



**CONSERVATION OF THE  
PAGUYAMAN FOREST  
IN  
NORTH SULAWESI, INDONESIA**

*Final Report to the Darwin Initiative  
for the Survival of Species  
Ref: 162/09/012*

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# ***Darwin Initiative for the Survival of Species***

## ***Final Report***

### **1. Darwin Project Information**

Project title	<b>Conservation of the Paguyaman Forest in North Sulawesi, Indonesia.</b>
Country	<b>Indonesia.</b>
Contractor	<b>Imperial College London.</b>
Project Reference No.	<b>162/09/012</b>
Grant Value	<b>189,960</b>
Starting/Finishing dates	<b>Original: April 2000 – March 2003. Revised: October 2000 – September 2003.</b>

### **2. Project Background/Rationale**

This project is **located** at the Paguyaman Forest, Gorontalo Province, Sulawesi, Indonesia. This is a site of international importance for Sulawesi's endemic, endangered wildlife. This 31,215 hectare rain forest was formally gazetted as a protected area, the Nantu Nature Reserve, by the Indonesian government in 1999. It is one of the last strongholds of the endangered babirusa pig in the world and one of the few pristine rain forest ecosystems remaining in Indonesia today. A key feature of this site is a large natural salt-lick, called Adudu, which is one of the few places in the world where Sulawesi's endemic large mammals can be readily observed.

Gorontalo is a new Indonesian province, created in February 2000 by separation from North Sulawesi province. Gorontalo province comprises four districts ("kabupatens"). The elected head of the district is the Bupati (Regent), a key decision-maker under Indonesia's policy of decentralization. In 2001 Indonesian central government adopted a decentralization policy, whereby decisions relating to natural resource management were devolved to the kabupaten.

The project aimed to address the **problem** that, although formal gazettement by the Indonesian government had taken place in 1999, the Paguyaman Forest was gravely threatened with destruction from slash-and-burn clearance, illegal logging and poaching of the babirusa.

The **need** for this project was identified by local and national stakeholders, following the gazettement of the Paguyaman forest reserve. Considerable enthusiasm and readiness had been generated prior to this project, particularly amongst staff of the North Sulawesi forestry office. During the project outstanding support and commitment for project activities has been shown by the Bupati of Gorontalo, local government in Gorontalo and by Gorontalo University (established Dec. 2001). This is evidenced by their full participation in all project activities and by the Bupati's spearheading of additional

initiatives to upgrade the Paguyaman Forest to National Park status, and to establish local legislation governing the protection and management of the Paguyaman Forest.

### 3. Project Summary

The **purpose** of this project was to establish a functioning nature reserve at the Paguyaman Forest.

The **project objectives** were:

1. to **establish a functioning 31,000 hectare rain forest nature reserve**, including reserve infrastructure, protection activities and mobile anti-poaching unit.
2. to **establish a Darwin training centre** at this site and conduct training courses here at all levels, from local schools to post-graduate students and for all levels of society.
3. to **produce and implement management plans** for the future protection and development of the reserve.
4. to **conduct internationally-recognized research** on a wide range of endemic, endangered and economically important wildlife and plant species within the reserve, with a focus on sustainable uses of rain forest products and the needs of local people.
5. to **establish strictly controlled eco-tourism activities** and other innovative income-generating activities at the reserve and ensure that these are structured to benefit local communities.
6. to **conduct public education campaigns** to increase local and regional understanding of, support for and participation in nature conservation.
7. to **found a conservation NGO**, based at the reserve, to support and publicise the work of the project and to carry it forward at the end of the Darwin project.

A logical framework was not requested as part of the original proposal.

The project **timetable** was delayed by six months, owing to the project's late start, which was due to contractual delays. The period April to September 2000 was however used for project preparatory activities and essential reserve protection action. The revised project implementation timetable was submitted to the Darwin Secretariat in October 2000 (as part of the 6-monthly monitoring form).

This project is best described by **Articles 8, 12 and 13** of the Convention on Biological Diversity. The project also assisted the host country to meet its commitments to the UK-Government of Indonesia Memorandum of Understanding on Forest Law Enforcement and Illegal logging.

This Darwin project was **extremely successful in meeting its objectives**. It established the Paguyaman Forest as a safe and protected reserve (*objective 1*), stopping illegal logging, poaching and slash-and-burn clearance within the reserve. It pioneered innovative protection methods and carried out extensive forest law enforcement operations in order to achieve this. The project constructed one permanent Darwin training centre and one field station at the Paguyaman forest (*objective 2*) and carried out training courses there. It also conducted an extensive range of public education and awareness campaigns (*objective 6*), bringing about a 180° turnabout in attitudes to

conservation in Gorontalo province. Methods used included a live Conservation Concert and preparation of a childrens' story book "The Special Place in the Forest". The project addressed alternative livelihoods of settlers living outside the Paguyaman Forest by provision of 7800 teak tree seedlings for planting as a bufferzone crop (*objective 5*). A local conservation NGO was successfully established by the project (*objective 7*).

Objectives 3 and 4 were only partially achieved: two technical documents were prepared as the first stage of management plan preparation (*objective 3*). Research activities focused on the wildlife trade in northern Sulawesi and were affected by essential activities to protect the reserve (*objective 4*).

Significant **additional accomplishments** were:

1. the expansion in size of the Paguyaman Forest Reserve from 31,000 hectares to 52,000 hectares.
2. the preparation and signing of local legislation by the local Gorontaloese government to protect and manage this 52,000 Conservation Area.
3. the proposal from local government for the Paguyaman Forest Reserve to be upgraded to National Park status.
4. the establishment of strong partnerships with Gorontalo University and the Gorontaloese local government, with whom most project activities were carried out.
5. five international and national television documentaries on this reserve, by NHK Japan, TF1 France, BBC, Metro TV Indonesia and TVRI Indonesia.

#### **4. Scientific, Training, and Technical Assessment**

##### **Research:**

Monitoring of the number of babirusa and other legally-protected wildlife, as well as all domestic and wild meats on sale in local markets was carried out every week throughout the project. The effect of law enforcement actions on this trade was also monitored.

##### **Methodology:**

A local woman who regularly shops in local markets was employed as a market monitor. This meant that she aroused no suspicion when enquiring about prices of wildlife products, hence ensuring reliable data collection. She visited Langowan market three times each month at 7am and counted the numbers of products on sale there, as well as asking their price. In some cases she bought products, allowing a comparison between quoted and actual prices; there was no systematic difference. The market monitor concentrated her efforts at Langowan market, Minahasa. Previous studies had shown Langowan to be by far the most important local market for wildlife. However, on one Saturday each month she visited other markets in the region where wildlife products were known to be sold, to check that there had been no change in their importance as wildlife markets. Saturday was chosen because it is the busiest market day, and the one with the most wildlife products on sale; occasional visits to the markets on other days confirmed this to be the case.

##### **Staff:**

Henny Pangemanan was employed to carry out the survey work. She is well qualified to collect consistent information, having collected this data weekly over the last ten years.

***Research findings:***

Data for the numbers of babirusa only sold during the project period at Langowan market are shown below. This data forms part of a long-term study of the trade in Sulawesi's protected wildlife over the last ten years.

<b>Year</b>	<b>Total number of babirusa observed in market</b>	<b>Number of weekly surveys</b>	<b>Average number of babirusa sold per week</b>
2000	292	36	8.1
2001	292	33	8.8
2002	284	40	7.1
2003	52	29	1.8

The successful prosecution brought against an illegal babirusa trade by this project in August 2002 resulted in a dramatic and relatively long-term effect on numbers of babirusa sold in the market thereafter. This was the first ever such prosecution to be completed in Sulawesi and had a major deterrent effect upon other dealers. Information from long-term contacts among wild pig and babirusa traders and hunters reinforced the conclusion that this was a genuine result of law enforcement rather than the result of declining populations of babirusa as could also be the case. The numbers of babirusa sold in 2000-2002 represent a reduction compared to earlier years (1990-92). During 2000-2002 fewer dealers than in the past continued to sell babirusa but these appeared habituated to law enforcement efforts. Law enforcement operations carried out by this project (December 2000) resulted in a more short-term impact on market numbers than in previous years.

For more details please see "The trade in babirusas and wild pigs in North Sulawesi, Indonesia".

***Peer review:***

Results of this work were subject to peer review before publication as "The trade in babirusas and wild pigs in North Sulawesi, Indonesia" in the journal *Ecological Economics* (appended). Papers for other peer-reviewed journals are now in preparation.

**Training and capacity building activities**

***Local villagers:***

A three-day training workshop was held at the Darwin field training centre (19<sup>th</sup> – 21<sup>st</sup> July 2002) for thirty local villagers. The selection criteria were that all settlements bordering the Paguyaman Reserve should be represented, as well as key local community figures (school-teachers, village heads and village-mosque leaders). Material was presented on the importance of the Paguyaman forest's wildlife (presented by Mr. A.H.

Mustari), conservation based on the Islamic religion (Mr. Idrus Labantu), forest law enforcement (Police Captain P. Sampelan), agro-forestry (Mr. Nasadi) and eco-tourism (Lynn Clayton). Practical fieldwork was also a key part of the workshop; this included babirusa viewing at the Adudu salt-lick, birdwatching and plant identification. Most delegates stayed at the newly-constructed Darwin training centre, enhancing local ownership; evening programmes included conservation film shows and informal discussions. This event had a very strong catalytic effect, participants subsequently passing on information gained to others and becoming active in reserve protection activities.

### ***Bufferzone income-generating activities: teak planting***

Seven thousand eight-hundred teak trees were grown from seed and handed over to immigrant settlers just outside the reserve for planting on their land. The choice of teak was the result of local consultation: a team from Gorontalo University, local government and the Darwin project visited all settlers immediately outside the reserve and requested their responses to a simple questionnaire on alternative livelihood options. The most common request was for teak. Project counterpart Mr. Idrus Labantu and one project assistant travelled to South-East Sulawesi province to obtain prime quality teak seed, assisted there by Mr. A.H. Mustari (11<sup>th</sup> – 20<sup>th</sup> Nov, 2001). A nursery-planting programme then began adjacent to the project base camp at Paguyaman, involving three full-time project staff. Seeds were germinated in nursery plots and then transplanted to polythene growing bags.

A simple ceremony and training day was held (April 2002) at the Darwin teak nursery, at which the four-month old seedlings were handed over to settlers. This ceremony was attended by representatives of district and village government, forestry department and seventy settlers. Presentations on the purpose of this programme were provided by government officials in the local dialect and an open discussion was held. Seven groups of settlers, each comprising ten individuals including a group leader, registered with the programme and each individual received one hundred seedlings for planting on his/her own land. Project staff visited each individual settler several weeks after this ceremony to provide follow-up technical support.

### ***Strengthening of local university and local government capacity:***

The project has developed a close working relationship with the Research Unit at Gorontalo University, and the local government in Gorontalo. Joint activities have included preparation of the local law legislation for the Paguyaman Forest, project public awareness and training activities, and preparation of the technical document proposing the upgrade of the reserve to National Park status. The experience gained during these processes has strengthened Gorontalo University and the local government's expertise and capability in the areas of environmental law and conservation. An open lecture attended by five hundred students of all faculties was also given at Gorontalo University by project staff (Nov. 2001).

### ***Student training:***

The Darwin Initiative supported the fees for Iswan Dunggio, junior lecturer in Forestry at Gorontalo University to study for an MSc degree in Conservation at Bogor Agricultural University (2002-04). Iswan is an excellent communicator and it was considered that his training would in future benefit many other Gorontaloese undergraduates, and assist in strengthening Gorontalo University. Bogor Agricultural University was selected as it has an excellent reputation for Forestry training and did not involve the problems of English language that an overseas university course would have done.

### ***Support for three MSc theses by Gorontaloese students at Paguyaman:***

The Darwin project has also provided field support, supervision and funding for three MSc thesis studies on the Paguyaman Forest by Gorontaloese research students. Irwan Bempah, lecturer in forestry at Gorontalo University, is currently conducting field research for his MSc degree on Multi-stakeholder Management of the Paguyaman Reserve. He is an MSc student at Mulawarman University, Kalimantan. Fatmah Hiola (Bogor Agricultural University) is currently preparing an MSc dissertation on Ecotourism Management at the Paguyaman Reserve and Iswan Dunggio is preparing an MSc dissertation using GIS techniques to determine management zones within the Paguyaman Reserve.

## **5. Project Impacts**

The **evidence that project achievements** have led to the accomplishment of the project purpose is as follows:

### ***Additional 21,000 hectares of Sulawesi's pristine rain forest protected:***

As a result of this project the Paguyaman Reserve has been expanded in size from 31,000 hectares to 52,000 hectares. This decision was signed by the Bupati in Dec. 2003, after a process of extensive local consultation. The reserve area is increased by the addition of 9,871 hectares of montane forest and 10,905 hectares of forest which had been previously been allocated for exploitation.

### ***Innovative forest protection activities and forest law enforcement:***

This project pioneered the use of special forces soldiers for forest protection. This resulted in the cessation of illegal logging, poaching and slash-and-burn clearance within the reserve. Without this activity the Adudu salt-lick and much of the reserve would without doubt have been destroyed. Six special forces soldiers were deployed continuously at the project base camp (Oct. 2000 – Dec. 2002). This was reduced to four personnel Jan. 2003 – Sept. 2003 given the improved security situation and increased support from local communities in reserve protection. These personnel were on 24-hour patrol, working alongside five local project assistants. In addition twelve special operations by provincial forestry, police and project personnel were organized against illegal chain-saw operators and forest clearers. Results of operations against illegal loggers included the confiscation of 90m<sup>3</sup> (seven lorry loads) of top quality illegal timber at Paguyaman (Sept. 2000), and 30m<sup>3</sup> (Aug. 2001). Proceedings were brought against all



offenders. One completed court case resulted, with a jail sentence of two-months for one chain-saw owner (May 2003); timber, chain-saws and axes were confiscated from other offenders. Forest law enforcement of this kind was unknown in Gorontalo prior to this project. Illegal gold-mining within the Paguyaman Reserve was also stopped by the Gorontaloese local government. As a result of these activities the Paguyaman Forest remains as a pristine forest, one of a very few actively protected and intact forest ecosystems in Indonesia.

***Public awareness campaigns and media coverage:***

The project's public awareness campaigns have brought about strong support for the Paguyaman Forest amongst local stakeholders in Gorontalo. Evidence for this is the various new initiatives spear-headed by the Bupati, and village initiatives suggested by local communities to establish village guard posts against illegal loggers and village-level local laws protecting this reserve. Feedback from viewers of project television documentaries (Metro TV, TVRI, NHK Japan, BBC and TF1 France) indicate that these have been successful in raising awareness of the Paguyaman Forest Reserve. Visits by these film crews have also reinforced to local citizens the message that the site is of international importance.

A wide variety of other publicity methods and materials have been used by the project to promote conservation of the Paguyaman Forest. These include live Conservation Concerts by a local singer/impersonator, conservation adverts on local radio, exhibitions with showing of conservation films, Ramadan visits to local villages to promote conservation based on the Islamic religion, and distribution of tee-shirts, children's story book, colouring books, exercise books, calendars, VCD's, and stickers, all with a conservation message.

Three hearings held in the local parliament also provide the opportunity to promote forest conservation (July 2001). These were instigated by illegal logging barons unhappy at the effectiveness of project forest protection activities. The Darwin team utilized these to publicise project aims; a field visit by a six-member parliamentary delegation to the project site followed the hearings, where an "Adudu declaration" by all local stakeholders supporting reserve conservation was signed and later published in the local newspaper.

***Mobile anti-poaching unit and protected wildlife law enforcement:***

Weekly monitoring of numbers of babirusa sold in local markets reveal that this trade has decreased dramatically. On average eight babirusa were observed on sale at Langowan market each week between 2000-2002, compared with an average of two babirusa per week in 2003. This reduction in trade is the result of the first ever successful prosecution against a babirusa trader to take place in Sulawesi, which was completed as a result of this project (Aug. 2002). The project mobile anti-poaching unit and the distribution of Indonesian wildlife laws to hunters and dealers throughout the project also contributed to this reduction.

### ***NGO established and operational:***

The local NGO established by the project Yayasan Adudu Nantu International (YANI) is now an active and respected participant in environmental affairs in Gorontalo, and co-ordinator of activities at Paguyaman. Its establishment has significantly enhanced local ownership of project activities. YANI has been active in several areas relating to the project, including training workshops, forest protection and public education work, and assisting with preparation of local legislation for the reserve as well as the proposal to upgrade the Paguyaman Forest to National Park. A YANI secretariat has been established in Gorontalo. Key personnel are Director: Mr. A.H. Mustari (Bogor Agricultural University), Secretary: Mr. Idrus Labantu (Social Affairs Department, Gorontalo local government), Advisors Mr. Daniel Sinaga (Ministry of Forestry, Jakarta), Lynn Clayton. A leaflet with details on the NGO has been prepared and distributed to local and national stakeholders (appended).

### ***Alternative livelihoods:***

7800 teak seedlings were supplied to settlers immediately outside the reserve, in response to local request (April 2002). This attention to the livelihood needs of local settlers generated increased local support for the reserve.

### ***Reserve infrastructure:***

The project constructed one permanent Darwin training centre and one field station at the Paguyaman Forest (2002). These have been used for training workshops and to host a wide variety of local and international visitors, as well as providing field accommodation for special army forces and project assistants. They were constructed using traditional methods and waste wood from outside the reserve. The project also worked with the local forestry office to physically mark the reserve boundary over a 15 km length (Nov. 2000). This was the most gravely threatened section of the entire boundary and this action was vital in protecting the reserve from major incursions by slash-and-burn clearers. Project staff also assisted the forestry department with the physical marking of a further 75 km of the boundary (2002). This means that the entire reserve boundary has been marked physically marked with posts at 100 km intervals.

The support generated for the Paguyaman Forest by this project has resulted in several **additional local government initiatives** which were not anticipated at the beginning of this project. These include:

1. 65% increase in size of the reserve,
2. the preparation and completion of local government legislation (PERDA), which will greatly strengthen long-term reserve protection and management,
3. the initiative to upgrade the reserve to National Park status.

This project has **fully achieved its goal**. It has led directly to the following **actions** by the Indonesian authorities:

***Completion of local legislation (PERDA) covering Paguyaman reserve management and expansion to 52,000 hectares:***

A highly significant policy resulting directly from this project is the completion of local legislation (PERDA) governing the management of the reserve. This innovative measure was ratified by the Gorontaloese parliament (17<sup>th</sup> Dec. 2003) after extensive local consultation. Under Indonesian decentralization such a law is of higher stature than a Ministerial decree. As a result of this law the reserve has been expanded from 31,000 hectares to 52,000 hectares, named the Nantu-Boliyohuto Conservation Forest. The initiative for this came from the Bupati, on whose instruction a team was formed to co-ordinate preparation of the PERDA (Oct. 2003) (comprising lecturers from Gorontalo University Forestry and Law Faculties, heads of Gorontalo local government Forestry and Legal Departments, YANI secretary and Darwin project leader). Public meetings were held in two villages around the reserve, Mohiolo (5<sup>th</sup> Dec. 2003, south-east boundary of reserve) and Sumilata (6<sup>th</sup> Dec. 2003, northern boundary) to debate this PERDA. A seminar for all local stakeholders hosted by the Gorontaloese local government was held in Gorontalo (11<sup>th</sup> Dec. 2003) to further discuss this legislation.

This eighteen-page regulation is only the second such PERDA for a protected area anywhere in Indonesia. It covers all aspects of reserve protection and management, including establishment of a local management body to co-ordinate future reserve management (document appended, translation of key points in Appendix V). This innovative policy for local management of the reserve is highly appropriate under regional autonomy and will significantly strengthen the long-term sustainability of project achievements.

***National park upgrade:***

The Paguyaman Forest has been proposed for upgrading to National Park status by the Bupati of Gorontalo. This initiative resulted from a visit to this site by the Bupati and his senior staff (July 2002). An academic document supporting this proposal was prepared by a team from the Gorontaloese local government, Gorontalo University and YANI (Pakaya et al, 2003), and submitted to the Minister of Forestry, Jakarta. This proposed the expansion of the reserve to 52,000 hectares. Meetings were held with the Assistant Minister of Forestry and the Director General for Forest Conservation, Jakarta (May 2003) to discuss this proposal. Informal agreement for this Park has been given by the Minister and the gazetting is currently being processed by the Ministry of Forestry.

***Actions to control trade in protected wildlife:***

Three checkpoints have been undertaken by local officials to control the illegal trade in protected wildlife. These operations were conducted with expertise, staff and support from the Darwin Initiative, and timed to coincide with peak periods of illegal wildlife trade (Christmas 2000, Easter 2002). Each operation involved a continuous day-and-night examination of all wildlife traders' vehicles travelling along the Trans-Sulawesi highway. These resulted in one completed prosecution for a babirusa dealer, and a four-month jail sentence for him. This was the first ever such sentence for an illegal babirusa trader in Sulawesi. Project staff worked closely with senior police and judges to bring about this prosecution. Project mobile operations resulted in the examination of twenty-four dealers' vehicles, of which five carried babirusa; eleven dead babirusa were confiscated

and disposed of. Field teams were composed of wildlife department staff, police, judges and project staff. A further ten dead babirusa were confiscated from a house near the Paguyaman Forest by special army forces and project staff, and one babirusa was released from a snare nearby (Feb. 2001). Weekly market monitoring of numbers of babirusa sold in local markets showed a deterrent effect of these operations and especially the completed court case.

***Reserve infrastructure:***

Seventy-five kilometres of the Paguyaman reserve boundary was physically marked with boundary posts every 100 metres by forestry department staff (2002).

The **training and capacity building** elements of this project have improved the capacity of the host country to conserve biodiversity in the following ways:

***Sponsorship of MSc student:***

The Darwin Initiative has funded the fees of Mr. Iswan Dunggio (junior lecturer in Forestry at Gorontalo University, MSc degree in Conservation at Bogor Agricultural University, West Java). This training will benefit many Gorontaloese students as Iswan will return to lecture at Gorontalo University on completion of his MSc.

***Support for three MSc theses on Paguyaman Forest; project counterpart completes PhD:***

It is anticipated that all three MSc scholars will return to Gorontalo after completion of their studies and will pass on their knowledge to many other Gorontaloese students. Project counterpart Abdul Haris Mustari has also completed his PhD at New England University, Australia (Sept. 2003). Darwin project leader Lynn Clayton acted as co-supervisor for this study on the Ecology and Conservation of the Sulawesi Anoa. Mr. Mustari has returned to Indonesia to lecture in Conservation at Bogor Agricultural University.

***Training for local villagers in conservation and English language:***

Thirty villagers attended a three-day conservation training workshop at the Darwin training centre, Paguyaman (19<sup>th</sup> – 21<sup>st</sup> July, 2002). This equipped local settlers for involvement in reserve participatory management and research activities. A two-month course in English language was also organized by the project in response to local demand; this was held at Pangahu village school, Paguyaman and taught by a Gorontaloese teacher fluent in English. This will help to equip local villagers for future involvement in eco-tourism activities.

***Training of forestry, wildlife department officials, special army forces and ex-hunters in law enforcement and forest protection:***

Police and wildlife department officials (21 persons) were trained to carry out checkpoints against illegal poachers; forestry and police officials (72) carried out twelve special operations against illegal loggers and slash-and-burn clearers and special army forces (192) carried out 24-hour forest protection activities. These actions have improved the capacity of these officials to uphold the law. As they will continue to work in their present jobs, this step will lead to long-term improvements in biodiversity conservation in northern Sulawesi. It has significantly contributed to improved transparency in natural resources management by the Government of Indonesia. Two ex-hunters were amongst the six local assistants employed by this project; this has had a major impact on the perceptions of hunters and their villages, raising awareness of the importance of biodiversity conservation amongst them.

***Field visits:***

Field visits to the project site by a wide range of government personnel and other local stakeholders (police, judges, parliament members, school-teachers etc) have also had a profound effect in generating understanding for the importance of biodiversity conservation in Gorontalo, which will be applied by these persons in their respective positions in society.

The project has led to an **increase in collaborative links** between UK and Indonesian institutions in the following ways:

**Close collaborations** have been developed with two key local partners, Gorontalo University and the local government in Gorontalo. Most project activities have been carried out in partnership with these institutions. A team was formed to carry forward the process of PERDA development, and this team conducted two public forums in local villages, one local stakeholder seminar in Gorontalo and three internal discussion meetings. The NGO established by the project has become a close partner with local government.

The **beneficiaries** of the project included the citizens of Gorontalo who, as a result of project public awareness campaigns, have received education on the value of their natural resources. Local schools benefited from the provision of desks and benches (30) as well as educational materials: colouring books (1000 copies), exercise books (2000), children's story book, (5000), and training in English language by the project. The construction of one primary school building was also upgraded by the local government as a result of the visit by a key official organized by the project. Local settlers benefited by the provision of 7800 teak tree seedlings to assist their livelihoods.

## **6. Project Outputs**

All **project outputs** are quantified in Appendix II.

**Most agreed outputs and many additional ones** have been achieved. The planned conference was replaced by a local seminar to debate management of the Paguyaman Forest (11<sup>th</sup> Dec. 2003). This was hosted by the Gorontaloese local government and held in the newly constructed seminar tower (resembling the Eiffel Tower). Representatives of all local stakeholders attended this (60 delegates). Some training outputs were revised to take account of local circumstances: for example visitor guiding was not yet appropriate and local stakeholders identified a need for English training to facilitate this. Seven additional outputs are listed in Appendix II.

**Information relating to project outputs and outcomes** has been disseminated in the following ways:

1. **Copies of project television documentaries** have been widely distributed to local, national and international stakeholders on VCD and VHS video tape.
2. **Previous and current scientific papers** have been translated into the Indonesian language and distributed to the libraries of national and local research institutions.
3. **Five thousand copies of the children’s book** have been distributed to local school-children, as well as to other key stakeholders.
4. The **academic document** proposing the National Park has been distributed to appropriate key senior decision makers at the Ministry of Forestry, Jakarta. (Minister of Forestry, Assistant Minister, Director General for Nature Conservation).

It is planned to **develop information dissemination** on the Nantu Forest by establishing a “Café Nantu” in Gorontalo, to act as a future resource and information centre. Funding for this is currently being sought. A website on which all publications are readily available is also planned. YANI and Gorontalo University would be jointly responsible for these initiatives, funding for which is currently being sought.

## 7. Project Expenditure

<i>Item</i>	<i>Budget</i>	<i>Expenditure</i>

## 8. Project Operation and Partnerships

**Seven local partners** worked on project activities. The creation of Gorontalo as a separate province from North Sulawesi meant that some originally envisaged local partnerships were no longer appropriate (e.g. North Sulawesi Forestry Office) and that new partnership opportunities arose. The main and most active project partners were Gorontalo University (established Dec. 2001) and the Gorontaloese local government, with whom increasing close partnerships were developed over the course of the project.

**Gorontalo University**, the only university in Gorontalo, is the main local centre for teaching and research in biodiversity issues, and an influential local voice via its Research Centre, Forestry Department and Centre for Forest Conservation Studies. The **Gorontaloese local government** is the level of government in Indonesia which under the policy of decentralization makes decisions relating to management and allocation of natural resources. Key departments with which the project collaborated were the Forestry Department, Department for Environment and Economy, Social Department and Legal Department; at village-level key government partners were village heads and heads of sub-districts (“kecamatan”).

**Other project partners** were the Ministry of Forestry, Jakarta, the Centre for Research and Development in Biology of the Indonesian Institute of Sciences, Bogor Agricultural University, the North Sulawesi/ Gorontalo police office and Mapala Asteroida (undergraduate conservation group from Sam Ratulangi University, Manado).

Project plans were **modified** in response to local consultation. The project timetable in year 3 was adjusted in order to respond to three additional local initiatives (the preparation of legislation governing the Paguyaman forest, the desire for a local level management system for this reserve and the proposal to upgrade the reserve to National Park status).

**Collaboration** existed with two similar projects elsewhere in the host country. These were the Sungai Wain Forest Conservation project in East Kalimantan and the Bunaken Marine National Park Conservation Program, North Sulawesi, both part of the Natural Resources Management program of USAID. A key objective of both these projects is to pioneer innovative local resource management systems. Preparation of the local government regulation for Paguyaman was carried out in collaboration with the Sungai Wain project, which was the first to develop such regulations for forest protection. Many lessons were learned from the Bunaken Marine programme, which has developed innovative eco-tourism initiatives to fund park protection.

**Regular consultations** were held with the Director General for Nature Conservation and Forestry Protection, Ministry of Forestry and the Director of the Centre for Research and Development in Biology of the Indonesian Institute of Sciences, Jakarta. Both are key participants on Indonesia’s Biodiversity Strategy Committee.

**Seven international partners** participated or advised on project activities: the World Bank, USAID, Centre for International Forestry (CIFOR), British Council Jakarta, British Embassy Jakarta, the Wildlife Conservation Society and the Alliance of Religions and Conservation.

The **strong partnership** developed between colleagues from Gorontalo University, Gorontalo local government and YANI during this project has continued after the end of this project. This team constitute a key resource in local biodiversity conservation activities. The project's success in raising local awareness for reserve conservation mean that increased community participation is now highly appropriate in reserve protection activities i.e. transition to full local community reserve protection. Expansion of project educational initiatives in local schools could provide a role for private sector funding for internet exchange between Gorontalo and UK primary schools using satellite communication resources.

## 9. Monitoring and Evaluation, Lesson learning

The **project strategy** for monitoring and evaluation planned at the start of the project involved regular monitoring meetings with project partners and an external sustainability assessment of income-generating activities in year 3.

**Regular meetings** were held in Sulawesi at three-monthly intervals to monitor project progress against agreed milestones. Local and national partners, YANI and Darwin project staff participated in these. Key indicators of progress reviewed were:

1. security situation at Paguyaman Forest, including levels of illegal logging, poaching, slash-and-burn encroachment, results of special army forces/field assistants activities (as recorded in daily log), number of forest law enforcement court cases in progress from Paguyaman, visit rates of babirusa to Adudu salt-lick, success of local and international visitors in observing babirusa at the salt-lick.
2. impact of public awareness campaigns,
3. progress of income-generating programs, project milestones and other project initiatives.

The planned external sustainability assessment was replaced by an external **independent mid-term review** by the Edinburgh Centre for Tropical Forests (16 – 25<sup>th</sup> Sept. 2002). This reviewed all project activities and achievements and was extremely beneficial to project staff. Comments and issues raised in reviews of project annual reports were addressed by the mid-term review report. **Mid-term review recommendations** were implemented in the following ways:

1. Strong efforts were made during 2003 to establish **development partnerships** with national and international groups to support and fund development needs of local communities at Paguyaman. Discussions were held with USAID, CIDA, DFID and TNC and progress on these partnerships is ongoing.
2. A close working relationship was developed with **Gorontalo University**: this University was strengthened by experience gained during extensive participation in project activities, and by training received from the Darwin project by University lecturers.
3. Plans have been developed for an **alternative** to forest protection by special army forces. A gradual reduction in number of special forces personnel has begun (six persons to four) as community-based protection activities are expanding. Planned initiatives suggested by local communities include village protection posts, creation of local village



legislation to protect the reserve and a stakeholder forum to resolve issues of potential conflict.

4. YANI has contacted the **DFID** Multi-stakeholder forestry programme regional co-ordinator Mr. Anas Nikoyan to discuss future development partnerships.

5. The project has sought to enhance its **impact in local schools** by the provision of a two-month English language course. Corporate funding to support internet information exchange between UK and Gorontaloese schools is being sought.

6. New **participatory research** programmes and a training needs assessment at the Paguyaman Forest are planned. Research programmes will include research in traditional medicine, alternative livelihoods, botanical and wildlife studies.

The **key lessons** to be drawn from the experience of this project are:

1. the need for flexibility in managing projects of this kind. A flexible approach was essential to the success of this project as it was necessary to adapt project plans to political changes, particularly Indonesian government decentralization. Without such flexibility it would also not have been possible to respond to important new local initiatives, such as the development of local legislation governing reserve protection, which arose during the project period.

2. the importance of a logical framework as a key project management tool.

## 10. Darwin Identity

The project **publicized** the Darwin Initiative in the following ways:

1. The **Darwin Initiative logo** and name has been extensively used on all project publicity and training materials, including international and local television documentaries, children's colouring and story books, tee-shirts, newspaper articles, scientific and popular articles, video compact discs, internet newsletters, banners and calendars, and in presentations at local and national level.

2. The **Darwin name** has also been clearly publicized at Conservation Concerts organized by the project, and at exhibitions, attended by many thousands of local people.

3. The **Darwin logo** is clearly displayed at the Darwin training and research centres.

4. **Darwin scholar** Mr. Iswan Dunggio has clearly acknowledged the support of the Darwin Initiative in presentations and course activities in Bogor.

The **Darwin Initiative is widely known** in northern Sulawesi as a UK government small grants programme for biodiversity conservation, where funds are used directly at grass-roots level in the host province. Local government officials, NGOs, school-children and civil society in Gorontalo are familiar with the Darwin Initiative. Evidence for this is the frequent reference to the Darwin Initiative by a wide range of individuals in all levels and sectors of society. The numbers attending events where project activities are publicised indicates people are aware of this Darwin project: some five thousand villagers attended a Conservation Concert at Mohiolo village (29<sup>th</sup> Sept. 2003); approximately two thousand people attended a Concert at a provincial exhibition in Gorontalo (24<sup>th</sup> Sept. 2003) and at least five hundred people attended the project exhibition stand each evening for a two-week period (21<sup>st</sup> Sept – 4<sup>th</sup> Oct. 2003) where project films were shown. More widely throughout Indonesia the Darwin Initiative has been publicised through credits on national television programmes, which have been repeated extensively, and through

distribution of project materials and presentations to key decision-makers in Jakarta.

This project was widely recognised as a **distinct project** with a clear identity. It was conducted in a relatively remote part of Indonesia, where few larger programmes existed.

## 11. Leverage

The following **additional funds** were attracted to biodiversity work associated with the project:

Eighty-thousand pounds was donated by the Foreign and Commonwealth Office's Environment Project Fund, via the British Embassy Jakarta, for the period Oct. 2001 – Sept. 2003. A further eighty-five thousand pounds from this fund has been awarded for the period Oct. 2003 – Sept. 2005.

The equivalent of five thousand pounds was donated in kind by the Gorontaloese local government to support the preparation of the PERDA (local government legislation). This comprised staff time, sponsorship of seminar for all stakeholders, provision of meeting and seminar rooms and all costs associated with this process.

Staff time was also contributed from the following Indonesian government departments: North Sulawesi Forestry Department (2000) and Gorontalo Forestry, Social, Economic and Environment Departments (2001-2003): one thousand five hundred pounds; local police forces (staff for mobile anti-poaching patrol, forest law enforcement operations and court cases): eight hundred pounds; forest protection support: army special forces personnel: three thousand five hundred pounds.

Gorontalo University contributed use of meeting rooms and staff time to the value of one thousand five hundred pounds.

Darwin staff secured invitations for **local project partners** to attend a Canadian International Development Agency (CIDA) workshop in Manado (Dec. 2003) to discuss a planned seven-year CIDA natural resource management programme in Sulawesi. Meetings were also held with DFID Multi-stakeholder Forestry Programme, USAID's Natural Resource Management programme, the Nature Conservancy Indonesia programme and WWF UK to discuss future development partnerships to address the needs of local communities at Paguyaman.

## 12. Sustainability and Legacy

One of the **project achievements** most likely to endure is the legislation written into local law to protect the Paguyaman Forest. This is a very powerful tool in ensuring the long-term sustainability of other project achievements, particularly the establishment of the pristine and protected forest reserve. The innovative management practices for which this document paves the way have the potential to establish the Paguyaman Forest/Nantu National Park as a global model of sound rain forest management and sustainable development. The very significant advances in public awareness and attitudes towards conservation achieved by this Darwin project will also endure.

**Project staff** are working on a proposal for establishment and management of the Nantu National Park. This will build on the strong partnerships developed during this project

period. Partners will definitely keep in touch due to the close working relationships which have been established. Gorontalo is now known at Indonesian Ministerial level as one of the few Indonesian provinces committed to conserve forest resources, and project partners are working to maintain this legacy.

The **project's conclusions** and outputs have been widely applied. Key local stakeholders have suggested that innovative Darwin project methodologies should also be applied in Bogani-Nani Wartabone National Park, Gorontalo's other main forest area.

**Funding** is being sought from the Darwin Initiative Round 12 to support a team of partners to establish the Nantu National Park, implement pioneering park management methods, strengthen the NGO YANI and to ensure the long-term sustainability of existing achievements.

### **13. Value for money**

The project provided excellent value for money. The range and scope of project achievements were comparable to those achieved by projects with much larger budgets. The favourable exchange rate of the pound to the Indonesian rupiah meant that every pound achieved a great deal for Indonesian biodiversity conservation.

**Authors / Date** Lynn Clayton, Irwan Bempah and Idrus Labantu. 31<sup>st</sup> December 2003.

## 14. Appendix I: Project Contribution to Articles under the Convention on Biological Diversity (CBD)

<b>Project Contribution to Articles under the Convention on Biological Diversity</b>		
<b>Article No./Title</b>	<b>Project %</b>	<b>Article Description</b>
<b>6. General Measures for Conservation &amp; Sustainable Use</b>	<b>2</b>	Develop national strategies which integrate conservation and sustainable use.
<b>7. Identification and Monitoring</b>	<b>5</b>	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities which have adverse effects; maintain and organise relevant data.
<b>8. In-situ Conservation</b>	<b>40</b>	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
<b>9. Ex-situ Conservation</b>	<b>0</b>	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
<b>10. Sustainable Use of Components of Biological Diversity</b>	<b>5</b>	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
<b>11. Incentive Measures</b>	<b>8</b>	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
<b>12. Research and Training</b>	<b>15</b>	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation

		and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
<b>13. Public Education and Awareness</b>	<b>20</b>	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
<b>14. Impact Assessment and Minimizing Adverse Impacts</b>	<b>0</b>	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
<b>15. Access to Genetic Resources</b>	<b>0</b>	Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
<b>16. Access to and Transfer of Technology</b>	<b>0</b>	Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
<b>17. Exchange of Information</b>	<b>5</b>	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
<b>19. Bio-safety Protocol</b>	<b>0</b>	Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
<b>Total %</b>	<b>100%</b>	<b>Check % = total 100</b>

## 15. Appendix II Outputs

Code	Total to date	Details
<b>Training Outputs</b>		
2	Number of Masters qualifications obtained: <b>3</b>	<b>Iswan Dunggio</b> , junior lecturer in forestry at Gorontalo University, to obtain MSc degree in Conservation at Bogor Agricultural University (Sept. 2002 – Aug. 2004). <b>Irwan Bempah</b> , lecturer in forestry at Gorontalo University, to obtain Masters degree in Forestry at Mulawarman University, Kalimantan; dissertation on multi-stakeholder management at Paguyaman Reserve funded by Darwin Initiative; completion date June 2004. <b>Fatmah Hiola</b> , to obtain Masters degree in Conservation at Bogor Agricultural University; dissertation on Eco-tourism at Paguyaman Reserve with field support from Darwin project.
3	Number of other qualifications obtained: <b>1</b>	<b>Idrus Labantu</b> (YANI secretary) attended three-week training course in Environmental Impact Assessment (“Amdal”) at Gorontalo teacher training college.
5	Number of people receiving other forms of <b>long-term</b> (>1yr) training not leading to formal qualification( i.e not categories 1-4 above): <b>6</b>	<b>Six</b> local project assistants, including two ex-hunters, each received 120 weeks training in reserve protection/management and biodiversity monitoring.
6a	Number of people receiving other forms of <b>short-term</b> education/training (i.e not categories 1-5 above): <b>463</b>	<b>Thirty villagers</b> received three days training in wildlife conservation, eco-tourism, law enforcement and agroforestry (July 2002); <b>one-hundred and ninety-two special army forces personnel</b> received four weeks training in forest protection (2000 – 2003); <b>seventy settlers</b> received two weeks training in teak tree growing (2002); <b>twenty-one police and wildlife department officials</b> received three days training in protected wildlife identification (2000, 2002); <b>one hundred villagers</b> received English language training (one day per week for a three month period).
6b	Number of training weeks not leading to formal qualification: <b>932 weeks</b>	
7	Number of types of training materials	<b>i) illustrated children’s story book</b> about the babirusa and the Paguyaman Forest in

Code	Total to date	Details
	produced for use by host country(s): <b>8</b>	the Indonesian language produced and distributed to children in villages around the Paguyaman reserve (5000 copies); <b>ii) calender</b> promoting conservation of Paguyaman forest distributed throughout Gorontalo district (2001, 2003, 3500 copies); <b>iii) seven types of stickers</b> produced and distributed (1000 of each design); <b>iv) copies of Indonesian wildlife laws</b> distributed to local stakeholders (1000 copies of each of 3 books); <b>v) four banners</b> with conservation message displayed in Gorontalo city; <b>vi) exercise books</b> featuring colour conservation cover distributed to local primary school children (2000 copies); <b>vii) conservation colouring book</b> prepared and distributed to local schoolchildren (1000 copies); <b>viii) three different Indonesian television documentaries</b> on Paguyaman Forest distributed to local stakeholders on VCD (video disc, similar to DVD) (200 copies). <b>Copies</b> of all national and international television documentaries have been <b>sent to the Darwin Initiative</b> .
<b>Research Outputs</b>		
8	Number of weeks spent by UK project staff on project work in host country(s): <b>144</b>	Lynn Clayton in Indonesia for <b>144 weeks</b> conducting project work.
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s): <b>2</b>	<b>One academic document</b> proposing upgrade of Paguyaman Forest Reserve to National Park status prepared, submitted to Indonesian Ministry of Forestry (April 2003); <b>one technical document</b> proposing concept of local management authority for reserve prepared and submitted to Gorontaloese local government (Sept. 2003).
11a	Number of papers published or accepted for publication in peer reviewed journals: <b>1</b>	<i>The trade in babirusas and wild pigs in North Sulawesi, Indonesia</i> . Ecological Economics 42 (2002) 165 – 183.
<b>Dissemination Outputs</b>		
14a	Number of conferences/seminars/workshops organised to	<b>One workshop</b> held at Paguyaman (11 <sup>th</sup> April 2002) to provide technical advice on teak tree planting to settlers around the

	present/disseminate findings from Darwin project work <b>4</b>	reserve. <b>One seminar</b> hosted by Gorontaloese local government (11 <sup>th</sup> Dec. 2003) to debate reserve management, 60 local stakeholders attend. <b>Two workshops</b> in local villages organized (5 <sup>th</sup> , 6 <sup>th</sup> Dec. 2003) to debate local law for reserve.
15a	Number of national press releases or publicity articles in host country(s): <b>8</b>	<b>Seven articles</b> on project in Indonesian Conservation Newsletter (INCL), a weekly internet publication with extensive Indonesian and international readership; <b>one article</b> in Time magazine: <i>Tinggal Lima Ribu, Masih Terus Diburu</i> , Tempo, pp. 46-7. April 2003.
15b	Number of local press releases or publicity articles in host country(s): <b>53</b>	<b>Fifty-two</b> articles on project in local Gorontaloese newspaper; one in “Manado Post” newspaper.
15c	Number of national press releases or publicity articles in UK: <b>1</b>	<b>One article</b> in BBC Wildlife Magazine: <i>Babirusa: Tusk Master</i> , Jan. 2003, pp. 52 – 57.
18a	Number of national TV programmes/features in host country(s): <b>6</b>	<b>Two national TV documentaries</b> made on project: TVRI national award-winning 25-minute film (2000, repeated five-times per year) and Metro TV “Expedition” program (2 episodes, each 20 minutes, 2003). <b>Features:</b> Metro TV news (3 mins), Metro This Morning (5 mins), TVRI news (2).
18b	Number of national TV programme/features in the UK: <b>1</b>	Babirusa at Paguyaman Forest filmed and featured in BBC television’s “ <i>The Life of Mammals</i> ” (programme 6, “The Opportunists”) by Sir David Attenborough.
18c	Number of local TV programme/features in host country: <b>3</b>	<b>One Gorontalo-TV</b> and <b>one local TVRI</b> news feature (2003). The Paguyaman forest was also featured in a 45-minute <b>documentary</b> on Gorontalo province for local TV.
19c	Number of local radio interviews/features in host country (s): <b>20</b>	<b>Twenty interviews</b> , features and interactive dialogues were aired on Poliyama local radio and Radio Republic Indonesia, Gorontalo. Additionally a radio <b>advert</b> promoting Paguyaman Forest conservation was run for three months on local Poliyama radio (three times a day, fifteen days a month).
<b>Physical Outputs</b>		
20	Estimated value (£s) of physical assets handed over to host country(s): <b>5500 pounds.</b>	<b>Two permanent training/research</b> buildings constructed; <b>30 desks and benches</b> (each seating three pupils) made and donated to local primary school.
21	Number of permanent	<b>One permanent Darwin training centre</b> and



	educational/training/ research facilities or organisation established: <b>2</b>	<b>one permanent Darwin field station</b> at Paguyaman forest reserve.
22	Number of permanent field plots established: <b>5 km</b>	<b>Five kilometres</b> length of transects established for ongoing wildlife monitoring.
23	Value of additional resources raised for project: <b>165,000 pounds plus 12,300 pounds in kind.</b>	<b>Eighty thousand pounds</b> awarded from Foreign and Commonwealth Office Environment Project Fund (Oct. 2001 – Sept. 2003); <b>eighty-five thousand pounds</b> awarded from FCO Environment Project Fund for period Oct. 2003 – Sept. 2005. <b>Five thousand pounds</b> in kind contributed by Gorontaloese local government to support process of PERDA (local law) establishment. <b>One thousand five hundred pounds</b> in kind contributed as staff time of North Sulawesi and Gorontalo government departments. <b>Eight hundred pounds</b> in kind as staff time of local police personnel. <b>Three thousand five hundred pounds</b> in kind as staff time of special forces personnel. <b>One thousand five hundred pounds</b> in kind from Gorontalo University – meeting rooms and staff time.
		<b>One local NGO</b> Yayasan Adudu Nantu International (YANI) established (2002) and operational.
		<b>Two international television documentaries:</b> Japanese television (NHK) 45-minute film on this project and French television (“Ushuaia”) 10-minute film ( <b>copies sent to Darwin Initiative</b> ).
		<b>One mobile anti-poaching unit</b> established and operational; first ever completed prosecution for illegal babirusa trader in Sulawesi achieved.
		<b>7800 teak trees</b> (4-months old) handed over to settlers around Paguyaman Reserve as bufferzone income-generating crop.
		<b>Additional 21,000 hectares</b> of rain forest protected. <b>Reserve area expanded to 52,000 hectares</b> (from 31,000 hectares).
		<b>One set of local legislation</b> (“PERDA”) signed governing Paguyaman Forest Reserve protection and management.
		<b>Three masters theses</b> in preparation on Paguyaman Forest management by Gorontaloese students: <b>Irwan Bempah</b>

		(Mulawarman University, Kalimantan) on Multi-stakeholder management of Paguyaman Forest; <b>Fatmah Hiola</b> (Bogor Agricultural University, Java) Eco-tourism Management at Paguyaman Forest; <b>Iswan Dunggio</b> (Bogor Agricultural University) GIS study to develop management zones for Paguyaman Forest. Supervision, field support and funding (2) by Darwin project.
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## 16. Appendix III: Publications

<b>Type *</b> (e.g. journals, manual, CDs)	<b>Detail</b> (title, author, year)	<b>Publishers</b> (name, city)	<b>Available from</b> (e.g. contact address, website)	<b>Cost</b> £
<b>Journal*</b>	<i>The trade in babirusas and wild pigs in North Sulawesi.</i> E.J. Milner-Gulland and L.M. Clayton. Ecological Economics 42 (2002) 165 – 183	Elsevier	www.elsevier.com/locate/ecolecon	
<b>Magazine</b>	<i>Babirusa: Tusk Master.</i> L.M. Clayton. BBC Wildlife Magazine 21(1), 52 – 57.	BBC Magazines London	BBC Wildlife, P.O. Box 279, Sittingbourne, Kent ME9 8DF. wildlife@galleon.co.uk	
<b>Children's book*</b>	<i>Tempat Istimewa di Dalam Hutan (The Special Place in the Forest).</i> M. Colbeck and L. Clayton. 2003.	YANI	P.O. Box 1346, Manado 95011, Sulawesi Utara, Indonesia. dr_lynn@manado.wasantara.net.id	
<b>Report*</b>	<i>Suatu Tinjauan Ekologis Tentang Kemungkinan Pengelolaan Suaka Margasatwa Nantu, Hutan Lindung Boliyohuto dan Hutan Produksi Terbatas Boliyohuto Sebagai Taman National Nantu Boliyohuto di Kabupaten Gorontalo, Provinsi Gorontalo.</i> Hi. A.H. Pakaya et al. 2003.	YANI	P.O. Box 1346, Manado 95011, Sulawesi Utara, Indonesia. dr_lynn@manado.wasantara.net.id	

## 17. Appendix IV: Darwin Contacts

<b>Project Title</b>	<b>Conservation of the Paguyaman Forest in North Sulawesi, Indonesia.</b>
<b>Ref. No.</b>	162/09/012
<b>UK Leader Details</b>	
Name	Dr. Lynn Clayton.
Role within Darwin Project	Project Leader.
Address	P.O. Box 1346, Manado 95011, Sulawesi Utara, Indonesia.
Phone	
Fax	
Email	
<b>Partner 1</b>	
Name	Idrus Labantu
Organisation	YANI and Social Department, Gorontalo.
Role within Darwin Project	Local counterpart, YANI secretary.
Address	Jl. Nila 5, Hutuo, Limboto, Gorontalo, Sulawesi.
Fax	
Email	
<b>Partner 2 (if relevant)</b>	
Name	Irwan Bempah
Organisation	Gorontalo University
Role within Darwin Project	Local partner
Address	Jalan Jenderal Sudirman 247, Limboto, Gorontalo.
Fax	
Email	

## **Appendix V: Translation of Local Legislation Developed for Reserve (Summary)**

### **Background:**

1. The Nantu Nature Reserve and Boliyohuto Forest have high levels of biodiversity and are of outstanding value for the citizens of Gorontalo and Indonesia.
2. This forest area has a vital function as a watershed protection area and also as a habitat for endangered wildlife.
3. This area is potentially threatened from illegal logging, wildlife poaching and slash-and-burn clearance.

Therefore with the agreement of the local parliament for Gorontalo district we declare this legislation on the management of the Nantu-Boliyohuto Conservation Forest.

### **Chapter 1:**

The “management authority” is a body established to manage the Nantu-Boliyohuto Conservation Forest

The objective of managing this area is to conserve the wildlife and its habitat in a professional way involving all concerned stakeholders, which will be of benefit to local citizens.

### **Chapter 2:**

The Nantu-Boliyohuto Conservation Forest is 52,000 hectares in size. It is made up of the Nantu Nature Reserve (31,215 hectares), the Boliyohuto Protection Forest (9871 hectares) and the Boliyohuto Forest (10,905 hectares).

### **Chapter 3:**

The purpose of managing this Conservation Forest is to protect the forest within this whole area and ensure fair and sustainable practices.

### **Chapter 4:**

The functions of the Nantu-Boliyohuto Conservation Forest are to protect the Paguyaman watershed, prevent flooding and erosion, maintain soil fertility and especially to be a protected area for animals, plants and the entire forest ecosystem.

### **Chapter 5:**

Persons wishing to undertake activities within this Conservation Forest are required to first obtain permission from the Management Authority.

Persons carrying out any commercially beneficial activity within the reserve are required to make a contribution to conservation management activities within this Forest.

### **Chapter 6:**

Local people are entitled to fully participate in all aspects of management of this Conservation Forest. They are also entitled to use water originating from this Forest.

Local people are required to protect this Forest from destruction arising from illegal logging, wildlife poaching and forest burning, and to guard Conservation Forest assets such as information boards and guard posts.

**Chapter 7:**

A local management authority will be established to manage this Forest. It will comprise representatives from local government, local academic institutions, concerned international and local conservationists, and representatives of local communities. It will be responsible to the Bupati.

**Chapter 8:**

It is anticipated that the funding for the management of this reserve will come from the local government budget and from local and international grants and contributions.

**Chapter 9:**

The Bupati is responsible for assessing the achievements of the Management Authority. Auditing of Authority finances will be carried out by an independent auditing team.

**Chapter 10:**

Any person damaging or destroying this Conservation Forest, or committing offences against the above regulations, will be subject to a six-month jail sentence or a fine of 5 million Indonesian rupiah.

**Chapter 11:**

This chapter details the persons considered qualified to examine offenders and the evidence necessary to support prosecution of perpetrators.

**Chapter 12:**

This legislation is binding and active from the date of signature (17<sup>th</sup> December 2003).

**Signed by the Bupati of Gorotalo,**

**Achmad Hoesa Pakaya.**

**17<sup>th</sup> December 2003.**

## Appendix VI: Translation of Children's Story Book

### THE SPECIAL PLACE IN THE FOREST

By **Martyn Colbeck and Lynn Clayton**

Illustrated by **Dadi Sungkowo**



*We dedicate this book to the children of Gorontalo*

**Acknowledgements:** We offer our sincere thanks to the Darwin Initiative for the Survival of Species of the UK Department of Environment, Food and Rural Affairs, and to the Foreign and Commonwealth Office's Environment Project Fund for funding this book. We also thank the British Embassy, Jakarta, the Centre for Research and Development in Biology of the Indonesian Institute of Sciences, the BBC Natural History Unit and the Directorate General of Forest Protection and Nature Conservation of the Ministry of Forestry and Plantations, Jakarta. We appreciate the help of Drs. Achmad Pakaya, Huw Cordey and especially Ani Kartikasari for their contributions to the preparation of this book.

The **Adudu-Nantu Conservation Foundation** is a non-governmental organization based in Gorontalo Province, Sulawesi, whose aim is to conserve the Nantu Forest, Paguyaman, and its wildlife.

The **Darwin Initiative** is a British government funded programme, based in London, UK, which supports projects to conserve wildlife and their habitats throughout the world.

Long, long ago in the middle of a vast blue sea, there was a beautiful island. The sea surrounding the island was over-flowing with fish. There were small ones and big ones but every single one of them was more colourful than you can imagine. The island itself was covered in thick, dark forest. The trees of the forest clung to the mountains and valleys like a coat clings to your body. The forest was home to all sorts of birds and animals, most of which were found nowhere else on earth.

The largest bird had a huge beak that looked like it had been painted by a very clever artist in as many different colours as he could think of. It was so colourful that it dazzled all the other animals and birds when they saw it. There were black monkeys with no tails and insects that screamed so loud that the other animals had to cover their ears when

they passed by. And there was the longest, thickest and heaviest snake in the world! One day in a very quiet part of the forest a mother pig built a small house out of branches. And inside this house she built a nest of leaves. There was only just enough room for the mother pig to squeeze inside because she did not want any of the other animals to know she was there.

And so, in the middle of the night when all the other animals and birds were asleep, she gave birth to a little boy piglet. It was not long before the little piglet opened its eyes and began to drink its mother's milk. As the piglet grew up its mother noticed that he was different to all other little piglets. He would often go for long walks in the forest by himself. He liked to watch the black monkeys with no tails play high in the tree-tops.

And the big bird with the colourful beak chose the tastiest fruits from the trees. But there was one animal that the piglet did not want to see and was the longest, thickest and heaviest snake in the world. The one place the piglet knew he was safe was on the beautiful white sandy beaches that were on the edge of the forest. And so he would go there sometimes to just lie in the sun. One day he was so tired after walking in the forest that he fell asleep. It was a hot sunny day and when he woke up he felt very, very hot. In fact he felt like he was on fire! so he ran and ran, further and further into the cool forest but he still felt as if he was on fire. So he ran and ran, further and further into the forest. All of a sudden he tripped over a huge tree root and flew head first into a large pool of mud.

There was a "psssssst" sound and steam rose into the cool forest air. The lovely wet mud cooled the little piglet in no time. A few days later a strange thing happened. All the little piglet's hair fell out and his skin became very pink and very smooth. and every time after that if the piglet wanted to go the beach he had to cover his little pink body in mud so he wouldn't get burned. One of the piglet's favourite forest animals was the deer. he liked it because it was so quiet and shy which made it very difficult to find. The piglet liked the idea of being able to hide in the forest so no one could find him. Sometimes he wished he were a deer.

As the piglet grew up he thought more and more about wanting to be a deer. But the problem was he also liked being a pig. Maybe, he thought, he could be a bit of both- a pig-deer. In that way he could be everything he ever wanted to be. He told all his friends about his new idea. Some thought he was just a mad little piglet but most of them liked the idea and decided to join him. The new herd of pig -deer chose the piglet as



their new leader and presented him with a crown of beautiful curved tusks. They called him Babirusa - King of the Pig-Deer!

For a long time Babirusa and his friends lived happily on the beautiful island. Each day they walked through the forest looking for delicious fruits to eat, swam in rivers, wallowed in the mud and played with their friends. Babirusa had several sons and each one had four beautiful tusks on his head - just like a crown. They all agreed it was great being a pig-deer. But then one day the peace of the forest was shattered. Suddenly the trees on the edge of the forest started to fall down. When they hit the ground there was a huge bang.

The noise frightened all the animals and they ran as fast as they could deep into the forest where they knew they would be safe. But the trees kept falling and so the animals had to run even further into the forest. Babirusa and all his friends and family now found themselves in a new part of the forest. Everything looked different.

There were huge mountains and waterfalls and different sorts of trees. The pig-deer even had to eat new types of fruit which they hadn't eaten before. It was not long before they got used to living in their new home. But then there was another problem. The pig-deer began to get sick. Some even died. Babirusa was deeply troubled and could not understand what was happening to all his friends and so he went off alone into the forest in search of an answer. He was so deep in thought that he failed to notice the longest, thickest and heaviest snake in the world hidden in the shadows.

In a flash the snake struck out and bit Babirusa's back leg. In no time it wrapped its whole body tightly around him and squeezed hard. It was difficult for Babirusa to breath and he knew he had to do something fast. He wriggled and squirmed, twisted and turned but the snake's hold got tighter and tighter. Babirusa had almost given up hope when he remembered his secret weapon- the crown of sharp tusks on his head. Using all his strength he twisted and turned and with a huge shake of his head stabbed the snake in its side. And then he did it again and again until the snake started to uncoil itself from Babirusa's little pink body. As soon as he could Babirusa wriggled free and ran off into the forest. He had had a lucky escape from the clutches of the longest, thickest and heaviest snake in the world.

Babirusa was now very tired and lost in the forest. By the time the large brown rotting pangi fruit on the forest floor Babirusa was so hungry that he did not care that he didn't recognize the fruit. He did not mind

that he had never eaten it before. And so he broke the fruit open and ate the delicious white flesh that covered the huge seeds inside. He ate and ate until his tummy was so full he thought it would burst. And then he lay down on a bed of leaves and fell asleep. When he woke up Babirusa did not feel well. And then he remembered why he had wandered off into the forest in the first place- to try and work out why all the other pig-deer were getting sick. And now he too was getting sick. How would he help them now? Babirusa was still lost in the forest. It all looked the same. He tried to find a path that he knew. And then he saw a bright patch in the forest. As he got closer the patch got brighter and brighter.

Babirusa walked very slowly and very quietly until he got the edge of a large clearing in the forest. He had never seen any place like it before. It was a special place. In the middle of the special place was a small pool of water. After his long walk Babirusa was thirsty so he drank from the pool. The water tasted good and sweet. Even the mud around the pool seemed to taste sweet so he found himself eating that too. He had never eaten mud before but this tasted so good. As he ate more and more of the mud he started to feel better. He no longer felt sick and the more he ate the better he felt. Was this a magic potion? If it was, Babirusa had to tell his sick friends as soon as possible. And so he set off to find them.

After many days searching in the forest. Babirusa found all the Pig-deer and he led them back to the special place in the forest. There they ate the magic mud and on by one recovered. From then on the pig-deer visited the clearing in the forest each day to eat the mud. The special place had saved Babirusa and his pig-deer friends, because without it they could not live in this part of the forest with its poisonous fruits.

But even though Babirusa had found a place where all the Pig-deer could live, all was not well. For in the distance, even from the remote clearing, the pig-deer could still hear the distant sound of falling trees. This worried them. It worried them a lot. Because if the trees fell any closer to their home they would have nowhere left to run, nowhere to hide. They did not want their forest home to disappear forever because that would mean the end of the pig-deer and all the other animals as well. But for now there is still a special place in the forest-a place where Babirusa comes with all his friends and family. And if you are very quiet and sneak through the forest like a deer, you may, just may be very lucky and catch sight of them.

### Questions to think about:

1. Why is it important for us to save the Nantu Forest?
2. The babirusa is an animal which is found only in Sulawesi and nowhere else in the whole world. Have you seen anything in the forest which would hurt the babirusa?
3. What do you think you could do, either on your own or with your friends, neighbours, family or school, to help so that the babirusa can continue to live in Sulawesi?

Lynn Clayton is an international conservationist based in Sulawesi, Indonesia. She has conducted research and conservation work on the babirusa and Sulawesi's other wildlife for the past thirteen years. She was awarded her doctorate from Oxford University, England, on the ecology of the babirusa in the wild at the Paguyaman Forest, Gorontalo Province (now gazetted as the Nantu Nature Reserve). She also gained her first degree and masters, both in biology, from Oxford University. Her scientific work has been widely published in international journals and featured on Indonesian, Japanese, English and French television. It is sponsored in Indonesia by the Centre for Research and Development of the Indonesian Institute of Sciences. Together with a team of Indonesian scientists and conservationists Lynn has founded the NGO Yayasan Adudu-Nantu Internasional (Y.A.N.I.) and is now working to help protect the Nantu Nature Reserve through public education and establishment of a research center. This conservation work is funded by the UK government's **Darwin Initiative** programme and the Foreign and Commonwealth Office's Environment Project Fund. Lynn was born in Sussex, England.

**Martyn Colbeck** is an award-winning wildlife film-maker and photographer. For nearly twenty years he has been travelling the globe filming wildlife for the BBC's Natural History Unit in Bristol, England. His subjects have varied from the extraordinary gelada baboons of the Ethiopian Highlands to the rare and endangered pygmy chimpanzee in the Congo Basin. In 1993 Martyn won the Wildlife Photographer of the Year Competition with a dramatic photograph of one of the magnificent bull elephants in Amboseli National Park in Kenya. It was taken while he was making two films about a family of elephants. Martyn is currently working on a third film about the same family which will be completed in 2004. In 2000 Martyn won a Panda award for his cinematography at the International Wildscreen Wildlife Film Festival in Bristol, England, for his work on Elephants of the Sand River, a film about the rare desert elephants of Namibia.

The book "The Special Place in the Forest" was written while Martyn was filming the extraordinary babirusa for the David Attenborough series "The Life of Mammals". Martyn spent over two years filming for this highly acclaimed series.



This is a true story and really happened in the Nantu Nature Reserve, Paguyaman, Gorontalo Province.

The Nantu forest is the home of the babirusa, which is only found in Sulawesi and nowhere else in the whole world. In the Nantu forest there is a muddy open place which is very special for the babirusa. Babirusa come to eat mud, wallow and meet with other babirusa. Other animals, like monkeys, the anoa and monitor lizards also come to this special place in the forest.

The Nantu Forest is also home to many other animals and birds, including the hornbill, monkeys, tarsiers, deer and civet cats, as well as many types of trees and plants, including the pangi tree, rao tree and the blue-and-red coloured Eucalyptus tree.

