# *Darwin Initiative for the Survival of Species*

# *The Sustainable Management of Ornamental Fish Species in Mamiraua*

## *Project Number: 162/14/060*

## *Annual Report Number 1*

## *1 April 2005 – 31 March 2006*

# *Darwin Initiative for the Survival of Species*

# *Annual Report 2006*

## 1. Darwin Project Information

| | |
|---|---|
| Project Ref. Number | *14-060* |
| Project Title | *Sustainable Management of Ornamental Fish, Mamiraua* |
| Country(ies) | *Brazil* |
| UK Contractor | *Zoological Society of London (ZSL)* |
| Partner Organisation(s) | *Sociedade Civil Mamiraua (SCM)* |
| Darwin Grant Value | *£234,000* |
| Start/End dates | *June 2005 – May 2008* |
| Reporting period (1 Apr 200x to 31 Mar 200y) and report number (1,2,3..) | *1 April 2005 to 31 March 2006*<br>*Annual Report Number 1* |
| Project website | |
| Author(s), date | *Alison Shaw and Helder Queiroz, May 2006* |

## 2. Project Background

- Briefly describe the location and circumstances of the project and the problem that the project aims to address.

To protect the biodiversity of fish within an area of Brazilian Amazon, by developing a sustainable freshwater ornamental fish trade. This is to be achieved by developing a pilot project in the Mamirauá Sustainable Development Reserve (MSDR) and the Amana Sustainable Development Reserve (ASDR). The introduction of such a trade will result in direct economic benefits to the rural community, and the monetary value, along with the establishment of a sustainable system, will encourage the long-term protection of fish diversity within the reserve. The pilot scheme will establish trade guidelines that can be adopted for a certification system within this, and other, Amazonian regions.

## 3. Project Purpose and Outputs

The project purpose is that populations of ornamental fish species in the Sustainable Development Reserves (SDRs) are protected through management within a sustainable ornamental fishery, made possible through strengthened capacity of fishers, local community, researchers, reserve managers and national and international traders.

On receiving the Darwin Initiative and after attending the Darwin Leader workshop, we reviewed to the log frame to make sure it was measurable. It was considered that there was some overlap between the project outputs. We therefore restructured the log frame (see Annex 2) to have four distinct outputs although overall there is no material change to the planned project activities or outcomes. Therefore, the outputs are as follows:

Output 1: Populations of ornamental fish in the MSDR are maintained at a natural level. (Old wording: Biodiversity of ornamental fish species in MSDR assessed, and a standardised, repeatable monitoring programme established).

Output 2: Increased livelihood opportunities from extraction of sustainable levels of ornamental fish lead to increased income for households in MSDR. (Old wording: Social and economic parameters of community determined and monitored, local knowledge and needs identified, and feedback loop established).

Output 3: Market and economic potential for fishery identified, a business plan and standardised guidelines in place for trading procedure from source to end-user.

New output: Output 4: Fish welfare maintained from source to end user

Old output: Standards for sustainable harvesting upheld within reserve. [This is included in Outputs 1 and 3]

Old output: Understanding of, support for, and participation in sustainable ornamental fishery within community. [This output is included in Output 2]

Log frame:

Please see project logical framework in Annex 1 with achievements and progress reported against it. This is an updated version of the log frame submitted with the Project Proposal Stage 2, prepared at the start of the project in June 2005 and is more measurable. The changes to the log frame were discussed with Darwin Secretariat in June/July 2005 although there are no material changes to the project outputs. The project outputs have just been repackaged.

## 4. Progress

The project commenced in June 2005 and so, at the end of 2005/2006 financial year, had run for 8 months.

- Summarise progress over the last year against the agreed baseline timetable for the period and the logical framework (complete Annex 1). Explain differences including any slippage or additional outputs and activities.

| **Project implementation timetable 2005/2006 – progress** | | |
|---|---|---|
| **Date** | **Key milestone** | **Progress** |
| Aug 05 | Undertake review of current ornamental trade and develop trade links (e.g. in UK). Steps and processes, authorisation etc in Brazil and internationally. | 80% complete and on-going. See Annex 3 for briefing note on UK trade. Annex 4 and 5 for list of stakeholders consulted with.<br>We have been delayed for approx. 4 months in producing a species list of fish suitable for extraction due to the key fishing period In Amana being July/August. Please see below for more details. |
| Aug 05 | Assessment of existing certification and standardised guideline schemes and potential for application to the freshwater ornamental fish market reported | 100% complete. See Annex 6. |
| Dec 05 | Organise stakeholder meetings (and if appropriate, workshop in Manaus) to determine current situation and issues. | 100% complete but consultation is ongoing. See Annex 5 for outputs of stakeholder meetings<br>The project was invited to a timely workshop |

| | | |
|---|---|---|
| | | 'Socioeconomic aspects of sustainable management of the international freshwater ornamental fish in the north of South America. The workshop brought together all the key stakeholders in the Amazon Basin ornamental industry' hosted by Traffic and WWF hosted by TRAFFIC in Bogotá, July 05. This is where we launched the project and it gave opportunity to identify the key issues and meet the stakeholders. A summary of the outcomes can be found in Annex 7 a & b. We have interpolated the results of the workshops supporting with additional information. See Annex 7c for an example.<br><br>In Brazil, we worked with other organisations involved with ornamental fish including conservation organisations (Project Piaba) and academia, government and trade organisations to put together a report on 'Evaluation of value chains for the Bio-commerce project' for the Biodiversity Foundation of the Ministry of the Environment (FUNBIO) United Nations Trade Org (UNCTAD). See Annex 8 for outputs |
| Dec 05 | Biological research survey methodologies finalised. | 95% complete. Survey protocols prepared but reports need combining as a stand-alone document. This will be completed when the baseline surveys are written up. See Annex 9 a & b. |
| Dec 05 | Collect additional information necessary for Collection Area Management Plan (CAMP). | 75% complete. The draft contents list for the CAMP can be found in Annex 10. Data collection is on-going. |
| Dec 05 | Socio-economic survey methodologies finalised. | 100% complete. See Annex 11. |
| Dec 05 | Potential communities and individuals identified for involvement in the project. | 75% complete. See Annex 12 a. The communities involved in the project will be finalised once the fishing grounds/collection areas are determined. See below. However, the project has been introduced to all communities adjacent to the potential collection areas. |
| May 06 | Determine protocol to establish extraction procedure (collection areas and no-take areas expected to relate to MSDR management plan). List of suitable species determined | 50% complete. Expected completion date November 06.<br><br>Please see below for explanation on this delay. |
| May 06 | Baseline surveys at Mamirauá completed, database components established and data entered. | 75% completed. Annex 12 b & c Please see below for explanation in delay. |
| May 06 | Socio-economic situation of community explored through participatory meetings, interviews and information gathering. Details obtained on desired community collection methods and association structure to feed into CAMP. | 80% complete. Please see Annex 12a. |

- Provide an account of the project's achievements during the last year. This should include concise discussion on methodologies and approaches by the project (e.g. research, training, planning, assessment, monitoring) and their

consequences and impacts as well as results. Please **summarise** content on methodologies and approaches, and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications).

Research

Over this first year, progress has been steady. This initial period has been largely fact finding and relationship building, with trade and government organisations, as well as designing and undertaking the baseline biological and socio-economic surveys. A key additional output is that we are now implementing the project in two Sustainable Development Reserves, Mamiraua and Amana. These SDRs are both managed by project partners Sociedade Civil Mamiraua (SCM), in conjunction with the communities, and are adjacent to each other. The key reason for this is although it was the communities in Mamiraua who asked SCM to investigate the feasibility of establishing the ornamental fish trade; the habitat and water quality conditions in the Amana reserve is more appropriate for ornamental fish currently found in the market. Therefore it was considered wise to investigate the feasibility in both reserves given that a consolidation of resources might mean both reserves could support a sustainable industry.

In line with the project implementation timetable, the biological and socio-economic survey methods were developed (See Annexes 9a & b and 11). The fish survey commenced in Mamiraua in June 2005 and in Amana in November 2005 after the project was introduced to the communities and their permission granted. The initial results of the surveys demonstrate how seasonal the fishery is with collection conditions being hugely dependent on water levels, which vary through out the year. i.e. in the rainy season, when the forest is flooded, it is very difficult to catch fish in reasonable numbers. The best period is as the water is rising after low water period. The collection period in Amana was found to be July/August. As we started the surveys in November, and survey every two months, we will not capture the catch data (species and relative abundance) until July/August 2006. This means that we cannot finalise our species list and define those suitable for extraction, and the methods to extract them, until after this period. Consequently, we will slip four months on our project implementation timetable for this particular activity although it is not thought that this will affect the overall output or timetable for the project.

The socio-economic situation of the communities has been explored through meetings and interviews. In total, our team met with seven communities in Mamiraua (including Boca do Mamirauá, Sítio São José and Vila Alencar) and eight in Amana including (Juazinho, Boa Esperança, Bom Jesus do Baré and Santa Isabel do Baré). The two researchers prepared baseline information on the socioeconomic aspects of these communities as indicators to allow future monitoring and evaluation (like average size of family and household, household structure, income generation, main economic activities, material inventories of equipment for economic production, etc.). (See Annex 12a) As it is not envisaged that the ornamental trade will replace existing livelihoods but provide a supplementary income that might improve quality of life and allow the communities to remain in the reserves to act as custodians for its biodiversity, a key question is how the fish collection period fits in with other activities such as the harvest period. Initial findings indicate that the activities complement well.

To manage the fishery and ensure its sustainability, a collection area management plan (CAMP) is being prepared. The draft contents can be found in Annex 10. Supporting information for the CAMP has been collected through interviews with communities, such as about the reported ornamental industry that had collapsed in the 1980's/90's, and through literature search.

Research into the Amazonian ornamental fish trade has been carried out in the UK and Brazil. In the UK, meetings have been held with the Ornamental Aquatic Trade Association; importers, consolidators; the press including Practical Fish Keeping, RSPCA, to research about the current and potential market in the UK. A briefing note was prepared, see Annex 3, and a more detailed report is being prepared in line with the research in Brazil.

The initial feedback from each sector is excitement about the project and people are keen to be involved. A key issue that will need to be addressed this next year is the public perception that wild caught fish equals bad and farm produced fish equals good. We will assess and tackle this perception through working with the trade press and also through supporting literature/posters/marketing.

In Brazil, we have also been establishing links with trade (exporters), national and government and other conservation non-governmental organisations. The research was designed to investigate the feasibility of exporting our fish, do an option assessment of the best route to export our fish, if viable, and to start compiling the business plan. A key concern of the exporters is the pressure on them from their buyers to reduce the prices of the fish. There is a real fear that some companies will go bankrupt. This will need to be taken into consideration during our business planning. The trade components of the project have progressed as far as they can without us defining the species that we are able to extract.

A review of the certification schemes and their suitability for application to the ornamental trade was prepared and can be found in Annex 6

A final additional activity undertaken this year was a visit by the UK Minister for Biodiversity, which the whole team was involved in, and the presentation of the project at the Eighth Conference of Parties for the Convention on Biodiversity in Curitiba, Brazil (Annex 13). Our two biologists (PhD and MSc) and our junior sociologist prepared and presented posters of their work during the first year of the project (Annex 12 a, b & c) to the DEFRA team. The posters were also displayed at the CBD COP8.

Over the year four trips were made by UK project staff to the host country. This included three trips by the Project Leader: i) to set up the project and interview project staff (2.2 weeks); ii) second to develop survey methods and site locations (2.2 weeks) iii) lead further surveys, coordinate the UK Ministers visit to the project, and represent the project at CBD COP8 (three weeks). A further visit was made by our water quality and fish welfare specialist (2.2 weeks). In total 9.6 weeks were spent in the host country by UK staff. Our Trade Advisor is employed directly by ZSL and will reside in Manaus for the duration of the contract.

Training

The research is being undertaken by Brazilian student ichthyologists supervised by the Head Scientist. The Head Scientist provided training in survey techniques at the beginning of the survey period and also provides constant support and technical supervision. The provisional titles of their works are as follows:

- Alexandre Hercos - Population ecology, biology and management of *Symphisodon aequefasciatum* at Amanã Lake, Amazonas, Brazil - PhD Thesis.
- Rose Chaves - Fish communities: structure, diversity and abundance in várzea lakes of Mamirauá Reserve, Amazonas, Brazil - MSc Dissertation.

A further MSc student had to drop out of the project as it was too difficult to combine motherhood with studies. However, her data have been very useful and are being worked up by the other scientists. Annex 14

An undergraduate student from the State of Sao Paulo is completing the research component of her degree with the project. Mariella is investigating the ornamental

fish associated with the floating plantation and has been based in based in Mamiraua for over six months. We hope that she will join the team for the remainder of the project after her final semester.

Our team has also provided training to undergraduate students of the Institute of Mamiraua. Students are undertaking research projects into the discus fishery of Tefe Lake. Thirteen students visited the fishing communities to find out about the fishery and investigate its extent. The data are likely to be incorporated into the doctorate thesis.

The Head Sociologist also provides training and significant support to the Junior Sociologist as it is her first job.

Planning

Detailed planning was carried out by the Project Leaders at the beginning of the project, ensuring a detailed project timetable was established and understood by the whole team. This timetable is evaluated during every trip and through monthly progress reports.

The outputs of the first years work will influence the direction of the project. It is necessary to determine what species we have got and in what abundance before we can finally decide, for example, what our export route will be and forge more formal trade links. This delay in determining the species list will be built into the workplan and project implementation timetable. Annex 15

Assessment

We are continually undertaking assessment of all components of the project: biological, social and economic, as described above, in order to ensure sustainability. Sustainability is key to the success of this project.

Monitoring

This year has been about establishing the baseline. The socio economic and biological survey protocols have been designed to allow monitoring in the future. These monitoring protocols are enveloped into the collection area management plans that are being developed to sustainable manage the fish stocks. In addition, the guidelines for the transportation (chain of custody) are currently being developed, which will provide further monitoring tools.

- Discuss any significant difficulties encountered during the year and steps taken to overcome them.

The first significant difficulty that we came across this year was finding a suitable project manager with the necessary skills at the salary resource available. There were many academics interested but it was felt that it wasn't a research role but a management role. As such, some of the tasks for the project manager have been redistributed to the trade advisor and greater project management is provided by the Project Leaders.

The other key difficulty was this delay in knowing what species we have and in what quantity. This is due to expanding the project to the two SDRs as discussed above. We have carried on with all other activities and we hope this delay will not cause issues in the long run but has highlighted the true seasonality of the industry and the

need to build in buffers in the business plan to minimise this seasonality for the importers, such as having holding tanks.

- Has the design of the project been enhanced over the last year, e.g. refining methods, indicators for measuring achievements, exit strategy?

The design of the project has principally been undertaken this year. The survey methods were reviewed and refinements made. This included using more specific techniques used for collecting ornamental fish as used in other areas of the Amazon and including specific questions in the socio economic surveys about past fisheries. The exit strategy has not been altered but we are still early days in deciding if the fishery is viable.

- Present a timetable (workplan) for the next reporting period.

See Annex 15

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

- Not applicable

**6. Partnerships**

- Describe collaboration between UK and host country partner(s) over the last year. Are there difficulties or unforeseen problems or advantages of these relationships?

The relationship with our partner the Sociedade Civil Mamiraua has worked well over the last year. There is sometimes a problem with communication due to the geographical distance, language and the team also being in the field without email contact but this is usually solved during site visits. There is also sometimes a conflict between work demands but this happens in all working environments and is managed through forward planning.

Having the relationship between SCM and ourselves has the added advantage of SCM being able to promote their work to a wider audience outside Brazil through the development of a new centre for conservation in London, Biota!. It has also given ZSL the advantage of having greater contact with DEFRA through this project.

- Has the project been able to collaborate with similar projects (Darwin or other) in the host country or other regions, or establish new links with / between local or international organisations involved in biodiversity conservation?

The project has been openly consultative with other similar projects in the region such as Piaba in Brazil and Iwokrama in French Guyana, the latter through the UK expert. The project has also attended conferences hosted by WWF TRAFFIC and has established a strong network with trade, government departments and non-government organisations and academia in the Amazon Basin and has facilitated much information sharing. Please see Annexes 7 a, b & c and 8 for conference outputs. We also worked collaboratively with NGOs within Brazil to submit a report on the ornamental trade and the need for national management measures. Furthermore, our Project Leader in Brazil advice has recently been sought about the impact of the ornamental fish industry in Bolivia and was invited to review a report written by Wildlife Conservation Society (WCS) on this. Annex 16.

Internationally, we have recently been advised of a similar Darwin initiative looking at the marine ornamental trade and so we hope to make contact with them.

## 7. Impact and Sustainability

- Discuss the profile of the project within the country and what efforts have been made during the year to promote the work. What evidence is there for increasing interest and capacity for biodiversity resulting from the project? Is there a satisfactory exit strategy for the project in place?

The most significant promotional event that we hosted this year was a visit by the UK Minister for Biodiversity, Jim Knight. The Minister was very impressed with the project and gave state and national newspaper interviews mentioning the project. The project was also promoted at the Conference on Biological Diversity, Conference of Parties 8 where posters were displayed, a presentation made at a side-event and Project Information Sheets were distributed (See Annex 17 a & b). The Project Information Sheets have been produced in Portuguese and English and so can be used in respective countries to promote the project.

Around the Amazon Basin, there is increasing concern from the fishers, exporters and conservation organisations about the sustainability of the ornamental fish industry. This was demonstrated by the WWF Traffic conference and the meetings held in Brazil. The profile of the ornamental fish industry is being raised within Brazil and the roles of the State versus the national environmental organisations who control the industry reviewed.

The research and investigations undertaken during the life of the project will determine the sustainability of the project and consequently the exit strategy. If the project is not economically viable, then there will be no continuation. This has been explained to the communities from the outset. However, if the extraction of ornamental fish has been demonstrated to be both ecologically and economically sustainable, then it will sit within the family of economic activities/livelihoods that are allowed within the Sustainable Development Reserves and will be subject to the same levels of monitoring by the scientists.

## 8. Post-Project Follow up Activities (max 300 words)

- Not applicable

## 9. Outputs, Outcomes and Dissemination

- Explain differences in actual outputs against those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule', i.e. what outputs were not or only partly achieved? Were additional outputs achieved?

There are no significant differences except for those described above. The most significant additional output is that we are carrying out the project in two reserves in order to provide a more viable product.

- Provide details of dissemination activities in the host country during the year, including information on target audiences. Will dissemination activities be continued by the host country when the project finishes, and how will this be funded and implemented?

Project information sheets have been produced in Portuguese and disseminated at the CBD COP8. They have also been distributed at the SDRs and to the exporters in

Manaus. They will be taken to all meetings. An English version has also been produced and these will be used in the same way.

Presentations on the project have been given at the WWF Traffic Conference in Bogotá 'Socio economic aspects of sustainable management of the international trade of freshwater ornamental fish in the north of South America: challenges and perspective' and with FUNBIO/UNCTAD in Brasilia 'Evaluation of value chains for the bio-commerce project'. The attendees have set up elists to continue dialogue.

- Please expand and complete Table 1. **Quantify** project outputs over the last year using the coding and format from the Darwin Initiative Standard Output Measures (see website for details) and give a brief description. Please list and report on appropriate Code Nos. only. The level of detail required is specified in the Guidance notes on Output Definitions, which accompanies the List of Standard Output Measures

**Table 1. Project Outputs 2005/2006 (According to Standard Output Measures)**

| Code No. | Quantity | Description |
|---|---|---|
| 1B | 1 | One Brazilian PhD in preparation. Expected completion date 2009. |
| 2 | 1 | One Brazilian MSc research thesis in preparation. Expected completion date December 2006. |
| 4A | 14 | At least 13 Brazilian undergraduate students have received training in the ecology of ornamental fish and on the ornamental fisheries. A further Brazilian undergraduate student is completing her dissertation with the project. She received one week's formal training in ecological survey techniques and also constant assistance with taxonomic identification. |
| 4B | 6 | Pro rata: approximately six training weeks have been provided to undergraduates. |
| 4C | 2 | Two post graduate students have received training in ecological survey techniques. |
| 4D | 2 | Two 'formal' weeks training were provided although informal support has been provided through out the year through close supervision especially with taxonomic identification. |
| 5 | 1 | Our Junior sociologist has been provided with informal training from the Head Sociologist through out the project although isn't registered on an official course. |
| 6A | 0 | The training of the scientific coordinator and junior sociologist has been included above. Training of the fisher will commence next week. |
| 7 | 2 | A biological survey protocol and socio-economic survey protocol were produced. Other printed reference material was also utilised as it was deemed pointless in producing training materials for the scientists/sociologists for the sake of it. |
| 8 | 9.6 | In total, 9.6 weeks were spent in the host country by UK staff including 7.4 weeks from Project Leader and |

| | | |
|---|---|---|
| | | 2.2. Weeks from our aquarist (water quality and fish welfare). Furthermore, one UK staff member, out trade advisor, has resided in Manaus, Brazil, since September 05 and will remain until the end of the project. |
| 9 | 0 | A draft contents list for the collection area management plan has been drawn up and supporting information collected. |
| 10 | 0 | The fish suitable for extraction have not been selected yet. |
| 11B | 0 | No papers have been submitted to peer reviewed journals as yet. |
| 12B | 1 | The biological database is updated every time a survey has been completed and included information on habitat type, water quality, ambient conditions etc. |
| 13B | 1 | The species reference collection is enhanced when new species are found within the reserves. |
| 14A | 0 | Early preparations are being made to host workshop to discuss and take forward suggested best practice guidelines. |
| 14B | 3 | The project was presented at three workshops hosted by other organisations: CBD COP8; WWF Traffic in Bogotá; and FUNBIO/UNCTAD in Brasilia. |
| 15A | 1 | At least one nation press release was made linked to COP 8. |
| 15B | 1 | At least one local (state) press release was made in Brazil |
| 15C | 1 | One national press release has been made in the UK. |
| 16A | 3 | A Project Information Sheet has been produced in Portuguese and English. Two articles have been produced for the ZSL newsletter which has a distributed to 30,000 |
| 16C | 30,000 | The ZSL members' magazine gets circulated to 30,000 addresses. 2,000 Project Information Sheets were produced in both English and Portuguese. |
| 17 | 0 | A network has been established as the result of the WWF Traffic conference to exchange information and ideas about the ornamental trade. Whilst our project is integral to this and facilitates the networking, we are not responsible for its establishment. |
| 18A-B | 0 | No known television articles |
| 19 A-C | 1 | No known radio articles |
| 20 | £11,000 | The following have been purchased: a project boat (£7,000); survey equipment including GPS, water quality meters, cameras, nets etc (£3,000) and a computer (£1,000). |
| 21 | 0 | The legal requirements for setting up a formal organisation such as a fishers association have been determined. |

| | | |
|---|---|---|
| 23 | £2,000 | £2,000 was kindly donated by a ZSL trustee. |

- In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, e.g. title, name of publisher, contact details, cost. Details will be recorded on the Darwin Monitoring Website Publications Database. Mark (*) all publications and other material that you have included with this report.

**Table 2: Publications**

| Type * (e.g. journals, manual, CDs) | Detail (title, author, year) | Publishers (name, city) | Available from (e.g. contact address, website) | Cost £ |
|---|---|---|---|---|
| Project Information sheets | 'Conserving ornamental fish in the Amazon.' Zoological Society of London, 2006. English and Portuguese ver. | ZSL | www.zsl.org or Conservation Programmes, ZSL, Regent's Park, London, UK. NW1 4RY | Free |

**10. Project Expenditure**

- Please expand and complete Table 3.

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

## 11. Monitoring, Evaluation and Lessons

- Discuss methods employed to monitor and evaluate the project this year. How can you demonstrate that the outputs and outcomes of the project actually contribute to the project purpose? i.e. what are the indicators of achievements (both qualitative and quantitative) and how are you measuring these?

Project progress is monitored against the log frame, key milestones, project outputs and the work timeframe. Each are reviewed quarterly when field visits are undertaken and the team is brought together. Progress is also monitored through the monthly reports. Our annual detailed evaluation and planning exercise will take place in August when we will have a better indication of what species we will have to export.

The indicators for our success are stated in the Measurable Indicators of the logframe. These were carefully considered at the start of the project and are reviewed regularly. By achieving these indicators we are certain that the project outputs will be achieved and hence the project purpose. It is imperative that we demonstrate sustainability at each stage of our chain of custody. If we can't do this then we have not achieved our project purpose of protecting our populations of ornamental fish. Therefore, although we might achieve our measurable indicators, they may demonstrate that we cannot achieve our project purpose.

The means of verification of our outputs are listed and numbered in our log frame in Annex 2 and are linked to the progress and achievements in Annex 1. These are demonstrated, where possible, in the other annexes of this report. The details provided in the Progress and Achievements column will hopefully demonstrate the contribution to the project progress.

- What lessons have you learned from this year's work, and can you build this learning into future plans?

The key lesson we have learnt from this years work is how seasonal the fish collecting period is. It is imperative that we building this into our business plan. We must also look at this within the context of the other livelihood activities of the communities for compatibility, for example, the collection period does not clash with harvest time etc. It is likely that this seasonality will mean that it is economically not viable to establish our own holding facility. In addition, legislative requirements mean that an export licence must be attained to be allowed to export fish and neither ZSL nor SCM would be eligible. As such, it is likely that we will need to work with existing exporters and freight agents. This will focus our work on how we can apply our best practice guidelines through the existing system. This will all be tested in the business plan.

Our other key finding is that fish are often loss leaders in the UK retail market i.e. retailers make more money from tanks and gravels to subsidise the cost of fish. This combined with the fact that the typical consumer believes that wild caught fish are 'bad' indicates that we will need a strong marketing campaign to create an interest in our fish and justify the expense of importing them.

We have also discovered that our fish are not particularly interesting to ornamental hobbyist. The IBAMA export list also hinders finding fish that we are able to export that might create market interest. We therefore have to look at the feasibility of trying to add fish to the IBAMA list if deemed of interest to the ornamental fish keeper.

The narrow financial margins are also of big concern to the exporters in Brazil. It is felt that some exporter may go out of business this year. We must make sure that this business pressure is not passed down the chain of custody to the fishers them selves.

On the project management side, the key lesson learned is that we need to utilise field trips more to make progress with the project and decision make as the team leaders have many demands on them outside this project.

**12. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum)**

I am more than happy to write something about the Minister of Biodiversity's visit to the project in March 06.

**Annex 1 Report of progress and achievements against Logical Framework (June 2005) for Financial Year: 2005/2006**

| Project summary | Measurable Indicators | Progress and Achievements April 2005-Mar 2006 | Actions required/planned for next period |
|---|---|---|---|
| **Goal***:* To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve<br>• The conservation of biological diversity,<br>• The sustainable use of its components, and<br>• The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources | | | |
| ***Purpose*** Populations of ornamental fish species in MSDR protected through management within a sustainable ornamental fishery, made possible through strengthened capacity of fishers, local community, researchers, reserve managers and national and international traders. | Ornamental fish populations in MSDR remain at natural levels whilst accommodating controlled sustainable extraction of selected fish species by May 2008.<br><br>Two Organised Community Associations have demonstrated capacity to implement and manage the sustainable extraction of ornamental fish from within MSDR by May 2008.<br><br>Best Practice Guidelines adopted by all links in the supply chain from MSDR to retailer by May 2008 to ensure the sustainable trade in ornamental fish. | Baseline surveys are being undertaken at both reserves to determine what the natural fish populations are. Ecological studies will determine a sustainable level of extraction using the precautionary principal.<br><br>The content list for the Collection Area Management Plan has been drafted and the supporting information collected.<br><br>Communities have been identified and introductory meetings held. Baseline socio-economic studies completed.<br><br>A review of the certifications schemes has been completed assessing suitability for application to this industry. Draft guidelines are being produced. | *(report any lessons learned resulting from the project & highlight key actions planning for next period)* |
| **Outputs** | | | |

| *(insert original outputs – one per line)* | *(insert original output level indicators)* | *(report completed activities and outcomes that contribute toward outputs and indicators)* | *(report any lessons learned resulting from the project & highlight key actions planning for next period)* |
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| **Outputs**<br><br>1. Biodiversity of ornamental fish species in MSDR assessed, and a standardised, repeatable monitoring programme established.<br><br>[Populations of ornamental fish in the MSDR are maintained at a natural level.] | 1.1 MSDR ornamental fish population surveyed to document species present and population abundance within the designated fishing zones. The results written up and disseminated by May 2006. | 1.1.1 Biological survey protocol has been prepared, reviewed, revised and agreed. See Annexes 9a and b. The fishing zones were identified including examining village ordinances.<br><br>1.1.2 Baseline surveys of the fish populations commenced in June 05 in Mamiraua SDR and in November 05 in Amana SDR. Fish surveys have been undertaken every two months at a minimum of five sites in each of the reserves. In addition, historical fish samples from the same sites but within different habitats, such as the floating meadows, have been processed and analysed. See Annex 14<br><br>1.1.3 Discussions have been held with communities totally over 229 families to harness local knowledge about where the best fishing areas are. The results will be presented to the communities after the baselines have been completed. | Early review of our biological survey protocol in reference to the initial analysis of the ornamental fish trade meant we had to adjust our survey methods to make sure we were capturing data on our possible target fish.<br><br>Initial results have shown that the habitat in the Amana SDR, black water ecosystem, is more productive than the Mamiraua white water system with respect to ornamental fish. Our baseline surveys have also demonstrated the importance of seasonality within the region due to the hugely variation in water levels making it very hard to catch fish in the rainy season. The key collecting period has been identified as July/August and as such we will not have a complete baseline until then. This means we will not produce baseline reports for the designated fishing zones until November 2006. At this point we will be able to present the findings to the communities (proposed date June 06)<br><br>**Key actions: Complete and write up baseline surveys. Add results to the data base and present results to the communities by January 2006.** |
| | 1.2 Ornamental fish stock monitoring protocol completed by August 06 for the Collection Area but which may be applied in a wider Amazon context. | 1.2.1 In order to determine which species are suitable for extraction, we need to complete the baseline studies during the key fishing season, which we have identified as July/August when the water | A key lesson from this first year is how critical (and short) the collection season is. |

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| | | levels are low although the species list and relative abundances is reviewed after each survey period. (See Annex 18). These results are cross-referenced with the trade analysis which has identified those fish desired and are allowed in the trade (see Annex 19) as well as considering the welfare issues. Through developing a matrix/decision tree, (see Annex 20) we will prioritise which fish are suitable for extraction at sustainable levels. This will provide an auditable trail of how and why we can justify the fish extraction and another monitoring tool.<br><br>1.2.2 The biological sampling protocol has been developed to ensure that it will produce comparable results for long term monitoring (Annex 9 a & b). Once the species list has been determined, see above, the monitoring protocol will be finalised. | **Key actions: List species suitable for extraction. Using this list focus detailed ecological and behavioural studies. Develop and finalise monitoring protocol. Develop and apply matrix to select species. December 2006** |
| | 1.3 Collection Area Management Plan (CAMP) for ornamental fish extraction completed by April 2008 to ensure its sustainable management. | 1.3.1 The contents list for the Collection Area Management Plan has been drafted (See Annex 5).<br><br>1.3.2 The collection of the background information is 80% complete. | **Key actions: Compile CAMP for one collection area as a trial, review and complete for other collection areas. July 2007.** |
| | 1.4 At least four biologists trained in scientific survey techniques to assess and monitor fish populations through three training courses run by Head Scientist on an annual basis commencing August 05. | 1.4. 1 One PhD student, two MSc students and one undergraduate student have been trained in the biological survey methods by the Head Scientist. The Head Scientist supervises all their outputs.<br><br>Additional outputs: At least 13 other undergraduate students have received training about ornamental fish and have carries out investigations in to the local discus fishery. | **Key actions: A new MSc student and undergraduate need to be identified for the following academic year and trained in survey techniques. Continue monitoring of fish collection areas and write up results. July 2006** |

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| 2. Social and economic parameters of community determined and monitored, local knowledge and needs identified, and feedback loop established.<br><br>[Increase livelihood opportunities from extraction of sustainable levels of ornamental fish lead to increased income for households in MSDR]. | 2.1 Households that have elected to be involved in the project benefit from an increased income of 10% due to the new fishery by 2008. | 2.2.1 The socio economic survey protocol was developed and agreed in line with the standard survey methods used in the SDRs. See Annex 13.<br><br>2.1.2 229 families in Mamiraua and Amana SDRs have been approached and introduced to the project. See Annex 12a – poster showing the progress of the Socio Economic Surveys to date. Those communities involved in the project will be finalised when the baseline surveys are complete<br><br>2.1.3 Interviews have been conducted with 229 families in the SDRs to investigate and determine the baseline socio-economic situation.<br><br>2.1.4 The socio-economic monitoring protocol was considered when developing the survey methods to ensure that indicators were included to measure benefit from the project. Monitoring will commence in the next financial year. | **Key actions: Confirm villages – linked to collection areas. Commence socio economic monitoring. December 2006.** |
| | 2.2 Two Community Associations have the organisational capacity to effectively manage and monitor a sustainable trade in ornamental fish in MSDR by May 2008. | 2.2.1 A sociologist was recruited in June 2005. She is currently working with field assistants to conduct the socio-economic surveys.<br><br>2.2.2 Results of the socio-economic surveys are being written up. A summary of them can be seen in the poster attached. These will be presented to the communities on completion.<br><br>2.2.5 The legal and legislative processes in setting up the community organisations | **Key actions: Ensure that sufficient capacity is available for training sessions for the communities once baseline surveys completed. Complete socio-economic write up and present findings to communities. August 2006 Develop best practice guidelines in conjunction with communities**. **September 2007.** |

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| | | have been determined. | |
| 3. Market and economic potential for fishery identified, a business plan and standardised guidelines in place for trading procedure from source to end-user. | 3.1 A sustainable trade in ornamental fish is established from the MSDR by May 2008. | 3.1.1 An initial industry analysis has been undertaken on the UK ornamental industry. See Annex 3. Contacts have been established with a range of key stakeholders including animal welfare, trade associations, retailers, consolidators and importers. See Annex 4.<br><br>3.1.2 An analysis of the trade in Brazil and the other Amazon regions has been progressed and reports produced in draft until further information received. See Annex 21.<br><br>3.1.3 Trade and legislative report is progressed. A key regulation is that fish must be on the governments approved list for exportation (Annex 19). A future worry is the possible establishment of new health standards for health imported fish into the European Union.<br><br>3.1.4 The business plan is being drafted by our trade advisor. | The ornamental fish industry is an informal trade. It is therefore sometimes difficult to get a direct answer on necessary information, such as the average mortality rates. This is due to caution on behalf of the business considering us either competition or government researchers. Also it may well be that many things are simply not monitored. It is also difficult to get up to date information from government sources.<br><br>Fish cannot be exported from Brazil unless it is listed on the Government's official list of fish that can be exported i.e. a positive list rather than a prohibited list. This fish list is very limited and means that there are relatively few species of ornamental fish that can be exported and those that are often saturated the marked already.<br><br>**Key actions: If we have determined marketable species that are suitable for extraction and which are not on the IBAMA government list, we must decide whether we should approach the government for it to be added providing our management measures are implemented. December 2006.**<br><br>**Key action: Progress the business plan. This will determine how we now develop our relationships with the business stakeholders. It might be pertinent to test our business plan on a few key species rather that looking at the whole species list. Draft for February 2006.**<br><br>**Key action: investigate possible** |

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| | | | **introduction of new health standards December 2006.** |
| | 3.2 Standardised Best Practice Guidelines are adopted by May 2008 for the sustainable trade in ornamental fish from MSDR that are transferable and can be applied in a wider Amazonian context. | 3.2.1 An assessment of relevant certifications schemes has been made to look at the appropriateness of the model to the ornamental fish species. (See Annex 6). As suspected, the model prepared by the Marine Aquarium Council seems the best to be interpreted and applied for the trade in ornamental fish in the SDRs.<br><br>3.2.2 The Best Practice Guidelines are being prepared. A suggested content list is included in the certification report. See Appendix of Annex 7c. | There is significant discussion in the Amazon region about benefits and dis-benefits of applying a certification scheme to the Amazon ornamental industry. This project is now seen as a case study. A workshop was held in Bogotá hosted by Traffic to assess the problems within the industry. See Annex 7 a-c<br><br>**Key action: Host workshop to present best practice guidelines to stakeholders including trade, scientist, conservation NGOs to receive feedback on them. Review and start implementation process. April 2007.** |
| 4. Fish welfare maintained from source to end user | 4.1 Ornamental fish welfare secured by achieving 80% reduced mortality along the supply chain from 2008. | 4.1.1 Assessment of water quality standards made with reference to fish welfare. Experiments have been undertaken to investigate the variation in water quality with changing ambient conditions e.g. how oxygen levels or pH levels change with increasing temperature.<br><br>4.1.2 Three meetings have been held with exporters in Manaus to discuss fish welfare. There is a large difference in standards between the different exporters and these discussions have helped shape the development of our business plan. | **Key action: a key action for the next phase is to monitor the changes in water quality from source to supplier and identify those critical periods for fish welfare**. **December 2006**<br><br>**Key action will be to organise 'exchange' programmes with other ornamental fishers from the Rio Negro to learn about fish collection and handling skills. April 2006.** |

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| Standards for sustainable harvesting upheld within reserve.<br><br>[This is included in Outputs 1 and 2] | | | |
| Understanding of, support for, and participation in sustainable ornamental fishery within community.<br><br>[This output is included in Output 2] | | | |

*Note: Please <u>do NOT expand rows to include activities</u> since their completion and outcomes should be reported under the column on progress and achievements at output and purpose levels.*