

ITTO PROJECT PD16/99 REV. 2(F) • PHASE III

DEVELOPMENT OF LANJAK ENTIMAU WILDLIFE SANCTUARY AS A TOTALLY PROTECTED AREA

Project Completion Report



INTERNATIONAL TROPICAL TIMBER ORGANIZATION
FORESTRY DEPARTMENT, SARAWAK, MALAYSIA

March 2004



PROJECT COMPLETION REPORT

A. Project Identification

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| (a) Title | Development of Lanjak Entimau Wildlife Sanctuary as a Totally Protected Area, Phase III |
| (b) Serial No. | PD 16/99 Rev.2 (F) |
| (c) Executing Agency | Forest Department, Sarawak, Malaysia |
| (d) Host Government | Government of Malaysia |
| (e) Starting Date | 1 September 2000 |
| (f) Project Duration | 36 months |
| (g) Actual Project Cost | US\$1,678,725 |

PART I :

EXECUTIVE SUMMARY

1. Background Information

(i) Key Problems

Through the sustained efforts of ITTO and Forest Department Sarawak as the Executing Agency (EA), the Lanjak Entimau Wildlife Sanctuary (LEWS) Project has become known internationally as a model for tropical biodiversity conservation and sustainable forest management with emphasis on active participation from the local communities. In spite of its status as a Totally Protected Area (TPA) and more recently as an integral part of the Trans-boundary Biodiversity Conservation Area (TBCA), however, Lanjak Entimau is constantly under threats from illegal encroachment and poaching. With continuing social and economic activities outside the buffer zones, LEWS and the adjacent Batang Ai National Park (the latter became a part of the TBCA in 2002) has been isolated into an "island" of pristine forest surrounded by human settlements, timber industry and oil palm plantations. As its rich biodiversity still remains intact, this "island" has naturally become a target of illegal activities. The fish resources in several river systems are also under threats due to pollution and over fishing. Greater collaborative efforts are still needed to fully achieve the objective of conservation management. The local communities have not taken full advantage of the sustainable use of the resources to improve their livelihood.

The key problems to be addressed include:

- a) Protection of the Sanctuary from encroachment and other illegal activities that include hunting and fishing;
- b) Ensuring the survival of the rich and complex biodiversity of the Sanctuary;
- c) Getting the local communities to be more receptive to sustainable development of the Sanctuary's biodiversity resources.
- d) Enhancing collaboration with the local communities to ensure effective co-management;
- e) Strengthening management on-the-ground to ensure effective collaboration with the local communities;
- f) Continuing collaboration with West Kalimantan on TBCA management.

Concerted efforts were made with the EA in solving some of the above problems. However, the EA is still handicapped by the shortage of technical expertise and staff to undertake research and inventories and to effectively enforce the Wild Life Protection Ordinance. More professional inputs will also be required when new TBCAs and Trans-border World Heritage Sites (TBWHS) are established.



Aerial view of Lanjak Entimau Wildlife Sanctuary and Batang Ai National Park.

(ii) Specific Objectives and Outputs

The specific objectives were targeted towards enhancing our knowledge of LEWS and BANP as an integrated conservation entity for biodiversity, and to sensibly exploit the economic potential of this biodiversity to benefit the State, the local communities and other stakeholders. The Project also helped to initiate and sustain collaborative efforts on TBCA management. With their recent extensions, the conservation values of LEWS and BANP have been further enhanced. Having a combined area of over 200,000 hectares, it is the single largest TPA in Sarawak and presently constitutes about 40 % of the total TPAs and 20 % of the TBCA respectively. This last remaining resource must be fully guarded at all cost, especially after so much effort and human and financial resources have been invested to protect and develop it.

Outputs under each of the specific objectives were fully implemented and the results achieved. The community-related activities and phenology study of species in the gene bank plots are continuing in nature and will be monitored by the EA. Likewise, TBCA cooperation will be continued and possibly enhanced.

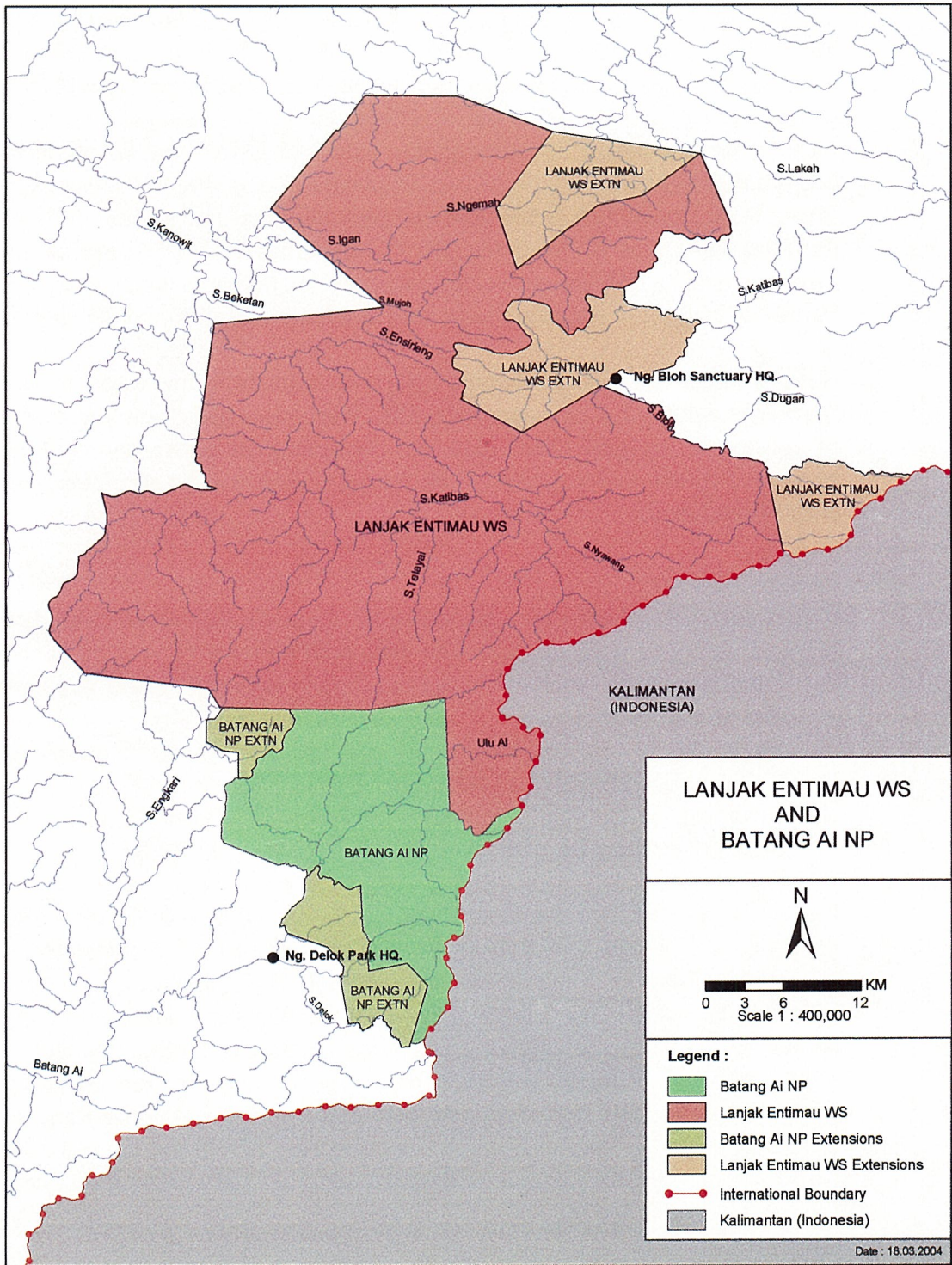
(iii) Project Strategy

Research and development concentrated on the collection of baseline data for biodiversity in selected areas. The main activities were:

- Identification of vegetation types and flora inventory in BANP as a new addition to the TBCA;
- Study on the habitat conditions, populations and distributions of Orangutan in LEWS and BANP;
- Inventory of the fish resources to develop an integrated and more effective strategy for management within LEWS and BANP.

It is envisaged that the Orangutan study will be extended to cover the entire TBCA as this is the last frontier for the conservation of the threatened primate in Borneo. Community development was aimed at actively involving the local communities in management and sustainable use of the natural resources as a strategy to prevent indiscriminate exploitation and to reduce their dependence on the forest. Local participation included employment, appointment of representatives as Honorary Wildlife Rangers and members of the Special Wildlife Committee for LEWS and Special Park Committee for BANP. Community-related activities were extended to new areas in the buffer zones.

Having a more permanent co-management committee can help to strengthen TBCA management. The existing Joint Task Force has been handicapped by not having permanent members to ensure continuity in planning and implementation.



Extensions of LEWS and BANP.

2. Project Achievement

2.1 Outputs and specific objectives achieved

In compliance with the specific objectives, the Project concentrated on the following outputs:

(a) Infrastructure

Construction of the Sanctuary Headquarters began during Phase II but was completed only in 2002 after a long delay. The HQ complex costing about RM1.7 million (US\$447,000), was financed by the Malaysian Government. A sub-camp near to the gene bank plot at Ubah Ribu was constructed for use by field staff on travelling and patrolling duties.

(b) Research and Development (Specific Objective 1, Output 1)

- Establishment of gene bank plots for commercially important timber trees and species of non-timber value;
- Study on the habitat conditions, populations and distribution of Orangutan in LEWS and BANP to gain a better understanding of the social ecology of the animal;
- Fish resource inventory in selected areas of LEWS and BANP to ensure better management in an integrated manner;
- A pilot study on the selection and domestication of ornamental plants and other indigenous species of economic potential. Facilities to support the study were developed.
- Vegetation typing and floral inventory of Batang Ai National Park to expand the database for the Park and the TBCA.

(c) Community Development (Specific Objective 2, Output 2)

Fish culture was extended to new areas in Ulu Mujok, Nanga Bloh and Batang Ai buffer zones to benefit more participants. On-the-job training relating to plant propagation and nursery practice, fish culture and handicraft making was provided to gain hands-on experience. The Project also adopted the Nanga Delok Primary School of 72 pupils.

(d) Collaborative management of the TBCA (Specific Objective 3, Output 3)

Members of the Joint Task Force have agreed to continued collaboration through exchanging information, cross visits and conducting joint research on topics of common interest. A more effective co-management committee with permanent members has been proposed.



Orangutan nest.

(e) Training

Opportunities for training were provided under the project activities pertaining to vegetation survey and floral inventory, establishment of gene bank plots, orangutan study, fish resource inventory, nursery practice, fish culture and handicraft making; benefiting ten research officers and rangers from the Forest Department and more than 50 participants and employees from the local communities.

(f) Exchange visits and study tour

A team of 12 members from the LEWS Project comprising researchers, rangers and community representatives went on a one-week study tour to BKNP. The return visit by the BKNP team comprising 14 members was made on 17 to 22 March 2004.

LEWS also played host to a group of 12 officers, consultants, managers and scientists from Thailand and Cambodia who were involved in the ITTO trans-boundary biodiversity conservation Project PD 15/00 Rev. 2 (F). The visitors were impressed with the achievements of the LEWS Project and the extent of community participation.

3. Target Beneficiaries Involvement

LEWS and BANP cover extensive catchments that span across four Administrative Divisions in Central and Western Sarawak, bringing immense benefits to several hundred thousand people living in the regions. This important ecological function has often been taken for granted by the stakeholders. Benefits in SFM are more long term. The gene banks are a potential source of genetic material for tree plantations using indigenous commercial species in the next 10 to 15 years, for which large quantities of planting materials will be required. The rich diversity also provides a ready resource base for research on biotechnology and commercialization of many plant and animal species of economic potential.

The local communities have derived immense benefits from the forests for many generations and will continue to do so under the new strategies to promote SFM in a systematic way to reap economic benefits. Opportunities for training and active participation have been provided for the participants to develop and use the natural resources in a non-destructive manner while improving their livelihood and cash income. This LEWS Project is believed to be the only international project in Sarawak that has made a concerted effort to assist the local communities through participatory approaches.

Under an adoption programme, 72 pupils and their teachers and staff of the Nanga Delok Primary School have received benefits through electricity supply and the construction of toilets and shower room, a cage for fish culture, a mini fruit garden and a freezer, sponsored by Forest Department, ITTO and private individuals. The pupils will learn to culture fish and grow fruits and vegetables as an extra curricular activity. The electricity supply has enabled the teachers and pupils to operate their computers during classes and at night. In the future, regular classroom and field activities relating to environmental education should be organized for the teachers and pupils.

4. Lessons Learned

(a) Development Lessons

While the Executing Agency was committed to ensuring the Project's successful implementation and completion, obtaining high-level decisions quickly on issues relating to the Project would often require extra efforts and initiatives. A case in point was the acquisition of land that normally involves several Ministries and government agencies. Seeking inter-agency cooperation and support through a direct approach would have been more effective.



Nursery at Nanga Delok.

Success and sustainability are very much dependant on the important role of the EA. Greater success in SFM and community development could have been attained with stronger management presence to implement and supervise activities on the ground, and to provide the catalyst for more active local participation. Even after project completion, the need for the EA to develop a manpower resource with the desire and passion for conservation management is critical.

Although community-related activities were initiated in Phase II, many of the earlier participants still lacked the desire and confidence to manage their projects independently. They also lacked the financial resources to sustain their activities. A more effective way to achieve results has been introduced. This is to develop and manage activities on a joint venture basis involving Wildlife Rangers and field staff to provide the necessary management expertise and leadership.

Another challenge is for the EA and ITTO to facilitate and guide the local participants to change their attitude and mindset of the “subsidy syndrome”, and to shift from their traditional lifestyles to modern economic activities.

On a positive note, a change in awareness towards conservation among the local people has become more obvious. During a recent workshop in September 2003, local community representatives unanimously expressed their desire to help protect the TPAs from illegal encroachment and poaching. They even made a suggestion to form local co-management units to be headed by the Park/Wildlife Wardens and Rangers. To meet this expectation, greater management presence on the ground is desirable.

The Project is thus at a critical stage where the local communities have begun to understand and accept the concept of conservation management, and are showing increasing interest and enthusiasm in active participation. It is crucial that this newfound interest and enthusiasm are maintained. Greater human and financial inputs by the EA are essential. The proposed final phase of the Project should help to strengthen co-management initiatives and guide the local communities towards adopting a new and more positive approach in SFM.

(b) Operational Lessons

No difficulties were encountered in the project organization and management, although management would have been more effective with fuller participation from the local counterparts. Manpower shortages was another concern. The studies on gene banks and phenology were initially hampered by the non-availability of a full-time consultant. Weaknesses in data analysis and report writing were observed among a number of consultants and research officers.

The project consultants were responsible for monitoring evaluation during the contract periods. This was continued by the local counterparts and supervised and coordinated by the Project Leader. All the project activities were short-term lasting only six months. Planning, organizing and scheduling each activity in advance had helped to facilitate the work of the consultants most of whom were visiting LEWS and BANP for the first time.

Officers in charge of management should be more understanding and sympathetic with regards to the needs of the field staff and local employees who operate from remote stations, and should provide the necessary assistance and support upon request. The conviction and interest shown by a number of officers were commendable.

Variations between planned and actual implementation had been largely due to the non-availability of local consultants at the time when the activities were scheduled. The delay, however, had not affected successful completion of the Project except for the late submission of several final reports that required much editing. Difficulties in recruiting local consultants were not foreseen.

5. Recommendations

(a) Project Implementation

- i) The Project has provided great opportunities for on-the-job training to local counterparts and researchers to increase their technical competence. This has not been taken to full advantage of because for many, participation was on a part time basis, while the desire and enthusiasm to learn was lacking for some. Nevertheless, continued training will be crucial in order to boost the efficiency and confidence of those involved;
- ii) Strengthen manpower at all levels of the management. Instill greater interest in conservation management among the young officers and rangers and pay particular attention to capacity building;
- iii) Continue to encourage and guide the local communities to enhance their technical and entrepreneurial skills in organized economic activities. Where possible, engage local graduates and school leavers in co-management. Better results also come with effective community leadership and interest and cooperation among the participants;
- iv) Make full use of the Special Wildlife Committee to improve management presence on the ground to facilitate enforcement, planning, implementation and monitoring.



Indigenous fruit garden at Lubang Baya Ranger Station.

(b) On Sustainability

- i) The EA is committed to ensuring sustainability after project completion. Regular interactions and coordination between enforcement parties, Honorary Wildlife Rangers, the Special Wildlife Committee, the local communities, the private sector and other interest groups will help to demonstrate the seriousness of the Government to assist the local people and to achieve SFM;
- ii) Sustainability will be dependant on close cooperation between the residual Forest Department and SFC. The latter should be sufficiently briefed on the Project. Initially, a co-management team comprising of members from both agencies must be formed to plan, coordinate and implement future activities, and to continue collaboration with Betung Kerihun N.P. with respect to the TBCA and TBWHS;
- iii) Develop long-term educational/environmental programmes to create greater awareness among all stakeholders and other interest groups;
- iv) Interest in research can be sustained by implementing the proposal to develop a field center at the new LEWS HQ for *in-situ* biodiversity research and a center for orangutan research at Nanga Delok (in BANP);
- v) Develop a programme for bilateral research on topics of common interest with BKNP;
- vi) Revise and update the existing management plan for mid-term and long term planning incorporating new baseline data and information obtained from Phase III.



Species of *Begonia* are useful as ornamental, food and medicine.

PART II :

MAIN TEXT

1. Project Content

Lanjak Entimau Wildlife Sanctuary is located in South West Sarawak between 111° 53' to 112° 28' E and 1° 19' N to 1° 51' N. Project activities were also extended to cover parts of Batang Ai National Park that shares a common boundary with LEWS to its north. The southern tip of the Park extends to 112° 07' 37" E and 1° 10' 37" N. The Park is now a part of the TBCA. Most of the activities under Research and Development and Community Development were still largely confined to the buffer zone and wilderness zone.

The proposal for Phase III was formulated based on the findings and recommendations of Phase II. Research and Development was scaled down and greater emphasis was given to promote community involvement in management and community-related activities. Collaborative management of the TBCA with BKNP in West Kalimantan was also pursued.

Phase III objectives are as follows:

- (i) Development Objective – To develop the LEWS Totally Protected Area into a model for biodiversity conservation and management of genetic resources for forestry, community development and research.
- (ii) Specific Objective 1 – To continue specific aspects of the biodiversity inventory to suit the management needs of the Sanctuary and the adjacent protected area of Batang Ai N.P.



Cage culture of high value fish at Nanga Delok.

- (iii) Specific Objective 2 – To encourage and support the development of economic activities by the local communities, enabling them to share the benefits of the biological resources on a sustainable level.
- (iv) Specific Objective 3 – To promote and integrate biodiversity conservation, research and management on a collaborative base in the Trans-boundary Biodiversity Conservation Area with Betung Kerihun National Park in West Kalimantan and other institutions involved in research on tropical forest biodiversity.

The Outputs for Phase III were:

- (a) Infrastructure
The Sanctuary's HQ complex was completed in 2002 after a long delay. A sub-camp at Ubah Ribu was built for staff on field duties.
- (b) Research and Development with emphasis on sustainable utilization
 - (i) Three gene bank plots for timber and non-timber species;
 - (ii) Study on habitats, populations and distribution of orangutan;
 - (iii) Vegetation study of BANP and a pilot study on cultivation and domestication of ornamental and medicinal plants.
- (c) Community Development to promote local participation
 - (i) Extending cultivation of indigenous crops and developing a demonstration plot and a mini-garden together with infrastructure;
 - (ii) Fish resource inventory and culturing of indigenous fish species in valley ponds, concrete tanks and cages.
- (d) Training to upgrade skills in community-related activities including handicraft making.

A series of community-based training had benefited an additional 50 participants and employees. The study tour to BKNP in 2003 was a useful exposure and experience for the officers and community representatives.

The strategy under Phase III was to scale down on R and D and increase community participation. The studies in LEWS and BANP were planned to obtain additional baseline data for integrated planning and management. The orangutan survey was a necessary monitoring exercise and constituted part of an important study that would eventually be extended to BKNP to cover the entire TBCA.

To facilitate a participatory approach, the Wild Life Protection Ordinance (1998) and National Parks and Nature Reserves Ordinance (1998) have provided for the establishment of Special Wildlife Committees (SWC) and Special Park



Cage culture at Rh. Anthony Bau – Releasing fish fries.

Committees (SPC) respectively. Members of the committees are made up of representatives from relevant Government agencies, local communities and the private sector. The new approach to involve field staff directly in community-related activities is a necessary step to ensure sustainability.

1.2 Work Plan

For each year, a Yearly Plan of Operation (YPO) was prepared in accordance with the model given in Annex C of ITTO Manual for Project Monitoring, Review and Evaluation (second edition). Each YPO outlined the organization chart and specified the project activities, the consultants to be engaged, the stakeholders involved, and the estimated budget. Each YPO was discussed and endorsed by the Project Steering Committee before it was implemented.

Delays in implementing the Work Plan were mostly due to the non-availability of suitable consultants at the scheduled time but this problem was not serious.

1.3 Inputs

ITTO and the Malaysian Government provided the inputs based on the approved activities or outputs in the project proposal. The total contribution

was US\$1,678,775.00 with US\$743,775.00 provided by ITTO and the rest from the Malaysian Government. The bulk of the ITTO contribution helped to pay salaries for the consultants, while the Malaysian budget was disbursed for salaries of the counterparts and other officers involved, for transport and travelling, infrastructure, purchase of materials and equipment, and field allowances etc. The project was extended for seven months without additional funding.

1.4 Project Rationale

The project to develop LEWS as a Totally Protected Area was the result of the recommendation of the ITTO Mission to Sarawak in 1989/1990 to give more attention to biodiversity conservation. With the full support of ITTO and the Malaysian Government, the potential of LEWS as a TPA has been confirmed and recognized. LEWS is not only an important conservation area in its own right, but is also an integrated part of the TBCA and a pioneer in trans-boundary cooperation. Furthermore, the three components of the TBCA have also recently been nominated as the first UNESCO Trans-border World Heritage Site in Borneo.

LEWS needs to be preserved permanently as a watershed for environmental protection and continued social, political and economic development. Those living in and close to the buffer zones are still dependent on the forest resources for their livelihood, either directly or indirectly. The rich resource base provides great opportunities for biotechnology research and advancement. LEWS will continue to play its pioneering role as a TPA for biodiversity conservation and a model for promoting trans-boundary cooperation among ITTO member countries in the wet tropics.

1.5 Relevance to ITTO

1.5.1 Compliance with ITTO Objectives

The Project is in compliance with ITTO objectives contained in Article 1 of the International Tropical Timber Agreement, 1994:

- (a) To contribute to the process of sustainable development (Output 1)

- (f) To promote and support research and development with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests (Outputs 1 and 2)



Semah harvested at Rumah Api.

- (g) To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forestland, with due regard for the interests of local communities dependent on forest resources (Output 2)

1.5.2 Compliance with ITTO Criteria

The following criteria are relevant:

- (a) Improvement of forest management through research into the natural forest ecosystems, species composition and gene banks of timber trees and their sustainable uses (Output 1)
- (b) Contribution to reforestation through protection and utilization of regenerating forests and abandoned shifting cultivation areas in the buffer zone with sustainable use of non-timber forest products (Outputs 1 and 2)
- (c) Contribution to the development and strengthening of the Sarawak Forest Department, particularly its National Parks and

Wildlife and Forest Research Branches, through research and training to increase technical competence

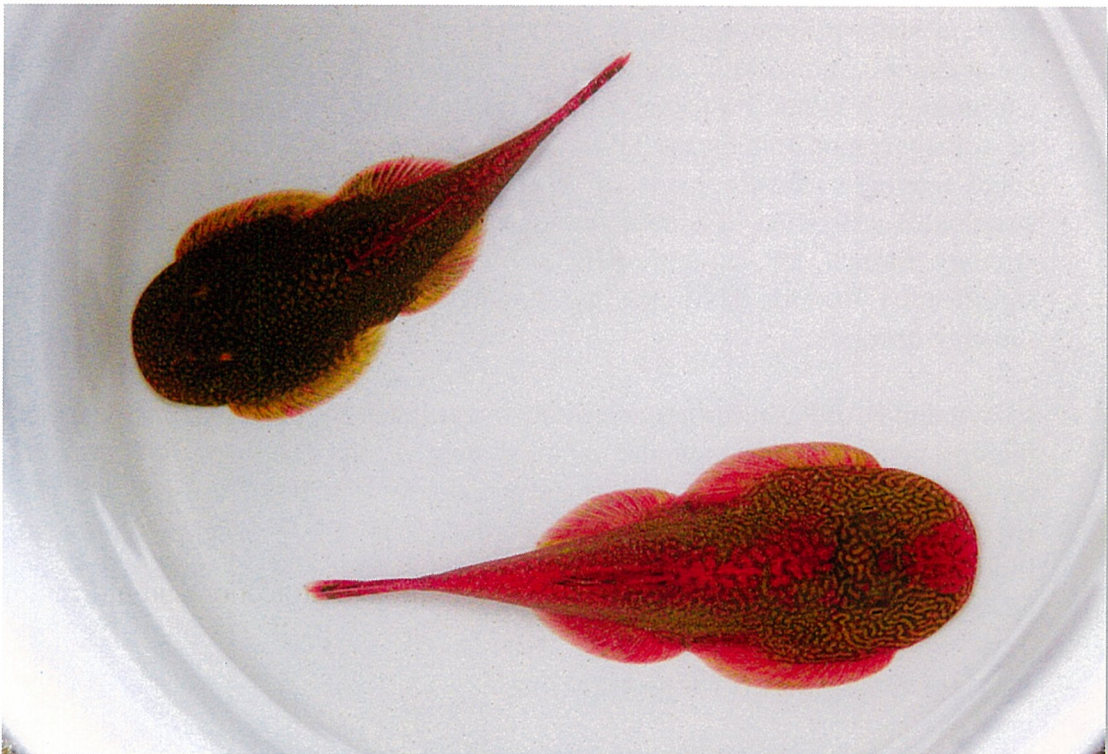
- (d) Enhancing international cooperation with Indonesia through collaborative research and management programmes developed for the Betung Kerihun-Lanjak Entimau Trans-boundary Conservation Area (Outputs 1 and 2)

1.5.3 Relationships to ITTO Libreville Action Plan

Priorities in the ITTO's Libreville Action Plan are wholly or partially covered by the Project under the Committee on Reforestation and Forest Management. The Action Plan has set out the following specific goals:

- (a) Support activities to secure the tropical timber resource base;
- (b) Improve the tropical timber resource base;
- (c) Enhance technical, financial and human capacities to manage the tropical timber resource base.

The Project's outputs through research and development and community development activities have provided the supporting actions to achieve these goals.



Lelekat, *Gastromyzon* sp. nov. (live specimen), a new discovery.

Goals (a) and (b) were achieved by recognizing and enhancing sustainable utilization of non-timber products of economic potentials and by establishing gene banks for timber trees to support the development of the tropical timber resource base through tree plantations. Under (c), on-the-job multi-disciplinary research and training to improve technical competence were given to Forest Department staff involved in the Project in the fields of forest ecology, resource inventory, research techniques, development, management and report writing. The local communities received training through community-related activities, and were made more aware of environmental conservation through regular dialogues, discussions and workshops.

2. Project Context

In its policy on SFM, the State Government of Sarawak is setting aside about six million hectares of natural forest as Permanent Forest Estates (PFE) and a further one million hectares as national parks, wildlife sanctuaries and nature reserves. Conservation will play an increasingly important role in socio-economic development while the forest industry will be stabilized at a level determined by the availability of timber resources in the future.

With the recent privatization exercise, the residual Forest Department will perform statutory and regulatory functions, and leaving the responsibilities of management and development to the Sarawak Forestry Corporation. The Corporation's unit on Protected Area and Biodiversity Conservation (PABC) will be directly responsible for the TPAs. The new strategy of SFC is to maximize the socio-economic development of TPAs through eco-tourism activities and sustainable utilization of suitable biological resources for commercial purposes. Already known for its extremely rich biodiversity, LEWS can contribute significantly towards SFM, but the resources must be carefully guarded and sensibly utilized.

LEWS and BANP can further contribute towards science and research in tropical biology, especially through the establishment of the proposed field research center for *in-situ* research in LEWS and a center for orangutan research in BANP. In the international context, cross-border cooperation with neighbouring Indonesia can be further strengthened through the TBCA partnerships and UNESCO Trans-border World Heritage Site.

3. Project Design and Organization

Phase II provided the identification phase for the development of the proposal for Phase III. The design and organization of Phase III activities were based on the

studies and recommendations made during the previous Phase. One key issue identified was that conservation management of LEWS would not be effective without the full participation of the local communities and other relevant stakeholders. In this respect, the National Parks and Nature Reserves Ordinance and Wild Life Protection Ordinance were revised in 1998 to make provisions for the establishment of Special Park Committees and Special Wildlife Committees to facilitate stakeholder involvement.

The Project design took note of the need to create greater awareness and to have more proactive involvement in SFM by the EA and local people on a collaborative base, and recommended increased management presence in the field in order to achieve this. This problem had been partially addressed by attaching several young research officers and rangers to the Project for training and to gain on-the-job experience in research and management. Their continued involvement in the development of LEWS is crucial. The Project was also designed to lay the foundation for sustainable development of LEWS as a Totally Protected Area after project completion.

4. Project Implementation

There was no critical difference between planned and actual project implementation. The budget provided by ITTO and the EA was adequate. It was necessary to revise the schedules for a number of studies because the Project



Rumah Api, a 21-door longhouse in Ulu Ketibas.

wrongly assumed that full time counterparts and research officers for all the project components would be readily available. The lack of management at on-the-ground and implementation levels and weaknesses in enforcement had been identified as the key factors that hindered smooth implementation.

The completion of several project activities led by a number of consultants and research officers were delayed, particularly at the data analysis and report writing stage. Overall, implementation had been satisfactory, and the project inputs had largely met with the quality and quantity expected of the consultants and officers. Those who are still involved in implementation should seek every opportunity for fieldwork and on-the-job training. There is a concern, however, that senior researchers who possess sufficient knowledge and practical experience in various disciplines and who can provide the necessary training and guidance to young researchers are lacking.

5. Project Results

One significant development in Phase III was the inclusion of 32,000 hectares of Batang Ai National Park into the TBCA. The EA is also to be commended for extending LEWS and BANP by 23,850 ha and 8,100 ha respectively in 2003.

As a continuous habitat for plants and animals, R and D and community development were extended to BANP to collect additional and new baseline data such as vegetation types and flora, and fish resource. The populations and distributions of the orangutan were also monitored. Orangutan populations range between 166 and 285 individuals in BANP and 1,180 and 2,000 individuals in LEWS, indicating that the populations have remained stable since the last surveys in 1993 and 1994 respectively. The fish surveys covering new areas in the two TPAs counted 49 species with 9 new records in LEWS, and 38 species with 18 new records in BANP. One new species of *Glaniopsis* was also reported in LEWS.

The main vegetation types in BANP are primary mixed dipterocarp forest (MDF) and secondary forest of different age classes. The latter is estimated to occupy up to 60 % of the total area of the Park. The oldest secondary forest surveyed is about 40 years old, and is already an important habitat for the orangutan. From the MDF, 334 species were recorded, comprising 232 trees and 82 non-woody species. The 40-year-old secondary forest is richer with 304 tree species and 101 non-tree species. Non-tree flora including herbs, palms and climbers are abundant. Young secondary forest from 5 to 10 years old contains only a total of 22 species comprising 16 trees and 6 non-trees. Like LEWS, BANP is also extremely rich in medicinal and ornamental plants.



Dialogue or 'berandau' with local community.

Community-related activities have been expanded to benefit participants from 6 longhouses in Batang Ai and one longhouse in Ulu Mujok. Assistance was also given to the Ng Delok Primary School adjacent to the National Park Headquarters. New activities at Batang Ai included cage culturing four species of fish, cultivating 65 species of indigenous fruits in a demonstration plot, and 76 species of ornamental and medicinal plants in a mini-garden. A nursery was constructed to provide training facilities for the local participants. Seedlings of economic plants were distributed to the farmers.

Three indigenous fish species and one introduced species were used in cage culture. The introduced species is the very fast-growing Red tilapia. About 200 gm was harvested and sold only after six months. The money obtained was managed by the local participants to be used as capital. Although growth rates of the indigenous species were very slow the investment would be worthwhile because of their high value and market demand. Mortality rate was below 5 percent after 18 months.

Two new valley ponds and two concrete tanks were constructed at Ulu Mujok and Nanga Bloh, managed jointly by the staff of the Sanctuary and the local participants. Late requests were received but these could not be entertained. Overall, the local communities have developed a greater understanding and appreciation for biodiversity conservation and have expressed their willingness to participate more actively in management and enforcement. These expectations have to be met.

The Project has laid the foundation for further research and rational development of useful plant and animal species even on a commercial scale. To meet future challenges, technical competence among the management personnel and entrepreneurial skills among the local participants will have to be strengthened. The Management Plan needs to be reviewed and updated. A similar plan for Batang Ai National Park has yet to be developed.

6. Synthesis of the Analysis

(a) Specific Objectives Achievement	Realized
(b) Outputs	Realized
(c) Schedule	Delayed, not seriously
(d) Actual expenditures	10% above planned
(e) Potential for replication	Significant potential
(f) Potential for scaling-up	Modest potential



Toilets and shower room built for Nanga Delok Primary School.

PART III:

CONCLUSIONS AND RECOMMENDATIONS

(a) Development Lessons

Development of LEWS as a TPA would not have been successfully achieved without the cooperation and inputs from all stakeholders and other interest groups. There was no question about the commitments of the Government and its relevant agencies, and the increasing interest of the local communities. Nevertheless, certain weaknesses need to be rectified. The following recommendations are made:

- (i) Encourage and promote greater interest in conservation and research, and increase capacity building;
- (ii) Sarawak Forestry Corporation must continue to give priority to the ITTO project as well as the co-management of international projects such as the TBCA and TBWHS. This can be partially achieved through the Special Wildlife Committee for LEWS and the Special Parks Committee for BANP;
- (iii) Guide the local communities to be more proactive and enterprising and to adopt a positive approach in socio-economic activities for sustained benefits. Strong local leadership is a great advantage;
- (iv) Develop and update the management plans for LEWS and BANP to suit present and future needs and to attain the desired conservation goals;
- (v) Continue to create awareness among the stakeholders and other interested groups.

(b) Operational Lessons

The Project Coordinator was overall responsible for ensuring successful execution of the Project, while the Project Leader had to ensure smooth operation of activities at the planning and implementation levels. The support and cooperation from consultants, counterpart staff, research officers and the local participants were crucial. Better results would have been achieved with full-time counterpart involvement. To ensure smooth operation it is recommended that:

- (i) On-the-ground management must be made more effective to sustain the interest and to meet the expectations of the local communities;
- (ii) Participatory approach can be enhanced through better understanding and cooperation among the stakeholders.

- (iii) The EA should be more receptive to the needs and expectations of the field support staff and local participants who are understandably more familiar with the problems and situation on the ground.
- (iv) Full time counterparts should be made available for all research and development activities;
- (v) Enforcement is strengthened to protect the forest resources.

(c) Lessons learned on the Transboundary Biodiversity Conservation Area

Trans-boundary cooperation on biodiversity conservation had been a new experience for Malaysia and Indonesia. A Joint Task Force was appropriately formed to discuss, plan, and implement collaborative activities. Lessons learned were:

- (i) Administrative – Members of the Joint Task Force were not permanent, thus affecting continuity of planning and implementation. A permanent co-management committee had been proposed. There was also a need to give greater priority to TBCA management by the host governments and their respective agencies. A TBCA management unit under each agency would be ideal. There must be permanent presence in the field.
- (ii) Social – The local communities on each side of the border differ in socio-economic background, and have different expectations and needs. Their cooperation and participation can be sought only through an effective permanent co-management committee that representing the relevant Government agencies. Many of the local communities are still heavily dependent on the forests, and need the support of more community-based economic activities to provide an alternative and steady income.
- (iii) Legislative – Different laws and regulations govern the stakeholders on each side, causing complications in law enforcement.
- (iv) Continuing collaborative efforts – Activities on enforcement, staff and information exchange, and bilateral research will help to sustain TBCA management.
- (v) Training – The lack of management personnel is a great concern. More officers with interests in conservation must be recruited and trained.
- (vi) Continuing ITTO presence – ITTO can continue to provide the catalyst, and enhance efforts in TBCA cooperation.

(d) Recommendations for Future Projects

(i) Project Identification and Design

Owing to the large size of LEWS and its very rugged terrain with difficult access, R and D had been confined largely to areas within the buffer zone and wilderness zone. In spite of this, sufficient baseline information on the major forest types, ecology and distribution of biological resources has been collected from previous and present studies. This knowledge has formed the basis for management and sustainable utilization.

For future projects, R and D ought to consider the study of key stone species to gauge a fuller understanding of the ecological interactions and relationships between plant and animal species. Research to support SFM to improve the socio-economic status of the local communities should be continued. The last Project Steering Committee meeting held on 18 November 2003 supported a final phase for the Project with the objective of completing the community-related and economic activities before handing over to the EA.

Another recommendation by the Committee was to consider making available a revolving fund in the final phase for supporting socio-economic activities with certain rules to ensure proper management and continuity by the EA. There should be greater emphasis on awareness education targeting all stakeholders and other interest groups as conservation management cannot depend on enforcement alone.

(ii) Project Implementation

Problems encountered in Phase III have been highlighted and solutions must be found to avoid these in future projects. This entails greater investment in manpower development and financial inputs by the EA. The process to acquire land for project activities can be stepped up. Sarawak Forestry Corporation must continue to give emphasis to basic research in order to achieve conservation and economic objectives. It is also important to consult ITTO for advice and guidance in the future management of the Project and in trans-boundary cooperation among its member countries.

(iii) Project Organization and Management

Under the current system, the Project Leader is responsible for preparing the Work Plan and Yearly Plan of Operation, and for helping to identify consultants, local counterparts, research officers and support staff in consultation with the Project Coordinator; and for managing the Project. This has worked very well and should be allowed to continue. The EA can play a more proactive role in management by making available full time counterparts to work with the Project Leader and consultants, thereby deriving maximum benefits from the Project.

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