

**CUSUCO NATIONAL PARK PROPOSED MANAGEMENT SCHEME**

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## 1. Introduction

In 2005 the Operation Wallacea Trust began talking with UNDP in Tegucigalapa over the development of a best practice management programme for the Cusuco National Park. The Operation Wallacea survey teams had demonstrated the biological importance of the Park with 9 the discovery of 9 new vertebrate species to science, the rediscovery of an extinct species and the doubling of the species lists for all the taxonomic groups studies to date. UNDP agreed in principle to develop a management programme with the Trust for proposed funding by GEF.

One of the major problems with conservation in Honduras has been funding the proper management of the National Park system. Corperacion Hondurena de Desarrollo Forestal (COHDEFOR), which is responsible for the National Park system, has tried both direct management and the subcontracting of the management of specific Parks to NGO's. The Cusuco National Park was one of the Parks where the management was subcontracted and from 1995 - 2003 the Fasquelle Foundation managed the Park on behalf of COHDEFOR. This San Pedro Sula-based NGO managed to obtain funding from the US and Japanese governments to help improve the management of the Park and to begin some economic development. In 2004 the agreement with the Fasquelle Foundation was terminated and COHDEFOR took direct control of the forest for a short periojd before agreeing a new subcontract arrangement with DIMA (the environmental department of the three municipalities in which the Cusuco Park partly lies). Despite these changes in name in practice the Park has been virtually unmanaged in recent years because of the lack of sustainable funding for the long-term management of the Park. This project aims to develop contracts with each of the communities in the buffer zone of the Park, which will attract investment so that long term income streams can be developed. In exchange, each of the villages has to agree that none of their village members will hunt or log in the core conservation forests. If such transgressions do continue then the income stream for the village will be suspended until the community sorts out the problem. Levies will be paid on additional income generated by the communities from these enterprises and this funding is to be used directly for the employment of rangers and management of the Park.

The GEF funding sought would be used to set up the Cusuco National Park as a demonstration best practice forest site in Honduras. Cusuco National Park has a number of advantages as the location for a best practice management programme for Honduras. Operation Wallacea with its team of academics led by the University of Nottingham and funding from paying volunteers is committed to working on the Park for a further 8 years. This programme provides additional funding, logistics support for any GEF staff and additional data on the success of the management programme. In addition the annual Operation Wallacea presentations to all UK and many east coast US universities help raise the profile of Cusuco amongst conservationists and academics. There are no similar programmes in any other Honduran National Parks. Cusuco National Park is also relatively accessible with a track passable by vehicle to the edge of the core zone and previous investment has resulted in a trail system and buildings in the Park which can be used as a base for some aspects of the project. There is much expertise available to help implement the management programme. Many of the rangers who were trained and worked under a previous funding programme still live in the area and the enforcement programme could be rapidly resurrected. The core zone of the Park is relatively undisturbed and there are perhaps more existing biological data on the Park than any other National Park in Honduras.

Successful implementation of a project that yields long-term income both for the local communities and established self- funded and proper management of the Park would have much wider application throughout Honduras.

## 2. Biological importance of the Park

The Cusuco National Park in the Merendon mountains of north-western Honduras provides protection for a representative patch of Central American montane forest. Initial studies completed by the University of Nottingham/Operation Wallacea teams in the Cusuco National Park in 2003 to 2005 and as part of a rapid biodiversity assessment programme funded by USAID in 1996 have shown that the Park is of great biological value for the following reasons:

- The core zone forests are still relatively undisturbed with no signs of cut trees or evidence of escaped plantation species that are found in many other more disturbed forests in Honduras. A good botanical indicator of the integrity and conservation value of a forest is the level of invasion by exotic species; throughout the 2003-2004 surveys of Cusuco only one exotic tree and one exotic herb species were noted. The tree was a single specimen of rose apple *Syzygium jambos*, a Malesian species causing major conservation problems on Pacific ocean islands and elsewhere. The herb was *Crocasmia crocosmiiflora*, which is common in disturbed areas such as path or track edges and around the Visitor Centre, but not in the forest proper.
- There is great floral diversity with both northern hemisphere elements such as pines *Pinus*, oaks, *Quercus*, and sweetgums, *Liquidambar* mixed with species derived from the southern hemisphere Gondwanaland, such as *Podocarpus*, *Weinmannia* and the Proteaceae genus *Roupala*. This biogeographical floristic diversity mirrors the mix of northern and southern hemisphere animal species that are such an important feature of Central American biodiversity. On top of this biogeographical diversity there is striking altitudinal diversity. Prior to the Operation Wallacea surveys in July and August 2004, the only previously report on the botanical diversity was from a few days' survey in 1993 (C. Nelson R, in The Nature Conservancy/Fundacion Ecologista Hector Rodrigo Pastor Fasquelle, 1994, unpublished). Given this lack of survey work to date it is apparent that the floristic diversity of the Park is under-estimated and it is therefore difficult to make comparisons with the diversity of other better-studied areas. After 22 sample plots (20m X 20m) completed in the eastern Park, the species accumulation curve is still rising steeply. There are still a number of specimens requiring identification; from those already identified at least 16 families of vascular plants, 38 genera and 61 species previously unrecorded from the Park have been added. The magnificent tree ferns, one of the most striking features of the rain forest vegetation, provide a striking example of how little the flora has been worked on. To date 5 species in 3 genera have been recorded, as opposed to the single species on the 1993 list. The 1993 list contains only 3 palm species but at least 6 have now been distinguished. Some of these palms are both rare and economically useful: further work is required to complete their identification and assess their distribution. Other specimens still under investigation include a *Magnolia* that does not appear to match anything in the literature or in international collections at Kew herbarium. Much of the Operation Wallacea work has concentrated on the woody species and the survey has so far added 53 species of trees and shrubs to the existing (1993) Park inventory, an increase of 62%. The sample plots ranged in diversity from 3 - 4 species (in the uniform stands of pine) to 30+ species in the lower altitude and better-soil plots where, in places, almost every individual tree is a different species!
- The Park provides an excellent example of cloud forest fauna with a number of restricted range cloud forest specialists. For example Cusuco is home to seven species of Jewel Scarab beetle (*Chrysina* sp), one of which, *Chrysina cusuquensis* is endemic to the Park. These beetles inhabit pine and pine-broadleaf forests and are restricted to between 1400 and 2100 meters altitude. Amongst the butterflies a total of 69 species have been recorded so far, including notable Neotropical forest species such as *Caligo uranus*, *Prepona brooksiana*, *Adelpha leuceria*, *Archeoprepona* species (particularly *A. demophon* & *A. meander*), *Caligo* species, *Ithomia* species and *Morpho* species. Amongst the herpetofauna there are 11 species endemic to the Park and its immediate vicinity, including the frogs *Eleutherodactylus merendonensis*,

*E. omoaensis*, *Plectrohyla dasypus*, and *P. exquisita*; the salamanders *Bolitoglossa diaphora* and *Cryptotriton nasalis*; the lizards *Norops amplisquamosis* and *N. cusuco*, and the snakes *Geophis* sp 1, *Geophis* sp 2, and *Omoadiphas aurula*. Regional endemics known only from the greater Cordillera de Merendon along the Honduras-Guatemala border in the departments of Cortés, Santa Barbara and Copán, comprise a further 10 species including: the frogs *Eleutherodactylus charadra*, *E. milesi*, *E. rostralis* and *Duellmanohyla soralia*; the salamanders *Bolitoglossa conanti* and *B. durni*; the lizards *Celestus montanus* and *Norops johnmeyeri*; and the snakes *Bothriechis marchi* and *Ninia espinali*. Amongst the birds the cloud forest specialists are well represented including the iconic Resplendant Quetzal and two range-restricted species (North Central American Highlands Endemic Bird Area –BirdLife International designations): Green-throated Mountain Gem and Wine-throated Hummingbird and one near-threatened species: Highland Guan. The small-mammal fauna mostly comprises locally restricted endemics or specialised and/or rare species. The Robinson Mouse Opossum (*Marmosa robinsonii*) found in the 2004 Cusuco survey has never been recorded from mainland Honduras before.

- The Park appears to be home to a number of previously undescribed species. The Operation Wallacea surveys have described 2 snakes, 1 lizard, 1 frog, 1 salamander and four rodent species that are new to science.

Despite overwhelming evidence of the biological importance of the Park, the current diversity is still substantially under recorded. For example, in 2004 and 2005 the Operation Wallacea surveys doubled the number of herpetofaunal species recorded in the Park, despite extensive previous work on this group. These herpetofauna surveys also recorded a number of species representing considerable range extensions. Notable findings from 2004 and early 2005 include *Eleutherodactylus charadra*, a streamside frog previously thought to have disappeared from habitats above 900 m elevation; the skink *Sphenomorphus incertus*, previously only known from localities over 175 km to the west in Guatemala and 125 km to the east in north-central Honduras; and the colubrid snake *Omoadiphas aurula*, a monotypic genus of snake previously known from only a single specimen collected outside the Park. The 2004 Operation Wallacea surveys increased the butterfly listing for the Park from 8 to 69 species, whilst the bird list has increased from 105 species to over 200. The bat list was increased from just 3 to 17 species, including 10 that represent range extensions; two particularly noteworthy records were *Eptesicus brasiliensis* – previously unrecorded in Honduras, – and *Phyllostomas hastatus*, which was captured at Buenos Aires (1200m) but previously only recorded up to 600m altitude, representing a significant altitudinal range extension.

### **3. Proposed structure of the management programme**

The proposed programme would contain the following elements:

#### **Component A. Development of village contract scheme**

Each of the villages in the Cusuco buffer zone would be offered a contract which will develop long-term income streams for the villages and in return the villages will commit to ensuring that none of their village members hunt or log in the core conservation forests. If they do break this part of the contract then the investment will be suspended until the rogue elements are brought under control. The contract will also entail a commitment by the villagers to have regular, minuted meetings about their stewardship of the buffer zone and how their activities might be impacting environmentally on this zone. In order for the contract system to work the investment part of it must have the following elements:

- a. It must be used to develop businesses that could be suspended if the village does not fulfil its part of the contract. In other words it can't be major capital investment because short of demolishing what has been built or bought there are no realistic sanctions in the event of a breach of the contract.

- b. The benefits must be spread widely amongst the villagers. If only a few people benefit there will be little incentive for the others to comply with the contract conditions.
- c. The funding should be a pump priming exercise to establish businesses that will run long after the initial funding has stopped.

There are a limited number of investment options that would fulfil these criteria but they essentially fall into three categories:

1. **Getting greater value from products they are already producing.** This is essentially Fair Trade but the problem with traditional Fair Trade schemes is that although they pay fair wages to the producers there is no link between purchase of a product from the community and the impact that community has on the conservation forests. So the community most involved in the illegal hunting and selective logging in the Cusuco National Park is the only one that is currently receiving Fair Trade prices! The proposal is to offer a Fair Trade Plus scheme to the communities in the Cusuco buffer zone where they will receive enhanced prices for their commodities (eg coffee, chocolate etc) in return for ensuring the whole community comply with the no hunting or logging restrictions and the stewardship principles. If this doesn't happen then the Fair Trade Plus scheme is suspended until the village sorts out the problem. Initial funding would be needed to establish this business and ensure regular exports of products under this scheme to developed countries' markets. The advantage to the customer buying the products is that they can be certain that purchasing the product will be directly ensuring the survival of the cloud forest fauna.
2. **Improving agricultural production.** The grant would need to employ an agronomist to produce a report for each of the villages on how they could improve agricultural production. Additional Agricultural Development Specialist contracts will be awarded for advice on particular crops after this initial assessment has been completed.
3. **Ecotourism** Operation Wallacea has completed an assessment and action plan for how **ecotourism** could be developed in the Cusuco National Park Cusuco has a number of advantages: it is close to a major domestic market and to the main international airport for tourist arrivals to the country; there is an existing access road to the edge of the core zone; there is an existing basic infrastructure in the Park including marked trails; there are relatively easily seen cloud forest species (eg Resplendant Quetzal) and easily heard primates (especially howler monkeys); and the forest is very beautiful and relatively safe for hiking (the main danger being poisonous snakes). The grant would fund the development of local research tourism, jungle-training weekends, short stays for international visitors, university training courses and day visits (see ecotourism development plan). This development would contribute significantly to the revenue needed to run the Park and would also have a substantial direct impact on some of the villages close to the access routes (eg Buenos Aires and Santo Tomas)

The grant would also need to fund a Project Manager to ensure the village contracts were agreed and implemented prior to receipt of the additional income streams.

#### **Component B. Enhancement of enforcement activities**

There is currently widespread illegal hunting and collection of birds for the pet trade within the Core Zone of the Park. This has arisen since the reduction of the ranger team from 15 staff spread across the forest when the previous funding scheme was in position, to a point where there are only 3 rangers confined to just 2 sites on the edge of the forest and with little support. The radio booster system that was installed to enable patrolling is still functional and many of the trained rangers who were used to patrolling throughout the Park are still living within the area. The grant would fund the re-creation of the ranger team and the patrolling programme. However, the grant aid funding would be gradually reduced after the first year so that the income from the village contracts and ecotourism activities gradually took over the direct costs of supporting the patrolling team. The Honduran government would be responsible for the administration and office costs for the Ministry of Conservation and Forest Development offices in San Pedro Sula and Tegucigalpa.

### **Component C Improvement of awareness of biological importance of the Park and existing regulations**

Widespread awareness of the regulations is important in order to ensure high levels of compliance. Initial studies completed by Operation Wallacea teams in 2004 suggested that whilst knowledge of the regulations for the core zone was generally good within buffer zone communities, there was much confusion over whether activities such as firewood collection, use of wood to repair houses, extension of field areas, shooting of birds and animals etc was allowed in the buffer zone. Funding in this component would be aimed at producing explanatory leaflets for distribution to each of the villages together with short training courses for each village. Engendering pride in the unique value of their environment is another important aspect of this component. This could be done by producing colour leaflets illustrating the important species together with short training courses run in the core zone forests. It is just as important that this aspect is well known in communities outside the buffer zone. Operation Wallacea surveys in the nearby city of San Pedro Sula revealed that most city inhabitants thought the main function of the Park was protection of the watershed. There was little knowledge about the unique fauna of the cloud forest. Increasing the level of awareness of the biological value of the Cusuco National Park would also help improve the appeal of the Park to visitors, both Honduran and international. The leaflet explaining the biological value of the Park and the opportunity for day-long introductory field courses to the fauna of the rain forest would therefore also be extended to Honduran nationals from San Pedro Sula, and information would be placed at the airport and in tourist agencies.

### **Component D Implementation of monitoring scheme and training of Honduran field scientists to complete similar programmes elsewhere**

If the Cusuco National Park is to be used as a best practice example for Honduran National Parks, then it is important to demonstrate with published results in international peer reviewed journals, the effects of the management programme. The advantage that the Cusuco National Park has over other Parks in Honduras is that the University of Nottingham in conjunction with Operation Wallacea (a research tourism organisation that is funded by paying volunteers who participate in research projects run by university academics) has signed an 8-year agreement to complete annual research programme to assess forest structure and integrity, biodiversity of key groups of organisms (eg herpetofauna, birds, butterflies, small mammals etc) and socio-economic aspects of local communities. There is therefore much expertise on site each year funded by Operation Wallacea to assist with the monitoring programme. However, a core team of Honduran scientists need to be trained to be able to carry out biodiversity and socio-economic assessments. It is proposed that the crucial components of any monitoring programme should be undertaken by Honduran students as part of a PhD programme. There are no PhD programmes currently running in these subject areas at Honduran universities so it is proposed that the project supervision is offered on a competitive tender basis to overseas universities, but that the resultant studentship must be offered to a Honduran Masters student. A high level of supervision would be ensured by this approach as well as publications on the impact of the management programme on key aspects of biodiversity and economics. A further benefit is that at least 4 Honduran PhD students would be trained, so that similar monitoring programmes elsewhere in Honduras could be run by these qualified researchers. Additional monitoring data on other taxonomic groups (eg butterflies, herpetofauna, bats, small mammals, large predators etc) would be provided as part of the Operation Wallacea research programme, which is separately funded.

The Cusuco National Park was originally designated primarily to protect the water catchment of the Sula valley. Yet despite the continued importance of the Park in protecting the water quality of the rivers and streams from which abstractions are taken for water supply, there is no existing biological monitoring programme to assess the effects of various potential pollution sources on the water quality. Chemical monitoring is carried out, but it is expensive and the budget for it is so low that the value of this monitoring is extremely limited. The main reason for the lack of biological monitoring is the absence of a biological water quality index for Honduran rivers. It is proposed that as part of the Cusuco monitoring programme a biological water quality index that can be used throughout the Merendon mountains is developed via a part-funded PhD programme and that a routine biological monitoring programme throughout the Merendon mountains is implemented using this water quality index by the Municipalities' water supply departments.

There is also a need to enhance the numbers of Honduran graduates with biodiversity assessment field skills. It is proposed that funding for 10 Honduran university students to join the various biodiversity and socio-economic research teams for 10 weeks each year. These undergraduates would spend a week each on a range of biodiversity assessment and socio-economic projects.

#### **Component E Development of plans for four other sites in Honduras where similar schemes could be introduced with much reduced initial funding requirements**

Once the village contract system, enforcement and educational programmes are in position and the monitoring teams are producing data to show the effectiveness of this type of approach, then the Project Management team would concentrate on developing plans for village contract schemes to be run in 4 other Honduran forest National Park sites. Additional schemes will not require the investment programme needed to establish the Cusuco National Park as a best practice example, since the demonstrable economic benefits to communities should drive the development of contracts in other Parks.

### **4. Outputs**

#### **Component A. Development of village contract scheme**

This Component would have the following criteria against which progress would be assessed:

*A1 The enhancement in village economies in the buffer zone as a result of the contract programme.* There should be a noticeable and perceived improvement in the economies of each of the buffer zone villages.

*A2 The numbers of people in the buffer zone gaining their annual income from the contract programme.* It is not just total income obtained by each of the villages but how widespread the benefits are of the contract schemes. Thus if the village is gaining income from Fair Trade Plus schemes then for each household in the village the percentage of their income that comes from the contract schemes will be calculated and from that the person equivalents in the family reliant on the contract income will be calculated. The people equivalent figures for each village will be summed and the benefits of the contract schemes expressed as a percentage of the total population for each village.

*A3 The income generated in levies and Park entrance fees as a percentage of the funds required to sustain the Park patrols.* This figure should continue to grow until it reaches a point capable of sustaining the Park patrolling costs.

*A4 The development of stewardship attitudes in the buffer-zone communities.* The important thing is that the villagers themselves become convinced of the value of the Park, not just for their own economic benefit, but also from a broader viewpoint. The minutes of the regular meetings about the stewardship role of the villagers should reflect their changing attitudes to the Park's plants and animals.

#### **Component B. Enhancement of enforcement activities**

This Component would have the following criteria against which progress would be assessed:

*B1 Number of man-hours spent on patrols within the Park.* Each ranger would be required to record the number of hours spent on patrol each week and the areas covered. A patrolling plan would be produced ensuring that all areas of the Park are covered through the week and at different times of day. A minimum number of patrolling hours per week would be built into the contracts to avoid the problem of rangers being confined to bases.

*B2 The number of illegal activities recorded per man-hour of patrol within the core zone forests.* This figure should fall during the course of the project.

*B3 The percentage of recorded illegal incidents that lead to a successful prosecution. This figure should rise during the course of the project.*

Component C Improvement of awareness of biological importance of the Park and existing regulations

This Component would have the following criteria against which progress would be assessed:

*C1 Average questionnaire scores from village communities on activities allowed and banned within the Park. The training courses to be run as part of the project should result in these scores rising significantly over the course of the project.*

*C2 Average questionnaire scores from village communities on the biological importance of the Park. The training courses to be run as part of the project should result in these scores rising significantly over the course of the project.*

*C3 Average questionnaire scores from surveys in San Pedro Sula on the biological importance of the Park. The training courses and advertising as part of the eco-tourism programme to be run as part of the project should result in these scores rising significantly over the course of the project.*

#### **Component D Implementation of monitoring scheme and training of Honduran field scientists to complete similar programmes elsewhere**

This Component would have the following criteria against which progress would be assessed:

*D1 Number of Honduran PhD students successfully completing their studies. Four Honduran PhD's should be trained as part of the project.*

*D2 Number of publications in peer reviewed journals on the effects of the management programme on biodiversity and the socio-economic impacts on local communities. The publications are need to show unequivocal evidence for the performance of the management programme.*

*D3 Development of biological water quality index that can be used as part of a cost effective biological monitoring programme throughout the Merendon mountains. The project should result in a biological water quality index that can be used throughout Honduras and biological monitoring should be introduced throughout the Merendon mountains by the three Municipalities.*

*D4 Numbers of Honduran undergraduates with training in biodiversity assessment field work. At least 24 students should receive 10 weeks training each over the course of the project.*

#### **Component E Development of plans for four other sites in Honduras where similar schemes could be introduced with much reduced initial funding requirements**

This Component would have the following criteria against which progress would be assessed:

*E1 Knowledge transfer. A guidebook should be produced that allows maximal knowledge transfer to other protected areas in Honduras. This should contain information on setting up and managing similar village contract-based schemes, to make the approach as easy as possible to replicate elsewhere in Honduras.*

*E2 Number of National Parks in Honduras developing similar village contract-based schemes. Interest should be shown by at least four other Park areas in Honduras in running similar schemes.*

*E3 Employment of trained personnel. Some of the scientists trained in Cusuco as part of the MSP should move on to jobs in conservation and development, including involvement in setting up and running similar schemes in the other protected areas in Honduras that show an interest.*

## **5. Planned activities to achieve outcomes**

### **Component A. Development of village contract scheme.**

There are three main ways in which the communities around the buffer zone of the park can obtain significant income: ecotourism, Fair Trade Plus and enhanced agricultural productivity.

#### **Ecotourism**

A local co-operative will be formed to help develop the ecotourism potential of the park and build on the promotional and background research work completed by the University of Nottingham / Operation Wallacea to date. Part of the MSP funding will be to fund this ecotourism co-operative partially for the first 3 years, with an increasing percentage of the funding coming from ecotourism income. By the end of the 5-year period the ecotourism co-operative should be contributing 40% of the costs of patrolling the park. The initial grant investment in the co-operative from the MSP will be to improve the infrastructure in the Park (building rustic homestays at the site of the existing visitor centre, developing simple restaurant facilities, safety improvements to the access road), training of local staff and support for promotional activities within the country. The main markets for this form of ecotourism are overseas visitors to Honduras (currently mostly going to Roatan and Copan) who are looking for an authentic forest experience, and Hondurans with disposable income for short weekend stays in the forest or jungle training experiences. Developing these markets in addition to the existing research tourism and the university/schools training course market run by Operation Wallacea would be feasible within a short time with little investment. Development of Cofradia and Buenos Aires as the entrance route for the Park, with purchasing to service the market being completed primarily from these towns, will ensure that the ecotourism revenue not only benefits the members of the co-operative, but also the wider communities.

#### **Fair Trade Plus**

Ecotourism revenue will benefit the communities along the access route, but will have little impact on villages that are too remote from the access route. If financial benefit is to be the main driver protecting the Cusuco core zone forests then another income source for the communities has to be developed. Shade-grown coffee is commonplace amongst the mountain village communities but in recent years the price has collapsed. The Fasquelle Foundation, with support from DTZ, has developed a community-managed coffee processing and marketing co-operative at La Fortuna de Bañaderos (one of the buffer zone communities). This co-operative is gaining higher prices for its coffee by selling directly to an overseas company and by marketing the coffee as both fair trade and environmentally friendly. This idea could be developed further in other communities in the Cusuco area, with the end users of 'Quetzal coffee' being prepared to pay a premium for the coffee if the costs paid are helping to protect the cloud forests of Cusuco. The coffee could be marketed as having a beneficial impact on the forests if each of the communities selling through this system were to sign an agreement to guarantee that they would control their own village members, preventing them from logging or illegally hunting in the forests of the national park. The condition of the buffer zone is important, as well as that of the core zone, and the village members should also undertake not to clear any more forested land in the buffer zone for agriculture, coffee production or new dwellings. Non compliance with these conditions would threaten the continuance of the contract that allows the village to continue marketing its coffee through this enhanced price system. Such an arrangement would provide a direct link between protection of the core zone forests and the economic development of the surrounding communities. Part of the MSP funding would be used to bring communities to learn from the La Fortuna experience of forming coffee co-operatives and in marketing to ensure that the coffee can be sold at enhanced prices via concerned organisations (eg universities, women's groups etc). The objective is to ensure that each community has a coffee co-operative formed within the first 12 months of the MSP and that by the end of the 5-year period of grant aid that Park levies on the coffee cover 60% of the patrolling costs of the National Park.

### **Component B. Enhancement of enforcement activities**

In former years when Cusuco National Park had funding from US AID, quite an effective ranger team was formed, which operated from a range of communities around the edge of the core zone. A radio network exists with repeater stations around the Park, allowing rangers to be in communication with each other and with central control in COHDEFOR. The ranger team was only dismantled 3 years ago and most of the former rangers are still living in the communities. Part of the grant would be used to re-employ this 12-strong team, with the percentage of funding for the patrolling activity each year from ecotourism and Park levies on the enhanced value of the community coffee gradually increasing, until by the end of year 5 the full costs of patrolling would be met from these sources. The rangers would be encouraged to spend part of their patrolling time in the buffer zone, talking to villagers about the Park and the benefits it brings to the local communities, as well as the importance of maintaining the conservation role and value of the buffer zone. An independent auditing/monitoring programme will also be set up, to ensure that the team of rangers is operating effectively and without corruption.

### **Component C Improvement of awareness of biological importance of the Park and existing regulations**

Surveys by Operation Wallacea social scientists in Cofradia in 2004 revealed that, astonishingly, very few of the inhabitants in this sizeable town, which lies at the entrance to the Cusuco National Park, had ever visited the park. Whilst most of those questioned were aware that the Park had an important function in watershed protection, very few had any knowledge of the Central American endemic species contained within its borders. Surveys in the nearby city of San Pedro Sula revealed similarly low levels of awareness. Whilst awareness will undoubtedly be raised by the ecotourism activities, an educational programme targeted at the schools within the Cortés province could considerably enhance awareness. A lecture room already exists at the Visitor Centre and the data and digital photos from a range of species found in the Park gathered by the University of Nottingham/Operation Wallacea teams could be used to develop a series of short residential courses for school groups of different ages. Information leaflets and other educational materials would be produced, for distribution in San Pedro Sula, Cofradia and other towns near to the Park. These would contain URLs to Operation Wallacea and other project-related websites, where people could find further information.

### **Component D Implementation of monitoring scheme and training of Honduran field scientists to complete similar programmes elsewhere**

The University of Nottingham and Operation Wallacea have established an annual monitoring programme for the Cusuco National Park to monitor change in both biological and socio-economic attributes. On the biological side, this involves monitoring forest structure (from satellite data and ground truthing), biodiversity levels of indicator groups (herpetofauna, birds) and population levels of key species (eg small mammals). The socio-economic monitoring is based on Household Economic Analysis (HEA), a system developed and widely used by Save the Children, and concerns income levels in buffer zone communities, levels of awareness of the importance of the forests and levels of environmentally damaging activities. This annual monitoring programme is self-funded from the paying volunteers and with some MSP investment could be used as the basis for a series of Honduran PhD topics. The PhD students would extend the monitoring programme beyond the 10 weeks currently supported by the Operation Wallacea programme to provide more extensive monitoring – including the ability to monitor seasonal, migrating bird species that are missed by the scientific activities restricted to the July-August Operation Wallacea field season. The PhD training would also provide a cohort of experienced Honduran field biologists who could help establish similar programmes elsewhere. The PhD students would provide annual data on forest structure and levels of disturbance, the effects of forest disturbance on bird and butterfly communities, population levels of Baird's Tapir using DNA extraction from droppings and on the economic benefits of the contract schemes to the various buffer zone communities.

The Cusuco National Park was designated originally in order to protect water quality in the catchment used to supply much of the Sula valley. Despite the importance of this aspect of the Park's existence there is no routine monitoring of water quality. In the UK and various other countries around the world, a standardised system exists for monitoring water quality on the basis of the organisms found living in the watercourses. This system has several advantages over chemical water monitoring methods, including:

- It is cheap and easy to use.
- It monitors the long-term quality of the water, rather than the snap-shot provided by chemical analysis – this means that isolated pollution incidents and seasonal pollution pulses are detectable by biological monitoring, but can easily be missed by chemical analysis.
- It takes into account local environmental parameters.

No such system exists in Honduras and the macro-invertebrate communities living in the watercourses of Cusuco National Park are very poorly known. The MSP would help fund a PhD studentship to develop a biological water quality index that can be used for assessing the quality of Honduran rivers. Once the system is developed and tested, the water supply and treatment departments of the Municipalities (DIMA) would utilise it to help monitor water quality throughout the Merendon mountains.

#### **Component E Development of plans for four other sites in Honduras where similar schemes could be introduced with much reduced initial funding requirements.**

Each year the Ministry of Forestry Conservation and Development and its predecessor organisation, COHDEFOR produces an evaluation of all the protected areas in Honduras, comparing notes about what is going on, what is going well, differences between parks with and without NGOs, etc. There are 107 protected areas but most don't have a management plans. The MSP will be used to establish Cusuco as a best practice site and the project management team in the later part of the grant period would promote the benefits of developing village contract schemes to at least 4 other National Parks in Honduras. To make this as effective as possible, a document will be produced to act as a handbook for setting such a system up. This would guide the reader through the steps needed, potential pitfalls, etc, based on Operation Wallacea's experiences both in Cusuco and previously in Indonesia.

## **APPENDIX 1: INITIAL IDEAS ON THE DEVELOPMENT OF ECOTOURISM IN THE CUSUCO NATIONAL PARK**

### ***Research Tourism***

This market is already being developed in Cusuco with Operation Wallacea which has committed to bringing research volunteers to the Cusuco National Park every July and August throughout the period 2003 - 2010.

### ***Local research tourism***

Given the establishment of Operation Wallacea in developing a major biodiversity and social research programme in the Park, an obvious extension of this programme would be the opening of the programme outside the July and August period. Initial conversations with residents of San Pedro Sula have suggested that a number would be very interested in joining a weekend trip to Cusuco for a rate of \$150 per person to join a monthly biodiversity survey. Volunteers would be based in specially built log cabin style accommodation at the Park entrance and food would be served from a central restaurant. The cabins would have en suite bathrooms with hot showers and power from solar panels. Volunteers would join projects completing forest structure transects, emptying pitlines and live traps and processing the captured animals, helping with bat surveys in the evening, radio tracking large mammals such as ocelot, margay, jaguarundi etc and assisting with bird surveys. The weekend would be organised as a social event and would be open for up to 30 volunteers. If this programme was run 10 times outside the main Op Wall season it could raise up to \$45,000 plus any income from the bar. Most of the equipment and training for the biologists to complete the surveys would have been provided anyway under the agreement with Op Wall and the other facilities (eg log cabin accommodation for 30 people and restaurant) would be used for the other tourism activities (see below).

### ***Jungle Training weekends***

Another variation on the weekend break idea in Cusuco would be to run jungle training weekends. This would be for management groups, youth groups or just those generally interested in the forest. People on this weekend would spend Friday at the entrance base camp learning the basics of jungle survival. On Saturday they would trek to one of the base camps used by the Op Wall teams (eg Camp Cantiles) and spend the night in a hammock. Sunday would see them return to the entrance camp and a barbecue before returning back to San Pedro Sula. The experience of Op Wall is that this type of course is very popular and there should be no problem in filling 10 courses of 30 people each paying \$150 for the training course. As part of the 2006 research programme, Operation Wallacea is paying to bring one of the leading experts in jungle training across to the Cusuco National Park. It is proposed to trial the concept of running jungle training weekends whilst he is in Honduras this summer.

### ***Ecotourism***

The other major possibility for using the log cabin accommodation and restaurant at the entrance to Cusuco is to make it available for tourists to Honduras who want to do something different to the normal visits to Copan and the Bay islands. San Pedro Sula is the main tourist gateway to Honduras but most tourists move on rapidly since there are few tourist attractions in the city. An advertising campaign with hotels in San Pedro Sula and with major publications about Honduras (eg Honduras Tips, Lonely Planet and Rough Guides) could help bring people to the Park. In addition tour operators could be contacted to include short side trips to Cusuco as part of tours to Copan or the Bay Islands. An office in San Pedro Sula would take bookings and organise transport for the visitors. Charges would be \$50 per day for accommodation and food and a further \$10 each way for the transport to the Park. Using this type of approach the target would be for 1000 bed nights in weekday periods for year 1 (\$50,000) rising to 2000 bed nights in year 3 onwards (\$100,000).

### ***University training courses***

Another opportunity afforded by setting up Cusuco as a forest research station is to attract US or European university training courses to use the facilities. Operation Wallacea is already marketing university training courses to US and European universities through its web site.

### ***Restaurant dinners***

The entrance camp at Cusuco is in a spectacular setting and with a decent restaurant would attract people wishing to dine in a different and romantic setting. Transport would be provided for \$20 return from San Pedro Sula with the costs of the dinner on top. The advantage of this market is that it will also result in extra people being attracted to stay overnight in the log cabins at a future time.

### ***Day Visitors***

Day visitors to the Park in 2003 were generating \$1300 income only and since that point the staffing has declined yet further and doubtless the income to go with that. Whilst unrestricted access to the Cusuco facilities is an admirable objective allowing anyone to drive up the track and to arrive at the Park unannounced, is not resulting in a huge demand and the income raised is not capable of covering even the ranger costs. The more valuable income streams would come from the accommodation, food and bar sales at the entrance camp from those participating in one of the Park organised events. Moreover, allowing unrestricted access at low entrance charges undermines the value of the product and will result in ecotourists for example not wishing to pay as much because they can see others visiting for a small entrance fee. It is therefore proposed that access to the Park is restricted to those who are participating in one of the above projects or activities for most of the time. Moreover those joining one of the activities would also have to travel to the site in Park organised transport (either owned vehicles or local rented vehicles).

The aim of allowing all people in the San Pedro Valley access to their National Park also has to be maintained. This could be achieved by holding bi-monthly Open Days when day visitors would be allowed and would be charged the normal entrance fees. These could be scheduled for the weekends when the biodiversity or jungle training weekends were not running. The Open Days would be advertised and it is hoped that more visitors would come because of the publicity generated by the other activities and the availability of transport to the Park. Other groups which would benefit from free access for educational purposes could then be accommodated on specially arranged dates when guides could be arranged for them.