict | 46 | 33 | 0 | 24 | 3 | 1 |
| Tigray Eastern | Senkata | Tetema Kidist Silasse | C | old | relict | 40 | 29 | 0 | 20 | 1 | 2 |
| Tigray Southern | Enderta | Debre Haila Mariyam | M | old | relict | 41 | 38 | 0 | 14 | 1 | 3 |
| Tigray Southern | Mekele | Debre Genet Medihane Alem | C | old | relict | 54 | 41 | 1 | 18 | 7 | 7 |
| Walaita Dawuro | Bolososore | Bolola Baleweld | C | recent | new | 49 | 47 | 2 | 17 | 4 | 3 |
| Walaita Dawuro | Bolososore | Anchucho Medihanealem | C | mediu m | relict | 50 | 46 | 0 | 28 | 2 | 9 |
| Walaita Dawuro | Bolososore | Gununo Kidus Georgis | C | recent | new | 51 | 41 | 4 | 18 | 5 | 5 |
| Walaita Dawuro | Bolososore | Delbo Baleweld | C | mediu m | relict | 43 | 36 | 2 | 19 | 4 | 5 |
| Wellega East | Amuru | Agemissa Sillase | C | mediu m | relict | 55 | 44 | 2 | 11 | 1 | 2 |
| Wello North | Bogna | Yimrana Kirstos | C | old | relict | 24 | 17 | 0 | 9 | 1 | 2 |
| Wello North | Kobo | Rama Kidane Mihirate | M | old | relict | 39 | 31 | 0 | 16 | 1 | 4 |
| Wello North | Kobo | Rama Ras Alula | C | mediu | relict | 37 | 32 | 1 | 24 | 0 | 2 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Tekilehaimanot | | m | | | | | | | |
| Wello North | Kobo | Mendefra Kidane Mihirate | C | recent | relict | 21 | 13 | 2 | 14 | 1 | 1 |
| Wello North | Lalibela | Neab-Kutelab | M | old | relict | 30 | 19 | 0 | 11 | 2 | 2 |
| Wello South | Hayk | Abune Eyessus Moa | M | old | relict | 39 | 33 | 2 | 13 | 4 | 3 |
| | | **Mean** | | | | **40.4** | **32.7** | **0.8** | **16.5** | **2.2** | **3.5** |

**Appendix II - LEGEND:**

**C/M:** C = church; M = monastery

**Age**

**church:**

- recent = <100 yrs old;
- medium = 100-200 yrs old;
- old = > 200 yrs old

**woodland:**

- relict = leftover from the original forest;
- new = planted with exotics (chiefly eucalypts and *Cupressus lusitanica*) but harbouring an undergrowth of naturally regenerated species

**Species richness** (number of species

- Outer = outer churchyard;
- Outer exotic = exotics in outer churchyard;
- Inner = inner churchyard;
- Inner exotic = exotics in inner churchyard;
- <5 indiv. = species with fewer than 5 individuals in woodland and uncommon in surrounding countryside

**Appendix III Attitude ecology and potentials**

| Zone/Diocese | District/Woreda | Church/Monastery | C/M | Attitude | | | | Ecology | | | | | | | | | | Potential | | | SC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | - | + | $ | C | no | R | F | ob | nr | L | G | A | pp | I | D | T | sp | |
| Fiche Sellale | Chancho | Chancho Egzabiher Ab | C | * | | * | | | | | | | | * | | | | | + | | 7 |
| Fiche Sellale | Fiche | DebreLibanos Gedam | M | + | | | | * | + | | * | | | * | | | | | * | | 10 |
| Fiche-Sellale | Sendafa | Itissa Abune Tekilehymanot | M | | * | | * | + | * | | + | | | + | | + | | | | | 10 |
| Fiche-Sellale | Sendafa | Itissa Mariyam Gedam | M | | | | | | | | + | | | + | | | * | | | | 4 |
| Gojjem East | Beso Liban | Yekibna Hawariyat | C | | * | | | * | + | * | + | | | | | | | | | | 8 |
| Gojjem East | DebreMarkos | Aba Asirat | M | | * | | | * | + | | | | * | + | | | | * | | | 10 |
| Gojjem West | Bahir Dar | Robit Debresina Bata | C | | | | | | + | | | * | | | * | | | | | | 5 |
| Gojjem West | Bahir Dar | Abune G/Menfeskidus Andinat | M | | * | | | * | | * | * | | | + | * | | | * | * | | 15 |
| Gonder North | Aderkay | Acholake Eyessus | C | * | | | * | + | | | * | | | + | | | | | | | 8 |
| Gonder North | Aderkay | Beri Mariyam | C | * | | | * | | | | | * | | + | | | | | | | 7 |
| Gonder South | Addis Zemen | Tara Gedam | M | | | + | | * | | | | | | | | | | | | | 3 |
| Gonder South | Addis Zemen | Zelalem Silasse | C | | * | | | * | | | + | | | + | | | | | | * | 8 |
| Gurage | Bui | Kondaltity Bale Weld | C | + | | * | | + | + | | + | | * | + | | | | | | | 9 |
| Gurage | Bui | Midrekebd Gebremenfeskidus | M | | | | | | + | | + | | | + | | | | | | | 3 |
| Gurage | Eshe | Mihur Eyessus Gedam | M | | + | | | + | | * | | + | * | | | * | | | | | 9 |
| Gurage | Eshe | Emmanuel | C | | + | | | | | | | | | | | | | | | | 1 |
| Shewa East | Ziquala | Gebre Menfeskidus Abo | M | + | | | | + | | * | * | + | | | | + | + | | | | 9 |
| Shewa North | Ankober | Tekilehymanot | M | | * | | | + | | * | * | * | | | | | | | * | | 11 |
| Shewa North | Miratina Jeru | Zena Markos | M | | | | | * | | | * | | | | | | | | | | 4 |
| Shewa West | Alem-Gena | Geja Georgis | C | | * | | | | + | | + | | | * | | * | | | * | * | 12 |
| Shewa West | Menagesha | Menagesha Medanealem | M | | | | | + | + | | | | | + | | | | | | | 3 |
| Tigray Central | Lay-Machew | Abune Tedros | C | | | | * | + | | | | | | * | | | | | + | | 4 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tigray Central | Tach-Machew | Bokel Gedam | M | | * | | + | | | | * | | | * | | | | | | * | 9 |
| Tigray Eastern | Atsibi Wemberta | Kidus Georgis | C | | | | * | + | + | | + | | | * | | | | | | | 7 |
| Tigray Eastern | Atsibi Wemberta | Atsibi Silasse | C | | | | * | + | | | | | | + | | * | | | | | 6 |
| Tigray Eastern | Senkata | Tetema Kidist Silasse | C | | | | * | + | | | * | | | | | | | | + | | 6 |
| Tigray Southern | Enderta | Debre Haila Mariyam | M | | | | | + | | | + | | | * | | | | | | | 4 |
| Tigray Southern | Mekele | Debre Genet Medihane Alem | C | | | | | * | * | | | | | + | | | | | + | | 6 |
| Walaita Dawuro | Bolososore | Bolola Baleweld | C | | + | | | * | | | | * | | | | | | | | + | 6 |
| Walaita Dawuro | Bolososore | Anchucho Medihanealem | C | | * | | | * | * | | | * | | + | | | | * | | * | 13 |
| Walaita Dawuro | Bolososore | Gununo Kidus Georgis | C | | * | | | + | + | | | * | | | | | | + | | | 7 |
| Walaita Dawuro | Bolososore | Delbo Baleweld | C | | + | | | + | + | | + | | | | | | | | | | 4 |
| Wellega East | Amuru | Agemissa Sillase | C | | * | | | * | | | | | | * | * | * | | * | | * | 14 |
| Wello North | Bogna | Yimrana Kirstos | C | * | | | | | | | * | | | * | | | | | + | | 5 |
| Wello North | Kobo | Rama Kidane Mihirate | M | | | | | + | + | | * | * | | | | | | | | | 6 |
| Wello North | Kobo | Rama Ras Alula Tekilehaimanot | C | | | | | + | | | + | | | + | | | + | | | | 4 |
| Wello North | Kobo | Mendefra Kidane Mihirate | C | | | | | | | | | * | | + | | | + | | | | 4 |
| Wello North | Lalibela | Neab-Kutelab | M | | + | | | | | | * | | | * | | | | | * | | 7 |
| Wello South | Hayk | Abune Eyessus Moa | M | | | | | + | | | * | | + | + | + | + | | | | | 7 |

**Appendix III - LEGEND**

rating system: * = high; + = medium; blank = low or null

**C/M:** C = church; M = monastery

**Attitude**

- **-** = sites where project team was not particularly welcomed either due to complete lack of interest in our project or a dislike for strangers
- **+** = sites where the project team was positively received: * = team specifically requested to return and carry out further work
- **$** = tree mainly viewed as a money making resource
- **C** = cutting totally banned or very limited

**Ecology**

- **no** = woody species richness of outer woodland (* = > 40 species, + = 25-40)
- **R** = number of woody species with fewer than 5 individuals (* = 7-9 species, + = 4-6 species)
- **F** = forest or woodland of ecological importance. These have been relatively little disturbed, have a good physiognomy and age class distribution, and should be conserved.
- **ob** = area of outstanding beauty
- **nr** = natural regeneration
- **L** = logging being currently carried out at an unsustainable rate
- **G** = grazing pressure, * = unsustainable grazing causing erosion and/or destruction of vegetation; + = grazing prevents woody plant regeneration
- **A** = destruction of woody cover for agricultural purposes
- **pp** = increasing population pressure resulting in higher demand for natural resources
- **I** = invasive species present and in the case of * locally dominant

**Potential**

- **D** = team can make a difference to the conservation of the site within the remaining period of the project. At these three sites the team has been requested to come and help to sort out conflicts with the local population (tree resources in one case and religious in another) or set up a sustainable agroforestry/ecotourism system.
- **T** = Tourism: potential for (eco-) tourism is already there or could be initiated as the sites are close to major routes or important tourist sites.
- **sp** = space for planting. Following our inquiries the communities are keen to plant native trees and have areas which could be allocated to that effect.

**SC**

Tentative scoring: score of 2 given for a * and 1 for a +.

The scoring and resulting ranking does not necessarily reflect the views of the Darwin Team.