

PD-ARM-436

**PROFITABLE ENVIRONMENTAL PROTECTION (PEP) PROJECT**

# **ANNUAL SUMMARY**

**Fiscal Year 1995**

# **FINAL PROGRESS REPORT**

**Covering the Period: May - September, 1995**

---

---

**Foundation for the Peoples of the South Pacific**  
**P.O. Box 951, Port Vila, S.W. Pacific**  
*Tel 678 22915 Fax 678 24510*  
**e-mail: fspVanuatu@pactok.peg.apc.org.**

*Profitable Environmental Protection (PEP) project.*

## ACRONYMS USED IN THIS REPORT

AEP	..... Asian Environment Programme
AIMS	..... Australian Institute of Marine Sciences
CEF	..... Community Environment Forestry
DNA	..... Deoxyribo Nucleic Acid
EMU	..... Environmental Management Unit
ESHDP	..... Equitable and Sustainable Human Development Programme (VESHDP .... Vanuatu ESHDP)
FSA	..... Farm Support Association
FSP	..... Foundation for the Peoples of the South Pacific
FSPI	..... Foundation for the Peoples of the South Pacific International
IEE	..... Initial Environment Examination
IUCN	..... International Union for the Conservation of Nature
KAP	..... Knowledge Attitudes and Practice
LDC	..... Lolihor Development Council
LPG	..... Liquefied Petroleum Gas
NGO	..... Non Government Organisation
NKDT	..... National Komuniti Development Trust
NPSO	..... National Planning and Statistics Office (NPO .... National Planning Office)
NUP	..... National United Party
PEP	..... Profitable Environmental Protection
PRA	..... Participatory Rural Appraisal
SCF	..... Save the Children Fund
SPREP	..... South Pacific Regional Environment Programme
SSA	..... Site-Stable Agriculture
STIDA	..... Santo Tourism Industry Development Association
UNDP	..... United Nations Development Programme
UNV	..... United Nations Volunteer
USAID	..... United States Agency for International Development
VRDTCA	..... Vanuatu Rural Development Training Centres Association
WWF	..... World Wide Fund for Nature

---

*Profitable Environmental Protection (PEP) project.*

**TABLE OF CONTENTS**

**Annual Summary** ..... 1

**Program Activities** ..... 2

**Administration** ..... 3

**Travel And Training** ..... 4

**Appendix 1**      **Outboard Engine Repair Workshop Report** ..... 56

**Appendix 2**      **Final Report of the Farm Support Association Work in Lolihor**..... 65

**Appendix 3**      **Report on the KAP Survey of Farmers in Lolihor** ..... 76

**Appendix 4**      **Report on the Wild Yam Survey** ..... 83

**Appendix 5**      **List of Wild Yam Farmers** ..... 89

**Appendix 6**      **LDC Constitution** ..... 90

**Appendix 7**      **Ecotourism Management Consultant's Report** ..... 99

**Appendix 8**      **Ecotourism Environmental Consultant's Report** ..... 116

**Appendix 9**      **Report on the Chicken Farm & SSA Projects in Hog Harbour**..... 125

**Appendix 10a**      **Extract from John Dowe's Report on Carpoxyton** ..... 129

**Appendix 10b**      **Extract from AIMS Report on Carpoxyton DNA Analysis** ..... 132

**Appendix 11**      **Report on Germination Tests on Carpoxyton Seeds** ..... 136

**Appendix 12**      **Maskelynes Trip Report** ..... 140

**Appendix 13**      **Report on the Mele PRA Workshop** ..... 143

**Appendix 14**      **Consultant's Report on the PEP Lessons Learned Exercise** ..... 179

**Appendix 15**      **Extract from the Report on the Workshop on Lessons Learned** ..... 190

**Appendix 16**      **Environmental Curriculum Consultant's Report**..... 200

**PROFITABLE ENVIRONMENTAL PROTECTION (PEP) PROJECT**

**ANNUAL SUMMARY**

**Fiscal Year, 1995**

---

*Profitable Environmental Protection (PEP) project.*

## PROJECT ADMINISTRATION

As reported in the previous annual report, PEP's activities became focussed on Vanuatu during this fiscal year. The year has been a busy one with the project having to administer both an expanded range of activities and an increase in staff and short term consultancies. The quarterly meetings of the team proved very useful in keeping the staff informed and in facilitating co-ordination.

Work in the Lolihor EMU was facilitated by PEP's two local liaison officers but gradually handed over to the Lolihor Development Council which PEP had initiated to co-ordinate activities in the area. Activities in Santo continued to be administered through a field office in Luganville.

The arrangement to convert to greater team decision-making and to have the FSP regional director as project advisor worked very well. Better project planning was achieved through linking activities more closely with estimated budgeting.

The project was visited by the project administrators from USAID Manila and given guidelines for the rest of the project lifetime.

## PERSONNEL

### Staff:

The year saw the departure of several staff members and the recruitment of several more resulting in a much expanded compliment. John Salong, the community liaison officer for Lolihor left in the first quarter of this fiscal year. Jim Stead, the business advisor completed his contract during the second quarter, while Anita van Breda, the marine conservationist left the project during the third quarter. Donna Kalfatak, the environment education officer in Santo took maternity leave from the middle of July to the end of the project.

New recruits included Wycliff Bakeo, to replace Jim Stead, Joses Togase as information/publications officer, Timhu Thial as community liaison officer in Hog Harbour, Graham Nomiho as community-based marine conservation officer, and Raymond Tari as office helper.

### Consultants:

PEP had to engage a series of consultants to assist the staff complete the necessary activities. These included :

#### For Lolihor:

Trainers for first aid, tourism awareness and cooking for the Lolihor tourism enterprise.

A free lance journalist to write a promotional article on the Lolihor tourism enterprise.

An economist to write up the Lolihor tourism enterprise as a case study including an economic and financial assessment.

Trainers in outboard engine repairs.

#### In Santo

Clark University to run a PRA training exercise in Hog Harbour.

Two land use mapping consultants for Hog Harbour

A marine scientist to work closely with a mangement consultant to develop natural tourism attractions in Hog Harbour and Lope Lope.

A management consultant to develop a simple business plan, help marketing and teach business skills to Lope Lope resort staff.

A woman councillor to facilitate discussions of sharing workload between men and women in a workshop in Hog Harbour.

For Carpoxyton:

A palm taxonomist to lead the Carpoxyton population survey.

A nurseryman to advise on germination trials and processing palm seeds for export.

Two local foresters and a botanist to assist with the palm population survey.

The Australian Institute of Marine Science to do DNA analysis for investigating genetic variation of the palm.

Other Consultants:

A consultant was engaged to develop an environmental curriculum for Vanuatu's rural training centres.

PEP engaged a consultant from Kenya to run a second training course on PRA jointly organised with FSP/ Vanuatu.

A consultant was engaged to facilitate the lessons learned exercise and the Melanesian subregional workshop that followed it.

An additional consultant was engaged to assist the above-mentioned facilitate a second workshop for FSPI planning.

## PROGRAMME ACTIVITIES

Apart from the adoption of Lope Lope as another area of work, PEP remained with areas it had adopted during the previous fiscal year, and carried forward activities as much as possible to a stage where they can be sustained by local communities, or organisations.

### Lolihor

Site-stable agricultural techniques introduced through wuhuran farmers' plots demonstrated their value in increased yields, and reduced soil erosion. A field day that created much interest was the concluding activity of this intervention. More wild yam planting materials were distributed so that a total of 180 farmers had wild yam plots by the close of the project.

A KAP survey showed farmers had understood the environmental messages conveyed through PEP's educational activities, but that the conservation principles of site-stable agriculture techniques were not understood. Farmer practices had not been affected much. Messages have to be repeated regularly or they are forgotten.

A range of training activities were mounted to help the development of the tourism enterprise. This included training for tour guides in first aid, cooking and general hospitality services; training for LDC and small business persons on bookkeeping; training for boat operators in boat safety and in outboard motor maintenance; overseas training tour for the chief tour guide who travelled through the length of New Zealand; and the attachment of the bungalow operator to an established concern on Efate. PEP sponsored a tour of the Ambrym volcano and other attractions by three tour operators in Vila. They returned impressed and promised to market it. A system of payment for the tours to the LDC was agreed to in a meeting facilitated by PEP. An additional marketing avenue was utilised through the production of an adventure article on the tour for inclusion in the Air Vanuatu in flight magazine.

The tourism enterprise was written up as a case study. This showed that the lack of a market and the high prices make this enterprise of questionable viability.

The LDC continued to gain confidence and took over co-ordination of PEP activities in the area. By the close of the project they were running their own activities to train their community members and to raise funds for themselves.

The Wuhuran Theatre Troupe became independent of PEP and took on contract work for other organisations both in and outside Ambrym.

## Santo

The PRA activity in Hog Harbour guided PEP's activities with that community for this fiscal year. A landuse survey was made and a workshop on landuse management run for young people in the village. As a result, several small chicken farms were established, a theatre troupe for environment education was formed, and site-stable agriculture demonstration plots organised. A workshop to address women's work load resulted in the completion of a women's centre where women from the east coast of Santo can come together for training. Several landowners worked with PEP consultants to develop nature trails as tourist attractions. Posters, and pamphlets were produced for these.

Lope Lope resort sought PEP's assistance with developing their ecotourist attractions both marine and terrestrial. A business plan was also produced for the resort. Pamphlets, albums, posters, and diving/snorkelling rules were developed for this resort. A telephone was installed and marketing brochures distributed.

Plans to establish community-based coral monitoring systems for both Hog Harbour and Lope Lope could not be implemented for lack of time, and land dispute.

The Santo PEP office closed at the end of August and Graham Nimoho transferred to Vila for the last month of the project.

## Carpoxyton

A population survey supplemented by DNA analysis for genetic variation showed the palm population to be fairly non-variable with only two variant populations in Tanna. The consultants recommended multiplication of the three population variants for any source of seeds for export, and establishment of three ex situ conservation areas. To determine how these should be done more biological and ecological studies need to be made. PEP handed over responsibility for carrying on the work on Carpoxyton to a committee to be serviced by FSP/Vanuatu. The findings of the population survey enabled PEP to move ahead with a pilot seed export enterprise to test the market, establish procedures, and establish realistic prices for seeds. A paper on a strategy for conservation of the species, linked to the export enterprise was prepared for consideration of the FSP/Vanuatu serviced committee. This is to comprise representatives of the government Environment Unit, the Agriculture Department, the Forestry Department, The Farm Support Association, FSP/Vanuatu, and the landowners.

## Waste Oil

Investigation of alternative means of dealing with waste oil took Jim Stead to W. Samoa and to Fiji. Its use as a supplemental fuel for boilers was considered the most viable option for Vanuatu. Attempts to have demonstration plants installed with interested industrial concerns had to be curtailed for lack of time. A report was completed and distributed.

## Other Activities

PEP supported the development of a core curriculum on environmental awareness for school leavers in rural areas enrolled in rural training centres. The curriculum discusses practical application of environmental awareness in daily activities including small scale resource based businesses. PEP funded both the consultant to develop the curriculum, and a set of resources for each of the rural training centres. An additional set was compiled for the Vila office of their association.

Instead of an evaluation at the end of the project, PEP mounted a lessons learned exercise on the advice of USAID. A consultant, Dr. Michael Hamnett was recruited to facilitate the exercise and act as resource person for a workshop that followed it. The workshop provided an opportunity for people involved in PEP-like projects in Melanesia to come together and share experiences and lessons learned. It was a very fruitful exchange. The workshop report is to be distributed widely to interested donors, and implementing agencies.

A second workshop followed the first workshop. Representatives of the FSPI offices met together after the PEP lessons learned workshop to take up the findings and formulate strategies for a regional programme on sustainable community-based resource management. This was also a fruitful meeting and the FSPI network is to move ahead with selected regional programmes.

PEP staff visited the communities the project had served, for the last time during the second week of September, and officially closed out all activities in those communities.

# FINAL PROGRESS REPORT

May, June, July, August and September, 1995

*Written By The Profitable Environmental Protection Project Team*

*As usual appendices may be requested where they are excluded. This is the final report of the project.*

## SUMMARY

This final progress report covers a period of five months rather than the usual three. These were five very productive and busy months as all PEP team members attempted to complete interventions and hand over activities in a state that would enable others to sustain them.

### Lolihor

In Lolihor, the LDC has begun to initiate activities on its own and diversified its funding sources. It took responsibility for PEP's final activities for which PEP transmitted funds to the LDC's account. These were accounted for satisfactorily.

The LDC purchased additional wild yam planting materials from neighbouring Malekula Island, and distributed them to more farmers bringing the total number of wild yam farmers to 180. Training of these farmers on the care of wild yams was organised by the LDC independently of PEP.

The introduction of site-stable agricultural techniques through demonstration wuhuran farmers ended successfully with a well attended field day. Farmer interest is high and the LDC is to take up membership in the Farm Support Association on behalf of the farmers. Another KAP survey was conducted three weeks after the field day to assess how effective the FSA and PEP educational messages had been on the farmers.

The tourism enterprise remains of concern as it is not competitive with alternatives on Ambrym. It will be difficult to market without an airport close to Lolihor. PEP engaged a consultant to write up the Lolihor tourism intervention as a case study. Her findings confirm the concern about the market. Nevertheless, those involved in tourism activities now have much improved skills, greater confidence, and increased understanding of the needs of tourists.

The Wuhuran Theatre group became truly independent as it took on several contracts for other agencies and expanded its area of coverage to other islands of Vanuatu.

### Santo

In Santo, PEP achieved much more during these last five months than it had done since it began activities there in February, 1994. The ni-Vanuatu community-based marine conservation officer appointed to Santo mobilised key community members of Hog Harbour who then worked with PEP to implement activities as follow up from the PRA exercise.

PEP initiated the formation of a youth group that undertook small scale agricultural activities as well as set up a theatre troupe. With the help of PEP, an almost defunct women's group was revived, and a women's centre completed for women's training activities.

Interest in PEP's work was kindled not only in Hog Harbour but also in neighbouring villages. The chief's council in Hog Harbour has begun to follow up some activities arising out of the PRA. Unfortunately, PEP has not had sufficient time to facilitate linking the Hog Harbour community with existing services that they can use.

In contrast to the village community, the owners of Lonnok tourist resort rejected PEP's offer to assist them with developing a conservation-based business plan. All work with Lonnok and Elephant Island ceased as from May, 1995.

Another family ecotourism concern along the east coast of Santo at Lope Lope, invited PEP to assist them. The two consultants engaged by PEP for ecotourism advice were despatched to Lope Lope where they achieved much in such a short time.

## **Maskelynes**

PEP's association with the Maskelynes was revived when PEP organised a visit of a group of community representatives from Hog Harbour, Lonnok and Lope Lope in Santo to the Ringi te Suh marine reserve in Maskelynes. This proved an effective way of raising awareness to marine resource use issues.

## **Carpoxyton**

Carpoxyton seed export activities continued with consignments going to the International Palm Society seed bank in California, and to a commercial nursery in Hawaii. Samples were extracted for germination tests. An attempt was also made to investigate storage time for the palm seeds. Seedlings grown in the PEP nursery were all either sold on behalf of the village that supplied the seeds, or distributed to different gardeners for horticultural monitoring.

Much publicity was made of the palm through the media, public displays, and distribution of pamphlets throughout the country.

John Dowe completed his final report on the palm population survey incorporating the findings of the investigation of genetic variation through DNA analysis. This report gave advice on future activities for the palm's conservation. PEP made arrangements for handing over the Carpoxyton intervention activities to a special committee to be serviced by FSP/Vanuatu.

## **Waste Oil**

The report on Waste Oil was finalised, reproduced and distributed to interested individuals and institutions.

## **PRA**

Another 3-week PRA training activity was organised with FSP/Vanuatu. Representatives of NGOs and government departments attended. The training was led for the first week by an experienced trainer from Kenya. PEP staff who attended the Hog Harbour PRA training in 1994, became trainers for this exercise and emerged as an accomplished training team. FSP/Vanuatu hopes to continue PRA training activities as needed.

## **Lessons Learned**

The PEP/FSP Regional organised Lessons Learned workshop for Melanesia was attended by representatives of international and local organisations working on PEP-like projects in Solomon Islands, Vanuatu and Fiji. This proved to be a very useful exchange.

## **Educational**

PEP supported the development of a unit on environmental education for a core curriculum for Vanuatu's Rural Training Centres. This included the provision of a set of resources (books, tapes, video etc) for the centres. Everything was completed by the end of the PEP project.

Farmer leaflets and booklets on site stable agricultural practices continue to be popular. Several hundred were produced for distribution. FSP/Vanauatu is to continue to produce these on demand.

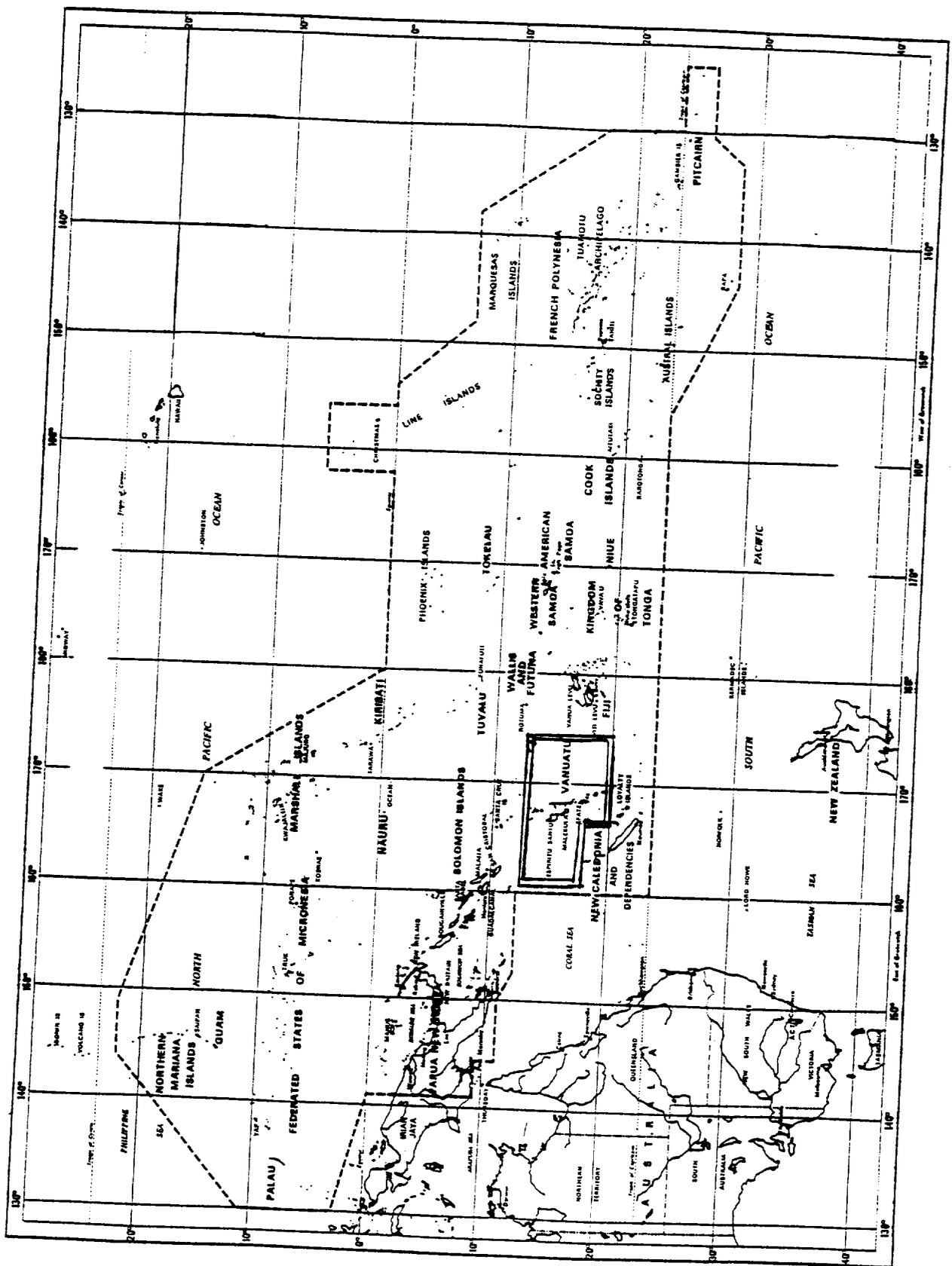
## **Closing**

The second week of the final month for the project was spent closing out activities at the three main field centres - Hog Harbour, Lope Lope, and Lolihor. All activities ceased then and the last two weeks were spent producing reports and closing files.

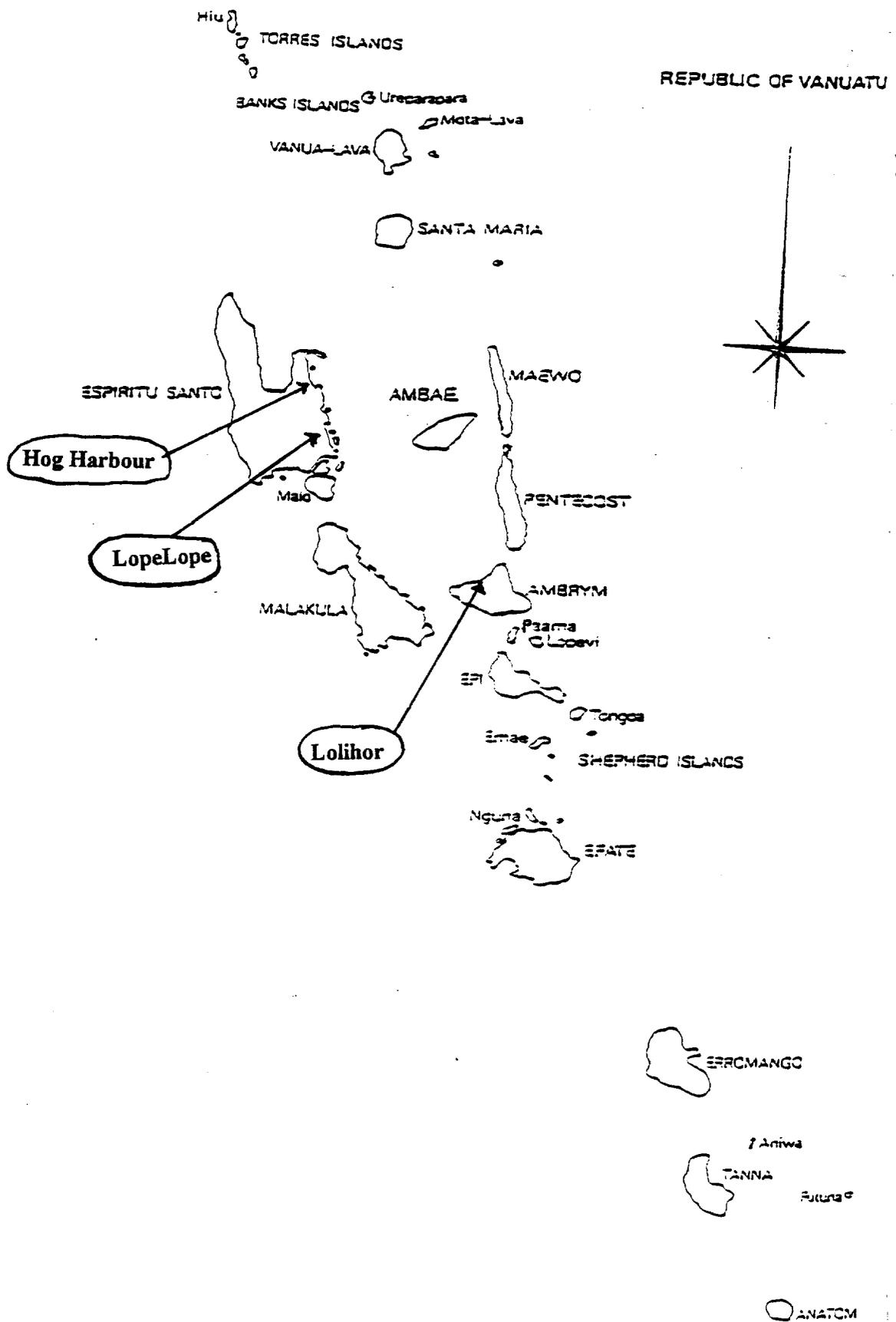
## **Staff**

As the PEP team disbands, Stanley joins the FSP/Vanuatu Community Environment Forestry project, Josefs joins FSP/Vanuatu Consortium, while Henry transfers full time to FSP/Regional office. Suliana, Wycliff, Graham, Donna and the community liaison officers leave FSP. The team thanks USAID and FSP for the opportunity to work on the PEP project and acknowledges in particular the useful advice and guidance of the FSP Regional Director, Kathy Fry.

*The Pacific Ocean Showing Location of the Vanuatu Group*



The Islands of Vanuatu Showing Location of Sites of PEP Activities.





## PEP HISTORY IN LOLIHOR

March 1993:

PEP Team recommended adoption of this EMU, with further investigation of specific interventions.

September 1993:

Profiling completed, active EMU, Initial Environmental Examination submitted and approved for wild yam enterprise, IEE in progress for tourism project, handicrafts under investigation, shark fin enterprise dropped. Monitoring and evaluation and environmental education programs were active.

PEP team recommended continuing advance in tourism, handicraft, and yam initiatives.

### **Interventions and Activities:**

Several interventions for Lolihor were investigated and activities begun as follows:

#### **1.1: Tourism**

##### **History**

December 1993:

Consultant Jeremy Challacombe visited the Lolihor EMU during the previous quarter to prepare an IEE for the tourism project. Traditionally, access to the volcanoes had been denied during the yam planting season, November through February. It was believed that persons visiting the volcanoes would disturb them, bringing volcanic dust and acid rain that would destroy the newly planted crops. Villagers favoring the tourism project wanted this prohibition lifted. In May of 1993, following presentations by representatives from Ranvetlam, the District Council of Chiefs agreed that tourists could visit the volcanoes at any time of the year. Although this issue had been the subject of continuing debate, the decision of the District Council was reaffirmed in August 1993. In a cultural context, this represented a major deviation, and was an indication of the level of interest in increasing tourism.

March 1994:

In January, Devoe met with the Activities Director for Club Med II to discuss potential shipboard environmental education programs for ships calling at Ambrym and Santo. PEP continues to pursue this possibility with all cruise ship lines.

Tourists visiting Vanuatu are not accustomed to Melanesian cuisine which they perceive as bland and monotonous. To provide more pleasing food and thus enhance the experience, it was decided to conduct a food preparation workshop for residents of Lolihor. It was not the purpose of the workshop to introduce Western-style cooking, but rather to teach local cooks to add spice and variety to the menu using only locally available food. Kelma Sope, a ni-Vanuatu with experience in conducting nutrition and food preparation workshops, was engaged to go to Lolihor to present the workshop. Ms. Sope developed a formal five day curriculum with emphasis on hands-on activities, and also developed a number of recipes utilizing locally available foods. Representing four communities within the EMU, 15 women and one man participated in the workshop. As a final exercise, the group voted to hold a food sale. This was a great success with VT 12,000 raised; it was voted to use the proceeds to provide more training for women's groups.

In October 1993, Jeremy Challacombe reported on his first consultancy, in which he was asked to evaluate the potential for nature-based tourism in Lolihor. Challacombe determined that tourism held reasonable income-generating potential for Lolihor residents. He recommended that a tour be developed, and that local people be trained to undertake this enterprise activity. Challacombe was employed to return to Lolihor in February to design the tour and conduct formal training for guides. Fifteen candidates, including seven women, participated in the guide training program. A planned component of this training was a trial tour, with paying tourists recruited in Port Vila as a test group. Unfortunately, at the time for this tour, two cyclones passed through Vanuatu, straddling Ambrym. Flights to, and local transport in, Ambrym were suspended, and the trial tour was canceled.

Upon his return to Port Vila, the consultant met with locally-based tour operators to acquaint them with the PEP tourism project. Their reaction was favorable, and they evidenced interest in marketing the tour once it was fully developed.

June 1994:

From May 3 - 7, two tourists embarked on parts of Ambrym Adventure Tour. Four days notice was too short to get everything organized, and the two tourists could not afford a cultural dance display at Fanla. A village tour outside of Lolihor was quickly organized. The tourists did not want to go to the hot springs, having just travelled in New Zealand. Their travel on Sunday resulted in some guides not turning up. Consequently, packs were too heavy for just one guide and the PEP local facilitator. Luckily, the tourists were fit and experienced, so they carried some of their own packs. The guides did not know the right path at that time because they had not surveyed the paths as planned due to other commitments. A report submitted by the two tourists has proven valuable to the tour guides and the cooks.

May 17 - May 26 saw consultant Jeremy Challacombe's return to Lolihor. He was joined by four tourists from May 19 - 24. The whole tour program was conducted. Everything went smoothly and everyone was relatively happy, except for some people at Emiotungan in West Ambrym who were expecting the tourists to stop at their village. A meeting called by the chiefs of West Ambrym on July 28th will discuss Ambrym Adventure Tours and listen to their concerns.

Work on brochures for Rosso Bungalows and Ambrym Adventure Tours has started but is yet to be completed. The in-house brochures will be produced and distributed to the tour operators in Vila.

Meetings have been held with tour operators in Vila to inform them of Ambrym Adventure Tours. Mike Van Helsing of South Pacific Travels and Gilbert Ambrogiani of Surata Tamaso may be coming on an awareness tour of the Ambrym Adventure Tours in August. They will try to bring some paying tourists to cover their costs. Jeremy Challacombe is also trying to organize a commercial tour from Australia in the next quarter.

It is recognized that some work needs to be done to inform yachtsmen of the Ambrym Adventure Tours. Educational pamphlets, brochures, posters and videos must be produced to provide a guide for tourists on what to expect and how to behave. Evaluation questions in self-addressed envelopes will be provided to tourists for feed back. This will help the stakeholders in improving the tour.

Douglas Solomon, (bungalow owner and operator) and Isaiah Bongnaim, (tour guide leader to west Ambrym.) should be taken on a study tour to see eco-tourist operations either in New Zealand or Fiji. A tour will enable them to substantially improve their practices on the ground.

Planned training workshops include:

- a first aid course for tour guides scheduled for July;
- the second tour guide training course (to increase the pool of tour guides) in August;
- and another cooking workshop is scheduled for September.

September 1994:

Under the sponsorship of PEP, a successful first Aid Training Workshop for the Tour Guides of Lolihor was conducted by Mr. Solomon of the Red Cross Society, Port Vila.

Six tourists including three members of the National Tourism Master Plan Consulting Team embarked on part of the Lolihor Ambrym Adventure Tours. The feedback provided was valuable in planning the second Tour Guide Training Workshop to be conducted Eileen Ligo.

Tour Guide Training Workshop. Conducted by Eileen Ligo:

- gave theoretical and practical experience to the tour guides of Lolihor,
- finalized agreement on package tour with the LDC, people of Emiotogone and Sanesup,
- orientated potential tour guides of West Ambrym and recommended urgent action to market the tour package before end of October 1994.

The National Tourism Master Plan Consulting team sent another mission to Lolihor to discuss the Lolihor, Ambrym Adventure Tours.

Individual tourists have continued to drift to Lolihor. Travel Agents in Port Vila have not taken advantage of the opportunity offered by PEP to familiarize themselves with the Lolihor Ambrym Adventure Tours. The Lolihor Development Council is interested in exploring linkages with tour operators in Santo, pending the opening of the New International Airport in Luganville.

December 1994:

A second cooking workshop, sponsored by PEP was conducted by Kelma Sope.

The LDC and Douglas Solomon, proprietor of the bungalows at Ranon, have agreed to host a team of tour operators from Vila on a tour of the Lolihor Adventure Tour free of charge. The operators will be paying their own air fares and PEP will account for the boat and truck transports. Hopefully, this will get their interest to market the package tour.

Arrangements have been made for Douglas of to spend a week at Nagar Bungalow Resort, North Efate, to gain experience from the operation there. Also, arrangements are being made for Isaiah Bong, chief guide, to go to New Zealand for training in tour guiding.

April 1995:

Activities involved with tourism in Lolihor over the last quarter included.

- i) A boat safety workshop conducted by Wycliff Bakeo. The workshop was conducted for boat owners and drivers who run their boats from North to West Ambrym. It included discussions about appropriate basic equipment, engine conditions, and emergency preparedness. An outcome of the workshop was a request for a special workshop on outboard motor engine maintenance and repair.
- ii) A tour of the Ambrym Adventure Package by three tour operators from Vila. The operators were; Noel Saul - Tour Vanuatu, Paul Tari - Adventure Centre and Elsie Nalo - Surata Tamaso. Their feedback after the tour was good. Meetings were organized in Vila with the tour operators and LDC to discuss package prices and the method of payment. The operators have agreed to prepare their own advertising materials for the tour.
- iii) A trip to New Zealand by tour guide leader Isaiah Bong for tour guiding experience. The trip was a success and has widened his experience on tour guiding.
- iv) Douglas's one week attachment to Nagar Restaurant, North Efate. The bungalow proprietor has gained a wider experience in the operation of small resorts after this trip.
- v) A special article to market the Ambrym Adventure Tour was produced for the inflight magazine on Air Vanuatu.

Current Situation -  
September: 1995

The Ambrym Adventure Tours has had very little advertising done by the local tour operators in Port Vila as expected by PEP and LDC. However, few tourists still wander into the Lolihor watershed; some from yatches to hike up to the volcano.

The PEP team has made another effort in putting together an advertisement to be published in the 'Wan Tok Niuspepa' for local advertising for the Lolihor package.

A related activity to this intervention was a five day workshop on Outboard Engine Repair conducted by two officials from the Santo Fisheries Department. The workshop attracted eighteen boat owners and drivers in and outside of Lolihor. Frequent engine breakdowns has always been a major problem for boat owners in Lolihor, some due to simple problems.



*One of the many tourist attractions in Lolihor.*

From the workshop the participants are now more knowledgeable and confident in running their boats either for fishing or transport. *The workshop report is attached as Appendix 1.*

The development of eco-tourism in Lolihor by PEP has sparked the interest of Koko from Fanla to build his own four bedroom bungalow. He's had little progress in marketing his product. PEP engaged a consultant to write up the Lolihor tourism enterprise as a case study. She found that while the individual components were viable small businesses, the whole enterprise was not. She expressed concern about market, competitive pricing, and administrative arrangements for payments in Lolihor.

## 1.2: Site-Stable Agriculture

### History

December 1993:

Boosting production from areas already under cultivation was one forest conservation strategy that PEP proposed for Lolihor but had not yet attempted. Following from several discussions with Charles Rogers of the Farm Support Association (FSA), Devoe drafted terms of reference for Rogers and FSA to begin this work, assessing existing farming systems, and recommending practices to boost production in terms of either food or cash. This consultancy was scheduled for February. It was to examine current practices and advice on means of boosting productivity without clearing more forests.

March 1994:

PEP began work with the national NGO Farm Support Association (FSA), negotiations for which were begun last quarter. PEP Local facilitator George Bumseng visited FSA personnel and the farm and alley cropping demonstrations at Montmartre just outside Port Vila at the end of January.

Charles Rogers of the FSA assessed existing farming systems in Lolihor during February 19 - March 1. He reported considerable potential for improving agricultural practices by: 1) introducing alley cropping to contribute to site-stabilization of cash cropping; 2) enriching fallows with legumes to speed restoration of soil fertility; and 3) increasing production from coconut plantations by suitable under plantings. Additionally, Rogers recommended a program of farm forestry to further stabilize agriculture, diversify woody biomass, and produce fuel wood and building materials. Contouring and other techniques to reduce erosion were also suggested. During his visit, Rogers established a contour planting trial. Cuttings of *Gliricidia sepium* sent by Rogers were outplanted in Lolihor in March. Rogers raised the interest of local farmers and predicts excellent participation in activities aimed at enhancing agricultural production.

June 1994:

Arrangements between three individual farmers, the Ranon Junior Secondary School Agriculture Teacher, and Charles Rogers, led to the shipment from Vila of some 450 glyricidia cuttings for alley cropping. Because of packing and transportation complications, only 30 per cent of the planted cuttings have sprouted. Glyricidia plants, however, already exist at Ranon. These can be used to start other alley cropping plots.

George Bumseng, has planted out:

- *Dendrolobium umbellatum* or "limlatau," 100 per cent of which are growing;
- pigeon peas - already germinated;
- and flamengia, for the purpose of collecting seeds. It remains to be seen how flamengia will resist volcanic activity.

George has also set out markers to monitor soil erosion on:

- a contour planted garden plot;
- and a plot without contour planting.

Nine Wuhuran farmers, besides George, have been identified to serve as key farmers in demonstrating:

- fallow enrichment;
- contour planting and alley cropping;
- and cultivating under coconut trees.

September 1994:

Under contract to PEP, the Farm Support Association established 6 demonstration plots with wuhuran farmers. Meetings held with different community members revealed the existence of other acid-rain resistance yam varieties. Some of these were collected for trial in the wuhuran plots. Planting of cuttings and seeds for alley cropping and for fallow enhancing was delayed due to a long period of drought.

PEP agreed to meet the cost of fencing the demonstration plots to keep pigs and cattle out. These destroy gardens close to the village and discourage people from farming land in proximity to settlements. The problem has to be addressed if the remaining forest, which is being encroached by gardens, is to be saved. The LDC agrees that the issue requires attention.

December 1994:

The officers of Farm Support Association (FSA) have been to Lolihor several times, working with the wuhuran farmers to;

- fence their demonstration plots to keep out roaming pigs and cattle.
- purchase and distribute 300kg. of acid tolerant yams to four farmers to multiply as seed material. This will be distributed to more farmers for the next growing season.

A shipment of over 1,000 glyricidia cuttings was sent from Vila and distributed to the wuhuran farmers. They have been planted in the alley cropping plots. Their growth is being monitored by the Lolihor PEP Staff and the few that have not sprouted are being replanted from a nursery "bank".

50kg. of laplap beans were distributed to interested farmers, most of whom had whole pieces of their land destroyed by bush fire during the long period of drought. Another 50kg. will be used by the Holiness Community to demonstrate the beans as a smother crop under old coconut plantations. Farmers were informed on the value of the bean which:

- enriched fallows.
- speedily restores fertility, and
- is a smother crop.

A flamengia nursery was set up at the Ranon Junior Secondary School. The seedlings which have germinated and are growing well will be used to establish a demonstration plot at the school.

April 1995:

The Lolihor PEP staff identified two more farmers who were interested in having SSA demonstration plots on their coconut plantation land. Peter Kaoh from FSA was in Lolihor for three weeks working with the two farmers in establishing the two plots. These were to demonstrate crop farming under thinned coconut plantations at different spacings.

He also worked with the Wuhuran farmers to prune the glyricidia alleys and 'limlalau' for the first time. This has stirred some excitement among some farmers who want to know what's happening. Prunings are scattered over the garden area for mulch/fertiliser.



*Photo scene from SSA field day held during August 9th, 1995 at Lolihor.*

**Current Situation - September, 1995:**

**Wuhuran farmers continue to work on their demonstration plots. Acid tolerant yams distributed last year have been harvested and one ready for redistribution to other interested farmers.**

**A major activity involving the SSA programme was the field day. The Wuhuran farmers and influential leaders in Lolihor were invited to participate. Activities included field trips to demonstration plots and presentations by PEP staff, FSA and other resource people present for the occasion.**

**The FSA will continue to maintain its presence in Lolihor after September 1995, following agreements made between LDC and FSA. *The final report of the FSA is attached as Appendix 2.***

**FSA was contracted by PEP to introduce site stable agricultural techniques into Lolihor. The long term goal for this intervention is to reduce clearing of native forest by increasing productivity of currently used land. PEP therefore mounted a range of environmental education activities to increase people's awareness and enable them to link SSA adoption with saving their forest and increasing the productivity of their agricultural land. A survey of farmers knowledge, attitudes and practices (KAP) was made before and after these efforts to assess farmer understanding and acceptance of ideas. The results of the this survey showed that while the environmental awareness education seemed to have been effective, the conservation principles behind the SSA techniques were little understood. *The results of the survey are reported in Appendix 3.***

**1.3: Wild Yams**

**History**

June 1994:

Three thousand seven hundred and sixty two kilograms of wild yams have been bought from the villages of Wilit and Konkon by PEP and distributed since November 1993. The total number of farmers that have received wild yams is ninety four.

Volcanic activity temporarily affected some of the growing plants but they have since recovered. More and more farmers are interested in participating in wild yam planting. Those who have already planted want to plant more.

Time constraints have resulted in a weakness in wild yam monitoring. But the proposed wild yam farmers workshop will be conducted to:

- reinforce PEP's goals in Lolihor;
- allow farmers to exchange ideas on the best ways to plant and harvest wild yams, monitor growths, monitor production, identify a marketing channel, and agree on a beach selling price.

The L.D.C. is committed to:

- administer the purchase of another 7,000 kg of wild yams from Wilit, Konkon, and S.E. Ambrym;
- transport, store, and distribute wild yams to farmers after briefing them.

September 1994:

Wild yams continue to grow but some will be affected by the current drought in Lolihor. One plot was trampled by cattle looking for water and better pasture.

Another six hundred and ninety (690) kilograms of tubers has been distributed for planting by twenty five farmers. Other farmers are requesting planting material and the LDC is waiting for approval for funds by PEP to purchase another (7) seven tonnes from South East Ambrym.

December 1994:

Wild yams continue to grow despite the long period of drought which caused minimal effects. Monitoring of the plantings and their growth is planned for the next quarter to be undertaken by the Lolihor PEP staff with the assistance of the PEP coordinator.

April 1995:

Monitoring of wild yams and their growth was not done as planned. This was due to time constraints on the Lolihor PEP staff. However the activity is now planned for the next quarter.

Following discussions with the LDC, PEP has agreed to purchase more wild yams for Lolihor farmers who haven't planted wild yams before. The LDC will be responsible for organizing the purchase and distribution of the yams.

**Current Situation - September, 1995:**

A survey was conducted by four PEP staff to monitor wild yams and their growth. observations during the survey have shown that some of the yams are doing pretty well and may be ready for harvesting early next year. *The survey report is attached as Appendix 4.*

Sponsored by PEP, the LDC has organised the purchase of another five hundred and fourteen kilos (514kg) of wild yam from Tisman, South Malakula. These have been distributed to thirtyfive farmers (12 women and 23 men), most of whom haven't had any planting materials before. Arrangements are being made by the LDC for more wild yams to be purchased from Maskelyne Islands.

A workshop is scheduled to be held for all wild yam farmers where experienced farmers will share their ideas on the best ways to plant and harvest wild yams.

LDC has already identified some marketing channels for the wild yams both locally and in Vila. Wild yams are easily sold on Ambrym and in Vila since the supply at present is very limited.

*A list of farmers involved is attached as Appendix 5.*

## 1.4: Popular Theater in Lolihor

### History

December 1993:

Response to the Wuhuran Theater Group continues to be excellent. The newly appointed Local Facilitator is working closely with the company to assure its effectiveness.

March 1994:

During the last two weeks in January, the Wuhuran Theater Group was in Port Vila for a training workshop with Vanuatu's national troupe, Wan Smol Bag. Wuhuran began work on a new play written by them, "Nabanga", about themes of cooperation in village life. Cooperation is shown to enhance environmental management and quality of life, while greed and self-interest lead to environmental degradation and social problems. "Nabanga" was performed for PEP and other FSP staff during the training.

Cyclones prevented the Wuhuran Theatre group from returning to Ambrym until early February. Wan Smol Bag continued to coach them, and they worked on the play "Tourists and Toilets", which Wan Smol Bag had originally written and produced upon commission from World Wide Fund for Nature (WWF). PEP selected this play for the Wuhuran Theatre's repertoire because it raises many of the environmental and social issues surrounding outer-island tourism and serves as an excellent platform for launching discussion of these issues. Wuhuran Theatre presented "Tourists and Toilets" in Vila for PEP, the larger FSP, and collaborators from Department of Local Government, Environment, Forestry, and National Planning Office. We were joined by Sally Montgomery Brumbaugh, new FSP Vice President, on her first visit to Vanuatu. The theatre group presented "Tourists and Toilets" in Fantereo and Ranon following the Port Vila workshop.

June 1994:

Developments with Wuhuran Theater Group include the following:

- hiring of two new members, John Nabong and Shelly Sali, - two performances of "Tourists and Toilets" play at Ranon Junior Secondary School and Fanla village;
- production of "Jealous Heart," - a new play about root causes inhibiting advancement of PEP activities in Lolihor, ready to be performed;
- a two day on-site training at Henyal-Orkon by Charleon Falao of Wan Smol Bag Theater; and
- and the decision by the group members to establish Wuhuran Theater Group as a separate entity from PEP to facilitate involvement in non-formal education on all issues including, but not limited to, environmental awareness.

September 1994:

George Bumseng's absence from Lolihor on an Asia Environment Program (AEP) Scholarship illuminated the great need for guitar lessons for all the theatre group members. In his absence, only two performances were made on the occasion of the Lolihor Development Council.

A funding proposal has been submitted to PEP for the performance of "Jealous Heart" in 8 Lolihor communities. PEP and the Wuhuran Theatre Group have agreed that any future plays would be developed and performed on a contract basis and at the request of PEP. PEP has encouraged the theatre group to seek other opportunities to perform as an independent theatre group, and has provided support for core activities.

December 1994:

The Wuhuran Theatre Group was contracted by PEP to perform the play "Jealous Heart" in the eight settlements in Lolihor. The theme of the play is cooperation which is shown to enhance environmental management and quality of life, while self-interest and greed lead to social problems and environmental degradations. Interactive discussions with the audiences after the play were based on these two questions: 1) How would you avoid these problems when and if it does happen?, 2) How would you resolve them?

April 1995:

The theatre troupe attended a two week workshop conducted by the Wan Small bag in Vila. After the workshop the troupe went back with a new play on turtle conservation. Funds are being sought to fund a tour of this play.

The Wuhuran theatre also produced and performed a play in the local language about the 'community - based lands survey' which was sponsored by ESHDP.

The theatre group took a week long trip to Hog Harbour Santo. Their activities there included:

- 3 evenings of performances in the village,
- a performance at Matantas Big Bay,
- workshops with the Hog Harbour youth to improvise a play on 'Land Management'.

The trip provided an excellent opportunity for the troupe to experience performing to a larger audience, and working with other youth groups with the same interests in theatre.

**Current Situation - September, 1995:**

**Since April, the development of Wuhuran Theatre has been generally good. In May two members, George Bumseng and Harry Bongto returned to Hog Harbour to do further training with the youth drama group.**

**Wuhuran Theatre also produced and performed a 20 minute play for the SSA field day. The play was written and performed in the local language 'ngeli'.**

**The group has been sub-contracted by Wan Smol Bag to do their turtle play at Maskelynes, North and West Ambrym. The contract includes a survey in the areas concerned, which the troupe has just completed.**

**Save The Children Fund has agreed to fund Wuhuran to raise Family Planning awareness through plays in MALAMPA Province. A seminar is scheduled at the end of September for Health officials and theatre members to formalise themselves with the project.**



*The Wuhuran Theatre group performed a play on site stable agriculture during the Lolihor SSA field day on 9th August, 1995.*

## 1.5: Environment Education

### History

September 1994:

The work of Stanley Womack (PEP Environment Educator) and Matu Bongranli (PEP Women Local Facilitator) in conducting the KAP survey has been discussed previously.

Jacque Yakan of CEF conducted a very successful tree planting workshop with 10 farmers of Lolihor complete with;

- theory,
- tree planting along the coast line,
- video show, and
- and establishment of a nursery.

Peter Kaoh of FSA has been responsible for the site stable agricultural project in Lolihor. His work with the team Wuhuran farmers has been hindered by the dry season and the prevalence of volcanic activity.

December 1994:

PEP's Environmental Education Officer Stanley Womack visited Lolihor twice to:

- gather appropriate information to be used by tour guides and wuhuran farmers,
- conduct a 2 day environmental workshop.

Information collected will be put in pamphlets for farmers and tour guides.

April 1995:

The SSA leaflets/booklets have been field tested by the Lolihor PEP staff and the responses have been forwarded to PEP's Environmental Education Officer for improvements.

#### **Current Situation - September, 1995:**

**A follow-up workshop on tree-planting was conducted by Harry Bule. A nursery was set up (white wood and sea oak) and the participants plan to replant some trees along Ranon coast.**

## 1.6: Equitable and Sustainable Human Development Program (ESHDP) and Lolihor Development Council (LDC)

### History

December 1993:

On November 6th, Pestelos travelled to Lolihor. Working with the PEP Liaison Officer, the following four days were devoted to community relations activities that culminated in the formal endorsement of the ESHDP Workshop by the Ambrym Island Councilors. The program and subsequent profiling activities began on November 11th, and continued intermittently through November 29th. Following a discussion with all participants at the onset of the training, it was agreed that participants would not be compensated for their work with the project. This issue was again raised by the local trainers on November 29th, when they presented a petition calling for a sitting fee to be paid, retroactive to the first day of the workshop. Pestelos and Salong responded, saying that among other considerations, this demand was in violation of a previous commitment, and that there was no money available to pay such fees. The workshop was declared closed, and Pestelos and Salong returned to Port Vila.

It should be noted that the work of the ESHDP was virtually completed by November 29th. The sudden closing of the program and subsequent discussions within the EMU brought to the surface long standing conflicts relating to ESHDP, the PEP Project, and Salong's work within the community. It was Salong's view that these conflicts were being successfully resolved, and that by December there was "incredible support" for the ESHDP.

March 1994:

Of ongoing concern are the issues of management and sustainability for the tourism project and other interventions. An expected product of the PEP/ESHDP participatory profiling and planning exercise was the selection of a Lolihor Development Council to provide guidance and management for development activities in Lolihor. As related in above report of the ESHDP activity, this did not eventuate. The tourism project involves a number of stakeholders whose record of cooperation is clouded; it was felt to be essential that a locally chosen body be constituted to assume management responsibility for the enterprise.

In an attempt to bring together the Lolihor community, and to facilitate the selection of a development council, Neil Netaf Stevens, a member of FSP's ni-Vanuatu staff and a Community Development Specialist, was recruited to work within the EMU.

Following background meetings with PEP staff and Jimmy Nipo of the Department of Local Government in Port Vila, Stevens travelled to Lolihor in March for ten days of consultations with community members. At meetings in six villages, the purpose of both PEP and ESHDP projects was discussed, and support and commitment for each project solicited. Next, an area leaders' meeting was convened, which resulted in the election of the Lolihor Development Council, Chairman, and Executive Committee. The Council agreed that they would support all PEP/ESHDP initiatives, and that responsibility for community participation would be lodged with the Executive Committee. If the Committee functions and accepts these responsibilities, it will follow that leadership and management roles now in the hands of on-site PEP staff will be transferred to local leaders. PEP staff will assume their more appropriate roles as advisors and facilitators, and the project will have achieved a significant milestone.

PEP continued coordination and planning with NPSO, Department of Local Government, and ESHDP personnel in Suva for the rescheduling of the aborted Lolihor Development Congress. Target date is now June. A United Nations Volunteer is expected to be posted to Lolihor in June, too.

June 1994:

ESHDP developments include the following:

- the first draft report on the ESHDP Participatory Planning Process in Lolihor called, "Community Aspirations for Human Security in the Lolihor Watershed Area: their implications to strengthening local capacities for project development and implementation", was produced;
- National Planning Office (NPO) re-affirmed commitment to being the coordinating center for ESHDP,
- new national committee has been set up. (The sacking of striking civil servants had left vacant positions.)
- a work plan produced,
- and the decision made for the United Nations Volunteer (UNV) to reside in Port Vila instead of North Ambrym.

## **Lolihor development**

The LDC has written letters to:

- all NGOs, introducing itself and requesting training support;
- Telecom Vanuatu Ltd. (TVL) to request the installation of a single line telephone in Lolihor, with facsimile capacity.

Initial preparations with Nasonal Komuniti Dvelopmen Trust (NKDT) to run a workshop with the LDC were canceled after scheduling difficulties. Neil Stevens Netaf, FSP Community Development Specialist substituted to facilitate the drafting of LDC's constitution. The week long process generated further excitement and cemented commitment to the PEP project activities in Lolihor. Neil officially opened a temporary office at the Lonbato co-operative store room at Ranon village.

The LDC and the Lolihor community are:

- prepared for the Lolihor Development Congress on August 17th; and
- eager to have assistance from the U.N.V. to develop and implement working policies based on community aspirations for human security.

Having received drafts of the constitution, delegates of the L.D.C executive will be travelling to all villages to discuss the draft constitution, address questions, and allow further input towards the final draft for ratification at the Second Annual LDC Meeting.

Based on the constitution, the LDC will proceed to develop:

- Lolihor Conservation Policy;
- Lolihor Tourism Plan;
- Lolihor Cultural Revitalization Policy;
- Lolihor Non-formal Education Policy;
- Lolihor Sustainable Development Plan;
- and a framework for partnership with other organizations.

After clarification of these policies, delegates of LDC will embark on an awareness mission to Port Vila to inform potential partners of how they can participate in the implementation of LDC policies in Lolihor. The partnership framework will guide negotiations with all organizations including local groups such as Wuhuran Theater Group.

The LDC executive met with the PEP coordinator and:

- agreed to hiring an environment educator for Lolihor;
- endorsed Marina Joses as the part time female Local Facilitator;
- agreed on first aid, tour guide and cooking workshops and a schedule for these;
- submitted a budget for a building for the LDC;
- and endorsed ten names as Wuhuran farmers to work with FSA on site stable agriculture.

September 1994:

VESHDP is advocating the participatory development process and facilitating participation in Lolihor with the following activities:

- official launching of VESHDP and the signing of the Suva Declaration by Vanuatu's Prime Minister and UNDP's Resident Representative on July 27, 1994, as part of the 14th Independence Anniversary Celebrations,
- orientation of Directors of Government Departments and Political Secretaries,
- orientation of Vanuatu NGOs,
- and close partnership with the National Planning Office staff and the Department of Local Government.

The facilitation of local participation in Lolihor included:

- support to the Lolihor Development Congress on August 17, 1994, and swearing in of the Lolihor Development Council,
- video documentation of the Lolihor Development Congress,

- introduction of Alan Morales, the UN volunteer to work with LDC, the Lolihor Development Team (formally known as Local Trainers) and the people of Lolihor to prepare project documents, find donors, implement, monitor and evaluate the projects.

LDC has;

- taken on responsibility of organizing all workshops conducted in Lolihor and funded by outside groups including PEP,
- held wide consultation with the Lolihor population concerning
  - Wuhuran education program,
  - LDC constitution prior to the Annual General Meeting of the LDC on October 15th 1994,
- submitted a report on wild yams to PEP and requested funding for another (7) seven tonnes of wild yams to be planted,
- a grant of Vt 200,000 from PEP to the LDC to partially cover start-up expenses for the organization. Funds are to be used for construction of office space and purchase of office furniture and supplies (subject to approval by PEP staff),
- mandated the Lolihor Development Team to document project ideas, implement, monitor and evaluate the projects,
- undergone a three day Basic Bookkeeping and Business Management Workshop conducted by Hanson Kalo of Community and Environmental Forestry Project and sponsored by PEP.
- and reviewed and finalized package rates for the Lolihor Ambrym Adventure Tours to begin on April 1st 1995.

December 1994:

Events over the last quarter included the introduction of Allan Morales, a UN Volunteer, to work with the LDC and the Lolihor Development Team to prepare project documents, find donors, implement, monitor and evaluate the projects.

April 1995:

The LDC has now taken full responsibility of the wild yam project except for funding. It has assumed organization and coordination of the tourism intervention. It now approves all PEP activities in Lolihor before they are conducted and assumes responsibility for them on the ground.

**Current Situation - September, 1995:**

**The LDC continues to assume responsibility of all PEP related activities and VESHDP program in Lolihor.**

**Other activities include:**

- **Organisation of a sewing workshop**
- **Formation of Lolihor Sport Association**
- **Second draft of LDC constitution. *This is attached as Appendix 6.***

**VESHDP**

**Of all VESHDP projects in Lolihor, one that is being implemented in the 'community-based lands survey'. Others are still under government consideration and approval.**

## 1.7: Monitoring Forest Clearing Practices

### History

September 1994:

Concern that PEP has no clear means of monitoring the effect of its interventions on the rate of forest clearing resulted in the decision to conduct a survey to investigate the current practices of clearing bush and forest in Lolihor. The survey had several objectives;

to establish baseline information on forest clearing practices in Lolihor,

to train local people in the conduct of such a survey,

to begin a process of monitoring forest clearing that the LDC can take over and continue after PEP closes.

A simple questionnaire of 12 questions was designed, and translated to Bislama. Discussions were held with the principal and staff of the local Junior Secondary School for students to be trained and to conduct the survey, under staff supervision during the August holidays. This coincided with the commencement of the traditional period for clearing land for new gardens. Three hundred nineteen questionnaires were completed. It is the intention to do only sample surveys in future so that the school can process the data itself by hand.

In brief they show that each household averaging 6.2 persons, has at least 2 farmers and often 3. The majority of farmers (over 52%) were females. Of farmers of both sexes, about 25% were farming for the first time this year. Of the rest, total number of years they had been gardening ranged from 1 to 62 years. On average, each farmer has three gardens, using the same piece of land for some two to three years, and leaving it fallow for some three to four years before farming it again. About 42% males and 38% females cleared virgin forest each year for new gardens. By far the most frequent reason for clearing virgin forest (83%) is to make gardens for subsistence crops. Favoured crops for resistance to volcanic damage are manioc and fiji taro, while crops considered good for planting under bush are wild yams and fiji taro. Some 71% of forest clearing is for mixes of subsistence and cash cropping, 52% is for cash crops only, 29.8% is for planting coconuts. The survey did not attempt to measure the average area of forest cleared each year. Only 12 of the 319 farmers had no more virgin forest on their land. The majority of farmers (97%) considered it important to conserve virgin forest while 94% think it good to leave some virgin forest uncleared. These results show that with careful planning and encouragement of well managed utilisation of the virgin forest, the Lolihor community may be able to sustain the integrity of their environment in the long run.

A total of 23 farmers, comprising all the wuhuran farmers and a control group, were subjected to a KAP survey. As these were specially selected farmers, they averaged a higher number of gardens (4.8) than the community average (3.1). Almost all of the gardens have some cash crop. The most frequent cash crops are coconuts and kava, while peanuts is also less frequently planted. Bananas, manioc, fiji taro and water taro are usually planted with cash crops. Sixteen of the 23 farmers still have about half or more than half of their land in virgin forest, while 4 of them have none left. Of those with virgin forest, 15 said they plan to keep some of it untouched for various reasons including that

they thought it is important to preserve the environment, to keep trees, and to provide fruits for birds, the bush provides nutrients, and helps regeneration of abandoned gardens, forest is necessary to plant wild yams in, or, it is too much work to clear.

The average fallow time for these farmers was just over 3 years. While 20 of the 23 considered the current fallow period long enough, 2 thought they were coming back to the same garden site too soon and not giving enough time for the land to recover. Ideas for improving the situation, included planting with legumes, alley cropping, longer fallow, mulching, and planting with big trees. All except one, garden on sloping land while all except three, claim they lose soil through erosion. The majority are using wood to stop erosion and considered this satisfactory. Suggestions for improvement include planting trees including glyricidia, hibiscus, limlalau, and alley cropping. All burn rubbish after clearing the land for new gardens because burning kills tree roots, weed seeds, pests, drives away rats, helps crops grow better, and is custom practice. Only three farmers state that burning is not good for the garden, because they had obtained new ideas from the FSA agents and because the rubbish burnt could be spread to fertilize the garden. About half the farmers interviewed are now farming the same garden plot longer than they did 5 years ago through mulching with crop rotation, and through decreasing fallow period. Fifteen of the farmers think that farming the same piece of land for many more years than currently practiced is not good, the reason being that such practice depletes soil nutrients too much. The majority favor mixed cropping and a list of crops thought to benefit each other as well as those thought to be detrimental to each other was obtained.

This questionnaire was administered a few months after the FSA team had made visits to Lolihor, so that it already detected the influence of the FSA programme on site-stable agriculture.

Another KAP survey is to be conducted towards the end of PEP life to see how much effect the FSA intervention has had. Responses of wuhuran and control farmers for both surveys will be analyzed separately then.

The next activity for this aspect of PEP's work in Lolihor was conducted in August, 1995.

**Current Situation - September, 1995:**

A second KAP survey was conducted on the wuhuran farmers and a control group. The results of this survey show that practical demonstrations of introduced agricultural technologies should be accompanied by regular and repeated educational messages if farmer knowledge and attitudes are to be changed for greater conservation-oriented practices. While the conservation value of SSA techniques were mentioned by some wuhuran farmers at the first survey, the message seemed to have been forgotten at the second survey, just over a year later.

*The report of the KAP survey is attached as Appendix 3.*

**PEP CLOSING**

PEP activities in Lolihor formally closed with an official ceremony on 13 September, 1995.

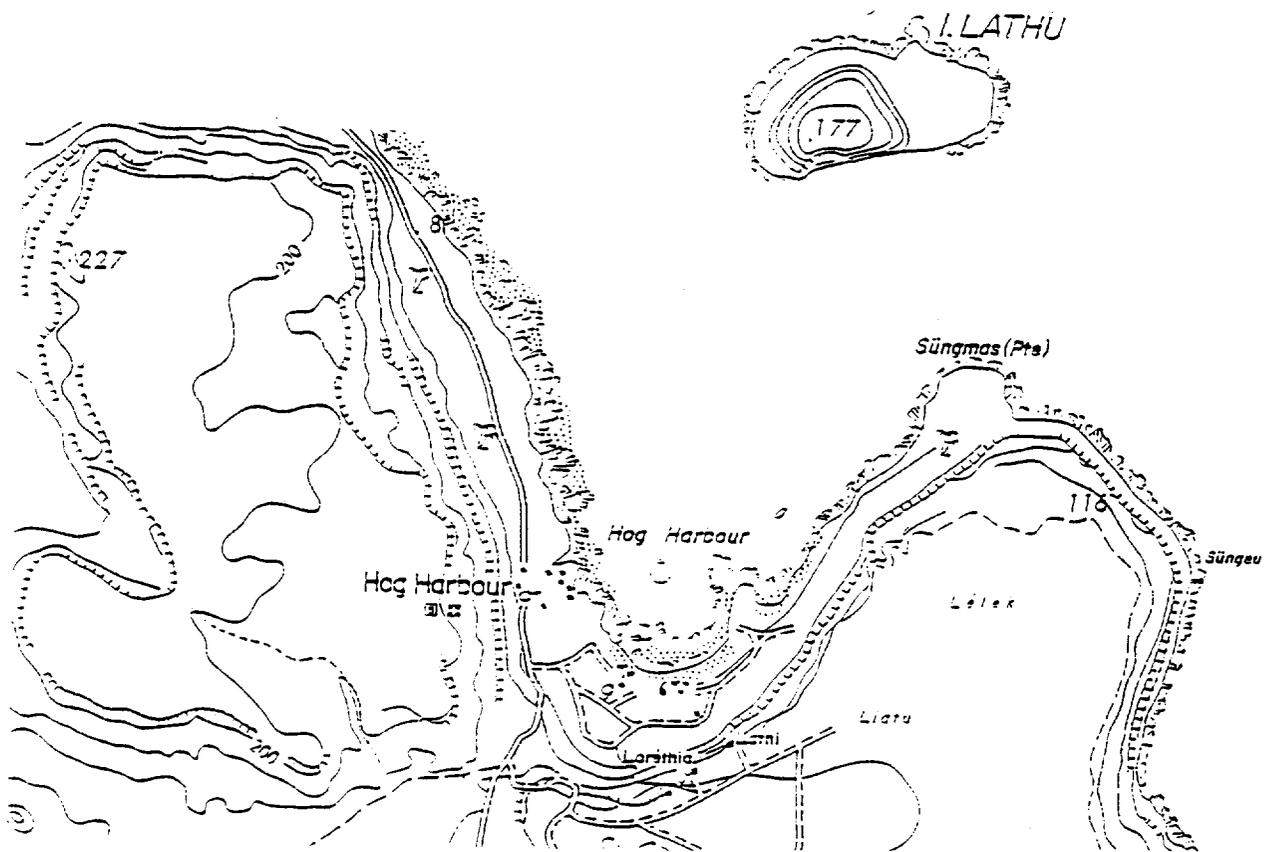


*A scene of the official closing ceremony of PEP at Lolihor, 13th September, 1995.  
Chief Tokon Sam of Lolihor shakes hand PEP's Community Liaison Officer of Santo, Thimu Thial.*

**Initial Situation:** The Australian Institute for Marine Sciences completed a Vanuatu Marine Resources survey in 1988. The Survey identified Hog Harbour and Elephant Island as one of four exceptional coral reef systems in Vanuatu and recommended Elephant Island as a national conservation priority. The area was noted for its rich marine biodiversity and unique conservation potential. Some suggestion of over fishing exists, turtles are occasionally hunted. Local tourist attractions, including Lonnoc Beach Resort and Champagne Beach, would benefit from protection of reef quality at Elephant Island. Potential exists for enhancing snorkeling and diving enterprises in exchange for cooperation in site protection.

**Conservation Objective:** To institute a private, protected area to safeguard the exceptional marine biodiversity of Elephant Island, threatened by uncontrolled exploitation and large-scale tourism (Fairstar cruise ship shipboard diving).

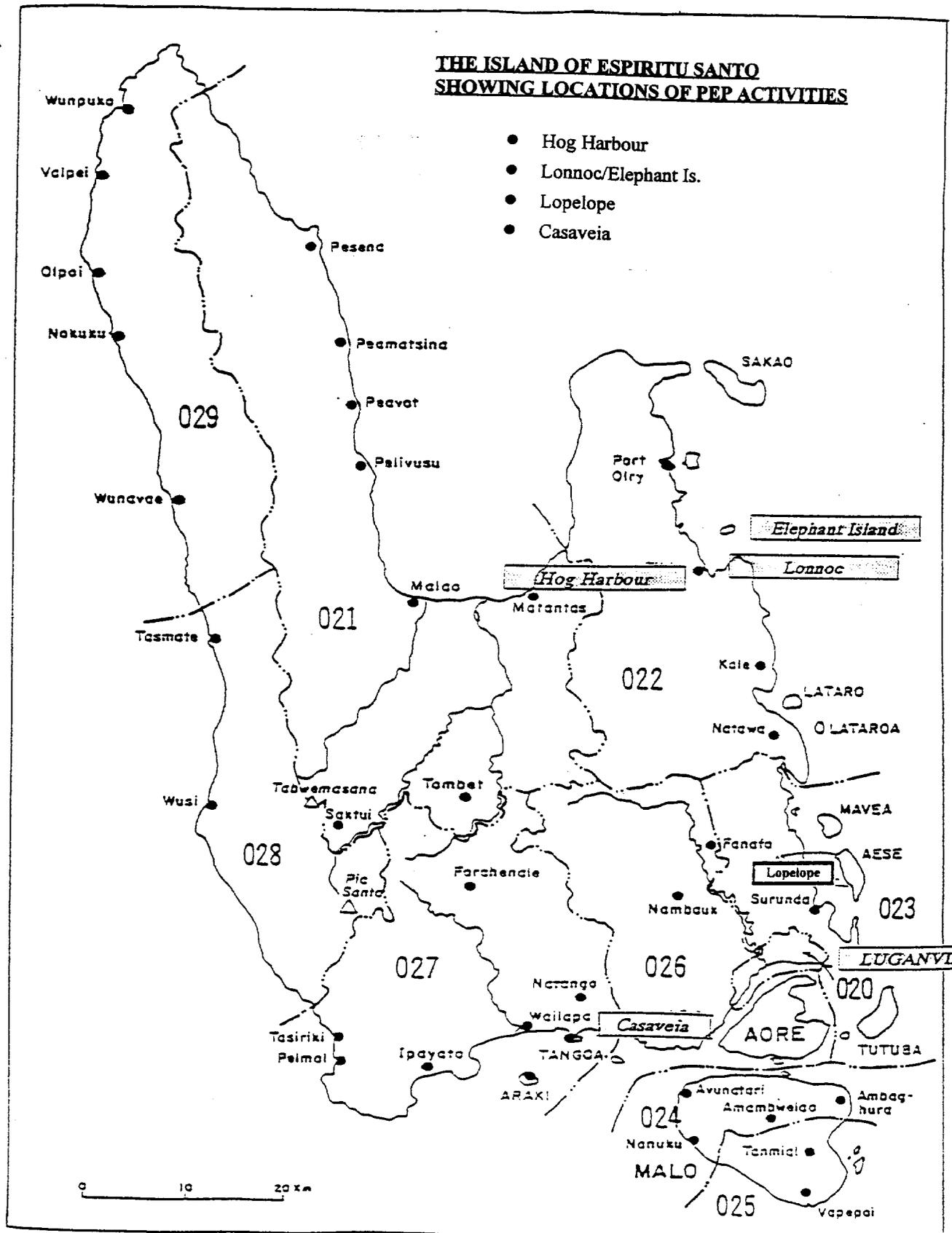
**Enterprise Intervention:** Lonnoc Beach Resort, Elephant Island, and Champagne Beach would all benefit from maintenance of reef quality at Elephant Island. We propose to investigate the enhancement of existing tour/snorkeling/diving enterprises to support a protected area, and to improve tourist services in exchange for cooperation in management of Elephant Island. The appeal for working with an established business (Lonnoc) is very high. Some baseline data is available and conventional business indicators can be employed to demonstrate progress (or lack thereof).



*Hog Harbour and Elephant Island (I. Lathu) - The Location of PEP's Main Activities in N.E. Santo*

**THE ISLAND OF ESPIRITU SANTO  
SHOWING LOCATIONS OF PEP ACTIVITIES**

- Hog Harbour
- Lonnoc/Elephant Is.
- Lopelope
- Casaveia



## PEP HISTORY IN SANTO

September 1993:

This project is highly recommended for continued investigation. Land disputes are rumoured for Elephant Island. The relationship between Lonnoc Beach and Elephant Island is unclear (Does Lonnoc share Elephant-Island-derived revenues with Elephant Island owners?) We would like to investigate these issues before approaching the principals at Lonnoc and Elephant Island to seek their cooperation in developing pro-conservation enterprises.

December 1993:

Stead travelled to Santo October 28 to prepare for the visit of USAID's Larry Armstrong and Toni Ferrara. Prior to their arrival, he met with John Mooney, Santo's Municipal Planner, to develop a strategy for introducing PEP into the Elephant Island community. It was decided to work through the Santo Tourism Industry Development Association (STIDA), as virtually all stake holders are represented in this organization.

Devoe and AEP Fellow Milika Naqasima travelled to Santo December 14-16, so Naqasima could see the site and better detail her work plan for January and February. Devoe and Naqasima met with Local Government Council (LGC) Secretary Havo Moli to discuss plans for work at Elephant Island and in the surrounding communities of Hog Harbor and Port Olry. Moli pledged LGC support for the PEP effort. He suggested that he accompany PEP staff to the site and villages to present them to the area chiefs upon Naqasima's return. He seemed acquainted with the environmental issues in the North Santo area and genuinely interested in protecting resources and tourist income there.

Naqasima and Devoe also met with Luganville Municipal Planner John Mooney, who as a member of the STIDA, had first approached PEP with regard to environmental management in North Santo. Mooney's concern, like PEP's, is in preventing damage to the marine resources which could result from uncontrolled tourist traffic, and thus undercut tourist revenues. Mooney was briefed on the discussion with Moli and PEP work plans.

Kalmer Vocor, owner of the Lonnoc Beach Resort, met with Devoe and Naqasima to discuss his questions about development in the area. Lonnoc Beach Resort will be the base for much of the PEP field work, so Devoe wanted to discuss longer-term rates for accommodation and boat rental. Vocor is very knowledgeable about local issues and politics, and is an important stakeholder in the project.

Ranked fourth in importance by the PEP Advisory Committee, it was recommended that this intervention is to be the site of heightened activity. Anita van Breda, PEP's Marine Conservation Specialist, will assume her duties on January 31st, and will be stationed in Santo to undertake day-to-day direction of this intervention

### **Interventions and Activities**

#### **2.1: General**

##### History

March 1994:

Van Breda arrived in Vanuatu the end of January and prepared a Project History and overview of PEP activity at Elephant Island. This includes statements of goals and objectives, activities and expected outcomes. She travelled to Santo to assist AEP fellow Milika Naqasima with field work and report writing. Debriefing meetings at the close of the fellowship were held with the Local Government Council Secretary Havo Moli, STIDA's Chairman Kalmer Vocor, Fisheries Department Francis Hickey, Devoe and van Breda. Naqasima gave a brief presentation of her findings. Devoe and van Breda reaffirmed commitment to follow up the initial findings with additional research. Fisheries agreed to target Hog Harbour community for traditional marine management education workshops.

Van Breda returned to Vila for PEP staff meetings, and to discuss PEP marine projects individually with PEP staff. Ten working days in Vila were devoted to research and networking for two marine projects as well as FSP computer and video training.

Devoe and van Breda defined terms of employment for a ni-Vanuatu environmental education assistant to work with van Breda in Santo. In March, van Breda established day-to-day management of the Santo project with the establishment of a PEP Santo office. Management is defined as "integrator, coordinator, communications center, tactician, and consensus-maker".

Van Breda recruited environmental education assistant Donna Kalfatak, who will be based in the Santo office.

June 1994:

Van Breda travelled to Port Vila April 18 and 19, for a two day staff meeting with USAID officials. A Santo-Project summary was prepared and future work plans discussed. With the project's ecological work under way, planning emphasis was given to social and economic data gathering relative to community dynamics and development. The group agreed to search for a social scientist consultant to perform a Participatory Rural Appraisal for Hog Harbour and Port Olry villages. The consultant will be required to train PEP ni-Vanuatu staff in the principles and methodology of PRA in order to develop in-country skills. Other plans include regional recruitment for institutional partners to assist with continuation of project beyond the close of PEP.

U.S. A.I.D. staff members John Grayzel and Chuck Howell, travelled to Santo with van Breda and Devoe for a one day tour of Hog Harbour, Lonnoc Beach Resort, Champagne Beach, and Port Olry.

The Santo-PEP office was moved to the Local Government Council building. The new office space increases accessibility of the PEP project to local community.

Van Breda and Kalfatak travelled to Vila in April for an introduction to the new PEP project coordinator and project review meetings.

Kalfatak completed an open water diver certification program.

van Breda participated in PEP's eco-tourist trek to Ambrym.

September 1994:

PEP/Santo work this quarter focused on social data gathering and increasing community participation in the PEP project. A Participatory Rural Appraisal (PRA) exercise was completed which yielded much information about the resources and social structure of the community as well as information on needs and issues of importance to the community. PRA techniques learned can be applied to specific areas of natural resource management of interest to PEP. Anticipated follow up will include continuing support of the momentum in community mobilization generated by the PRA, as well as addressing natural resource, agricultural and cultural problems identified in the PRA.

Environmental education and extension activities continue to grow. PEP/Santo receives many requests to provide or assist with environmental education from a range of individuals and institutions including local tour operators, government offices, individuals, and communities concerned with protecting resources. Kalfatak has translated posters, comics and booklets into Bislama for use in education workshops.

A PEP house was rented in Hog Harbour to serve as a field-site base of operations. Located within a short distance of the village "nakamal" (meeting house) and cooperative store, the house allows greater access by the community to the PEP project.

December 1994:

PEP/Santo work this quarter involved follow-up discussion and planning to the Participatory Rural Appraisal (PRA), expansion of environmental education programs, and continued ecological monitoring.

**Current Situation - September, 1995:**

**PEP closed its office and gave up the Hog Harbour house in August, 1995. The inventory was taken and updated. During the process of closing up the PEP project, PEP assets, supplies and equipment in the Luganville office were shipped to Port Vila. Most PEP equipment at Hog Harbour rented house were donated to the Hog Harbour community.**

## 2.2: Extension Activities

### History

March 1994:

To introduce PEP's marine projects to the South Pacific environment community, van Breda drafted and mailed a letter of introduction to PEP collaborators, supporters, and colleagues in the region.

The Great Barrier Reef Marine Park Authority requested PEP's review of a report on a global representative system of marine protected areas for IUCN and the World Bank. The A

The Australian High Commission - Vanuatu, requested PEP's review of a marine reserve project in Malekula.

Development of local contacts for further involvement with this project are underway. Van Breda and Kalfatak met with STIDA's acting manager Eileen

Ligo to communicate PEP research findings thus far, and to review plans for future activities. Ms. Ligo reaffirmed STIDA's interest in this project and agreed to participate in village workshops. Van Breda and Kalfatak also volunteered to formally introduce this project to the members of STIDA at their next general meeting.

Van Breda and Kalfatak participated in the Environment Unit's Big Bay national park community workshops.

Field activities are based from Lonnoc Beach Resort (LBR). LBR continues to update and improve services including construction of a larger bar and restaurant and running water, toilet, and shower facilities. Owner Kalmer Vocor would like to encourage landings of cruise ship visitors to Lonnoc Beach and has requested PEP's assistance in choosing a location and recommending construction design of a jetty.

We will continue to lend technical assistance and support for community-generated marine conservation projects where feasible and appropriate (such as the Maskelyn Island giant clam project). Our association with these projects enhances PEP's visibility and furthers our knowledge of, and experience with, community driven conservation projects which will ultimately enhance our effectiveness with our community education activities.

June 1994:

With the addition of Kalfatak to PEP staff, introductory meetings with the President and Secretary of Local Government Council were arranged. Kalfatak and van Breda requested continued assistance with facilitation of community relations. Additional meetings were arranged with two Hog Harbour village chiefs to remind the villagers that the project was still on-going, to share results of Naqasima's report, and to inform them of the pending visit of a fisheries biologist. It was agreed to arrange a meeting with all village leaders: chiefs, pastors, womens' group, youth group, and key landowners (Mr. Obed: Champagne Beach and Mr. John Wus: Elephant Island) for June to discuss the project's objectives, findings to date, and village involvement and participation.

Kalfatak and van Breda consulted with Neil Stevens, FSP Community Development Specialist, regarding future plans for Hog Harbour community relations and development activities.

Meetings were also held with William Naviti, Fisheries Research, and Ernest Bani, Environment Unit, to update status of project and seek support and involvement.

Individual meetings were also held with custom landowners of Elephant Island and Champagne Beach to discuss the project and extend an invitation to the village leaders meeting.

September 1994:

1. van Breda and Kalfatak toured the PEP project site with Mr. Richard Teare, American Ambassador to Vanuatu, and his wife during their visit to Santo in July, 1994.

2. Stead and van Breda met with dive and tour operators in Santo during Stead's enterprise research trip to Santo, July 1994.

3. Kalfatak and van Breda met with approximately 20 women of Hog Harbour to review and discuss the findings of Kalfatak's survey work completed in January. Information about membership in the Fiji based Women and Fisheries Network was provided and the women were encouraged to share information about their fishing activities and problems.

4. An environmental education and safe boating workshop was held for the staff and families of Lonnoc Beach Resort. The PEP project was explained, and general issues of coral reef and coastal conservation discussed. Specific information on anchoring was targeted to LBR boat captains in an attempt to minimise anchor damage to reefs. Boat captains were enlisted to assist with data gathering in terms of SCUBA and snorkeling activities of guests. A diver survey at LBR is now in place.

Posters on Vanuatu government fisheries regulations were distributed. Kalmer Vocor, proprietor of LBR, asked advice on what activities within the resort potentially damage coastal resources. As a result, taboos were placed on throwing rubbish in the sea, walking on reef flats at low tide, and putting wash water in the sea.

5. At the request of Chief Lulu Vatu, South Santo, and Chief Moli, Malo, an informational meeting was held with Mr. Peter Morris, lease holder in South Santo. Together, these gentlemen would like to establish a marine reserve in South Santo. We spent several hours discussing the history of the area and past attempts to protect resources. We agreed to assist with environmental education and surveying of the site which contains marshes, mangroves, mullet breeding grounds, and areas where coconut crabs were formally found in abundance. Land disputes and disagreements on land use are evident. Additional information will be needed for any future PEP involvement with this activity.

6. Kalfatak represented PEP/FSP at the opening ceremony of Ringi Te Suh Marine Reserve/Malekula at the request of Mr. Jack Enrel.

7. Kalfatak and van Breda provided assistance to Dr. Ken Zimmerman of Southern Cross University, Australia with research on marine snakes in Vanuatu. Dr. Zimmerman requested information on local beaches with appropriate habitat for marine snakes; collections were made at Elephant Island and Champagne Beach of *Laticauda frontalis* (thought to be found only in Vanuatu) and *L. colubrina*.

8. Several meetings and field trips were made with Jeremy Challacombe and Charles Darby, environmental consultants to the Vanuatu National Tourism Master Plan. These meetings allowed PEP staff to learn about tourism development planning in Vanuatu and express issues of concern regarding marine based tourism.

9. van Breda and Kalfatak attended the Save the Children Fund (SCF) "South Santo Bush Community Resource Management Project" first quarterly meeting in Vimele village. The project coordinator presented his report; guests were invited to make introductions to their projects. PEP was asked to present information to SCF "resource tour" for select village members.

10. Received request to make education presentation to Woman's Affairs Department workshop in October 1994.

December 1994:

Extension activities continued with production of environmental education workshops and seminars at the request of local government departments, tour operators, and individuals.

#### **Current Situation - September, 1995:**

**A heavily illustrated booklet on care of coral reefs for local community education was produced in Bislama and distributed to rural training centres in Vanuatu.**

### 2.3: Research

#### History

March 1994:

Van Breda edited Milika Naqasima's Santo report, and composed a two page summary for distribution to PEP collaborators.

Documentation of existing literature and information relative to development of a management plan for this site is an ongoing project.

Ecological data gathering continues with a third round of water quality testing to be completed in April. A fisheries biologist consultant will be contracted to assist with further development and refinement of the coral and reef fish biological monitoring program. Future work plans will identify additional research needs for economic, cultural and social data necessary for management of the area. The environmental education assistant will lead development of environmental education community workshops and will continue with the Woman's Fisheries Network Survey which seeks to evaluate the role of woman in community fisheries.

PEP recommended continued efforts to further develop this project including commissioning a participatory rapid appraisal of Hog Harbour and Port Olry. Long-term partners and funding agents should be sought to ensure continuance of PEP's efforts and goals.

June 1994:

Previous fish census dive sites were relocated and coordinates recorded. Mapping of dive sites was completed to facilitate work of contracted fisheries biologist consultant Dr. Allen Friedlander/ Hawaii Cooperative Fisheries Research Unit.

Dr. Friedlander conducted a census of reef fish of Elephant Island and Hog Harbour. Champagne Beach patch reefs. The work was designed to augment previous preliminary work completed last January and included recommendations for further investigation regarding subsistence and commercial fishing efforts, and their possible impacts for future management of the site. Preliminary analysis indicates a diverse and healthy fish population. However the full analysis and report is not yet available.

We are also in the process of conducting shoreline transects to characterize invertebrate populations, the primary target of women who fish.

Water quality monitoring continues. The Matevulu College blue hole will be included in the monitoring program at the request of the Department of Geology, Mines and Water Resources.

June 14 the Fairstar cruise ship visit to Champagne Beach was documented. The findings were reported to the Fisheries Research and the Environment Unit. A meeting was held with STIDA officials to discuss the Fairstar and cruise ship visits in general. We agreed to work together on the design of improved snorkel and dive regulations for all tour operators and to design an education program for tourists based on environmental considerations.

Kalfatak completed a report of the Women's and Fisheries Survey of 15 women in Hog Harbour, January 1994. An English and Bislama version of the results are available for distribution.

September 1994:

1. Report received regarding fisheries census and monitoring completed by Allen Friedlander: (contact PEP/Santo for copy of full report).
2. Visit to sea mount north of Elephant Island discovered by Yang Yako, commercial fisherman in Hog Harbour. Due to its proximity, this area may be included in Hog Harbour resource management plan.

December 1994:

Water quality testing is ongoing. Shoreline surveys of use of marine and coastal resources continue to document Hog Harbour's use of coastal natural resources.

## 2.4: Community Planning and Action

### History

June 1994:

#### Participatory Rural Appraisal (PRA)

- The staff planning meeting in June decided that any resource management plan for the Santo EMU would be formulated by the resource owners themselves, facilitated by PEP through a PRA exercise. On the advice of the USAID Manila office, contact was made with Dr. Richard Ford of Clark University. Negotiations are now well underway for the latter's assistance to PEP with training and with the conduct of the PRA exercise in Santo.

The proposal to facilitate community resource management planning through a PRA exercise has created interest in a few other bodies, including the Government Environment Unit. Discussions were held with the latter, which has a proposal for a PEP-type project in Matantas area contingent to the PEP Santo EMU. It was agreed that training associated with PEP's PRA exercise would also be made available to some of the government officers involved in Matantas. These will, in the main, be those that normally service PEP's EMU communities, and would therefore be required by PEP for the PRA anyway.

The PEP Coordinator held a briefing meeting with the outgoing Regional Development Planner attached to Luganville Municipality. He provided useful insight into current development of small indigenous business enterprises in Santo, particularly those involved in tourism.

September 1994:

With assistance from Dr. Richard Ford and John Bronson/Clark University/USA, a three week Participatory Rural Appraisal exercise was completed in Hog Harbour from September 11 to October 1, 1994. The PRA trained 14 village members and 12 individuals from PEP, FSP, and the Environment Unit, Fisheries, and Forestry government departments. A community action plan resulted from the PRA exercise, which PEP will use as a foundation for creating a village resource management plan. Abbreviated versions of PRA techniques will be used by PEP staff to address specific issues (such as fisheries and tourism) not covered in detail in the initial PRA.

December 1994:

Staff met with Hog Harbour PRA participants to discuss the outcome of the PRA, and the communities plan of action for specific tasks. Government elections and the holiday season seems to have limited community response to the PRA.

Two workshops were planned for 1995 to address natural resource issues. A Land Use and Management workshop will follow up on PRA Community Action Plan concerns for improved gardening and agriculture practices. Expanding on the concerns raised in the PRA, the workshop is designed to present an holistic approach to land use planning and will address various agricultural techniques, forestry practices, livestock production, and tourism.

A marine and coastal resources workshop was also planned for 1995, with assistance from the Fisheries Department. The purpose of the workshop is to involve active participation of Hog Harbour community members in evaluation of, and management planning for, sustainable use of these resources. The information gathered in the process will supplement scientific studies made thus far.

April 1995:

PEP engaged a two-person consultancy team to do a participatory mapping in Hog Harbour watershed area. Participation of the community was to include input through interviews of men, women and youth. Unfortunately, input from women was minimal. The exercise was also intended to include a three-dimensional model of the area for purposes of monitoring by the community later. The latter task was not completed.

A workshop on landuse management attracted 3 adults and 16 young persons. These included one adult and 11 females. The workshop created much interest in small scale livestock farming, and site stable agriculture.

### Other PRA follow up

John Grayzel and Lina Jensen from USAID office in Manila visited Santo during this reporting period. They were particularly interested in hearing the views of the villagers about the PRA exercise that had taken place in September, 1994. A good discussion took place with the village. Many of the villagers had not understood that PRA approach requires them to take responsibility for their own development rather than waiting for outside agencies to come with imposed development projects. Therefore, there was some frustration that the PRA was not immediately followed with tangible projects from PEP.

The frustration of the villagers also arose from the lack of effective followup by PEP after the PRA. In order to strengthen PEP's link and understanding of the community, a mature member of Hog Harbour village and an elder of the church, was recruited as community liaison officer. He was selected by the chief's council.

### Lopelope Resort

Discussions continued with Lopelope resort owners who had approached PEP for assistance with developing ecotourism attractions.

### Lonnoc Resort

Discussions took place with members of the Vokor family of Lonnoc to define PEP assistance for management, cooking, and development of a strategy for future development of their ecotourism business. Underwater photographs of the Elephant Island marine area produced by PEP consultants last year, were compiled into an album for deposit at Lonnoc resort.

### Current Situation - September, 1995:

#### *LopeLope*

Lopelope tourist resort has an agency through a tour operation in Santo. Setup by old Timothy Molivarap and his family with their own resources. The idea was initiated by his wife and the resort managed by her with no proper record keeping. It was not well known to tourists although the natural environment of this resort is fantastic.

#### *Business and Management constancy.*

Pat Lloyd was contracted by FSP to look into the development of the business and management of Lope Lope resort. His work and recommendations are reported in a separate consultant's report. *An extract is provided in Appendix Z.* Unfortunately part of his work was not completed due to time constraint and the processes of getting necessary materials ordered was slow. Intensive training and workshop on basic management were carried out for the Lope Lope community as well as the Hog Harbour community. This was the major task for Pat.

Young Nellie is keeping all the resort accounts and book keeping but she still needs somebody to work with her in the management of the resort. She needs someone in the decision making and managerial side of the resort.

The management of the resort is progressing and improving with the recent installation of the telephone line. The telephone line number: (678)36780. The telephone line has two extensions - one at the resort and one at Timothy Molivarap's residential house. Various water supply systems to the resort were considered but nothing has yet been started. PEP and Lope Lope resort agreed with the idea of *matching funds* to get the water supply to the resort but there was no time for Pat to implement this.

Sandra Lloyd was contracted to focus more on environment conservation and small scale tourism development. An extract from Sandra's report is provided in Appendix 8. The following environmental conservation and attraction sites were considered:

**Lope Lope** - Two advertisement posters were placed at two shops in Santo town for tourists. The Posters covered:

- *Bush trail*

A bush trail around Lope Lope resort was developed. Trees at the the trail were cleared and a road was cut through the bush by the NUP political party.

- *Blue holes*

Series of blue holes with three of them being spawning ground for fish. These are is about 1km from the resort.

- *Reef*

An attractive reef was identified at Aese Island and another in front of Lope Lope resort. Skin diving leaflet was produced for tourists.

- Thimoty was advised not to disturb the surrounding environment. Collecting of land crab and cutting of the bushes were prohibited.

**Hog harbour**

- *Coconut plantation*

- *Losura nature trail*

The nature trail was developed but tree tags were not completed. Produced posters for advertising.

- *Caves.* Poster advertising the caves as a tourist attraction was produced.

- Hog Harbour school children environmental day. Reported to be successful.

- *Hog Harbour harhour view.* Promoted as tourist attraction.

- *Historical sites.*

- (1) Old British government prison house plus office building foundation.
- (2) First hospital site.
- (3) First Santo Presbyterian church site.

More requests were received from Sara Village, Port Olry, Big Bay, Sack Bay and Total bay who request PEP to help them in protecting their environment.

Hog harbour

(a) *Women center*

The women center was set up around 1992/3 to cater for women around Sara, Gole, Hog Harbour, Shark bay, and Port Olry. Through personal contribution and fund raising the women were able to build the center. It was not completed due to financial difficulties and lack of support from men in the area. During a women's workshop in Hog Harbour it was decided that PEP would assist the completion of the women center. The building for the women center will be completed by a local carpenter and the Hog harbour Presbyterian church session. PEP has provided the floor materials and the SANMA provincial government has provided the materials for the wall and room sub-division.

During the closing of PEP projects in Santo, PEP further donated to the women center some kitchen utensils to start it off. PEP is also organizing another women workshop once the house is completed, through Vanuatu National Planning office in Port Vila . This workshop will take participants from around SANMA province.

(b) *Notice board*

Information center for the community of Hog harbour. A local carpenter was assigned to erect the notice board between the cooperative store and the chief nakamal. PEP has provided the materials for the notice board. From the estimated cost of materials of the notice board we agreed that PEP will buy the local materials from the carpenter as part of his wage instead of purchasing them from the suppliers in town. It was considered cheaper than purchasing timbers from the timber factory which will also need transportation to Hog harbour. The notice board once it is erected will be useful and will benefit the entire community, and other development activities in Hog harbour.

(c) *Poultry project*

This created, a lot of interest from the youth group. Unfortunately there wouldn't be any time for PEP to assess it's results. It would be interesting to find out what markets the project will supply. It is hoped that the project can constantly supply Luganville town with fresh eggs. Stanley Womack's report on this activity is attached as Appendix 9.

Eco-tourism

Hog Harbour has a high potential of developing its tourism industry. There wasn't enough time for Sandra to explore the area for eco-tourism. The following areas were excluded due to limited time for Sandra:

- (i) **Piloti Island - The island has high bio-diversity, very attractive scenery and history. We were able to convince the land owners for this Island to be created as a marine park.**
- (ii) **Golden beach and Point de Querous - Two beautiful sandy beaches at Port Olry.**
- (iii) **Coconut crab or Robber crab at Hog harbour point beyond Champaign beach. Suitable spot for night walk for coconut crab.**
- (iv) **Blue hole at Total Bay - has been developed for tourism but it needs more publicity.**

e. *Theatre group*

- (i) **The theatre group was donated with a Yamaha guitar by PEP. This will help them a lot with their performance. Phillemon Arron has done a lot in keeping this group together and he is organizing weekly practice on Mondays and Saturdays. The theatre group is gradually increasing in number as more youth are becoming interested. George Bunseng spent sometime with the group in May to train them. As a result of this training the group did a marvelous performance without any supervisions during Santo Presbytery Pastors retreat at Hog harbour. PEP has donated a photo alum to encourage them.**
- (ii) **PEP made an attempt to arrange a bigger show with the Save the Children Fund Australia (SCFA) South Santo bush theatre group but this arrangement was not possible.**

Seven members of the group took two week training in Port Vila with Wan Bag Theater to be trained as trainers.

(f) *Hog Harbour history book*

**A request was made by chief Kalmasei for PEP to assist in arranging funding for Hog Harbour history book on 1980 rebellion. It is understood that the New Zealand and the Australian embassies in Port Vila are interested to fund the project. Formalities are on pipe line.**

PEP staff attended formal closing ceremonies in Lopelope and Hog Harbour on the 10th and 11th September.

### Facilitator's report

This report covered all details of activities carried out by PEP in Hog Harbour. It laid out activities in chronological order and recorded the number of men and women who participated in PEP activities.

### Project list and follow up

Arrangements have been made for some of PEP projects in Hog Harbour and Lopelope to be followed up by various organizations. A copy of this list of projects was sent to the President of SANMA province, Local Facilitator and Chief Kalmasei Warsal.

a) K'NAP Theatre Group

Trained with Wan Smol Bag Theatre group in Port Vila. The theatre group youth leader, Philimon Arron and Loyalti are responsible for its activity.

b) Poultry projects and livestock

More than 10 youth involved. Arrangements were made with Livestock Department to follow up.

c) Alley cropping/site stable agriculture

More than 10 youth involved. Arrangement were made with Peter Kaoh for FSA to follow up.

d) Women Center

Materials have been arranged by FSP and SANMA provincial government. A follow up women's workshop is still on pipeline. Aid funding for this workshop is in place and probably a resource person from overseas will run this first ever workshop in Vanuatu. More information will be available by the end of September. NPO office has agreed to follow this up through FSP Vanuatu.

e) Eco-Tourism

High potential avenue for Hog Harbour community to generate plenty of income through tourism apart for Lonnoc resort and Champaign beach. It needs a little more promotion and marketing. FSP/PEP developed market information on pipe line. Tour Vanuatu will assist in the tourist promotion.

f) Lopelope

More assistance to Lopelope resort tourist management. Water supply to the resort is still a high priority. Hope for the Department of Rural Water Supply to help in future.

g) Notice board

Proper notice board as center for information for the community will be erected at the church area and will be accessible to any organizations. The community carpenter, Behov Beku and Timhu will ensure that this is done.

h) Proposed Vanuatu national marine park

Similar to Big Bay national park project but it will be at sea. Primarily the idea was discussed and put forward. More work, meetings and negotiations need to consider the idea. This will involve custom land owners, Central Government, SANMA provincial government and FSP/PEP, the initiator. Unfortunately FSP/PEP closes but we hope this will be considered by another organization who would be interested. Piloti Island was identified as suitable because of its high marine bio-diversity. This suggestion was discussed with the President of the SANMA province.

i) Hog Harbour's History book

Arrangements for funds to look into Hog Harbour's history is on pipeline.

*Constraints*

It was unfortunate that PEP current staff were not at the start of PEP projects. The PEP projects in Hog Harbour and Lopelope communities were completed under trying conditions.

- a) *Lack of cooperation* - The people are rather individualistic. Community cooperation is lacking and most community projects are done by few.
- b) *Out side influence* - The expatriate and initial PEP marine conservation officer hindered some of PEP programs. As a result some activities were discontinued due to unavailability of data, which had already been collected by the project.
- c) *Time limit* - A lot of work needed to be done but the time was too short.

CARPOXYLON MACROSPERMUM



*Crown of a mature Carpoxylon tree showing fruits and leaves.*

### 3.0: CARPOXYLON MACROSPERMUM PROJECT

**Initial Situation:** *Carpoxylon macrospermum*, a palm in what is described as probably the only endemic plant genus in Vanuatu, is botanically important as a very distinctive genus with few close relatives, and clearly endangered. The palm was apparently an important food for coconut crabs, flying foxes, and to a lesser extent, people (edible kernel) before its population declined. Thought to be extinct prior to rediscovery in 1987, *Carpoxylon* was known from at least one site on Santo (four plants), and suspected from sites on Erromango, Tanna, and Ambae (20 individuals total). Without conservation measures, this species is likely to become extinct.

**Conservation Objectives:** Multiplication of the remaining palms and protection of the full range of the plant's genetic diversity to ensure the survival of the species, assessment of the existing population and development of a formal species recovery plan, protection of wild palms and habitat.

**Enterprise Intervention:** A village-based and/or Port Vila-based nursery to produce and sell the palm to Vanuatu collectors and landscapers. Providing there are no legal restrictions, seeds or seedlings could be sold to the lucrative international palm trade, with sales initially directed to palmeta and research institutions. Money is to be returned to village projects and further conservation efforts.



*Carpoxylon seedlings do well as pot plants*

## Project History

September 1993:

The enterprise has excellent conservation value. The village of Casaveia, where four adult palms grow, has one extended family, very much interested in working with PEP. The enterprise potential of a palm nursery is to be evaluated. Success may hinge on the ability to access the international market; this situation will be clarified.

December 1993:

A terms of reference for forester Joanna Walker's assistance with the search for Carpoxyton at sites outside of Casaveia, South Santo, was drawn up following preliminary discussions. The initial plan was to follow leads of informants on palm location. When this method turned up a number of palms, Devoe conjectured that the population might in fact be large enough to merit a more generalizable sample. Accordingly, in November, Devoe and Walker walked a four-day transect in West Santo, where no palms had been reported, to effectively take a random sample of the palm population.

Upon the request of the editor of "Naika", the newsletter of the Vanuatu Natural Science Society, Devoe prepared a report of the findings and sent it to two palm taxonomists, John Dransfield and John Dowe, who are kept abreast of the Carpoxyton project. Both asked to forward the report to scientific journals for possible publication. As the request from Dowe was received first, it was sent by Dowe to "Palms and Cycads".

Also in November, Devoe and Stead met with forest botanist Pat Curry and horticulturist Sandy Lawson. Stead had arranged a meeting with Lawson, a local landscaper, to discuss the potential market for Carpoxyton. Lawson suggested that all rare endemic plants would be of some interest to collectors, but that the landscaping market is confined to plants with specific qualities. Lawson has a personal interest in rare native species, and believes the sale of materials from these plants could be a profitable one on a small scale. Curry suggested that determining handling methods for seeds of indigenous plants is a big task, and if started now, would assist the work of a proposed national botanical garden. Devoe and Curry believe that seed collection and sale could both raise conservation awareness and return income to rural communities. Curry urged the others to consider organizing a native plant enterprise that would market a broad range of rare and unusual plants.

Walker sent to Devoe Carpoxyton seed collected during her consultancy. Devoe sowed the seed in small-scale germination tests similar to those reported earlier, except that seed was sown in germination trays rather than directly into plastic pots. The first germination tests sown in July, 1993, yielded 89% germination, confined to a one-month period. It took more than two months from germination for the seedlings to reach the stage where the fronds became bifid. From these first tests and subsequent growth of the seedlings, we learned that in a wet medium, degree of insolation has little effect upon the rate or percentage of germination over the range tested (full sun, direct sun limited to three hours per day), but that where the potting medium is maintained moist, greater insolation produces faster seedling growth. These seedlings were held at Devoe's home for three months following sowing, and then transferred in November to the care of Mele family living in Port Vila.

Upon learning that the first batch of Walker's seed had been refrigerated, Devoe conjectured that it was unlikely to germinate. However, chilling may not have killed the embryos, in which case induced dormancy would likely delay germination. None of this seed has germinated to date, but neither is it obviously deteriorated.

The next lot of seed collected by Walker from two areas on Santo was sown November 18 with 23 out of 30 seeds (77%) germinated to date. Seed subsequently collected by Devoe and Walker sown November 27 has reached only 27% germination. Upon germination, seedlings are removed from germination trays and planted into poly planting bags.

Devoe is seeking a collaborator or contractor to assess the amount and distribution of genetic variation among the subpopulations of Carpoxyton spread over Santo and perhaps Ambae, Erromango, Tanna and other islands in the Vanuatu archipelago. The information is needed for the species recovery plan, which will aim to protect the whole genetic base.

The Enterprise Specialist prepared a report "Strategy for Carpoxyton Enterprise Development". The report notes that the domestic market for Carpoxyton plant materials is insignificant, but that there is a high probability that a substantial export market exists. Initially, export sales would be to collectors. If the species proves to have value as a landscaping or ornamental plant, this market should be developed as well.

With the existing prohibition against the export of Carpoxylyon materials, it is not possible to capitalize on this market.

December 1993:

#### Recommendation:

- PEP's Carpoxylyon intervention has attracted the interest of internationally recognized palm experts; without exception, they support the project. Development of a conservation plan and enterprise activity should continue unabated.

#### Interventions and Activities

##### History

March 1994:

##### Status

On the enterprise side, a consultant was employed to conduct a study to quantify the market for Carpoxylyon plant materials in the United States. This was limited to the U.S. for two reasons, 1) the U.S. represents by far the greatest single market for these products, and 2) initially offering the products exclusively in the U.S. greatly simplifies administration and distribution problems. The consultant employed had formerly been associated with Cultural Survival Enterprises as a market researcher, and was intimately familiar with research of this nature. The consultant concluded that there was a viable market for Carpoxylyon plant materials in the United States, and suggested approaches to access this market.

On the conservation side, a short-term technical assistance contract "Information Support for Horticultural Production of Carpoxylyon macrospermum, Veitchia montgomeryana, and V. spiralis" was fulfilled by Dr. Dennis Johnson, Deputy Chairman of the Palm Specialist Group of the IUCN Species Survival Commission. Dr. Johnson was asked to assist with a literature review to determine restrictions under CITES and plant quarantine to shipping seeds and seedlings of these species internationally. He further supplied background information related to palm biology and to the handling of seeds and seedlings as commodities and an Initial Environmental Examination for the proposed PEP palm seed enterprise.

During the quarter, Devoe corresponded with Johnson, Dransfield (Royal Botanic Gardens, Kew, UK), Dowe (Townsville Palmetum) and others regarding the species recovery plan for Carpoxylyon. She met with Dowe and Dransfield while in Australia. Expressions of interest in conducting the molecular analysis were received from staff at the Bailey Hortatorium at Cornell University and the US Forest Service National Forest Genetic Electrophoresis Lab. PEP resolved to draft a plan to pursue Carpoxylyon recovery. This draft, with a discussion of the enterprise aspects of the project, should be presented to Vanuatu's Environmental Unit. A goal of this activity would be to have the Environmental Unit rescind its prohibition against the export of Carpoxylyon plant materials. If the Government of Vanuatu agrees that Carpoxylyon seed can be exported in conformance with a sound conservation plan, PEP should assemble all data necessary to the plan, which will be subject to scientific peer review.

June 1994:

PEP held a meeting with the head of the Vanuatu Government's Environment Unit to brief him on the status of the project to date. Discussions ensued on the need to conduct a comprehensive population survey of the palm in order to formulate a strategy for conserving the species. PEP's conditionality for developing a profitable enterprise as part of the conservation strategy was explained and accepted. It was agreed that a palm expert be engaged to conduct the population study which is to include an ethnobotanical component. It was also agreed that the opportunity would be utilised for training some ni-Vanuatu persons in the process of population survey of a threatened or vulnerable plant species. Both the Environment Unit and the Forestry Department agreed to send up to two persons each to participate for part of the time during the six-week field work for this palm.

Contact was renewed with the palm expert, Dr. John Dowe, who has agreed to come in November/December for a period of six weeks. Dr. Dowe will conduct the population survey and include ethnobotanical information in his investigation. He will also supervise any laboratory analysis necessary for establishing genetic variation. The PEP Coordinator was to assist Mr Dowe for part of the survey.

Contact was also renewed with Mr. Dick Phillips, a commercial nurseryman who exports palm seeds from Fiji, and a member of the International Palm Society. He confirmed his interest in assisting with collection, germination, packaging, and export of palm seeds if needed. He also expressed interest in re-establishment of the palm in Aneityum - the location of the type species. Our last quarterly report made an error about a *Carpoxyton* palm being at the University gardens in Suva. The palm, one of two representatives in Fiji, is growing in Mr. Phillips' garden.

September 1994:

- PEP continued negotiations and concluded contracts for the services of John Dowe and Dick Phillips as reported for the last quarter.

December 1994:

During the month of November, PEP mounted a nation-wide survey of *Carpoxyton*. This survey set out to investigate the approximate number of trees, their distribution, ecology, obvious morphological variation and ethnobotany. Most importantly it intended to identify the existence and extent of natural populations, if any. To this end, the field work began in Aneityum, the island from which the palm was first collected and described scientifically.

The survey covered ten islands finding *Carpoxyton* in all but two. It was led by the South Pacific palm expert, John Dowe, with assistance from well known Fiji nurseryman, Dick Phillips; three local contractors, Japeth Hidson, Chanel Sam and Harry Bule; and three staff members from PEP and FSP - Suliana Siwatibau, Stanley Womack, and Feke Pedro. The reports from Dowe, Phillips, Hidson, Sam, and Siwatibau are available on file.

Briefly the survey found 139 mature fruiting trees, over 90 juveniles, and over 400 seedlings. Only 26 of the 139 mature trees were found in primary or late secondary forest. The rest are all either cultivated or have naturally regenerated from cultivated forbearers. Natural stands were found in Aneityum, Tanna, and Futuna. The survey team did not find any similar natural stands on any other island visited. This finding reveals the precarious status of this palm and confirms its officially declared status as rare and endangered.

As part of the population survey, PEP has contracted the Australian Institute of Marine Science to do a DNA analysis of the palm's genetic material to supplement field information on species variation. This will contribute towards the formulation of a species recovery and conservation plan. During the survey, seeds were collected for laboratory analysis to establish procedures and identify DNA markers.

The survey also collected much interesting information on the different uses of the palm. Its sweet green fruits make popular snacks with children - similarly its germinating seed, popularly called "navara". The leaf top, and old infructescence are used as broom. The leaf sheath may be used as a kava bowl, baby bath, sleeping mat, or shovel for hot charcoal. The spathe for the inflorescence is used to form a drinking bowl. Many of those who planted the palm also valued it for its beauty and its rarity.

Dick Phillip's role was to advise on germination methods. He talked to several nurserymen in Vila, after having observed growth characteristics of the palm in the field. He was very enthusiastic about the potential of the palm as a horticultural plant. On his advice, PEP approached the Farm Support Association and arranged to have them conduct germination trials as and when PEP requires these. These trials will be to test batches of seeds for export sales.

PEP's Enterprise Specialist, Jim Stead, continued investigations into overseas markets for *Carpoxyton* seeds. In discussions following John Dowe's population survey field work, it was decided that an enterprise based upon export of *Carpoxyton* seeds could be developed now - harvesting only from those trees that are cultivated or clearly regenerated from cultivated trees.

PEP staff met with Ernest Bani, Director of Vanuatu's Environmental Unit, to discuss plans for marketing *Carpoxyton* seeds. Mr. Bani's reaction to the plan was positive; the Environmental Unit will support the enterprise and issue required export licenses.

PEP proceed with plans to market *Carpoxyton* seeds maturing during March, April, and May 1995. Initially, the business will be conducted under the PEP/FSP umbrella as a separate entity having a board of overseers including members from the private sector, Government, and FSP. This organization will be sufficiently autonomous so that it can continue to function successfully following the close-out of the PEP project in September 1995. The intention is to first establish accurate costs with this trial run, and then to use this information in establishing the ongoing seed export enterprise. Proceeds from the first year's sales was hoped to generate sufficient surplus funds to provide capital for the succeeding years's operation.

Marketing Carpoxyton plant materials will be done through the seed banks of The International Palm Society, headquartered in the United States, and the Palm and Cycad Societies of Australia. In preliminary discussions, these organizations have indicated enthusiastic support of the seed marketing program.

April 1995:

Two clear sets of inter-related activities arose out of the developments in the Carpoxyton project to date. The first is a set of activities to develop a Carpoxyton seeds export enterprise to raise funds for the conservation of the palm. The second is to formulate a plan for the conservation and recovery of the species.

### 3.1: Developing a Carpoxyton Enterprise

#### Purchase of seedlings

A long standing confusion over the arrangements for purchase of Carpoxyton seeds and seedlings the project had recieved, and PEP paid for all the seedlings the project had recieved from Casavea. It had been assumed that the seedlings belonged to the community. Unfortunately these turned out to belong to only one man who therefore recieved all the funds.

#### Export of seeds

The first batch of Carpoxyton seeds for export was despatched to the Palm and Cycad Society of Australia.

#### **Current Situation - September, 1995:**

**Seeds were exported to the International Palm Society in the United States of America, and to a commercial nursery concern in Hawaii. These seeds were recieved in better condition than the ones sent earlier to Australia, as the PEP team and others concerned learnt from experience and improved procedures.**

**Good working relations were established with the government departments concerned with procedures for export and a system has been established for an on-going concern to follow.**

**Prices paid to suppliers and cleaners were set before PEP gained experience. Through the pilot business PEP has been able to get a better estimate of the real costs of getting seeds from the villages to the overseas buyers. These figures will help anybody that is to take over the export enterprise. They should aid in setting fairer prices to suppliers and cleaners.**

### 3.2: Species Recovery and Conservation

April 1995:

Work by the Australian Institute of Marine Science (AIMS) to establish appropriate laboratory procedures for DNA analysis on Carpoxyton seed material was completed. Further samples of Carpoxyton seeds were collected from Tanna, Aneityum, Malekula, and Santo and despatched to AIMS for DNA analysis. An interesting new population was identified in the interior of Malekula.

Seedlings of the palm were distributed to interested persons, institutions, and local nurserymen. Some were sold and some given free. A simple form was designed to help the project monitor the behaviour of the young and growing palm tree under different conditions. This is to gather some information on growth requirements.

A contract was agreed to with the Montmarte school farm to conduct germination tests for the Carpoxyton seeds from different islands, and under different conditions of planting. This contract also included testing the germination rates for batches of seeds exported overseas.

**Current Situation - September 1995:**

Final reports of the consultants John Dowe and the Australian Institute of Marine Science were received. These found that the population of Carpoxyton palm is fairly uniform throughout Vanuatu, with only two variant populations on Tanna. Thus there seem to be only three genetic variants of the palm left in the whole country. *Extracts of the two consultants' reports are attached as Appendix 10 a & b.*

The recommendations of the two reports were the basis of a conservation and species recovery strategy formulated after discussion with concerned government departments and with FSP/Vanuatu. A report on the pilot business concern was produced to accompany the species recovery strategy.

PEP organised a meeting with the government departments of environment, forestry, and agriculture, as well as with FSP/Vanuatu, to plan future activities and institutional arrangements for carrying on the work for Carpoxyton. It was agreed that FSP/Vanuatu is to be the lead agency servicing an interim committee to oversee activities.

Germination trials were concluded. *The results are reported in Appendix 11.* Horticultural trials where volunteers from the public participated showed that the palm is quite hardy and performs well both as a pot plant and as a garden item. It is stressed as a seedling in exposed sunny conditions and becomes easily susceptible to fungal and insect pests. Windy conditions also appear to stress the palm seedling but not as badly as direct sunlight. One of the seedlings had been moved twice in 5 months and is planted in a sunny exposed area. It is stunted from the disturbance, but is surviving well. Generally Carpoxyton does well in moist shady conditions as a seedling. None of the plants monitored had developed a proper trunk after at least 18 months of growth. Those that did well were about 140cm to 160cm at the top of the highest leaf. The number of new leaves produced during the 6 month period was not monitored.

#### 4.0: WASTE-OIL

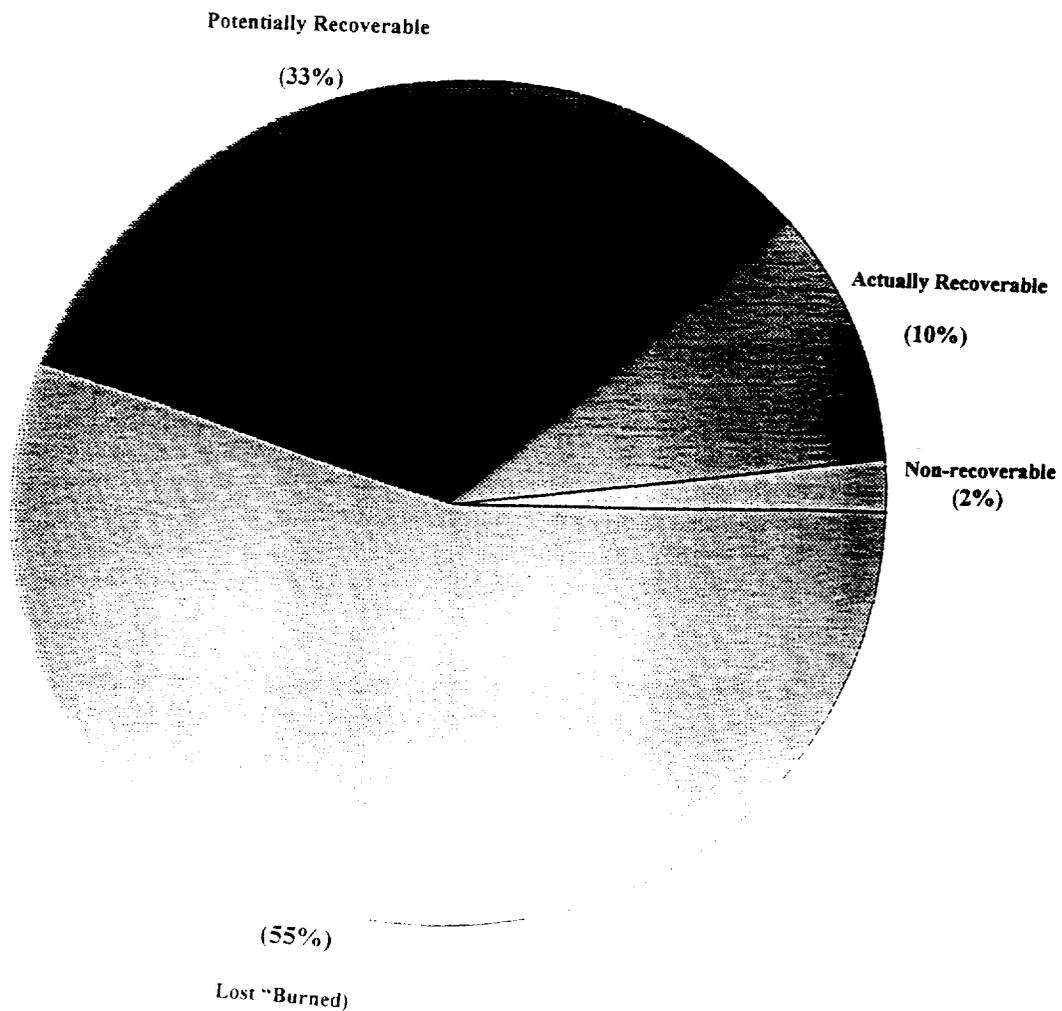
**Situation:** There is no program in Port Vila (or Vanuatu) providing for the disposal of used lubricating oil (waste oil) in an environmentally acceptable way. It is believed that a local utility uses 60,000 liters of lubricating oil per year. In addition, unknown amounts of lubricating oil are imported to service motor vehicles, construction equipment, and the like. Disposal of this waste oil is by dumping onto the earth.

Vanuatu's Energy Unit is enthusiastic about this project, and has offered to undertake a preliminary survey of waste-oil "producers" and potential purchasers.

**Conservation Objective:** To prevent the waste oil from being dumped improperly.

**Enterprise Intervention:** Working with the utility and other producers of waste oil, PEP proposes to develop an enterprise that would collect and market the used oil.

#### Waste oil in Vanuatu PEP's estimate of Recoverable Proportions



## Project History

March 1993:

The recommendation was to continue to evaluate feasibility of this project.

September 1993:

During the RDO/SP-FSP meetings of March and April, 1993, the then RDO/SP Science Advisor declined to approve continued activity in this area. PEP staff feel that this project has considerable enterprise and conservation merit and would contribute to the range of linkages addressed by PEP. In August, the Enterprise Specialist again discussed this proposed project with the RDO/SP Project Officer, and asked for approval to continue to study the recovery and sale of waste oil. This approval was granted. Preliminary discussions have been held with Vanuatu's Energy Unit; they enthusiastically support the concept.

PEP resolved to continue to advance this initiative, further define the project, and seek information regarding waste oil "producers" and potential customers.

## **Interventions and Activities**

December 1993:

### History

Efforts during this period were focused upon accurately determining the amount of lubricating oil imported into Vanuatu, and in ascertaining the size of the local market for waste oil.

Meetings were held with the managers of the three firms that import lubricating oil into Vanuatu to explain the project and to query them regarding the amount of product entering the country. The total amount of lubricating oil imported into Vanuatu in the last 12 months was 468,000 liters; this represents an average year. After subtracting the amount of oil sent to outer islands and estimated amounts consumed during use, it is estimated that 200,000 liters are available for recovery in Vila.

It may be possible to market some recovered oil in Vanuatu, although initial discussions with potential users have not been encouraging. Therefore, it is necessary to develop an economically viable export scheme that would provide for local storage, economical transportation, and the identification of an overseas purchaser. The local Shell Oil bulk plant has 800,000 liters of unused bulk storage that might be made available at some unknown cost. An arrangement to use this capacity would have to be negotiated with the parent company in New Caledonia.

With the exception of a small, specialized facility in New Zealand, there is no known re-refiner of used lubricating oil in the South Pacific. In Australia, used oil from metropolitan areas is customarily collected and sold as fuel oil. Although this oil may be filtered or cleansed in some way, it is not re-refined. The selling price is not sufficient to cover the cost of collection, processing, storage, and delivery; producers pay oil collectors for their services.

It was thought that oil tankers departing Vanuatu with empty bunkers would accept waste oil at very favorable rates. This is not the case. No bulk oil is shipped to Vanuatu from nations that are potential users (Australia and New Zealand). Oil imported into Vanuatu comes from Fiji and New Caledonia; neither of these nations represents a market for used oil.

It was recommended that efforts be continued to find a market for Vanuatu's waste oil. Market prices for waste oil in New Zealand and Australia should be determined, and cost of transport to those countries should be ascertained.

March 1994:

The possibility of disposing of Vanuatu's waste oil to an overseas market was investigated. Because of depressed world oil prices, there is virtually no market for waste oil in the South Pacific. Because of these depressed prices, the operation of Australian re-refineries became uneconomical in 1991, and these facilities were shut down. Commercial businesses collect waste oil for a fee of two to six cents per litre. This product is sold as a source of heat in a very soft market at prices that often fail to cover "production" costs. Much of the waste oil collected is being stored. The situation is much the same in New Zealand; however, there is one re-refinery in operation. The bottom line found was that even if waste oil could be delivered free to Australia or New Zealand, it would find no market.

In Suva, Fiji, a foundry uses waste oil as a source of heat. It has not been possible to determine what, if anything, they pay for this oil. It is known that they are able to meet all their needs from local sources, and that there is no possibility that Fiji will accept waste oil from Vanuatu. In 1993, a re-refinery commenced operations in W. Samoa. At present, this facility is able to meet all requirements for raw product from domestic sources. Realistically, transportation costs preclude Western Samoa as a market for Vanuatu's waste oil in any foreseeable scenario.

The cost of shipping oil from Vanuatu to typical destinations such as Australia and New Zealand was investigated. No tank ships regularly operate between Vanuatu and these countries, and in view of the small amount of product to be transported (200,000 liters per year, maximum), no ship would call to pick up this cargo. The alternative is to place the waste oil in 205 litre drums and ship them in containers. The bare cost of this, exclusive of local handling and delivery in Vanuatu and the delivery point, is approximately VT 136,000 per container, which translates to A\$.83 per litre.

Lack of a market and prohibitive cost of transportation preclude any possibility of exporting waste oil from Vanuatu. Any scheme for collecting waste oil must be predicated upon the assumption that the oil will be disposed of within the country. There are three broad possibilities:

1. Destroy the oil in an environmentally acceptable way.
2. Use it as a source of heat with little or no processing.
3. Process the waste oil so that it can compete in the marketplace with "new" product.
4. Ship the oil out of the country.

PEP resolved to continue to investigate the four alternatives indicated above.

June 1994:

Approximately 30 manufacturers were contacted to determine if their technology and equipment capabilities could meet the need for waste oil incineration, re-refining, or burning without processing as a source of heat. With one possible exception, no practical small-scale incinerating equipment is available. One manufacturer makes off-the-shelf waste-oil reprocessing equipment with capacities appropriate to the needs of small island nations (SINS) and at a reasonable price. A standard commercial hot water heater was located that will burn crankcase oil, transmission fluid and No. 2 oil "as received" from service stations, utilities, and other "producers" of waste oil.

Potential suppliers have been provided with specific parameters for equipment suitable for use in Vanuatu, and proposals solicited. These proposals will be evaluated during the current reporting period.

The Energy Division of the Forum Secretariat in Suva, Fiji, was contacted for information on a UNDP funded waste oil study. This information was provided by Mr. Park Yuen, Project officer at the Forum Secretariat. Information regarding waste oil recycling was requested from the UNDP in Suva, Fiji. Mr. Somsey Norindr, Resident Representative, responded with an overview of the situation in Australia and articles describing a small-scale re-refinery in W. Samoa. We will continue to liaise with these two organizations.

September 1994:

The Enterprise Specialist visited W. Samoa to meet with Mr. Tony Hill, Managing Director of Aegis Oil Samoa Ltd., a small-scale waste oil re-refining facility. The purpose of the meeting was to evaluate the technical and financial viability of this facility, and to determine if such re-refineries represent a practical solution to the disposal of waste oil in Vanuatu and other small nations of the S. Pacific. The following observations derive from a day-long meeting:

1. The facility is efficiently laid out and fabricated to high standards (largely by Mr. Hill). With minimal start-up difficulties and few subsequent maintenance problems, the facility produces re-refined base stock to acceptable standards.
2. From a production standpoint, the art, science and major cost is in the additive selection and blending to produce various end products.
3. Public acceptance of products has been high, and these demand retail prices comparable to brand name products produced from virgin base stock.

4. The major problem is the inability to secure enough waste oil to keep the facility operating efficiently. Hill has initiated a program to import waste oil from American Samoa, although he does not know the cost of such a scheme. (Experience in New Zealand, and an analysis of the situation in Vanuatu indicates that the cost of handling and transport preclude any possibility that importing waste oil is financially viable.)
5. No useful business plan was prepared prior to initiating the project. Accurate cost data was not accumulated during the construction of the facility. There are no drawings or specifications to document construction of the facility.
6. Although the plant has operated intermittently for several months, no useful product cost data has been accumulated.

Hill believes that, at best, to break even a small-scale facility such as this would have to produce 200-300,000 liters per year. This is two to four times the total amount of waste oil available in Vanuatu. Although data is not available, it is evident that construction of a small-scale re-refinery is capital and technology intensive. Elimination of waste oil by re-refining and blending to produce a marketable end product is not considered a viable alternative.

Returning to Suva, the Enterprise Specialist met with Suresh Raj, Sustainable Development Advisor, UNDP, and following with Brian Dawson, Director of the Forum Secretariat's Energy Division and Mike Lawrence and Park W. Yuen of his staff. Funded by the UNDP, the South Pacific Forum is managing the S. Pacific Regional Energy Project. A study of waste oil issues is a component of this project. Both parties were briefed on the PEP's waste oil work and it was agreed to continue to exchange information. As neither representatives of the UNDP nor the Forum had visited Aegis Oil (Samoa) Ltd., the Enterprise Specialist offered his observations on the appropriateness of small-scale re-refineries as a potential solution to the regions waste oil disposal problem.

Several manufacturers of oil equipment capable of filtering and purifying waste oil had responded to inquiries by PEP. Equipment of an appropriate scale and reasonable cost was available "off the shelf". The product produced by this equipment would vary in viscosity and chemical composition. It was not known if this product could be burned in conventional atomizing burners; this was under investigation.

Manufacturers of chemical incinerators had also been queried. "Off the shelf" equipment was available, although initial cost was high, approximately US\$ 260, 000 and operating costs were substantial. To achieve necessary high combustion temperatures, incinerators employed powerful blowers. These blowers consumed large amounts of electrical energy, were expensive to operate. In addition, pre-heater employed by these incinerators required a source of energy, usually diesel fuel or LPG.

December 1994:

An assessment of the amount of waste oil available for collection in the Port Vila area, and an evaluation of alternatives for disposal of this waste oil was completed and a report prepared. This report indicates that the only potentially viable way of disposing of Vanuatu's waste oil would be to burn it as a source supplemental heat.

A project has been proposed to demonstrate that: 1) employing off-the-shelf technology and equipment, a waste oil fired boiler could be installed in a local resort to provide supplementary hot water heating capacity, and 2) a small business could be established to collect waste oil and sell it to the user. An IEE for the project has been prepared and forwarded for approval.

April 1995:

A plan to establish a pilot project to waste oil as a supplemental fuel was abandoned because of constraints in staff time and project duration. This intervention is now concluded with the production of a report for distribution to interested institutions in the regions.

## 5.0: MALEKULA CLAM PROJECT

**Situation:** A small marine conservation area was established by community members with no outside prompting or support. A community representative requested PEP's assistance with information and further project development. The Maskelynes area is noted for over-exploitation of near-shore resources due to population pressure and absence of management. Because of rough seas and scarcity of deep-water boats, villagers are heavily dependent on near-shore resources for protein. The conservation area is a privately owned reef-flat that has been restocked with giant clams.

**Conservation Objectives:** To protect the initial efforts of villagers, encourage continued protection of the area, improve efficacy of the reserve to restock other areas, add additional organisms to those protected and produced in the reserve, assist with reserve management.

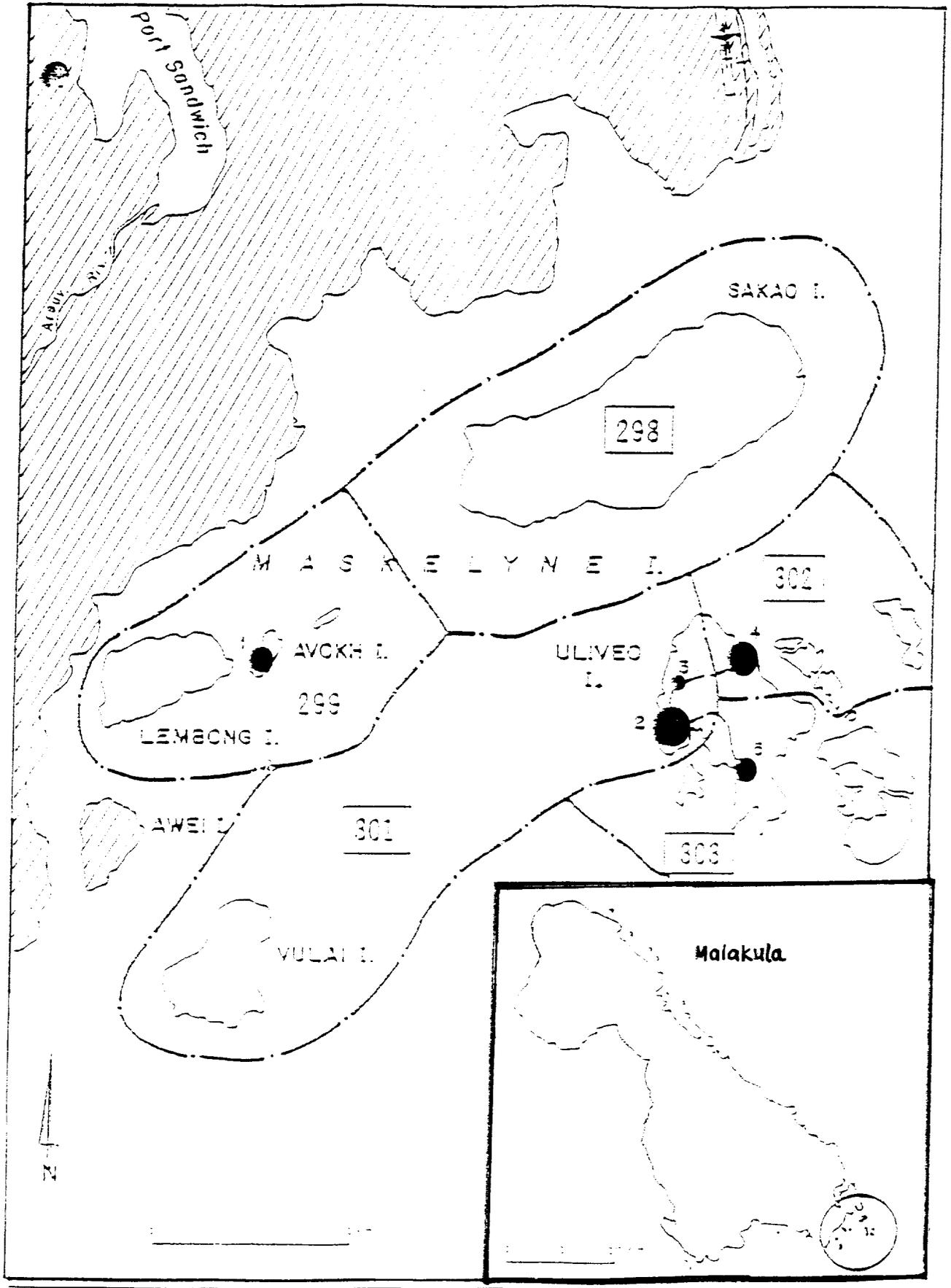
**Enterprise Intervention:** This is a subsistence-economy effort. The villagers would like eventually to have enough marine produce to sell, but that is a long-term endeavor. No PEP enterprise activity is proposed.

*Ringi Te Suh Marine Conservation Area.  
PEP Staff and Hog Harbour Villagers Visit the Conservation Area.*



*Profitable Environmental Protection (PEP) project. 50*

# MAP OF THE RESERVE AREA IN THE MASKELYNES



## **Project History**

September 1993:

PEP should provide technical assistance to support and encourage this meritorious community initiative. A partnership with the Environment Unit has been discussed and seems a promising approach that may ensure continued attention to the area. Because of limited enterprise potential, this area has not been chosen by PEP staff as a full-blown EMU.

December 1993:

Devoe twice met with Peace Corps volunteer Charles Allen to develop a program for the AEP Fellow's technical assistance visit to Ringi Te Suh. Local Government and traditional leaders were contacted for approval and to secure their input to the plan. Devoe reviewed and selected environmental videos for use in environmental education workshops planned for the three villages on Uliveo Island, where Ringi Te Suh is located. Jack Enrel, initiator of the Ringi Te Suh project, was asked to join the AEP Fellow during her visit to the project and assisted the Project Manager in developing the work program.

With Fisheries Department Fisheries Biologist Moses Amos, AEP Fellow Milika Naqasima travelled to Malekula December 2-7th. Naqasima and Amos conducted three environmental workshops and surveyed the reefs surrounding Uliveo. During their visit to Ringi Te Suh, they made several recommendations for enhancing giant clam reproduction and growth. PEP will follow-up on these recommendations subject to the availability of staff and resources.

The recommendation was that this low priority intervention would be advanced as resources allow.

## **Activities**

### **History**

March 1994:

During this reporting period, no activity relating to this intervention took place and there was no change in the status. Therefore no activity is planned for the forthcoming quarter.

June 1994:

Jack Enrel, Project Initiator of Ringi Te Suh Marine Conservation, privately owned marine protected area in South Maskelynes, Malekula met with van Breda and Kalfatak to report on the progress of the conservation area. Mr. Enrel requested PEP's financial assistance with the purchase of clam shells to stock the reef flat, and for funds to travel to giant clam mariculture centres in the region for practical learning experience. This assistance was not granted as it had previously determined that PEP input would be limited to technical assistance. Mr. Enrel requested we review a contract written for formal recognition of the protected site by adjacent landowners and local chiefs, as well as the village and national governments. We reviewed the contract and recommended adding a map of the site.

September 1994:

Kalfatak travelled to the Maskelynes Islands off the south coast of Malekula to attend the Declaration and Opening Ceremony of the Ringi Te Suh Marine Conservation Project on behalf of PEP.

December 1994:

There was no PEP activity during this reporting period. If there is no activity during the next reporting period, reference to the Malekula Clam Project will be deleted from the next Quarterly Report.

PEP had no active contribution to this project but continued to remain in contact with the initiator and main player behind it.

*Current Situation - September, 1995:*

*Maskelynes Tour*

PEP organized a tour for a team of 8 people from the community from Hog Harbour and Lopedope to visit Maskelynes from the 16th to 18th May, 1995. The 8 people represented various organizations in Hog Harbour and Lopedope. The purpose of the tour was for the community of Hog Harbour to see some environmental projects and conservation areas in the Maskelynes. It was expected that the traditional methods of environment conservation in Maskelynes could be applied to Hog Harbour and Lopedope area. *A report on this trip is attached as Appendix 12.*

## 6.0: OTHER PROGRAMME ACTIVITIES

### Current Reporting Period

#### 6.1 Second PRA Training

PEP mounted jointly with FSP/Vanuatu a second PRA training exercise for NGO and government officers involved in community development work. Charity Kabutha was recruited as chief trainer. PEP and FSP staff trained at the first PRA were trainers with Charity. This involved one week preparatory workshop in Mele and two weeks application of the tools in the selected village on Epi island. The PEP team led the two week PRA exercise on Epi. This proved much more successful training process than the first PRA at Hog Harbour. In addition the Community Action Plan that ensued was much better formulated, and thought out. The consultant report on the Mele workshop is attached as Appendix 13.

#### 6.1 Lessons Learned Exercise

Following the advice of USAID, PEP mounted a lessons learned exercise instead of an evaluation of the project. A consultant, Dr. Michael Hamnett was recruited to facilitate the compilation of lessons learned, and to act as resource person for a workshop at which these were to be shared with other agencies doing PEP-like projects in Melanesia. The consultant interviewed staff, government officials, and visited the communities with which PEP works. His report is presented in Appendix 14.

Representatives of World Wide Fund for nature (WWF). The Nature Conservancy (TNC), New Zealand Forest and Bird Society, Solomon Islands Development Trust (SIDT) Vanuatu Vathe Conservation Area, South Pacific Regional Environment Programme (SPREP), South Pacific Alliance for Conservation, Human Ecology and the Environment (SPACHEE), as well as local government representatives, joined PEP staff in a 3-day workshop to share experiences and lessons learned. Much of the lessons were similar throughout the countries in which the agencies were working. These were Solomon Islands, Vanuatu and Fiji. An extract of the workshop report is attached as Appendix 15. This report is to be widely distributed to interested agencies.

#### Continuation of Community-Based Resource Management

Following the lessons learned workshop a second workshop jointly organised with FSPI was also facilitated by Dr. Michael Hamnett and a second consultant, Dr. Margaret Chung. This was attended by directors of FSPI or their representatives. It took up the findings of the lessons learned workshop and worked out strategies for continuing community-based resource management projects as an FSPI regional programme.

#### 6.3 Assistance to Vanuatu Rural Development Training Centres Association (VRDTCA)

During this reporting period, PEP has supported the development of a curriculum and production of necessary materials for a unit on environmental education as part of the core curriculum of the Vanuatu rural training centres. PEP engaged a consultant, Jenny Whyte and funded all necessary activities as well as the collection of a basic resource kit for the training centres and for VRDTCA headquarters. The consultant's report is attached as Appendix 16.

### **III ADMINISTRATION**

#### **Current Reporting Period**

**May to September, 1995**

1. **Jose Togase, recruited on temporary basis during the last reporting period was confirmed as the information and publications officer. Graham Nimoho was recruited as the community-based marine conservation officer. He replaced Anita van Breda, and became responsible for the Santo office and programme. Donna Kalfatak took maternity leave from mid-July leaving Graham running the Santo office on his own.**

**At the close of PEP the environment education officer, Stanley Womack joins the FSP/Vanuatu Community Environment Forestry project, Jose Togase the publications officer, joins FSP/Vanuatu consortium, while Henry Boe, the administration officer, joins FSP/regional office full time. The PEP advisor, Kathy Fry continues as Director of FSP/regional office.**

### **IV TRAVEL AND TRAINING**

#### **Current Reporting Period**

**May to September, 1995**

**The PEP Co-ordinator Suliana Siwatibau attended a SPREP scoping workshop to consider possible regional programmes for the Global Environment Facility (GEF). This was held in Nadi, Fiji during the last week of July.**

**The PEP advisor, Kathy Fry travelled to Washington DC, USA to discuss with FSP regional office in headquarters, continuation of activities PEP had begun.**