

## ***Darwin Initiative Annual Report***

Important note:

To be completed with reference to the Reporting Guidance Notes for Project Leaders – it is expected that this report will be about 10 pages in length, excluding annexes

### **Darwin Project Information**

Project Ref Number	15/031
Project Title	Novel and practical conservation strategies following mining in Sierra Leone
Country(ies)	Sierra Leone
UK Contract Holder Institution	Centre for Ecology and Hydrology
UK Partner Institution(s)	Centre for Ecology and Hydrology (CEH) Mind the Gap
Host country Partner Institution(s)	Environmental Foundation Africa (EFA) Fourah Bay College (FBC) Njala University (NU) <i>Community Advocacy and Development Movement (CADEM) (subsequently withdrew from the project)</i>
Darwin Grant Value	£164,408
Start/End dates of Project	1st Nov 2006 to 31st Oct 2009
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 Apr 2007 to 31 Mar 2008 Annual Report No. 2

Project Leader Name                      Jan Dick

Project website	
Author(s), date	Jan Dick, Tommy Garnett, Scott Jones, A. B. Karim. James Sundufu, Richard Wadsworth & Arnold William

## **1. Project Background**

The aim of this project is to develop practical methods for successful reclamation and conservation following mining in developing countries that both conserve biodiversity and enhance community livelihoods – rutile mining in Sierra Leone is used as a case study.

The focus of the project is to integrate current scientific information with local knowledge through a partnership between CEH (UK), NGOs, local communities, a mining company and two universities (Sierra Leone).

## **2. Project Partnerships**

Project partnership: One of the strengths and challenges of this project is the wide range of partners from the host country and the UK, including research centres, NGOs, universities both in UK and in Sierra Leone, industry in the form of the mining company (SRL) and local communities. During the first year one project partner (CADEM) resigned from the project over a dispute for payment for work not authorised. The gap was filled effectively by the Community Liaison Officer, Jestina Jusu.

The UK lead institution CEH has built its own capacity to be an effective project partner. One example of this is the ability to introduce a new, more formal management model which followed the mid-term review (e.g. written terms of reference for all activities, all expenditure requiring prior approval by project management), when the original collegiate system proved uncomfortable for partners used to more hierarchical and inflexible systems.

Other collaboration: Partners in CEH and EFA continue to develop proposals and other activities related to the biodiversity conservation activities on Tiwai Island (e.g. a reconnaissance survey of the feasibility of detecting insectivorous bats with ultra-sound 'bat detectors', and a pico-hydro project for the surrounding communities).

## **3. Project progress**

The project has made good progress during this reporting year. Sixteen 0.25ha plots have been established and very large quantities of compost produced by the communities (in the order of 500 cubic meters) and paid for by the mining company. Coordinating collection and payment for the compost and seedlings was challenging and led to some unrest between the communities and the mining company the project community liaison officer played a key role keeping the project on track.

The plots are now well established and preliminary results have shown that even the worst treatment (no organic substitute) has resulted in over 80% survival of the planted trees. This is encouraging and believed to be the result of the very high level of care and management (especially watering) that has been carried out by SRL.

### **3.1 Progress in carrying out project activities**

A new log-frame was agreed as part of the mid-term review.

## **Output 1- Livelihood and restoration relevant business models developed and piloted in mining adjacent communities**

### 1.1. Livelihood and restoration relevant business models developed and piloted in mining adjacent Communities

Early in the year this activity was very successful with all 16 participating villages producing community and private pits (Note that the project proposal suggested only 3 communities, and that this was expanded by SRL because of the enthusiasm of the communities to participate). Problems arose when the company SRL started to collect and pay for the compost. Quality measures were abandoned and distribution of payment was not considered fair by many of the villagers (See Mid-term review). The problem was resolved by the end of the reporting period when all villagers received financial reward for the seedlings and compost they produced.

### 1.2. Undertake training needs assessment and deliver appropriate training opportunities

Training can be considered in two elements - community training and undergraduate training.

Community training – Scott Jones ran a very successful workshop – see specific report Scott et al 2007. Twenty participants took part in an interactive workshop entitled *Skills Training for Conflict Transformation and Partnership Building*. The participants included SRL staff, community leaders, and representatives from some government agencies, community groups, local government, a local high school and the Chiefly system.

Undergraduate training - Dr Sundufu was accompanied by two students Florence G. Miller and Abdul Koroma, of Njala University on a field visit where hands-on training in vegetative and soil macrofauna monitoring techniques was delivered.

Informal training was also carried out within the core team; a) on the design of monitoring schemes for the experimental plots and b) on the use of GPS and GIS for land cover assessment.

### 1.3 Monitor livelihood impacts, adapt and revise strategies as appropriate

This activity was included following the mid-term review and will be addressed more directly in future work. At this point it is clear that the livelihoods of the local communities has benefited from the project but as there were issues of fairness more work is required. This problem will be addressed in the coming year.

## **Output 2 - Range of appropriate interventions tested and evaluated in demonstration plots**

### 2.1 Undertake GIS survey of mine spoil areas and forward estimate of areas of different types

This activity is underway and Richard Wadsworth has produced important images of the mining area – see Wadsworth 2007. One important aspect of this has been to reveal a difference (by a factor of ~5) between the area of “degraded” land between the satellite image assessment and SRL assessment. It is believed that most of the discrepancy revolves around the definition of what constitutes “restored” land; at what level of canopy cover can or should land be considered to be no longer degraded? Resolution of this discrepancy will require further field work with SRL representatives. None of the equipment “donated” to FBC by a previous DI project is functioning (it was intended to use that equipment in training for this project), however, the FAO has established a temporary GIS Lab’ at FBC and we are negotiating to use it (provided that the FAO don’t move it to the Ministry of Food Security).

### 2.2 Develop interventions in consultation with stakeholders and establish demonstration plots

Following a series of workshops in November 2006 the first experimental plots were designed. These have been planted and monitoring is on going –see reports by Sundufu and Wadsworth

Data up to the end of the dry season (ie the first 6 to 8 months of growth) reveal some surprising information, despite the almost total absence of nitrogen or carbon in the sand tailings growth of the trees was better or as good for most species as on the dry-mining and laterite plots. The dry-mining and laterite plots are distinct and are now analysed as separate substrates. Surface treatment with mulch, topsoil or spare compost was beneficial but again surprisingly the benefit was less on the sand tailings than on other substrates. One species, 'Monkey apple', may be employing a different life-history strategy than originally thought, we assumed it was a pioneer, but it may be a stress-tolerater. Analysis of the planting treatments has been hampered by an apparent inconsistency in the naming protocol for the plot compartments; a definitive scheme has now been agreed.

Planting plans for 2008 were agreed in a meeting with SRL personnel following informal discussions at the December workshop. Following advice from the mid-term reviewer, SRL used a D8 'dozzer to "rip" 3 hectares of degraded land (borrow pit used to obtain material to construct a dam) for planting in January 2008.

### 2.3 Develop data gathering methodology for demonstrations, collect and analyse technical and economic data

This is a new activity agreed following the mid-term review. The technical reports of the University partners details the data gathering activities of the demonstration plots. Economic data will be collected in future years.

### 2.4 Discuss results with stakeholders and revise interventions as appropriate

A large (70 person) formal meeting was held with representatives of all the villages and structured interviews with three selected villages and mining company representatives see Dick et al 2007 for full details. The formal meeting commenced with the showing of the video created by EFA during the initial project meeting in Nov 2006. The DARWIN team then reported the progress of the project from their perspective and SRL representative commented from the mining companies prospective. One representative from each community then detailed the positive and negative aspects of the project from their perspective. This exercise fully exposed the strengths and weakness of activities conducted during the first year and was very helpful in the decision process for future work.

## **Output 3- Community / company relationships improved and consolidated**

### 3.1 Run workshops and similar events to provide forum for discussion

The over arching management principle of this project remains the participation of all parties. Consequently a formal meeting was held one year after the start of the project with representatives of all project partners in the SRL community centre which mirrored the start up meeting held in Nov 2006. The meeting was organised by Community Affairs Department SRL and the DARWIN Community Liaison Officer. Over 70 people attended and all project partners presented their work. Representatives from each of the participating communities presented the positive and negative aspects of the project from their perspective. – see Dick et al 2007. The outcome of this exercise was the recognition by all partners that written agreements were required between the villagers and SRL in future (we had proposed "contracts" at the beginning of the project, but to an indifferent or luke-warm response, now the communities and SRL are suggesting them).

### 3.2 Undertake regular monitoring through field visits and discussion with key individuals

The sites are regularly visited by the DARWIN Community Liaison Officer who has good working relationships with both the villagers and the mining company representatives. A total of 7 site visits were conducted during the year by project members not based at the mining site. The distance from Freetown and expense in travelling inhibits more frequent visits. Following the mid-term review a new management structure was implemented which has resulted in monthly telephone calls between the project leader and Issac Mate the nominated contact person in SRL.

### 3.3 Maintain close linkages with company and confirm agreement and support for interventions in advance

There have been a number of staff changes during the year which has not helped maintain close linkages. In particular there have been 3 general managers in 18 months; because the attitude of the manager can have such a profound effect on the activities of staff further down the organisational ladder, we have needed to reintroduce the project to each new manager.

New management procedures have been implemented during the year to facility this activity. Notes from monthly telephone conversations with the SRL officer in charge are circulated to all project partners and posted on the wiki.

## **Output 4- Alternative forms of biodiversity offset payment schemes identified and evaluated**

### 4.1 Prepare analytical discussion paper on options and potential

This activity was completed during the first reporting period.

### 4.2 Conduct SWOT analysis and consensus building to identify preferred options

SWOT analysis completed in first year. Identifying priorities is on going in an informal way. Continual staff changes and the understandable focus on production in the early part of restoration of the mining activity have resulted in no formal progress in this activity this year.

### 4.3 Make recommendations for selected options including cost effectiveness and contribution to biodiversity conservation

In order to make formal recommendations further explorative work was conducted on the mangrove forests. The results of this work will be presented to the mining company later this year.

## **3.2 Progress towards Project Outputs**

The project has made good progress as acknowledged by the mid-term review. There have however been some set-backs this will not we believe disturbed the project terminally although it has made progress slower than would be hoped in some sectors, in other areas we have made more progress than anticipated e.g. better tree survival in the plots

## **3.3 Standard Measures**

### **Table 1 Project Standard Output Measures**

Code No.	Description	Year 1 Total Nov 06 Apr 07	Year 2 Total Apr 07 Mar 08	Year 3 Total Apr 08 Mar 09	Year 4 Total Apr 09 Nov 10	Total to date	Total planned from application
Established codes							
4A	No undergraduates receiving training		2				11
4B	No training weeks provided to undergraduates students		2				19
4C	No postgraduate students receiving training		3				9
4D	No training weeks provided to postgraduate students		2				6
7	Number of training materials produced for use by host country		0				4
8	Number of weeks spent by UK staff on project work in host country		12				23
11B	Number of papers published						2
14A	Number of conferences/seminars/workshops organised to present/disseminate findings of Darwin project work	3	2				5
14B	Number of conferences/seminars/workshops attended at which findings disseminated		2				4
15A	Number of national press releases	2					2
18A	Number of national TV programmes						2
19A	Number of national radio interviews/features in host country						2
19B	Number of national radio UK						1
22	Number of permanent field plots		16				30
23	Value of resources						239,119

	raised form other sources						
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In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, eg title, name of publisher, contact details, cost. Mark (\*) all publications and other material that you have included with this report.

**Table 2 Publications**

Type *	Detail	Publishers	Available from	Cost £
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	

**3.4 Progress towards the project purpose and outcomes**

The basic assumptions behind the design and implementation of the project remain the same. SRL remains crucial to the economic development of Sierra Leone but the method of mining remains environmentally and socially disruptive. There is tension between the company and the affected communities, but the communities remain (guardedly) willing to collaborate and respond very positively to some opportunities (for example, producing 10 times more compost than we believed physically possible).

**3.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits**

On a technical level the experimental plots are all established and functioning, although it is still much too early to draw any conclusive lessons it does seem possible that the sand-tailings and other degraded land can be reclaimed thus changing an unsustainable activity towards a more sustainable state. From the social and economic aspects we have started to demonstrate that a non-centralised free-market approach giving livelihood opportunities to hundreds of people is feasible. Development of economic opportunities on the reclaimed land has the potential to reduce or delay extreme pressure on the existing limited biodiversity resource. If we ultimately prove successful here there is the opportunity to “spin-out” to many other degraded areas in Sierra Leone (diamonds, gold, bauxite, iron ore etc.) and possibly on the “natural” fire induced degradation occurring in the north of the country.

#### **4. Monitoring, evaluation and lessons**

The project hosted a mid-term review this year which produced a substantial report monitoring the progress of the project. Each visit to the mining site by project partners results in a written report which monitors progress.

During visits to the mining communities and the formal monitoring workshop (November 2007) feedback from the mining company and communities resulted in agreement that a formal written contact is required to facilitate future collaboration in terms of compost and seedling production.

#### **5. Actions taken in response to previous reviews (if applicable)**

The mid-term review made several recommendations which have all been implemented and are commented on else where in this report.

#### **6. Other comments on progress not covered elsewhere**

The design of the project has not been significantly altered over the last year although as noted earlier the recommendations of the mid-term review have been implemented.

There are no anticipated significant risks to the project as a whole.

#### **7. Sustainability**

This project is making significant progress towards its goal of developing practical methods for successful reclamation and conservation following mining. The project is structured such that in-country partners will be well placed to follow on the work started here. The move of Najala University back to Najala (30 miles from mining site) will strength the exist strategy of the project.

#### **8. Dissemination**

A poster was created and exhibited at the CEH conference and in a prominent position at the mining companys' HQ (immediately before entering the dining area) where it generated a considerable number of comments and questions. Project activities have been disseminated within each of the partners but particularly within CEH where it contributes to the debate on the assessment of ecosystem services and the Universities which has used the project to teach students about restoration ecology.



## 9. Project Expenditure

Please expand and complete Table 3.

**Table 3 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)**

Item	Budget (please indicate which document you refer to if other than your project application)	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (eg postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries (specify)			
TOTAL			

Note additional funding from SRL was obtained for extra field trips.

Highlight any agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget.

## 10. **OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

[I agree for ECTF and the Darwin Secretariat to publish the content of this section](#) (please leave this line in to indicate your agreement to use any material you provide here)

## Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2007/08

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/planned for next period
<p><b>Goal:</b> <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>		<p>Restoration demonstration plots established and monitored</p> <p>Communities actively engaged in restoration efforts</p> <p>Biodiversity offset options identified</p>	<p><i>(do not fill not applicable)</i></p>
<p><b>Purpose</b> Develop practicable methods for reclamation of surface mined land</p> <p>that engage communities and</p> <p>Support biodiversity conservation</p>	<p>Develop practicable methods for reclamation of surface mined land that engage communities and support biodiversity conservation</p>	<p>Communities engaged and demonstration plots established</p>	<p>Plant additional demonstration plots; empower communities and mining company representatives to work together and continue discussion on biodiversity offsets</p>
<p><b>Output 1.</b> Livelihood and restoration relevant business models developed and piloted in mining adjacent communities</p>	<p>Model adopted by local people and mining company following this project</p>	<p>Business model piloted in the first year. Implementation problems identified and strategies developed to overcome the problems (written agreements)</p>	

1.1	Develop business strategies with stakeholders to support interventions	Initial business model was not sufficiently structured this year written agreements will be tested.
1.2	Undertake Training Needs Assessment and deliver appropriate training opportunities	Skills Training for Conflict Transformation and Partnership Building workshop completed; informal 'on the job' training undertaken
1.3	Monitor livelihood impacts, adapt and revise strategies as appropriate	No formal activity this year as added during mid-term review. Monitoring will be conducted next year
<b>Output 2.</b>	Range of appropriate interventions tested and evaluated in demonstration plots	Plots established –minimum 15 plots 0.25 ha each in each of three years 16 plots planted June 2007 and plants established for 2008 planting
2.1	Undertake GIS survey of mine spoil areas and forward estimate of areas of different types	Initial estimate quantified additional survives will be conducted 2008
2.2	Develop interventions in consultation with stakeholders and establish demonstration plots	2008 demonstration plots agreed with mining company
2.3	Develop data gathering methodology for demonstrations, collect and analyse technical and economic data	16 plots monitored
2.4	Discuss results with stakeholders and revise interventions as appropriate	Large workshop conducted (70 people) all agreed that written agreements required
<b>Output 3.</b>	Community / company relationships improved and consolidated	<b>Initial and final stakeholder analyses</b> Continued dialogue and empowerment of community liaison officer

3.1 Run workshops and similar events to provide forum for discussion	Two workshops held.
3.2 Undertake regular monitoring through field visits and discussion with key individuals	Community development officer visits villages and plots regularly and site visits from Sierra Leone and UK partners
3.3 Maintain close linkages with company and confirm agreement and support for interventions in advance	Regular telephone conversations between project manager and focal point in mining company.
<b>Output 4.</b> Alternative forms of biodiversity offset payment schemes identified and evaluated	<b>Survey mining company and local community. Consolidate data and compare to similar initiatives.</b>  Survey reported last year additional survey of favoured option this year.
4.1 Prepare analytical discussion paper on options and potential	Completed last year
4.2 Conduct SWOT analysis and consensus building to identify preferred options	Additional work done to identify preferred option. Company currently concentrating on production aware but non-committal about off set payments.
4.3 Make recommendations for selected options including cost effectiveness and contribution to biodiversity conservation	Preliminary report produced last year will be undated as appropriate.

## Annex 2 Project's full current logframe

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><i>Goal</i></p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> <li>• the conservation of biological diversity,</li> <li>• the sustainable use of its components, and</li> <li>• the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</li> </ul>			
<p><i>Purpose</i></p> <p>Develop practicable methods for reclamation of surface mined land that engage communities and support biodiversity conservation</p>	<p>Successful technologies for the revegetation of mine spoil identified</p> <p>Livelihoods strengthened in adjacent communities</p> <p>Company community links consolidated</p> <p>Biodiversity offset options identified and analysed</p>	<p>16 0.25 ha plots planted and currently being monitored to identify most successful</p> <p>Communities engaged with compost and seedling production</p> <p>Project community liaison officer continuing dialogue between company and communities</p> <p>Biodiversity off set options documented</p>	<p>Mining company seriously committed to reclaiming mined area</p> <p>Local people seriously committed to delivering service to mining company</p> <p>Suitable community liaison officer recruited</p> <p>Sufficiently high quality sites exist</p>
<p><i>Output 1</i></p> <p>Livelihood and restoration relevant business models developed and piloted in mining adjacent communities</p>	<p>Model adopted by local people and mining company following this project</p>	<p>Survey of local people</p>	<p>Communities and mining representatives honest and transparent in their business dealings</p>

<b>Intervention Logic</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
1.1 Develop business strategies with stakeholders to support interventions	Analysis of methods tested	Reports and published articles	
1.2 Undertake Training Needs Assessment and deliver appropriate training opportunities	Number of people trained	Reports to Darwin	
1.3 Monitor livelihood impacts, adapt and revise strategies as appropriate	Stakeholder consultations	Reports to Darwin	
<i>Output 2</i> Range of appropriate interventions tested and evaluated in demonstration plots	Analysis of methods tested	Reports and published article	Local people deliver plants and compost of required quantity in a timely manner and company officials professional in their dealing with communities
2.1 Undertake GIS survey of mine spoil areas and forward estimate of areas of different types	Report of methods test and suitability for purpose assessed	Reports and published article	
2.2 Develop interventions in consultation with stakeholders and establish demonstration plots	Plots established – minimum 15 plots 0.25 ha each in each of three years	Photographs in reports and ground truthing by project team	
2.3 Develop data gathering methodology for demonstrations, collect and analyse technical and economic data	Analysis of data collected	Reports and published article	
2.4 Discuss results with stakeholders and revise interventions as appropriate	Survey mining company and local communities	Report outcomes in annual reports	
<i>Output 3</i> Community / company relationships improved and consolidated	Initial and final stakeholder analysis	Report to Darwin	Willingness to collaborate on both sides

<b>Intervention Logic</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
3.1 Run workshops and similar events to provide forum for discussion	Number of workshops held	Reports to Darwin with photographs	
3.2 Undertake regular monitoring through field visits and discussion with key individuals	Number of visits	Reports to Darwin with photographs	
3.3 Maintain close linkages with company and confirm agreement and support for interventions in advance	Number of contacts	Reports to Darwin	
<i>Output 4</i> Alternative forms of biodiversity offset payment schemes identified and evaluated	Study visit by expert	Reports to Darwin	Suitable high quality habits exist in the area
4.1 Prepare analytical discussion paper on options and potential	Analysis conducted	Reports to Darwin	
4.2 Conduct SWOT analysis and consensus building to identify preferred options	SWOT analysis completed	Reports to Darwin	
4.3 Make recommendations for selected options including cost effectiveness and contribution to biodiversity conservation	Number of recommendations delivered	Reports to SRL and Darwin	

# Annex 3 onwards – supplementary material (optional)



### ***Checklist for submission***

	Check
<b>Is the report less than 5MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ectf-ed.org.uk">Darwin-Projects@ectf-ed.org.uk</a> putting the project number in the Subject line.	
<b>Is your report more than 5MB?</b> If so, please advise <a href="mailto:Darwin-Projects@ectf-ed.org.uk">Darwin-Projects@ectf-ed.org.uk</a> that the report will be send by post on CD, putting the project number in the Subject line.	
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	
Have you completed the Project Expenditure table?	
Do not include claim forms or communications for Defra with this report.	