Darwin Initiative Annual Report

Darwin Project Information

Project Ref Number	17-023
Project Title	Linking research and environmental education to reduce Amazonian wildfires
Country(ies)	Brazil
UK Contract Holder Institution	Lancaster University
Host country Partner Institution(s)	Museu Paraense Emílio Goeldi, Belém, Brazil
Other Partner Institution(s)	Embrapa, Belém, Brazil (plus others, see report)
Darwin Grant Value	£253,770
Start/End dates of Project	01/09/2009 – 31/08/2012
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	01/09/2009 – 30/04/10 : First annual report
Project Leader Name	Dr Jos Barlow
Project website	http://www.tropicalforestresearch.org/projects/humansandwildfires.aspx
Author(s) and main contributors, date	Dr Luke Parry, Dr Jos Barlow, Dr Ima Vieira 25/05/10

1. Project Background

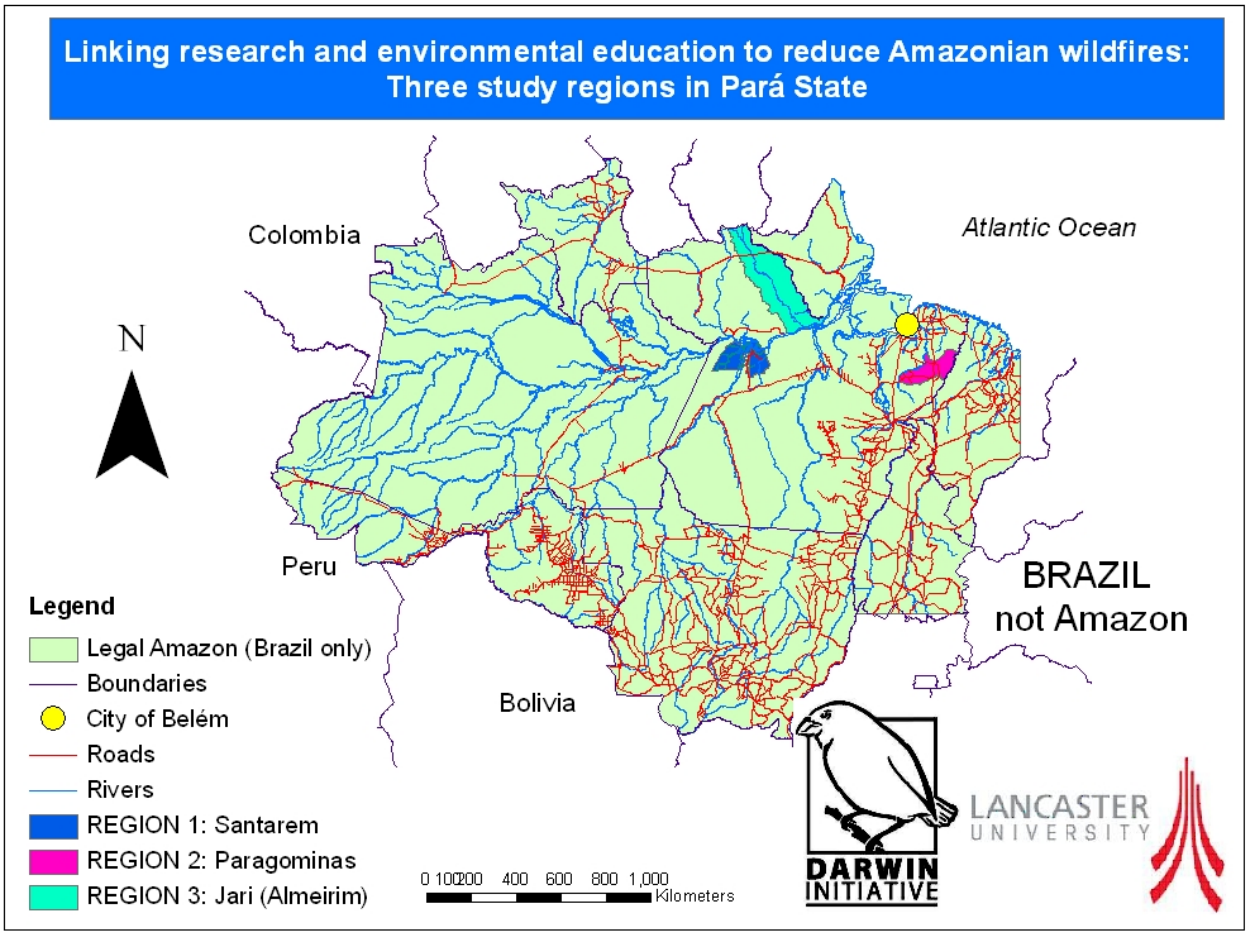


Figure. Location of study regions in the Brazilian Amazon

Wildfires have increased dramatically in extent and frequency in the Amazon basin over the last decade, due to the spread of anthropogenic activities that frequently involve fire, and recent severe droughts linked to climate change that increase forest flammability. We are assessing the social and environmental costs of wildfires, focusing on subsistence farmers and cattle ranchers. This is taking place in three regions of the eastern Brazilian Amazon, each of which has experienced significant levels of deforestation and forest fires. The three regions – Santarém, Paragominas and Jari - have unique histories of colonisation and agricultural development, allowing us to meet our project objectives for a range of contexts and diverse stakeholders.

2. Project Partnerships:

The institutions (in addition to Lancaster University):

Instituto de Desenvolvimento Florestal do Estado do Pará (IDEFLOR), Belém, Brazil
[Pará State Institute for Forestry Development]

Museu Paraense Emílio Goeldi (MPEG) Belém, Brazil
[The Goeldi Museum]

Empresa Brasileira de Pesquisa Agropecuária (Embrapa), Belém, Brazil
[Brazilian Federal Agricultural/Forestry Research Institute]

Grupo Orsa, Monte Dourado, Brazil.
The company includes a plantation forestry sector (Jari Celulose), sustainable logging sector (Orsa Florestal) and a community engagement/development sector (Fundação Orsa).

Universidade Federal do Pará (UFPA), Belém, Brazil
[Federal University of Pará]

Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil
[The Brazilian Space Agency]

Plus additional partners, as outlined in the text below.

Describe the partnership between the UK lead institution and host country partner(s) and how this has developed over the last year.

Project management:

The project is managed by Dr Jos Barlow (who spends ~ 8 hours a week on the project) and Dr Luke Parry, who works full-time on the project. Jos and Luke communicate about the project several times a day and hold more formal progress meetings twice a month. Jos and Luke also exchange regular emails and hold weekly meetings in the Lancaster Environment Centre with co-investigators Dr Alan Blackburn (remote sensing specialist) and Dr Saskia Vermeylen (anthropologist). In these meetings we discuss progress of the project, and seek advice on conceptual as well as practical issues. We work very closely with our network of Brazilian collaborators, as outlined below. In all cases we communicate in person (when we are in Brazil), by email and also by telephone.

Main partnerships:

Our initial partnerships were focussed on The Goeldi Museum and the Pará state forestry agency, IDEFLOR. The Goeldi Museum remains our main project partner. Dr Ima Vieira, the former director of the Museum, has been instrumental in aligning our research goals with Brazilian public policy, defining our field sites, and setting up the funding and selection process for the Brazilian Masters students on the project. The students are Amanda Estefania and Carla Furtado, both of whom are from small communities in the Amazon. We successfully established a contract for the student stipends and research costs between Lancaster University and the Federal University of Pará. Our colleague Dr Aurora Mota is the head of the multi-disciplinary MSc in Environmental Sciences, helped select the students (10 applicants per place) and is responsible for administering the funds we send to Brazil.

The partnership with IDEFLOR has changed slightly since the original proposal, based on developments since September 2009. IDEFLOR were inactive for much of 2009 due to a lengthy change in directorship. This also coincided with our appreciation that their current organizational objectives are almost wholly forestry, rather than the agricultural/forest interface where our project is operating. As such we have formed a very strong and productive additional collaboration with Brazil's federal agricultural research organisation, Embrapa. Dr Joice Ferreira is our principal Embrapa partner and is leading the allied environmental services program, Agroambiente (http://www.embrapa.br/publicacoes/institucionais/pesquisa-em-rede/folhetos/Agroambiente.pdf). Dr Ferreira and her team have been very supportive of our work, and have given significant logistical and political support to the process of defining our field sites and gaining on-the-ground access to farmers. We remain in contact with IDEFLOR (including a face-to-face meeting with the Director in December 2009) and we envisage that they will be very useful in turning some of forest-relevant outputs of the project into staff training and potential changes in State policy in Pará.

In our original proposal we envisaged close involvement from Dr Kemel Kalif, of the University of Campinas. Dr Kalif has provided us with a review of fire legislation for the Brazilian Amazon although he is not involved in the day-to-day work of the project. He now works for the NGO

Amigos da Terra (http://www.amigosdaterra.org.br/english/). He is working on minimizing the socio-environmental impacts of Amazonian cattle ranching and will be invaluable in working towards including some of our research findings into Brazilian public policy through certification schemes. Dr Mark Cochrane, a remote sensing specialist at the University of South Dakota was also identified as a partner in our original proposal. He will still be useful in providing satellite imagery products for our virtual landscapes.

Additional partnerships:

In April 2010 Dr. Jos Barlow and Dr. Luke Parry spent one month in Brazil, which involved discussions with our principal collaborators as well as further institutions and individuals that were able to offer advice and in many cases an interest in working together for the remainder of the project. This built on an earlier trip to Brazil (December 2009) by Dr Barlow when he spent a month in the Amazon region. Meetings were held in December 2009 with the director of the MSc course, Dr. Aurora Mota, our researcher, Ms. Karoline Goncalves, the Director of IDEFLOR and the Director of the Goeldi Museum, Dr. Ima Vieira. See Annex 3 for full details of our meetings held in Brazil in April 2010. We developed four additional relationships:

1) We have formed a partnership with the Brazilian Space Agency (INPE). They will be advising on integrating outputs of community workshops on fire attitudes and agricultural futures into the spatial analysis and virtual landscape component of the project. Our colleagues at INPE include Dr. Ana Paula Aguiar, a specialist in spatial modelling, and Dr. Roberto Araújo, an anthropologist.

2) We formed a new partnership with Katia Carvalheiro, a widely respected community-agriculture consultant who will take responsibility for workshop-based data collection. An example of her community-based work can be found at (http://www.iterpa.pa.gov.br/files/downloads/REGUL_FUNDIARIA_WEB.pdf)

3) We have finalized details of the component of the project to be undertaken with the large plantation and sustainable timber company, Grupo Orsa (http://www.grupoorsa.com.br/en/default.html). They will offer us insights into their decades of fire management in plantations and native forest, in their 1.7 million Ha landholding. They will provide cost estimates of their monitoring and fire-fighting work, as well as a unique insight into the losses caused by fire to cellulose and timber production, In additional they have invited us to observe their community workshops in which they try to reduce fire risk from agricultural burns from the 32 communities in the forestry and plantation matrix. This will offer a fascinating insight into potential fire conflicts (and solutions) for our other study regions, where plantation forestry and timber management is rapidly expanding. Dr. Katia Regina is responsible for the supply of the company data and Dr. Luke Parry is responsible for collecting additional data through fieldwork, in conjunction with Ms. Amanda Estefania, one of the Brazilian MSc students.

4) We have fostered and cemented bonds for the environmental education and dissemination component of the project. Most importantly, we have contracted the Brazilian film-maker Ms. Tania Cypriano (http://www.taniacypriano.com/) to produce the educational films on fire which are key outputs of the project. Ms Cypriano is responsible for delivering 5 short films in 2011. Additional input to the filming and environmental educational films will come from new collaboration with the “Biodiversity School” of the Goeldi Museum, headed by Sra. Joice Santos and collaboration with an expert in fire campaigns, Dr. Luciana Costa, who is a lecturer in journalism at the Federal University of Pará.

Describe any partnerships with other UK or Regional partners and how these partnerships have supported the project.

Most of our partners are in the Lancaster Environment Centre or the Brazilian Amazon. However, we work closely with Dr Toby Gardner and Dr Danilo Igliori, of Cambridge University.

Dr Gardner (http://www.zoo.cam.ac.uk/zoostaff/csg/gardner.html) is leading a project investigating the socio-economic and environmental trade-offs inherent in different Amazonian agricultural systems (e.g. cattle ranching or soy farms) and within systems, based on different agricultural and forest management practices. We are collaborating by working in some of the same field sites which is invaluable in giving us access to large cattle ranchers. Dr Igliorio (http://www.landecon.cam.ac.uk/staff/profiles/digliori.htm) is a Brazilian land economist and is helping us to develop our questionnaire and will advise on future econometric analyses which will be used to measure the economic costs and benefits of fire management in Amazonian agriculture.

We consider ourselves very fortunate indeed to have such a diverse, skilled and dedicated set of collaborators, both in Brazil, in the UK and in Lancaster University. We have encountered no significant problems with collaboration. We take a very communicative approach in which we aspire to be transparent in our objectives and wholly open to feedback, whether positive or negative. We feel this has been to the benefit of the project, particularly with our Brazilian partners who report that they have not necessarily been treated as equals in the past when collaborating with foreign partners. In terms of Lancaster University, there has been capacity-building in terms of close communication with the significant number of administrators, research support staff and legal advisers whom have been involved in the project in one way or another.

Other Collaboration:

We have not as yet worked with other separate Darwin projects, although we are employing the significant advantages of our knowledge (both of the area and links with the company) for our studies in the Jari region during a previous Darwin Project in which both Dr Barlow and Dr Parry were involved (http://darwin.defra.gov.uk/documents/12014/3744/12-014%20FR%20-%20edited.pdf; Project reference: 162/12/014).

In addition to our remote sensing collaboration with Mark Cochrane (see above) we are now working closely with the NGO, Amazon Institute for Man and the Environment (IMAZON). IMAZON and our colleague from this Amazonian organization, Dr Carlos Souza, have an international reputation for providing timely, spatially-explicit research on Amazonian forest conservation. They will be providing us with hitherto unobtainable imagery of forest fire history and also provide a mouthpiece for the dissemination of our research outputs. In addition, our MSc students will train in GIS with the specialist IMAZON unit in June 2010.

Does the project have a link with the CBD focal point?

The project will help Brazil meet its CBD commitments by reducing the potential loss of biodiversity caused by forest fires. However, these benefits are not easily measurable during the timescale of this project. Nevertheless, through the network of collaborations and partnerships we have established with public institutions and Brazilian universities we are already increasing awareness of the potential costs of fires to Amazonian forests. The project is leading to formal capacity building through the MSc students that we are funding and supervising and informal capacity building through the dialogue and data collection components of the research that will commence imminently.

3. Project progress

3.1 Progress in carrying out project activities

1.2 & 2.1. Assessing costs of fire: We are on-course to collect field data as planned in Year 1. We will begin collecting field data in June 2010. We were over-ambitious in our original predictions that we could begin data collecting in the first 6 months. We have been carefully

developing methods, alongside a site selection period of 4 months, due to the difficulties in obtaining research access to Amazonian cattle ranchers.

3.1 Field course. We will run a field course (for 10 researchers and students) in late June 2010 in which training on engaging with rural farmers and guidance on social research methods will be given. However, the course will be in Santarém, not Altamira, and will be with EMBRAPA staff, UFPA students and University of Sao Paulo students, not IDEFLOR.

3.2. Community-based workshops. We are currently planning our workshops, in collaboration with INPE colleagues and the consultant Katia Carvalheiro. It is likely that our first workshops will now be in October 2010 (beginning of Year 2) rather than the end of Year 1 as it is preferable for them to be held during the fire season.

4.1. Research and student achieving qualifications We have selected two excellent MSc students and they are doing well in their course, as well as doing extra focussed reading for us (we set them 2 assignments per month, on fire-related papers published in English). We are helping them define their thesis projects and paying for extra tuition in GIS. In addition we are working with and supporting two young Amazonian researchers, Ms. Karoline Goncalves and Ms. Camilla Dos Santos. We are striving to get both researchers into a multi-disciplinary MSc programme for 2011, and they would then do their thesis research as part of the fire project.

3.2 Progress towards Project Outputs

We are some way off achieving the first two project outputs (1. *Change in the baseline attitudes and agricultural practices used by cattle ranchers*. 2. *Change in the baseline attitudes and agricultural practices used by subsistence farmers*). However, progress will gather pace imminently once field data collection begins (June 2010) and when we begin community engagement in the form of community-based fire films (in up to 10 communities at any one time) and community workshops on considering agricultural futures (2 are planned for 2010). Ultimately our first two objectives will be achieved through the third (3. *Improved capacity to undertake policy relevant social research, develop environmental education and awareness programs, and monitor and evaluate their effectiveness*). We are making excellent progress towards this latter objective, mostly as a result of the diverse and productive partnerships we have fostered and strengthened during the first nine months of the project. See “collaborations” section above.

3.3 Standard Measures

Table 1 Project Standard Output Measures

[PLEASE NOTE THAT OUR YEAR 1 IS ACTUALLY FOR 9 MONTHS]

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
1A	Number of people to submit thesis for PhD qualification (in host country)	0				0	0	1
1B	Number of people to attain PhD qualification (in host country)	0				0	0	1
2	Number of people to attain Masters qualification (MSc, MPhil etc)	0				0	0	4
4C	2 Brazilian MSc students – GIS training 1 UK PhD student – GIS training and social research methods	3				3	3	5
4D	For social research methods and farmer engagement – in Brazil	2				2	2	3
6A	Field teams for site selection have been given training in GPS, basic GIS, account keeping. Karoline Goncalves learning English.	10				10	10	10
6B	Number of training weeks to be provided	4				4	4	6
7	Number of (ie different types - not volume - of material produced) training materials to be produced for use by host country	0					0	3
8	J Barlow and L Parry spent April 2010 in Brazil (and preparatory work in August 2009 just before the project officially started)	12				12	8	72
9	Number of species/habitat management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies	0				0	0	2

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
	in the host country							
11A	Number of papers to be published in peer reviewed journals	0				0	0	12
11B	Number of papers to be submitted to peer reviewed journals	0				0	0	12
12A	Number of computer based databases to be **established** and handed over to host country	0				0	0	1
14A	Number of conferences/seminars/ workshops to be **organised** to present/disseminate findings	0				0	0	3
14B	Number of conferences/seminars/ workshops **attended** at which findings from Darwin project work will be presented/ disseminated.	0				0	0	10
15A	Number of national press releases in host country(ies)	0				0	0	2
15B	Number of local press releases in host country(ies)	0				0	0	4
15C	Number of national press releases in UK	0				0	0	2
15D	Number of local press releases in UK	0				0	0	2
18A	Number of national TV programmes/features in host country(ies)	0				0	0	1
18C	Number of local TV programmes/features in host country(ies)	0				0	0	1
18D	Number of local TV programmes/features in UK	0				0	0	1
19A	Number of national radio interviews/features in host county(ies)	0				0	0	2
19B	Number of national radio interviews/features in UK	0				0	0	1
19C	Number of local radio	0				0	0	2

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
	interviews/features in host country(ies)							
19D	Number of local radio interviews/features in UK	0				0	0	2
20	FLIP cameras * 10 Laptop computers and hard-drives Dictaphone and microphone	6000				6000	6000	6000
23	£27,600 ($R69,000) from Brazilian government (INCT) £5,940 from Goeldi Museu staff costs £19,500 from Embrapa staff costs £48,000 for ESRC-NERC studentship (spread over project duration)	101, 040				101, 040	53940	>£233,725

Table 2 Publications

None – our project began in September 2009.

3.4 Progress towards the project purpose and outcomes

We feel strongly that our project purpose remains both relevant and achievable. The strongest two elements of the project so-far have been the formalization and strengthening of multiple partnerships with Brazilian institutions and the selection of almost 200 field sites (see Annex 3) in which we will assess the socio-economic and environmental costs of forest fires. The outcomes of the project will be enhanced through our close partnership with public institutions in Brazil, which will facilitate the transfer of our findings into policy change and mechanisms of such change such as informed certification schemes of Amazonian agricultural produce. We are also greatly encouraged by the hugely experienced and motivated team we have in place to produce community-films documenting fire problems and management solutions. We are satisfied with our indicators for measuring the research outcomes of the project. We are also confident that our indicators will be efficient at measuring the effects of our training and the production of environmental educational materials are sound. However, educational tools will come together towards the end of the project.

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

The project is making good progress towards our three principal outputs, as outlined in Outputs above. In this project we seek to achieve positive biodiversity impacts through understanding and then promoting improved agricultural practices. As such, whilst we are encouraged and optimistic about the progress and eventual contribution of the project to Amazonian biodiversity conservation, at nine months into the project it is too early for us to conclude that we have made a difference to Amazonian biodiversity in a measurable way. However, we are closer to achieving measurable impacts on turning unsustainable into sustainable resource use, and working towards improving the relative cost-benefits of conserving (rather than eroding biodiversity. We are confident in this due to our strong and productive partnerships with federal institutions in Brazil (EMBRAPA, INPE, UFPA, Goeldi Museum) and influential non-governmental organizations (IMAZON, Amigos da Terra).

4. Monitoring, evaluation and lessons

We monitor progress on a regular basis through almost daily communication between Dr. Jos Barlow and Dr. Luke Parry. As outlined in the introduction, we also hold weekly meetings with Dr Blackburn and Dr Vermeylen at the Lancaster Environment Centre in which achievements, obstacles and future plans are reviewed and discussed. In addition we are paying close attention to our progress according to the planned activities as outlined in our proposal. Our major achievements to date are summarized in the Collaborations section (above) and in the Annex 1 on Report on Progress and Achievements. We believe that the success of the project depends on close and regular communication within our Lancaster team and with our UK and Brazilian partners. In addition clear short- (weeks) and medium-term targets (months and years) our critical in ensuring that we satisfy our objectives and achieve our desired Outputs the end of August 2012.

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

Not applicable – this is our first report

6. Other comments on progress not covered elsewhere

Our methods have been developed and refined through the process of firstly discussing our aims and proposed methods with our expert Brazilian partners (at INPE, the Goeldi Museum and EMBRAPA) and secondly, through our consequent development of our main data-gathering tool, the socio-economic questionnaire (see Annex 3). Selecting our 200 field sites (and obtaining written permission from each landowner) across large areas of the Amazon was a major challenge yet we have successfully achieved this (see Maps in Annex 3). We have also negotiated complete transparency and access to the accounts and fire-fighting/fire-losses from one of the Amazon's largest plantation and sustainable timber companies, Grupo Orsa. In addition we were successful in efficiently negotiating the rather complex process of formally creating MSc places for two Amazonian students. Dr Barlow and Dr Parry are now their official supervisors and the Federal University of Pará. Risks to the project have included bureaucratic challenges by the Brazilian ministry of the science and technology, which have now been overcome. Additional risks include the significant (c. 35%) devaluation of sterling against the Brazilian real since the budget for the project was conceived. We are trying where possible to share budget costs with our Brazilian partners. We have also been assisted through additional funding from the Brazilian government, through the National Institute of Science and Technology's (Instituto Nacional de Ciencia e Tecnologia/ INCT) Amazonian land-use research programme. This program has also led to the strengthening of our research team as they are funding two researchers for our project, Karoline Goncalves and Camilla dos Santos. Both are from the Amazon region,

7. Sustainability

The project has a significant and respected profile in Brazil. This has been achieved by: Recognition by Brazilian institutions that we are committed to the training and success of students from the region.

- Our discussion of the project with many of Brazil's premier research institutes – the Brazilian Space Agency, the Museu Goeldi, and Embrapa.

- The success in defining our field sites. We have achieved a somewhat unique opportunity to sample the human and environmental dimensions of Amazonian farm-forest systems. As such we are receiving regular requests for participation in the project. For example, a PhD student (Ms. Patricia Torres) from the esteemed University of Sao Paulo will be working with us to understand interactions between forest fires and the conservation of hunted mammals and birds in our study landscapes. We will also be hosting two economics PhD students from Brazil's premier economics department at the University of Sao Paulo, Mr. Thiago Morello and Mr. Sergio Castelani. They will be working on valuing the economic losses from fire in eucalyptus plantations (in Jari and Paragominas) and investigating the effects of labour supply on agricultural profitability in Paragominas and Santarem.

The exit strategy for the project is based on the strengthening, support and interaction with the Goeldi Museum's Biodiversity School [Escola de Biodiversidade]. Joice Santos, its director has four full-time researchers and has expressed great interest in "lending" us her staff for community workshops and community-based filming and in the process aligning their long – term aims of community engagement and pro-biodiversity agriculture and for use in the eastern Brazilian Amazon. We will be working with them on the filming techniques (including leaving our equipment with them during the project) and producing the resulting short films viewable on-line. We have agreed that the Biodiversity School will host the website of our main "virtual landscapes" package in which users will be able to explore fire-affected landscapes through personal and community experiences (audio and visual), satellite imagery and also participatory mapping). We are also assisting in the development of social science capacity in Embrapa and working towards a long-term engagement strategy with farmers by this nation-wide federal institution. Embrapa have shown great enthusiasm for this relationship, including sending their Amazonian staff (Dr. Joice Ferreira and Dr. Jair Carvalho) to Sao Paulo to participate in questionnaire development and the generous provision of office space for our team in their Belém campus. The checks in place for our pursuit of more sustainable agriculture that avoids fire management will be assisted through our partnership with two respected and dynamic NGOs that work in the region, IMAZON and Amigos da Terra. The latter will be instrumental in producing certification standards for cattle-ranching based on our research outputs.

8. Dissemination

We presented the project (and invited criticism and participation) to twelve audiences in Brazil in April 2010. See Annex 3 for details. In so-doing we have now formed collaborations with four additional partners. See Collaborations for full details. The main phase of dissemination has not yet started. We will be holding community workshops in later 2010 in Paragominas and Santarem. The widest form of dissemination through web-based film, virtual landscapes, rural radio programs and possible tv dissemination will being in late 2011. Dissemination after the project is completed will be led by the Goeldi Museum's Biodiversity School (see above). They are funded by Brazil's Ministry of Science and Technology.

9. Project Expenditure

Table 3 Project expenditure <u>during the reporting period</u> (Defra Financial Year 1 April 2009 to 31 March 2010)

Item	**Budget** (please indicate which document you refer to if other than your project application or annual grant offer letter)	Expenditure	Variance
Rent, rates, heating, overheads etc			
Office costs (eg postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment * Laptop & screen * GPS * FLIP camera * 10 * FLIP accessories			
External Fees * Film production costs * MSc stipends * 2 * Brazil fieldwork costs			
Salaries * L Parry (100%) J Barlow (5%), A Blackburn (5%), S Vermeylen (5%)			
TOTAL			

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 LTS and the Darwin Secretariat to publish the content of this section

Wildfires have increased dramatically in the Amazon basin during the last decade due to agricultural expansion and logging, combined with severe droughts. We have spent the last nine months laying the foundations for our project, in which we are measuring the social and environmental costs of wildfires to subsistence farmers and cattle ranchers in the eastern Amazon. We have identified field sites in 200 farms and ranches. We have also gained unprecedented access into the cost-benefits of fire management of a plantation forestry and sustainable timber company working in a multi-million hectare Amazonian landscape. We consider ourselves very fortunate indeed to have such a diverse, skilled and dedicated set of collaborators, both in Brazil, in the UK and in Lancaster University in particular. One of the key achievements of Year 1 has been development of a strong partnership with Embrapa, Brazil's federal agricultural research institution. Our colleagues at Embrapa have been invaluable in gaining access to cattle ranchers and will be essential in turning the results of our research activities into policy and practice. We are beginning field data collection in earnest from June 2010 onwards. We have a fantastic team of Amazonian researchers in place, including two MSc students that we are funding, two researchers kindly funded by the Brazilian government and a large number of students and scientists from around Brazil that are keen to work together in our study landscapes. In addition to research we are producing five short films in which rural farmers will keep audio-visual diaries of their experiences over the 2010 and 2011 fire seasons. The films will identify and disseminate key local issues relevant to the costs of escaped fires and techniques to successfully manage fire or use non-fire alternatives for land management. The project is strengthened through additional partnerships with the Brazilian Space Agency (INPE) and the Goeldi Museum. Together we will run community fire workshops that will help improve our understanding of barriers to non-fire agriculture. The Museum's *Escola de Biodiversidade* (Biodiversity School) will be invaluable in helping us reach local audiences with the films and other educational outputs. Internet users will also be able to explore fire-effected landscapes via the web. The virtual landscapes will include high resolution satellite imagery of fire hotspots and deforestation as well as exploring community experiences of fire management and fire losses, audio-visual diaries of the trials and tribulations of escaped fires for farmers and forest extractivists such as Brazil nut harvesters.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2009/10

Project summary	Measurable Indicators	Progress and Achievements Sept 2009 – May 2010	Actions required/planned for next period
Goal: *Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.*		*In the 1st 9 months of the project we have built the foundations for reducing Amazonian wildfires through research and education.*	*NA*
Purpose To reduce the prevalence of Amazonian wildfires by linking earth observation, biodiversity data, and social and ethnographic research with environmental education, training, and capacity building	Changes in attitudes to fire and in land use practices Training and capacity building Evaluation of impact of environmental education	Development of methods, sites and team has gone very well. MSc students and research partners learning and training. Experts aligned.	Collect questionnaire data in region 1 – Santarém Refine social methods training further during fieldwork Undertake community workshop on fire futures by December 2010
Output 1. 1. Change in the baseline attitudes and agricultural practices used by cattle ranchers	Social and environmental costs of fires are quantified for cattle ranchers Development of virtual landscape fire scenario package as policy tool. Development of ethnographic film showing the social and environmental costs of wildfires. Development of Radio documentary demonstrating the social and environmental costs of wildfires	Preparation of sites and methods has gone well. Conceptual development gone well. Practical measures not possible until some field data has been collected. Not yet clear if best output is for policy-makers or rural farmers. Progress has been good. Progress has been good.	Data collection to start imminently (see Activities). Indicator is appropriate. Develop platform in early 2011 following arrival of field data The team is in place to begin once 2010 fire season starts (September 2010 onwards). The team is in place to begin once 2010 fire season starts (September 2010 onwards).
Activity 1.1 Social and environmental costs of fires for cattle ranchers assessed		Field sites (~200 spread over 3 regions) have been identified. Written permission has been obtained from each landholder.	Piloting of questionnaire on 14-30 June 2010. Questionnaire data collection for region 1 (Santarém) scheduled for

	Questionnaire has been developed. Questionnaire team identified and contracted.	1 July to 30 August 2010. Questionnaire data collection for region 2 (Paragominas) scheduled for October and November 2011. Data collection for region 3 (using a slightly different format as much of the data will be from the forestry company) will be collected simultaneously by a smaller team (Dr Parry and Ms Estefania) from September to October 2010.
Activity 1.2. Virtual landscape fire scenario package developed for regions dominated by cattle ranching	The computer framework for this package is being discussed. Possible involvement for facebook fire management application with XXXX. Discussions on-going.	Lancaster University MSc student to begin assembling the computer platform once the field data is available (end of 2010).
Activity 1.3. Production of ethnographic film showing the social and environmental costs of wildfires in regions dominated by cattle ranching	Tania Cypriano contracted to produce 5 short films analyzing and portraying 5 important yet over-looked issues in counting human and environmental costs of forest fires. E.g. The effects of forest fires on the viability of forest extractivism such as brazil-nut harvesting. Films will be watchable on the internet (from our website, using youtube.com plug-in) and as part of the virtual landscape package that we are developing. Most filming to come from rural Amazonians, using easy to operate “FLIP” video cameras (http://en.wikipedia.org/wiki/Flip_Video) plus careful meetings to start and monitor the filming, collect footage once per month (local	Filming to be spread over the fire seasons of 2010 and 2011 (fire seasons in the eastern Amazon generally September to December). Editing and production by Ms Cypriano in New York. In conjunction with ethnographic and visual anthropological guidance from Dr Vermeylen, Lancaster University.

		assistance) and wrap up filming with community workshop (Katia Carvalheiro) and additional professional filming (Tania Cypriano).	
Activity 1.4. Production of Radio documentary demonstrating the social and environmental costs of wildfires in regions dominated by cattle ranching		Collection method decided. Radio footage will come from some video footage (using the FLIPS) plus extra interviews of key stakeholders, rural farmers and the research team using Dictaphones and external microphones.	Footage to be collected in 2010 and early 2011. Dissemination and production is still being debated. We may produce these with the Biodiversity School of the Goeldi Museum (coordinated by Dr Joice Santos). Dr Santos has strong links to the coordinator of the rural FM radio network in the eastern Amazon, which could be an ideal medium for broadcast.
Output 2. Change in the baseline attitudes and agricultural practices used by subsistence farmers	Social and environmental costs of fires are quantified for subsistence farmers Development of virtual landscape fire scenario package Development of film showing the social and environmental costs of wildfires Development of Radio documentary demonstrating the social and environmental costs of wildfires	Progress is good and each of the four indicators are appropriate.	NOTE: We are using the same methods and study landscapes to measure the costs of fire management for both subsistence farmers and cattle ranchers. For this reason the planning process and progress for this section is identical to that outlined above.
Activity 2.1. Social and environmental costs of fires for subsistence farmers assessed		See above.	Additional data on fires and forest extractivism will be collected at a smaller spatial scale (only 1 region) by MSc student Ms Furtdado. Data will be collected over 2 months in 2010 (between October and December) and 2-3 months in 2011

			(between April and July).
Activity 2.2. Virtual landscape fire scenario package developed for regions dominated by subsistence farmers and extractivists		See above	
Activity 2.3. Production of ethnographic film showing the social and environmental costs of wildfires for subsistence farmers and extractivists		See above.	
Activity 2.4. Production of Radio documentary demonstrating the social and environmental costs of wildfires for subsistence farmers and extractivists		See above.	
Output 3. Improved capacity to undertake policy relevant social research, develop environmental education and awareness programs, and monitor and evaluate their effectiveness.	Improved capacity in local government in the state of Pará (able to plan, undertake and monitor impact of environmental education). The establishment of learning portfolios/networks in communities in fire-prone areas. Improved expertise in undertaking social research, and coordinating and undertaking large-scale environmental education programs.	Progress with IDEFLOR was delayed due to institutional changes. We have strengthened collaboration with the federal agricultural research institute, EMBRAPA. Indicators are appropriate. Progress good. Progress very good. Indicators appropriate.	More to be learnt and developed during the first fire season in 2010. Indicator appropriate.
Activity 3.1. Field course in Altamira for IDEFLOR staff and students to improve capacity to engage with cattle ranchers.		Four months of site selection in two regions (Santarém and Paragominas) in conjunction with Dr Gardner of Cambridge University and Dr Ferreira of Embrapa has led to significant personal and professional development for two young Amazonian researchers, Karoline Goncalves and Mario Pinheiro. Plus 4 local university undergraduate students.	NA

Activity 3.2. Community-based workshops conducted in Extractive Reserves and establishment of learning portfolio.	We have discussed these workshops and provisionally contracted the services of Katia Carvalheiro to lead them. We are also discussing methods with colleagues from the Brazilian Space Agency (INPE).	Dr Barlow to develop format and timing during a visit to INPE on 3rd June 2010. First workshop by end of 2010
Activity 3.3. Training of IDEFLOR staff in (a) techniques that can be used to monitor and evaluate fires, and (b) environmental education techniques, including use of virtual landscape tools	Embrapa staff and our research students are benefiting from world-class GIS training with IMAZON, Belém. We will use experiences from the forestry landscape Jari during our September-October 2010 fieldwork to foster a learning partnership between the socio-environmental arm of the company and the potential for local fire-prevention, - monitoring and – combating activities.	These activities will only be measurable from 2011 onwards.
Activity 3.4. Integration of a coherent fire policy into certification schemes for cattle ranching.	This activity is to be developed and undertaken towards the end of the project - in 2011 and 2012.	Hold regular discussions on this issue with Dr Kalif (at the NGO Amigos da Terra) and we have designed our questionnaire with the identification of good management practices that are useful for certification plans.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal: To help Amazonian countries meet their CBD objectives by reducing the spread of wildfires, thereby minimising biodiversity loss and helping maintain the resilience of tropical forests to climate and land-use change.	A reduction of wildfires, changes in agricultural practice, and an increase in environmental education schemes.	Earth observation data (satellite monitoring of the timing, frequency and location of fires). Monitoring of agricultural practices by Brazilian counterparts (both within governmental institutions, and within local communities). Development of environmental education schemes	[redacted]
Purpose: To reduce the prevalence of Amazonian wildfires by linking earth observation, biodiversity data, and social and ethnographic research with environmental education, training, and capacity building.	Changes in attitudes to fire and in land use practices Training and capacity building Evaluation of impact of environmental education	Baseline and end of project attitude surveys compared and analysed Baseline and regular monitoring of land use practices and fire by IDELFOR and communities Baseline and regular assessment of effectiveness of education programme events through formal and informal techniques	• Project partners are able to work together and communicate effectively IDEFLOR has the institutional capacity to implement the dissemination, education, and the monitoring of the results.
Outputs 1. Change in the baseline attitudes and agricultural practices used by cattle ranchers	Social and environmental costs of fires are quantified for cattle ranchers Development of virtual landscape fire scenario package as policy tool.	Data collected, validated, and available to partners Data validated and compiled into GIS database Publications submitted 3D model developed	Farmers collaborate with social researchers through agreed links (AVISAR) Date collected is useful for building virtual landscapes – Virtual Landscape scenarios are interpretable by stakeholders.

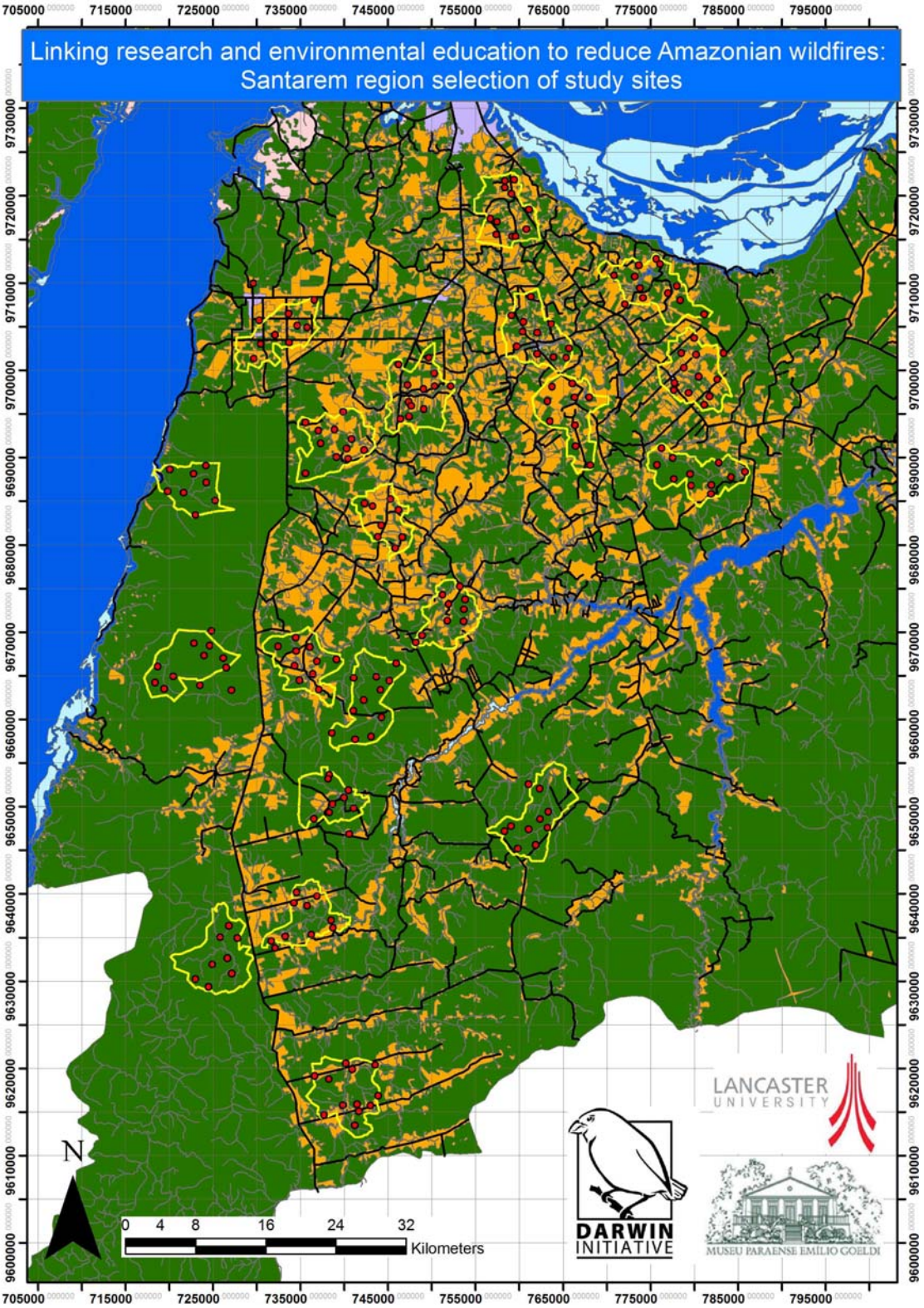
	Development of ethnographic film showing the social and environmental costs of wildfires Development of Radio documentary demonstrating the social and environmental costs of wildfires	Film available for dissemination Radio documentary available for dissemination	Farmers and smallholders collaborate with film project Smallholder communities collaborate with radio project
2. Change in the baseline attitudes and agricultural practices used by subsistence farmers	Social and environmental costs of fires are quantified for subsistence farmers Development of virtual landscape fire scenario package Development of film showing the social and environmental costs of wildfires Development of Radio documentary demonstrating the social and environmental costs of wildfires	Data collected, validated, and available to partners Data validated & compiled into GIS database Publications submitted 3D model developed Film available for dissemination Radio documentary available for dissemination	Farmers collaborate with social researchers through agreed links (AVISAR) Date collected is useful for building virtual landscapes Smallholder communities collaborate with film project Smallholder communities collaborate with radio project
3. Improved capacity to undertake policy relevant social research, develop environmental education and awareness programs, and monitor and evaluate their effectiveness.	Improved capacity in local government in the state of Pará (able to plan, undertake and monitor impact of environmental education). The establishment of learning portfolios/networks in communities in fire-prone areas. Improved expertise in undertaking social research, and coordinating and undertaking large-scale environmental education programs.	State government undertakes education and monitoring program and makes results available. Local communities participate in the project, monitor their activities, and share results. MSc and PhD students complete studies by EoP Government and research institutions in Pará continuing engagement with INPE and University of Campinas	State government maintains interest in project Communities are interested, and are willing to undertake monitoring. Students are integrated into project structure and complete their course Institutions in Pará and those in the south-east of Brazil are willing to work together.

Activities (details in workplan) 1.1 Social and environmental costs of fires for cattle ranchers assessed 1.2 Virtual landscape fire scenario package developed for regions dominated by cattle ranching 1.3 Production of ethnographic film showing the social and environmental costs of wildfires in regions dominated by cattle ranching 1.4 Production of Radio documentary demonstrating the social and environmental costs of wildfires in regions dominated by cattle ranching 2.1 Social and environmental costs of fires for subsistence farmers assessed 2.2 Virtual landscape fire scenario package developed for regions dominated by subsistence farmers and extractivists 2.3 Production of ethnographic film showing the social and environmental costs of wildfires for subsistence farmers and extractivists 2.4 Production of Radio documentary demonstrating the social and environmental costs of wildfires for subsistence farmers and extractivists 3.1 Field course in Altamira for IDEFLOR staff and students to improve capacity to engage with cattle ranchers. 3.2 Community-based workshops conducted in Extractive Reserves and establishment of learning portfolio. 3.3 Training of IDEFLOR staff in (a) techniques that can be used to monitor and evaluate fires, and (b) environmental education techniques, including use of virtual landscape tools 3.4 Integration of a coherent fire policy into certification schemes for cattle ranching. 4.1 Research undertaken and students achieve qualifications.
Monitoring activities: Indicators for 1 & 2. Social and environmental research is undertaken, virtual landscape fire scenarios tool is produced, and film and radio outputs are completed. Indicators for 3. Training courses take place and enhance capacity in IDEFLOR. Community-based workshops take place. Indicators for 4. Publications and qualifications available.

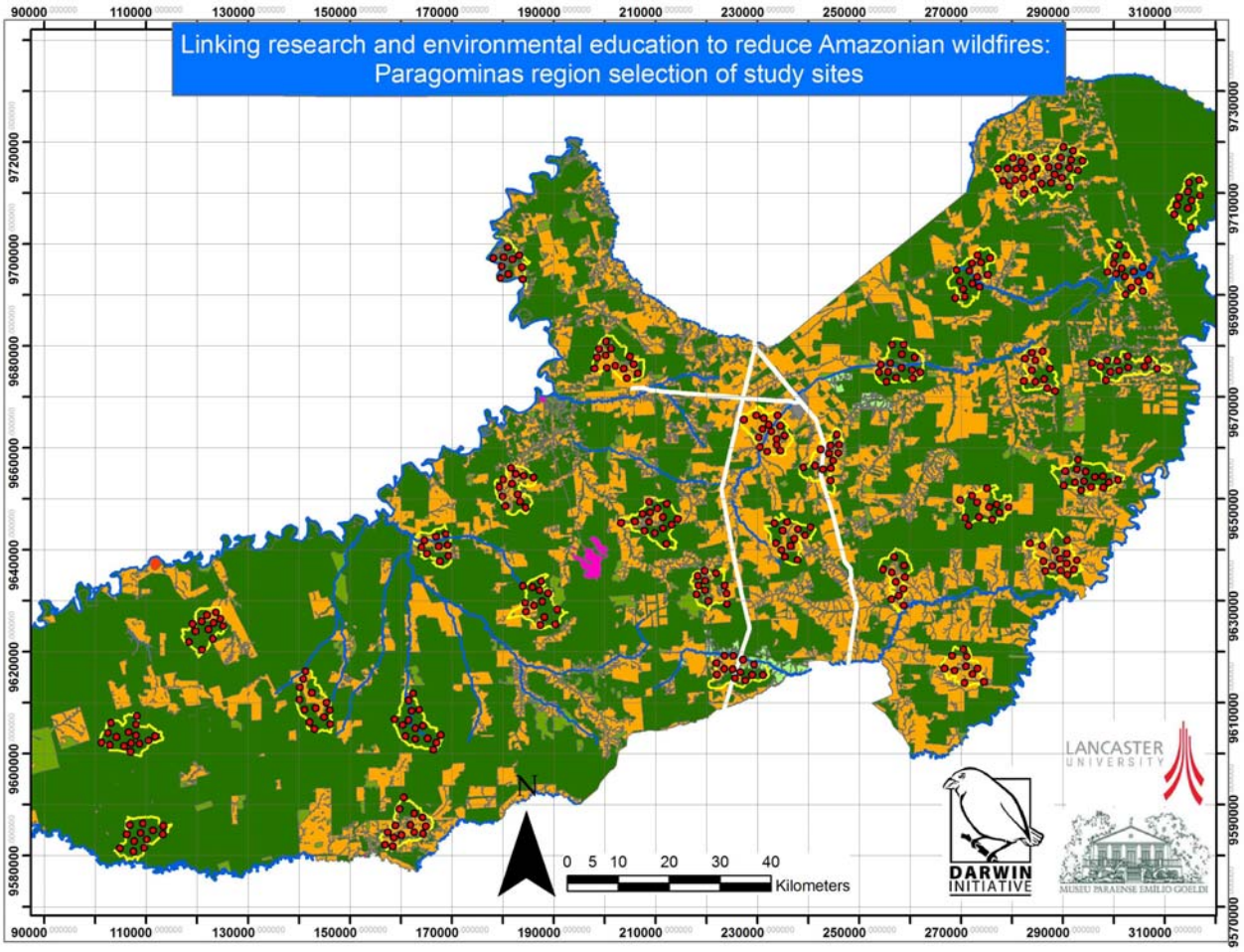
Annex 3 Onwards – supplementary material

Maps showing field sites selected by our field team in three regions in the eastern Brazilian Amazon, Pará State

REGION 1 - SANTARÉM

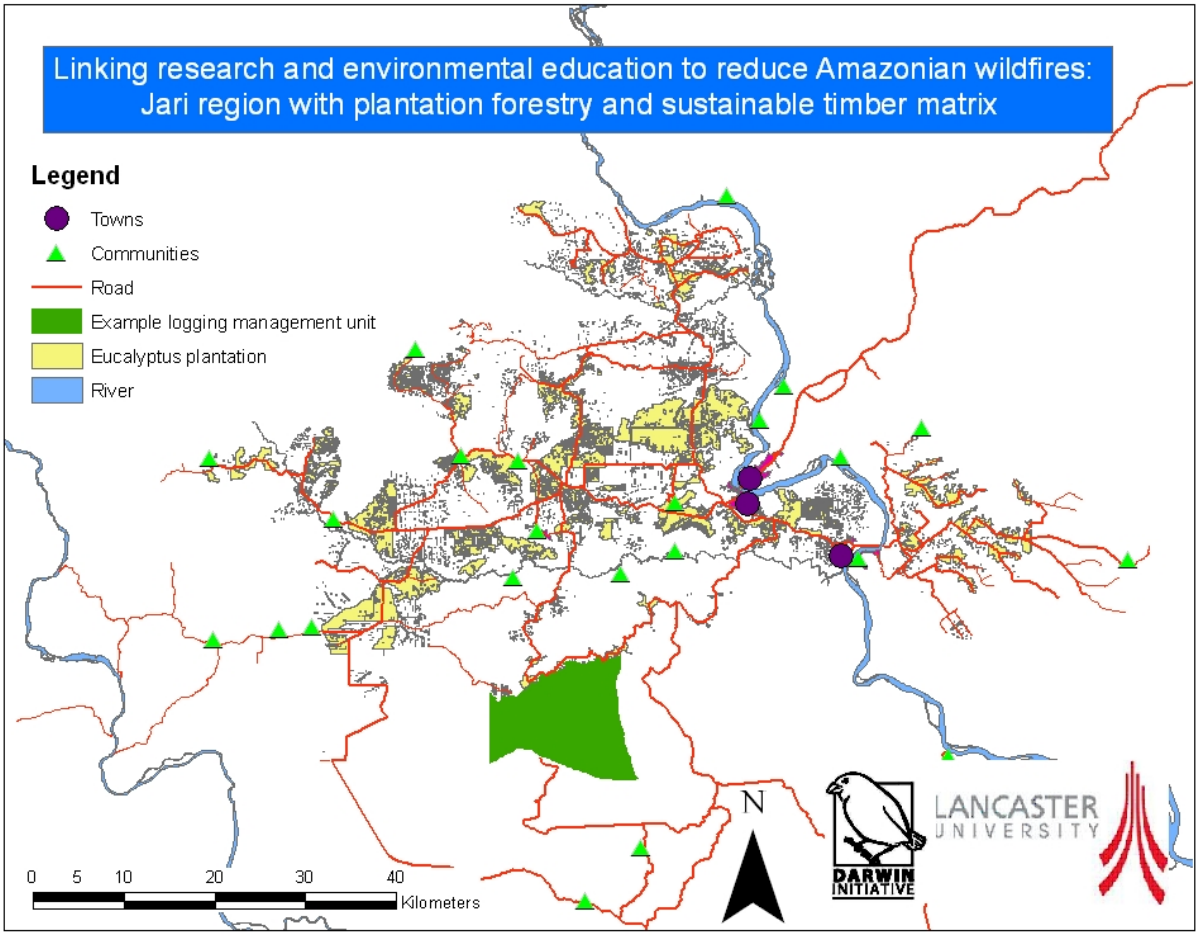


REGION 2 - PARAGOMINAS



REGION 3 – JARI

Precise field sites will depend on the activities of Grupo Orsa and also will be influenced by the distribution of forest fires in the 2010 fire season


Linking research and environmental education to reduce Amazonian wildfires:
Jari region with plantation forestry and sustainable timber matrix
Legend
Towns
Communities
Road
Example logging management unit
Eucalyptus plantation
River
0 5 10 20 30 40
Kilometers
N
DARWIN INITIATIVE
LANCASTER UNIVERSITY

List of meetings set-up and attended by J Barlow and L Parry in Brazil in April 2010

Place	Person(s)	Organisation	Date of meetings
Sao Paulo	Danilo Igliori et al.	Universidade Federal do Sao Paulo (USP-FEA) [University Economics Department]	
Sao José dos Campos	Roberto Araujo, Ana Paula	Instituto Nacional de Pesquisa Espacial (INPE) [Space Agency]	17/04/2010
Belém	Ima Vieira et al.	Museu Goeldi (MPEG) research network	19/04/2010
Belém	Aurora Santos, Ellen Goncalves	Universidade Federal do Pará (UFPA), FADESP [educational foundation]	20/04/2010
Belém	Karoline Goncalves	Our Researcher	19/04/2010 23/04/2010
Belém	Katia Carvalheiro	Center for International Forestry Research (CIFOR)/ Consultant	21/04/2010
Belém	Amanda Estefania + Carla Furtado	MSc students	21/04/2010
Belém	Luciana Costa	Universidade Federal do Pará – Communications dept.	22/04/2010
Belém	Joice Santos	Goeldi Museum – communications/ nature school	23/04/2010
Belém	Amanda + Carla + Ima	MSc students + plus Brazilian supervisor	23/04/2010
Belém	Toby Gardner & Joice Ferreira	trade-offs project/agroambiente	21/04/2010
Monte Dourado	Perez	Orsa Florestal [forestry company]	26/04/2010
Monte Dourado	Milton Nascimento	Jari cellulose [eucalyptus plantations]	26/04/2010

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	y
Is your report more than 5MB? If so, please advise Darwin-Projects@ltsi.co.uk that the report will be send by post on CD, putting the project number in the Subject line.	n
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	y
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	na
Have you involved your partners in preparation of the report and named the main contributors	y
Have you completed the Project Expenditure table fully?	y
Do not include claim forms or other communications with this report.	