Darwin Initiative Annual Report

Submission Deadline: 30 April 2011

1. Darwin Project Information

Project Reference	17-023
Project Title	Linking research and environmental education to reduce Amazonian wildfires
Host Country/ies	Brazil
UK contract holder institution	Lancaster University
Host country partner institutions	Museu Goeldi, Belém
Other partner institutions	Embrapa (Brazilian Agricultural Development Agency), Belém
Darwin Grant Value	£253,770
Start/end dates of project	01/09/2009 – 31/08/2012
Reporting period	May 2010-April 2011 (Annual Report 2)
Project Leader name	Dr Jos Barlow
Project website	http://www.tropicalforestresearch.org/projects/humansandwildfires.aspx
Report authors, main contributors and date	Dr Jos Barlow, Dr Luke Parry, Dr Ima Vieira, Dr Joice Ferreira 09/05/2011

2. Project Background

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 (Fig. 1), 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.

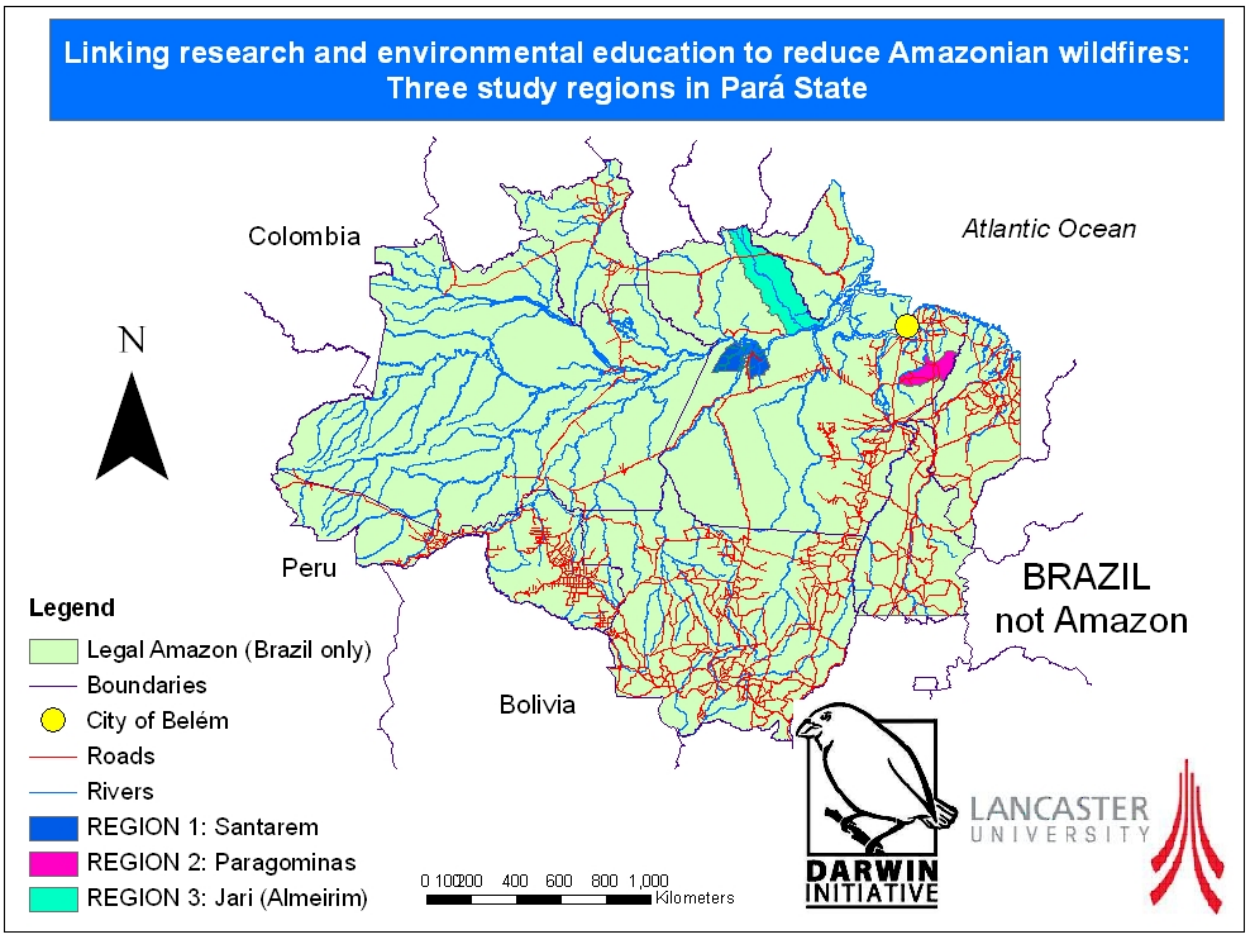

Figure 1. *Location of study regions in the Brazilian Amazon. (See Annex for more detailed maps of study regions).*

3. 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 do Homem e Meio Ambiente da Amazônia (IMAZON), Belém, Brazil
  [Amazon Institute for Man and Environment]
- 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.

The Goeldi Museum in Belém remains our principal partner institution in Brazil and during the past 12 months colleagues from the Museum have been invaluable to the project. Dr Ima Vieira, the former director of the museum, was instrumental in enabling us to overcome significant bureaucratic challenges in obtaining federal permission to being data collection. Dr Vieira is also co-supervising the two Brazilian Masters students funded by this project and has been very active during the development of their projects. The Museum has also provided significant additional funding for fieldwork over the past year. This support was critical in enabling us to successfully achieve our ambitious goals in challenging fieldwork conditions. Finally, the Museum has provided office space and support for Dr Luke Parry during his year of fieldwork. This has been of the upmost use to project work and has also facilitated supervision of our postgraduate students and interaction with other scientists at the Museum.

We have continued and strengthened our very constructive partnership with the Federal University of Pará. Their educational foundation has successfully managed the students' stipends and has also been proactive and efficient in providing the students with access to funding for their thesis related fieldwork costs. We also believe that we are having a positive influence on the 'cultural' development of the University, and its multidisciplinary MSc in Environmental Sciences. For example, we have encouraged and supported our students to undertake modules in other relevant departments and universities in Belém in order to enhance their experience and skills-set. Despite initial reluctance, the course convenor has now seen what a positive effect this has had on the students. In addition we have also been told (and commended) that the level of investment (time and resources) and expectations we have of our students is unprecedented and having a positive effect on students motivation and achievements. The partial support for the MSc by the UK government, and the role of Dr Barlow and Dr Parry on the course's academic body (*Corpo Docente*) has partially contributed to the course's upgrade (in late 2010) to a Level 3 in the Brazilian system, which means it can now offer doctoral training too.

Our relationship with Brazil's public agricultural research agency, Embrapa, has gone from strength to strength over the past year. Dr Parry has spent around three months in the field with Dr Joice Ferreira, our principal collaborator in the agency. Our affiliation with Embrapa has been of immeasurable benefit to the success of our interviews with cattle ranchers and mechanized farmers, who can be a difficult to access without an introduction through a highly trusted institution such as Embrapa. Dr Ferreira has been integral to the planning and implementation of field research. Furthermore Embrapa have provided additional fieldwork funding which has, along with the Goeldi Museum's contribution, helped us achieve our goals and also unite us in a genuine sense of partnership and collaboration. Also, we have had regular contact with the regional Embrapa staff in Santarém and Paragominas. Despite the agricultural focus of Embrapa work in satellite offices is often slow and poorly implemented. Our interactions with the regional Embrapa centres has gone some way to reinvigorating them and involving staff in research. Finally, Dr Ferreira has been inspired to seek special support from Embrapa to spend a year on sabbatical in the UK over 2011-2012 in order to work with us on analyzing the data collection and writing scientific papers and policy briefs. She intends to split her time between Lancaster and Cambridge University.

Our partnership with IDEFLOR has not progressed significantly over the previous 12 months. Elections in Pará state in October 2010 meant that normal governmental activities ceased from June 2010 onwards. Following the elections the directorate of IDEFLOR was completely replaced. Whilst we will include IDEFLOR in the dissemination phase of the project we have been unable to rely on them as close partners over the past year due to the aforementioned political situation.

We continue to work with the Amazonian NGO, IMAZON (Amazon Institute for Man and Environment, http://www.imazon.org.br/novo2008/index.php). We have agreed to work together to analyze forest fire occurrence in our study sites using an innovative technique that utilizes existing Landsat satellite images. Dr Parry will spend one week in IMAZON in May 2010 in order to acquire the skills necessary to use the relevant remote sensing software.

Additional partnerships.

1. We maintain contact with colleagues from the Brazilian Space Agency (INPE) and Katia Carvalheiro (community workshop consultant). A researcher from INPE will be attending our workshop in June 2010. We are also in regular contact with Dr Kemil Kalif who works with Friends of the Earth Brazil. We will be stepping up our partnership during Year 3 of the project when we attempt to integrate our research findings with the development of certification mechanisms for fire-free cattle-ranching in Amazonia.
2. The film-making component of the project continues to be based on a partnership with the Brazilian film-maker Tania Cypriano (http://www.taniacypriano.com/). We have remained in close contact with Ms Cypriano and she will be visiting our study region in July and September 2011. See below for further details.
3. We have advanced plans to use econometric analyses on our data in order to investigate the economic conditions necessary to promote fire-free agriculture. Our principal collaborators in this regard are a PhD student from the University of Sao Paulo. Thiago Fonseca Morello, and Dr Diana Weinhold (http://personal.lse.ac.uk/weinhold/) who is an economist in the International Development Department at the London School of Economics. This analytical focus is being assisted through close collaboration with land-use scientists at Brazil's highly regarded University of Campinas, under the leadership of Alvaro D'Antona (http://www.nepo.unicamp.br/en/index.html).
4. We have strengthened our collaboration with Grupo Orsa, the plantation forestry and timber company. Dr Parry made three visits to the Jari region over the past 12 months of the project. We have been granted unprecedented access to the company's unique dataset which covers their investments in fire prevention and losses to forest fires over the past 20 years. We have also been able to implement more practical innovations such as better record-keeping of forest fire occurrence in the 1.7 million hectare landholding. In addition, due to strong cooperation the Grupo Orsa allowed us to implement the ground-breaking MSc project of one of our students, in which she investigated the role of smallholder plantation forestry as a means of reducing Amazonian forest fires.
5. We have created an exciting partnership in Santarém (Study Region 1) with the rural workers syndicate (STTR, http://sttrsantarem.org.br/). They are the most active smallholder association in Brazil and have 17,000 rural members in the Santarém region. The director Danicley de Aguiar has been very helpful during our engagement process with rural producers and we are going to make use of the organizational structure of STTR to disseminate our researching findings in Year 3 of the project. We are also going to use STTR as part of the film-production process, outlined below.

Describe the management structure of the project including details of roles and responsibilities of main collaborators.

The management structure of the project remains unchanged since Year 1. Dr Luke Parry continues to be responsible for the implementation of the project and has spent almost the whole of Year 2 in Brazil in order to achieve this. Dr Jos Barlow continues to spend around eight hours per week on the project. Jos and Luke are in near daily contact by email and communicate by Skype at least once every two weeks. They also held face-to-face meetings in Brazil in July 2010 (two weeks together), September 2010 (one week), and January 2011 (two weeks). We communicate closely (by email) with our main partners in the Lancaster Environment Centre, Dr Alan Blackburn (remote sensing specialist) and Dr Saskia Vermeylen (anthropologist). We will have a multi-day meeting with Alan and Saskia in June 2011, following Luke's return to Lancaster. We meet our Brazilian collaborators in person at least once every few months and are in regular contact by email.

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

As indicated in our Year 1 Report, we work closely with Dr Toby Gardner of Cambridge University who is leading a project investigating the environmental-economic tradeoffs inherent among different Amazonian agricultural systems. Together with Dr Ferreira of Embrapa, we are working jointly with Toby in Regions 1 and 2 (Santarem and Paragominas) in order to achieve economies of scale with the selection of field sites and logistical costs of fieldwork. We are no longer working closely with Dr Igliori (Land Economy, Cambridge University) as he has now left academia. However, we continue to work with his Brazilian PhD student, Thiago Fonseca Morello. As outlined above, our principal partner for economic analysis is now Dr Diana Weinhold, of the LSE.

We are now on the verge of completing data collection in our three study regions, after one full year of great effort by ourselves and partners. We are delighted to report that we have had no significant problems of any kind with our collaborators during this time. We have successfully negotiated the transition from IDEFLOR to Embrapa as a main collaborator in Brazil, alongside the Goeldi Museum. We firmly believe that we have created a truly unique Brazilian-British project in which both sides consider themselves as equal partners. We are very excited about the workshop we will hold in Campinas, Brazil from 8-10 June 2011 when we will meet nearly all of our collaborators, discuss progress and achievements to-date and finalize our strategy for the next 12 months. Lancaster University continues to be efficient and productive in its financial and contractual administration of the project. Specific capacity-building measures in Lancaster will be mainly during Year 3 when Dr Parry and Dr Barlow work closely together on the project outputs.

Other Collaboration:

We have not yet worked with other separate Darwin projects though we are now working with a broad suite of international conservation and research organizations:

a. The Nature Conservancy (TNC). We have communicated closely with TNC over the past year. They have provided spatial datasets which have been invaluable for the planning and implementation of data collection. We have also established a positive dialogue for the dissemination of our findings to their Amazon Programme as well as their central science team in New York.

b. We are having a productive exchange of ideas about our analytical frameworks and the production of scientific papers with Dr Brendan Fisher, an environmental economist at the WWF in Washington DC.

c. We hosted a visit of scientists from Aberdeen University in November 2010 who were visiting Santarem as part of an UK ESPA scoping grant for project developing looking at poverty and forest dependency in the Amazon.

d. We have a growing collaboration with an anthropologist from Sussex University, Dr Evan Killick (http://www.sussex.ac.uk/anthropology/people/peoplelists/person/248956) who is working on soy in the Amazon, with Diana Weinhold (see above). We plan on jointly analyzing our datasets.

e. We have a strong relationship with Dr Emilie Coudel, a policy specialist from the French research organization, CIRAD. Dr Coudel is based in the Amazon and will be working with us on producing the policy outputs of the project.

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.

4. Project Progress

4.1 Progress in carrying out project activities

Activities (1.1) Social and environmental costs of fires for cattle ranchers assessed, and (2.1) Social and environmental costs of fires for subsistence farmers assessed

These activities have been central to our efforts over the past 12 months. We have successfully completed our field assessments in Regions 1 and 3, and are within one month of completing our field assessment in Region 2. As part of our principal scientific survey (standardized questionnaires with rural producers in Regions 1 and 2) we have now conducted 411 detailed farm interviews, examining producer histories, land-use change, fire management practices, history of escaped and forest fires on the property, and a range of other relevant variables including measures of community cohesion and social capital. These interviews followed a one month process (mid July to mid August 2010) in which we trialled several versions of the questionnaire, discussed it in detail with Brazilian collaborators (the piloting was done together) and trained our interview team. We believe that with this database we will have a unique ability to answer questions about trajectories of fire management by diverse producer groups in the Brazilian Amazon. We anticipate a further 55 interviews being added to this sample before the end of fieldwork in early June 2011. Each interview has been carefully reviewed by a senior member of the team in order to avoid errors in the future. In addition to this dataset we also have a further 217 complementary interviews from the research of Rachel Carmenta (UK PhD student involved in this project) and Amanda Estefania (our Brazil MSc student working in Region 3), a total of 628 interviews. This is likely to enable novel analytical approaches which will provide new insights into the complex relationships between producer origin, economic geography, forest cover, and wildfire. For example, our sampled farms range from one to 14,800 Ha and include cattle ranching, annual crops (e.g. soy, rice, manioc), perennials (e.g. black pepper and fruits) and plantation forestry (e.g. eucalyptus).

Our questionnaire-based dataset will be supplemented by semi-structured interviews with key stakeholders (a subset of large and small producers, workers organizations, governmental bodies such as the fire service, environmental agency IBAMA and governmental agricultural extension workers) in order to provide a qualitative ‘deep’ insight into some of the socio-environmental patterns that we have observed over the course of fieldwork. For example, the role of mechanized farmers in promoting fire-free land preparation by smallholders. A second example is the notably high use of fires in governmental colonization projects. The semi-structured interviews will be conducted by Dr Parry and our new researcher, Heloisa Correa. This will encounter some additional field expenses following the end of the main data collection period. And will be in addition to the field expenses incurred during the filming process planned for the 2011 ‘burn season’ – September to December.

4.1 Research undertaken and students achieve qualifications.

Our Masters students (Ms Estefania and Ms Costa) are on track to complete novel and challenging projects on-time. This is demonstrated by their successful ‘defence’ of their projects in April 2011. The defence consists of a 20 page document and a 30 minute oral presentation to a panel of experts in which the students outline the theoretical background to their thesis questions and also present methods and provisional results. We were very pleased that the experts were unanimous for their praise of the innovative questions being asked and their success in achieving ambitious field objectives. Prior to beginning fieldwork the students each spent three months with the main project team in order to train in data collection techniques and learn about the broader project. They began data collection for their theses in October 2010, each spending 10 days in the field with Dr Parry in order to refine methods, and data storage protocols. The students are set to hand in their completed theses before Februrary 2012.

We are also very pleased that one of our interview team successfully entered a Masters programme in March 2011. Amanda Coelho has tried unsuccessfully to gain a place in Forestry Sciences and Rural Development at the Federal Rural University of Pará. Ms Coelho is from Santarém and had a relatively poor undergraduate education. However, we provided two days per week of paid study time prior to the selection exams and interviews and also assisted

Amanda with key texts and study plans. She came in second place (of 20 places) and has consequently got a full stipend from the University for her two year course.

Our goal for our researcher Karol Goncalves continues to be to help her enter a Masters programme before the end of Year 3. Dr Parry has spent considerable time with Karol working on a strategy for the entrance exams and document submission necessary for the Masters in Sustainable Development and Tropical Agriculture for which she is applying. We are also supporting her on a visit to the highly respect University of Campinas in which she will gain an insight into one of the best universities in Brazil and possibly enter their postgraduate programme.

We have begun to support two additional student projects within the remit of the project, in the form of undergraduate theses at the provincial State University of Pará in Paragominas (study Region 2). Amanda Cardoso and Fatima Santos will be working on a laboratory experiment to establish the flammability of soil litter (dead leaves and other vegetative matter) in intact and degrade (burnt and logged forest) in order to test the hypothesis that the altered plant communities of degraded forests (which are dominated by pioneer species) influence the flammability of the understory. The project is scientifically novel, relatively straight-forward to conduct (one month of lab work scheduled for August 2011) and plays an important role in capacity building.

3.1 Field course in Altamira for IDEFLOR staff and students to improve capacity to engage with cattle ranchers.

As detailed in our last Annual Report we decided to relocate the course to Santarém and be with Embrapa staff, UFPA and University of Sao Paulo students. We successfully completed this course in July 2010. The convenors were Dr Parry, Dr Barlow, Dr Gardner (Cambridge), Dr Ferreira (Embrapa). The participants were our MSc students (Ms Costa and Ms Estefania), four graduates from the university of western Pará (UFoPA) in Santarém (Mr Claudionor Cardoso, Ms Amanda Coelho, Ms Alessandra Gomes, Ms Luciane Mota), our researcher Ms Karoline Goncalves) and two fieldworkers without degrees though with agricultural technician diplomas (Mr Wendell Sá and Mr Márcio Cunha dos Santos). The course lasted 5 days and included: communicating with rural producers, mapping sample watersheds, participatory mapping of farms, converting agricultural units (of land and production), rigour in interviews, use of GPS, use of excel. The course was held in UFoPA and in the field.

Activities (1.3) Production of ethnographic film showing the social and environmental costs of wildfires in regions dominated by cattle ranching and (2.3) Production of ethnographic film showing the social and environmental costs of wildfires for subsistence farmers and extractivists

Filming activities are firmly underway though have not yet been completed. We have a signed contractual agreement with Ms Tania Cypriano to produce five short films with us over the next 12 months. We have around 100 hours of provisional footage from the FLIP cameras collected during fieldwork by our interview team and our PhD student Rachel Carmenta. This material has been sent to Ms Cypriano in New York. We have also contracted an Amazonian researcher highly experienced with fieldwork and community engagement, Ms Heloisa Correa. Ms Correa will work full-time on the project from August to December 2010. She will be responsible for liaising with the rural producers participating in the filming, storing data and collecting material etc. Ms Cypriano will visit Santarém from June 22 to July 13 2011. She will train Heloisa in filming techniques and plan out the intense filming campaign over the 2011 ‘fire season’ (based on land preparation activities as part of the agricultural calendar). Ms Cypriano will visit Santarém again in September 2011 in order to being the filming and shoot professional (‘contextual’) scenes. Dr Parry will also be in Santarém for this crucial stage. Initial relationships with producers will be based on our existing contacts from 2010-11 field work and recommendations by our colleagues in the Santarém branch of the Rural Workers Syndicate. As outlined in above, Ms Correa will also work May to July 2010 on administering semi-structured interviews with key stakeholders.

3.2 Community-based workshops conducted in Extractive Reserves and establishment of learning portfolio. Rachel Carmenta successfully conducted four community-based workshops in the Tapajós-Arapiuns Extractive Reserve in November 2010. These were held in two communities, Sao Jose II and Pascoal. Different participatory techniques were used in these workshops, including seasonal calendars, brainstorming, open-ended guiding questions, oral testimonies, matrixes, participatory mapping, and group and plenary discussions. The learning portfolio has not yet been established though Ms Carmenta intends to share her outputs with the ResEx and community leadership. Further workshops planned with farmers unions in Santarém and Paragominas in early 2012.

Other activities

(1.2) Virtual landscape fire scenario package developed for regions dominated by cattle ranching. (2.4) Production of Radio documentary demonstrating the social and environmental costs of wildfires for subsistence farmers and extractivists. (2.2) Virtual landscape fire scenario package developed for regions dominated by subsistence farmers and extractivists. (1.4) Production of Radio documentary demonstrating the social and environmental costs of wildfires in regions dominated by cattle ranching.

Now that field work (data collection) is almost complete we are in a position to re-focus and dedicate more time to the radio documentary and virtual landscapes component of the project. Dr Parry will meet colleagues from the Goeldi Museum's Biodiversity School before leaving Brazil for the UK in mid June 2011. We are also communicating with Yale University MSc forestry student Richard Press regarding his involvement in producing part of the virtual scenario package. He has experience as a professional photographer and GIS expert and thus we are working on his close involvement of the package. A significant amount of work and collaboration with Dr Alan Blackburn (Lancaster) and other specialists will be required in order to produce these outputs over the next 12 months.

(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.

We have been working closely with Grupo Orsa staff on improving their fire monitoring techniques as a means of reducing wildfires in their 1.7 million hectare landholding. We will work more closely with public bodies in Pará state in this regard once we have the scientific outputs of our project to serve as a basis for discussion.

(3.4) Integration of a coherent fire policy into certification schemes for cattle ranching.

We will dedicate our efforts to this activity once we have the scientific outputs of our research ready. We will work closely with Dr Kemel Kalif in order to hone these recommendations and work on the most appropriate and effective means of dissemination.

4.2 Progress towards project outputs

It would be premature to conclude that this project has already affected baseline attitudes and agricultural practices used by cattle ranchers and subsistence farmers. This will be put into practice on a wide scale through the community-based films and radio documentary produced in Year 3. However, we have now interacted with 628 rural producers (in fact, 628 farms in which many have multiple producers) and in each case we have held detailed discussions about fire use, alternatives to fire, escaped fire etc. So it is possible that we have had a small (though probably immeasurable) effect in changing attitudes to fire. We can claim more success to-date in *understanding* baseline attitudes to fire and utilized agricultural practices. We have observed that a shift to fire-free land preparation is occurring in areas where smallholders are surrounded by mechanized farmers. Whilst on some levels this is a positive advancement, our detailed data analyses will reveal if there are net costs to the converting producers. If, for example, they are unable to afford fertilizer to replace the nutrient inputs that Amazonian producers traditionally exploit by burning secondary regrowth to release nitrogen and phosphorous into the soul.

We are in no doubt that we are already well on our way to achieve the objective of improved capacity to undertake policy relevant social research, develop awareness programmes and evaluate research. Based on the collaborations and training detailed earlier in this report, we have stimulated both students and established Amazonian scientists alike to think differently in terms of multi disciplinary research. In addition to these advancements in Santarém, Belém and Paragominas we are also having a positive effect on the research and monitoring culture of Grupo Orsa, an FSC certified cellulose and timber producer which serves as a benchmark for other sustainable management companies operating in the Brazilian Amazon.

4.3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
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	Postgraduate students to receive training *2* MSc students* *1 * PhD student (Brazilian)*	3	3			6		5
4D	Training weeks provided *MSc students – 1 week in other Brazilian state for workshop, + we facilitated extra analytical course in Belém, over 1 month* *2 practical weeks in field for PhD student (Sept 2010)*	2	7			9		3
6A	Number of people to receive other forms of education/training *15 interviewers have been involved in main project (2 regions), each trained in GPS, basic computer skills, interview techniques, revision processes, calculations)*	10	16			26		10
6B	Number of training weeks to be provided *3 weeks in Santarém, 07/2010 for interview team* *2 weeks in Santarém, 11/2010 for newcomers* *1 week in Paragominas, 03/2011 for newcomers*	4	6			10		6
7	Number of (ie different types - not volume - of material produced) training materials to be produced for use by host country	0	0			0		3
8	Number of weeks to be spent by UK project staff on project work in the host country *Aug 2009 (J Barlow, L Parry)*	12	46			58		72

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
	April 2010 (J Barlow, L Parry) *July 2010 (J Barlow, L Parry)* *Aug 2010 to April 2011 (L Parry)* *Jan 2011 (J Barlow)*							
9	Number of species/habitat management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies in the host country	0	0			0		2
11A	Number of papers to be published in peer reviewed journals (*Carmenta et al. 2011. Ecology & Society)*	0	1			1		12
11B	Number of papers to be submitted to peer reviewed journals *Barlow et al. Submitted for special issue of Biological Conservation*	0	2			1		12
12A	Number of computer based databases to be **established** and handed over to host country *In MS Access.*	0	1			1		1
14A	Number of conferences/seminars/ workshops to be **organised** to present/disseminate findings	0	0			0		3
14B	Conferences/seminars/ workshops **attended** *Barlow et al. 8 March 2011. Talk (Fires in tropical forests: implications for REDD+) at British Ecological Society Annual Conference.*	0	1			1		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		1

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
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 interviews/features in host country(ies)	0	0			0		2
19D	Number of local radio interviews/features in UK	0	0			0		2
20	Assets to be handed over to host country FLIP cameras * 10 Laptop computers and hard-drives Dictaphone and microphone	6000	0			6000		6000
23	Value of resources raised from other sources *($R90,000) from Brazilian government (INCT)* *£XXX from Goeldi Museu staff costs* *£XXX from Embrapa fuel and staff funding*	101, 040	64,806			165, 846		>£233,725

Table 2 Publications

Type	Detail	Publishers	Available from	Cost £
Journal article	Carmenta, R., L. Parry, A. Blackburn, S. Vermeylen, and J. Barlow. 2011. Understanding human-fire interactions in tropical forest regions: A case for interdisciplinary research across the natural and social sciences. Ecology & Society. 16 : 53.		URL:http://www.ecologyandsociety.org/vol16/iss1/art53/	free
Journal article	Barlow, J., Ewers, R.M., Anderson, L., Aragao, L.E.O.C., Baker, T., Boyd, E., Feldpausch, T., Gloor, E., Hall, A., Malhi, Y., Milliken, W., Mulligan, M., Parry, L., Pennington, T., Peres, C.A., Phillips, O., Roman-Cuesta, R.M., Tobias, J.A., Gardner, T.A., 2011. Using learning networks to understand and manage complex systems: a case study of biological, geophysical and social research in the Amazon. Biological Reviews 86, 457–474.		http://eprints.lse.ac.uk/32277/	Free (from this website)

4.4 Progress towards the project purpose and outcomes

We have made significant progress towards achieving our project purpose of reducing Amazonian wildfires through research and training. In this report we have demonstrated measurable success in our training targets for young Brazilian scientists from the Amazon region. Secondly we have clearly demonstrated our very diverse, productive and profound partnerships which are helping to improve research foci in the Amazon to more applied and useful topics. Through our additional partnerships with top institutions in Brazil and the UK we are further advancing the transfer of ideas. See Barlow et al. 2011. *Using learning networks to understand complex systems: a case study of biological, geophysical and social research in the Amazon. Biological Reviews* for our progress and attitudes to learning networks and information exchange. It still remains for us to produce the main educational outputs of the project and thus we are not currently in a position to evaluate the impact of these activities (one of our indicators). In regard to our assumptions, we are highly confident that our project partners can work together and communicate effectively. However, as detailed above we are less clear that IDEFLOR has the institutional capacity (and consistency) to implement and monitor the results of this project. For this reason we are focussing now on the Goeldi Museum and Embrapa, in whom we have the upmost confidence of capacity, effort and consistency.

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

As outlined above, we believe that we have made solid and measurable progress over the past 12 months in achieving our project outputs. We have engaged successfully with students, the research community, and 628 rural families, including subsistence farmers, large cattle ranchers, soy farmers etc. We have also engaged very positively with regional government, workers associations and producer organizations. We are thus encouraged that we are on-track to produce a positive impact for biodiversity conservation in the Amazon. However, we are not yet able to offer a measure of impact in this regard. However, we are more confident that we are assisting in moving towards sustainable use. We now have unprecedented understanding of the human dimensions of Amazonian wildfires and a truly world-class network of collaborating institutions and individuals at the local, regional, national and international levels.

5. Monitoring, evaluation and lessons

Progress is monitored through almost daily email communication between Dr Barlow and Dr Parry, and regular communication with co-investigators in Lancaster University. In addition Dr Barlow and Dr Parry hold multi-day ‘briefings’ and detailed discussions three to four times a year in which the ‘big picture’ progress of all elements of the project are discussed. Our major achievements to date are summarized in the Collaborations section (above), in our description of the research and training activities of the project. 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. Our continued success (and efforts) at achieving (and monitoring) both our short-term (days and weeks) and medium-term (months and Year to Year) achievements gives us confidence that we will meet our project outputs by the end of August 2012. We have around 15 months to focus on consolidating student training, producing films and radio outputs (with sub-contracting and consultancy) and our scientific outputs. We feel this is adequate to achieve our goals.

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

No major issues were raised in the Review of our Year 1 Report. We detailed our response to collaboration suggestions in our last Half Year Report.

7. Other comments on progress not covered elsewhere

Our sampling design and questionnaire designed were refined over a one month period in the field (July 2010) in which we worked very closely indeed with all of our main collaborators and our research team. In our last Annual Report we outlined very ambitious plans for sampling farmers attitudes, fire management practices and history of escaped fires in 20 landscapes in each of two study regions (Santarém and Paragominas). In practice we are very pleased to have achieved sampling from 18 landscapes in each of these regions (total = 36 landscapes) with up to 30 producers interviewed in each landscape. We developed a novel sampling design in Region 3 (Jari) and our Brazilian Masters student did a fantastic job of interviewing 30 rural producers across the Jari landscape. We successfully achieved (or will achieve in Region 2 within 1 month of writing) our goals due to hard work and a dedicated field team. Considerable effort was spent maintaining good relations with all workers unions and political representatives within the study regions and we now feel that they are both equal partners in the project and as excited as us about inspecting our findings. This is very encouraging indeed. We have developed plans for analytical development following a growing collaboration with economists from the University of Sao Paulo and the London School of Economics. We faced significant financial difficulties due to the further devaluation of sterling and the costs of working in Brazil, which have risen in recent years due to significant increases in the local price of petrol and diesel. However, commitment and financial assistance from the Goeldi Museum and Embrapa prevented this from compromising our objectives.

8. Sustainability

The project now has a high profile in the Amazon region, elsewhere in Brazil and internationally. This is due to our significant achievements in the field, successful progression of students and the great interest and enthusiasm demonstrated by our Brazilian partners. We are in no doubt that we have already improved research capacity both locally (Santarém, Jari, Paragominas) and regionally (in Belem-based institutions) and nationally (e.g. Sao Paulo-based PhD student). We also expect significant advancement in the project profile following our imminent workshop in Campinas (8-10 June 2011). In addition to two days dedicated to detailed planning and discussion with our main partners on the final day we have confirmed attendance from many of Brazil's premier environmental scientists. On this last day we will focus on promoting our dataset, research apparatus and demonstrate the potential for Brazilian researchers to work with this dataset for their own interests (e.g. agricultural economics, human-environment relationships based on a demographic approach). We will make our dataset freely available to any interested researchers.

We will continue to develop our exit strategy over the next 12 months. The various avenues we are investing in are:

a. Producing film and radio programs in partnership with the Goeldi Museum's Biodiversity School. This department is growing, has long-term funding, and currently offers the best long-term potential to continue the educational outputs of the project.

b. Assisting our MSc students access PhD courses following the completion of their studies. They will almost certainly continue to develop the research agenda began during their projects with us. Assisting other members of the field team to access MSc courses in the Amazon region and beyond. They are all invited to use project data for their theses, should they wish.

c. Assisting Dr Joice Ferreira with developing further research projects for working with farmers in the Amazon region.

d. Continuing to work with the directorate and field staff of the FSC-certified Grupo Orsa to encourage the further development of best practices, educational activities and environmental monitoring to reduce the prevalence of wildfires in their management areas.

e. Developing closer links with researchers from the French research agency CIRAD. They have a long-term presence in the Amazon and we are working with Dr Coudel to ensure continuity in research goals and partnerships with Brazilian institutions.

9. Dissemination

1) Producer unions. The project has been presented to smallholder syndicates (STTR) in Santarém, Belterra, Mojui dos Campos, Paragominas. In each case at least one follow-up meeting has been help. The project has presented at least three times to the large farmers syndicates in Santarém and Paragominas. A series of follow-up meetings were help in each case.

2) Regional scientific community. Dr Parry and Dr Barlow presented the project to other members of the INCT research network in the Goeldi Museum, Belém. We are working with the Museum's biodiversity school for the rural dissemination of the education films we produce and also intend to use www.youtube.com for wider dissemination.

3) Private sector – forestry/timber. Dr Parry has made 3 presentations in the past 12 months to directors of the FSC-certified company Grupo Orsa. Our collaborator Dr Ferreira has also held several meetings about the project with a second large certified timber company, Cikel.

4) Political. Dr Barlow has presented the project at the FCO in London, to a Brazilian delegation that included representatives from leading banks and Brazil's Ministry of Agriculture. They are in continued discussion about disseminating the project's outputs, with the help of the British Embassy in Brasilia.

The dissemination activities will be continued (and funded) following the end of this Darwin project by our partners at the Goeldi Museum (particularly Joice Santos and her Biodiversity School) and Dr Joice Ferreira of Embrapa.

10. Project Expenditure

NOTE: the expenditure below refers to the period up to 10th April 2011. We have additional expenditure from 11-31 April which therefore means that the information below is a slight underestimate of our expenditure during the reporting period.

The figures provided below are full totals (Darwin and non-Darwin funds)

Table 3 project expenditure during the reporting period (1 April 2010 – 31 March 2011)

Item	**Budget**	**Expenditure**	**Variance/ Comments**
Staff costs specified by individual			No comments
Overhead costs			No comments
Travel and subsistence			Additional costs required for travel costs for L Parry and J Barlow during 2011, and to fund fieldwork for semi-structured interviews. Car hire will be very expensive and has been reduced to now due to assistance from Embrapa and Goeldi Museum budgets.
Operating costs			No comments
Capital items/equipment (specify)			Additional filming equipment required from July 2011
Others: Consultancy			This apparent variance is the result of the payment schedule for filming and MSc students determined between Lancaster contracts office and Federal University of Pará (students) and Tania Cypriano (filming)
TOTAL			

11. 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 past 12 months heavily engaged with capacity building and field data collection for our project, in which we are measuring the social and environmental costs of wildfires to subsistence farmers and cattle ranchers in the eastern Brazilian Amazon. We launched a major fieldwork campaign to understand fire management practices and forest fires in 36 landscapes spread over three regions. We have now conducted detailed interviews with over 600 farmers, whose operations vary in size from one to 14,000 hectares in size. We trained 15 interviewers in total for the work. All are from the Amazon region and many are already in the process of accessing Masters courses to advance their research careers. We are very grateful to our partners at the Goeldi Museum and at Embrapa, Brazil's federal agricultural research agency. Both institutions have been close collaborators throughout the design and implementation of our project. They have also provided financial assistance which has been invaluable to our field efforts in often difficult logistical conditions. As we near the end of data collection we are turning out efforts to producing six community-based films that chart fire-hand experience of agricultural fire management and wildfires in Amazonia. We are working with our colleague Tania Cypriano in this venture, and will focus our efforts on understanding the key social and environmental features of the 2011 fire season in our study regions of Sanrarém and Paragominas, both in Pará state. One of our Brazilian MSc students has conducted the first ever study of smallholder forestry and fire risk in the Amazon, in partnership with an FSC-certified producer of cellulose and hardwood timber. We are looking forward to a workshop we are holding in Campinas in June 2011, in which we will advance our analytical plans and future research partnerships with Brazilian researchers, who represent Embrapa, Goeldi Museum, University of Sao Paulo, University of Campinas, Cambridge University and the Brazilian government.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2010-2011

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	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.		We have engaged successfully with students, the research community, and 628 rural families, including subsistence farmers, large cattle ranchers, soy farmers etc. We are thus encouraged that we are on-track to produce a positive impact for biodiversity conservation in the Amazon. We now have unprecedented understanding of the human dimensions of Amazonian wildfires and an truly world-class network of collaborating institutions and individuals at the local, regional, national and international levels.	
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	Significant progress towards achieving reducing Amazonian wildfires through research and training. We have demonstrated measurable success in our training targets for young Brazilian scientists from the Amazon region. We have also demonstrated our diverse, productive and profound partnerships which are helping to improve research foci in the Amazon to more applied topics. Through our additional partnerships with elite institutions in the south of Brazil and the UK we are further advancing the transfer of ideas.	• Collect more film material for educational films • Conduct interviews with key stakeholders • Work with film-maker to produce films • Assist MSc students in obtaining qualification • Analyze data collected & write scientific papers • Work on virtual landscapes platform • Cement plan for project exit strategy

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
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	It would be premature to conclude that this project has already effected baseline attitudes and agricultural practices used by cattle ranchers and subsistence farmers. This will be put into practice on a wide scale through the community-based films and radio documentary produced in Year 3. However, we have now interacted with 628 rural producers (in fact, 628 farms in which many have multiple producers) and in each case we have held detailed discussions about fire use, alternatives to fire, escaped fire etc. So it is possible that we have had a small (though probably immeasurable) effect in changing attitudes to fire. We can claim more success to-date in *understanding* baseline attitudes to fire and utilized agricultural practices. We have observed that a shift to fire-free land preparation is occurring in areas where smallholders are surrounded by mechanized farmers. Whilst on some levels this is a positive advancement, our detailed data analyses will reveal if there are net costs to the converting producers. If, for example, they are unable to afford fertilizer to replace the nutrient inputs that Amazonian producers traditionally exploit by burning secondary regrowth to release nitrogen and phosphorous into the soul.	
Activity 1.1 Social and environmental costs of fires for cattle ranchers assessed		Successfully completed our field assessments in Regions 1 and 3, and are within one month of completing our field assessment in Region 2. As part of our principal scientific survey (standardized questionnaires with rural producers in Regions 1 and 2) we have now conducted 411 detailed farm interviews, examining producer histories, land-use change, fire management practices, history of escaped and forest fires on the property, and a range of other relevant variables including measures of community cohesion and social capital. These interviews followed a one month process (mid July to mid August 2010) in which we trialled several versions of the questionnaire, discussed it in detail with Brazilian collaborators (the piloting was done together) and trained our interview team. Anticipate a further 55 interviews being added to this sample before the end of fieldwork in early June 2011. We also have a further 217 complementary interviews from the research of Rachel Carmenta (UK PhD student involved in this project) and Amanda Estefania (our Brazil MSc student working in Region 3), a total of 628 interviews.	
Activity 1.2, Virtual landscape fire scenario package developed for regions dominated by cattle ranching		Now that field work (data collection) is almost complete we are in a position to re-focus and dedicate more time to the radio documentary and virtual landscapes component of the project. We are communicating with Yale University MSc forestry student Richard Press regarding his involvement in producing part of the virtual scenario package. He has experience as a professional photographer and GIS expert and thus we are working on his close involvement of the package. A significant amount of work and collaboration with Dr Alan Blackburn (Lancaster) and other specialists will be required in order to produce these outputs over the next 12 months.	

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
Activity 1.3. Production of ethnographic film showing the social and environmental costs of wildfires in regions dominated by cattle ranching		Filming activities underway though have not yet been completed. We have a signed contractual agreement with Ms Tania Cypriano to produce five short films with us over the next 12 months. We have around 100 hours of provisional footage from the FLIP cameras collected during fieldwork by our interview team and our PhD student Rachel Carmenta. This material has been sent to Ms Cypriano in New York. We have also contracted an Amazonian researcher highly experienced with fieldwork and community engagement, Ms Heloisa Correa. Ms Correa will work full-time on the project from August to December 2010. She will be responsible for liaising with the rural producers participating in the filming, storing data and collecting material etc. Ms Cypriano will visit Santarém from June 22 to July 13 2011. She will train Heloisa in filming techniques and plan out the intense filming campaign over the 2011 'fire season' (based on land preparation activities as part of the agricultural calendar). Ms Cypriano will visit Santarém again in September 2011 in order to being the filming and shoot professional ('contextual') scenes. Dr Parry will also be in Santarém for this crucial stage. Initial relationships with producers will be based on our existing contacts from 2010-11 field work and recommendations by our colleagues in the Santarém branch of the Rural Workers Syndicate.	
Activity 1.4. Production of Radio documentary demonstrating the social and environmental costs of wildfires in regions dominated by cattle ranching		Now that field work (data collection) is almost complete we are in a position to re-focus and dedicate more time to the radio documentary and virtual landscapes component of the project. Dr Parry will meet colleagues from the Goeldi Museum's Biodiversity School before leaving Brazil for the UK in mid June 2011. A significant amount of work and collaboration with the Goeldi Museum, film-maker Tania Cypriano and other specialists will be required in order to produce these outputs over the next 12 months.	
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	It would be premature to conclude that this project has already effected baseline attitudes and agricultural practices used by cattle ranchers and subsistence farmers. This will be put into practice on a wide scale through the community-based films and radio documentary produced in Year 3. However, we have now interacted with 628 rural producers (in fact, 628 farms in which many have multiple producers) and in each case we have held detailed discussions about fire use, alternatives to fire, escaped fire etc. So it is possible that we have had a small (though probably immeasurable) effect in changing attitudes to fire. We can claim more success to-date in *understanding* baseline attitudes to fire and utilized agricultural practices. Our main sample to-date includes 136 cattle ranchers.	
Activity 2.1. Social and environmental costs of fires for subsistence farmers assessed		See 1.1, above	
Activity 2.2. Virtual landscape fire scenario package developed for regions		See 1.2, above.	

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
dominated by subsistence farmers and extractivists			
Activity 2.3. Production of ethnographic film showing the social and environmental costs of wildfires for subsistence farmers and extractivists		See 1.3, above.	
Activity 2.4. Production of Radio documentary demonstrating the social and environmental costs of wildfires for subsistence farmers and extractivists		See 1.4, 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.	We are in no doubt that we are already well on our way to achieve the objective of improved capacity to undertake policy relevant social research, develop awareness programmes and evaluate research. Based on the collaborations and training detailed earlier in this report, we have stimulated both students and established Amazonian scientists alike to think differently in terms of multi disciplinary research. In addition to these advancements in Santarém, Belém and Paragominas we are also having a positive effect on the research and monitoring culture of Grupo Orsa, an FSC certified cellulose and timber producer which serves as a benchmark for other sustainable management companies operating in the Brazilian Amazon.	
Activity 3.1. Field course in Altamira for IDEFLOR staff and students to improve capacity to engage with cattle ranchers.		We relocated the course to Santarém held with UFPA students and University of Sao Paulo students, our interviewers and Embrapa staff. We successfully completed this course in July 2010. The convenors were Dr Parry, Dr Barlow, Dr Gardner (Cambridge), Dr Ferreira (Embrapa). The participants were our MSc students (Ms Costa and Ms Estefania), four graduates from the university of western Pará (UFoPA) in Santarém (Mr Claudionor Cardoso, Ms Amanda Coelho, Ms Alessandra Gomes, Ms Luciane Mota), our researcher Ms Karoline Goncalves) and two fieldworkers with Embrapa without degrees though with agricultural technician diplomas (Mr Wendell Sá and Mr Márcio Cunha dos Santos). The course lasted 5 days and included: communicating with rural producers, mapping sample watersheds, participatory mapping of farms, converting agricultural units (of land and production), rigour in interviews, use of GPS, use of excel. The course was held in UFoPA and in the field.	
Activity 3.2. Community-based workshops conducted in Extractive Reserves and establishment of learning portfolio.		Rachel Carmenta successfully conducted four community-based workshops in the Tapajós-Arapiuns Extractive Reserve in November 2010. These were held in two communities, Sao Jose II and Pascoal. Different participatory techniques were used in these workshops, including seasonal calendars, brainstorming, open-ended guiding questions, oral testimonies, matrixes, participatory mapping, and group and plenary discussions. The learning portfolio has not yet been established though Ms Carmenta intends to share her outputs with the ResEx and community leadership. Further workshops planned with farmers unions in Santarém and Paragominas in early 2012.	

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
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		We have been working closely with Grupo Orsa staff on improving their fire monitoring techniques as a means of reducing wildfires in their 1.7 million hectare landholding. We will work more closely with public bodies in Pará state in this regard once we have the scientific outputs of our project to serve as a basis for discussion.	
Activity 3.4. Integration of a coherent fire policy into certification schemes for cattle ranching.		We will dedicate our efforts to this activity once we have the scientific outputs of our research ready. We will work closely with Dr Kemel Kalif in order to hone these recommendations and work on the most appropriate and effective means of dissemination.	
Activity 4.1 Research undertaken and students achieve qualifications.		Brazilian masters students on track to complete novel and challenging projects on-time. This is demonstrated by their successful 'defence' of their projects in April 2011. The defence consists of a 20 page document and a 30 minute oral presentation to a panel of experts in which the students outline the theoretical background to their thesis questions and also present methods and provisional results. We were very pleased that the experts were unanimous for their praise of the innovative questions being asked and their success in achieving ambitious field objectives. Prior to beginning fieldwork the students each spent three months with the main project team in order to train in data collection techniques and learn about the broader project. They began data collection for their theses in October 2010, each spending 10 days in the field with Dr Parry in order to refine methods, and data storage protocols. The students are set to hand in their completed theses before Februrary 2012. Efforts continuing to help other interviewer and researchers in our team enter postgraduate study program. One interviewer now started fully funded Masters. Begun to support two additional student projects within the remit of the project, in the form of undergraduate theses at the provincial State University of Pará in Paragominas (study Region 2). The project is scientifically novel, relatively straight-forward to conduct (one month of lab work scheduled for August 2011) and plays an important role in capacity building.	

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.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
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. Development of ethnographic 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 and 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 – Virtual Landscape scenarios are interpretable by stakeholders. 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

Project summary	Measurable Indicators	Means of verification	Important Assumptions
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.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
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 (optional but encouraged as evidence of project achievement)

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.	X
Is your report more than 5MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
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.	X
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	X
Have you completed the Project Expenditure table fully?	X
Do not include claim forms or other communications with this report.	