

## Report to RSPB

<b>Project Title:</b>	Trees for Pittas and People
<b>Donors:</b>	The Disney Foundation and Oriental Bird Club
<b>Project Period:</b>	01 October 2011 - 30 September 2012
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### INTRODUCTION

The small forest patches that remain around Khao Nor Chuchi in Khao Pra Bang Kram Wildlife Sanctuary and in the adjacent Reserved Forest and Non-Hunting area of Khlong Thom District in Krabi, are probably the most significant remnants of lowland tropical evergreen forest still surviving in Thailand. This forest type is one of Thailand's rarest and most endangered wildlife habitats and is home to the last few remaining pairs of the critically endangered, Gurney's Pitta in the country. However, most of the forest has now been replaced with rubber and oil palm plantations and the remaining forest exists as tiny isolated fragments.

Therefore, there is an urgent need to restore this forest and to create forest corridors through the plantations to facilitate movement of seed-dispersing wildlife around the area and also to maintain the enthusiasm and commitment of the local community through participatory working plan. FORRU-CMU is association with RSPB, OBC and BCST has been working to build local capacity to grow, plant and the indigenous forest tree species that comprise this forest type since 2003 and to facilitate implementation of forest restoration and the creation of wildlife corridors, sponsored by a variety of donors over the years. The work over the past year was sponsored by the Disney foundation and this report covers achievements over that time period (1/10/11 – 30/9/12).

### NURSERY

In 2004, the FORRU worked with local officials and villagers to build a simple nursery on communal land to carry out research on the propagation of local tree species and to produce trees for research trials and restoration plantings. Disney funding has allowed this nursery to continue to function over the past year. The funding supported 3 nursery workers, 2 from the previous project (Taweesak and Theerasak) and one new staff (Suchart), Duties of the staff include, seed collection, phenology monitoring (continued from the previous project), seedling propagation, care and monitoring of planted trees and provision of education events.

#### Improvements to the nursery

The seedling standing down area was expanded to support production of the project target of 20,000 seedlings. Two additional shaded areas of 6 x 9 m and 6 x 6 m were established in November 2011 to increase nursery capacity and to make more room for seedling growth experiments. Cement poles and good quality line iron were used as the main structure. Shade netting was replaced throughout the standing down area and plastic sheets were layered on the ground to prevent root growing into the soil from the seedling containers. This improved the quality of the planting stock being produced. In the germination room, a new wire net was placed around the room to protect seeds from predation (e.g. rats, birds etc.). Germination benches were fixed and the roof was repaired.



Standing down area

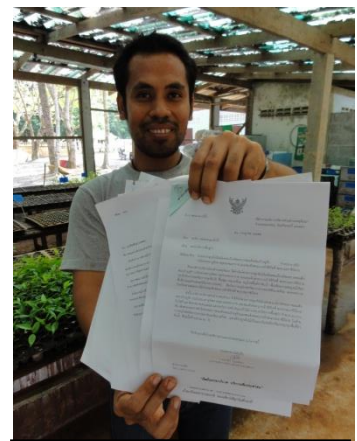
Germination room



### Tree production – species and numbers

At the nursery, propagation experiments (including seed germination and growing-on from wildlings) have now been carried out on 150 local forest tree species.

Over the past year, the nursery has produced a total of 20,844 seedlings of 55 tree species. A total of 6,570 seedlings were used for 2 planting events (corridor planting and replanting at base of Khao Nor Chuchi) (Table 1), and 10,316 seedlings were distributed to local organizations (Table 2). There are currently 3,958 seedlings left over in the nursery (as of August), which will be delivered to local farmers by the end of rainy season in October (Table 3). In addition, 4,474 seedlings are under production for next year’s planting events and are half grown in the nursery.



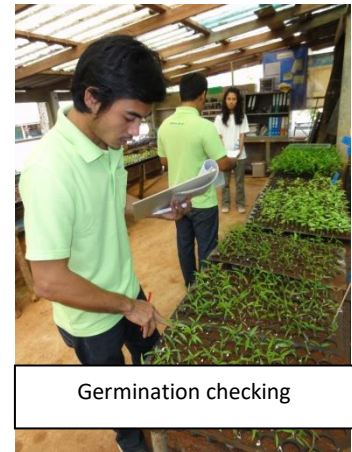
Letters from recipients of trees produced from the project nursery

All seedlings are germinated from locally collected seeds or from wildlings dug up from the forest (which would die due to completion if not removed). Seeds are germinated in the germination room and transferred to 9 x 2 ½ " plastic bags when the 2<sup>nd</sup> or 3<sup>rd</sup> leaf pairs have expanded and transferred to the standing down area. Media is local soil mixed 50:50 with organic matter (rice husk).



Drying chamber for seedling specimens.

Specimens of young seedlings are now also being collected from the nursery, to act as a reference collection for support of surveys of natural forest regeneration in the future. All specimens are lodged at the CMU herbarium. CMU continues to provide taxonomic support for naming of new plant materials. Whilst under production, germination and dormancy data are collected on a weekly basis and a sample of seedlings separated for seedling growth trials. This information is used to improve and streamline the nursery production process in the future.



Germination checking

**Table 1 List of seedling species in 2012 planted for habitat restoration.**

Local name	Scientific name	Family	Number of seedlings at corridor planting	Number of seedlings at 4 rais replanting (base of Khao Nor Chuchi )
Wah mid tone	<i>Garcinia hombroniana</i>	Guttiferae	310	100
Payom	<i>Shorea roxburghii</i>	Dipterocarpaceae	400	300
Kumchum	<i>Lepisanthes rubiginosa</i>	Sapindaceae	310	200
Tang kinoo	<i>Litsea grandis</i>	Lauraceae	200	100
Sai nam	<i>Pometia pinnata</i>	Sapindaceae	100	-
Gor Khao	<i>Castanopsis schefferiana</i>	Fagaceae	50	10
Maw	<i>Antidesma montanum</i>	Euphobiaceae	100	-
Riang	<i>Parkia timoriana</i>	Leguminosae, Mimosoideae	200	150
Tung Fa	<i>Alstonia macrophylla</i>	Apocynaceae	160	150
Kor Haeng	<i>Carallia brachtiata</i>	Rhizophoraceae	350	-
Op cheuy	<i>Cinnamomum iners</i>	Lauraceae	200	50
Tahm mahng	<i>Litsea salicifolia</i>	Lauraceae	200	-
Mooi	<i>Clausena excavata</i>	Rutaceae	-	10
Dta seu dum	<i>Nephelium hypoleucum</i>	Sapindaceae	50	-
Grisana	<i>Aquilaria malaccensis</i>	Thymelaeaceae	200	200
Kia Dai	<i>Eugenia cerasiformis</i>	Myrtaceae	300	100
Sok Nam	<i>Saraca indica</i>	Leguminosae, Caesalpiniodeae	50	50
Niang	<i>Archidendron jiringa</i>	Leguminosae, Mimosoideae	-	316
Wah	<i>Eugenia oleina</i>	Myrtaceae	310	-
Yor Pah	<i>Morinda elliptica</i>	Rubiaceae	200	-
Boonah	<i>Mesua ferrea</i>	Guttiferae	160	-
Sa tauw	<i>Parkia speciosa</i>	Leguminosae, Mimosoideae	50	50
Jik Nom	<i>Palaquium obovatum</i>	Sapotaceae	50	-
Takien Thong	<i>Hopea odorata</i>	Dipterocarpaceae	50	50
Yai-l	<i>Bridelia tomentosa</i>	Euphorbiaceae	50	-
Mung Sai	<i>Garcinia merguensis</i>	Guttiferae	200	-
Inthanin Pah	Unknown		34	-
Sam Rong	<i>Scaphium scaphigerum</i>	Sterculiaceae	250	200
<b>Total</b>			<b>4,534</b>	<b>2,036</b>

**Table 2 List of local organizations receiving seedlings from the project**

Type of organization	Number of organization	Number of seedlings
1. Subdistrict Administrative Organization	3	1,650
2. Village	3	3,100
3. Power Plant Company	1	1,209
4. Temple	1	600
5. Wildlife Sanctuary	1	200
6. Non-Formal Education Centre	1	40
7. Infantry Battalion no.1	1	300
8. Villagers	7	2,435
9. Conservation Club	1	422
10. School Project	1	360
<b>Total</b>		<b>10,316</b>

All data are accumulated into a database for easy scanning of species production profiles. The database has been distributed to the local authorities and villagers so that all information generated by the nursery is freely available to the community.



Measuring seedling growth

S no	Year	Treatm	Average RC	SD RCD	Average l	SD height	Average cr	SD cro	Average SD RGR	SD RGR of	Planted	Survived	Percentage	
ED K032	ED 2006		56.75	18.26	383.55	112.25	355.15	98.9	229.17	40.05	262.84	56.32	25	80
		Rai 1	50.55	18.51	362.91	134.42	293.36	119.43	174.68	49.05	215.05	59.81	26	43.31
		Rai 2	56.41	8.33	402.06	60.6	316.18	91.47	220.48	19.52	262.74	37.28	26	65.38
		Rai 4	48.46	15.12	402.5	52.94	271.5	55.89	212.12	22.33	244.25	40.4	27	51.85
		Total	53.54	9.89	387.75	18.77	304.05	27.62	209.11	23.99	251.22	28.81	104	59.89

### Providing nursery materials to the local conservation group

Beside from producing seedlings ourselves, we supported nursery materials to the local conservation group in the past 6 months. Plastic bags (2½ x 9 inch, 8 kg), slow-release fertilizer (2 kg) and chemical fertilizer (16-0-0) 1 kg were given to members of the local conservation group, to encourage them to learn practically how to produce native tree species.

### Administration of the tree production facility and reporting

Every month the nursery staff write a standard nursery report listing all nursery and filed actions, as well as educational events, as well as a memory card of photos. The tree numbers and species in the nursery are updated and trees donated to other projects recorded. These records are posted to CMU for checking. So far the nursery staff completed all monthly reports on time. Information in the reports is then checked during onsite visits 2-3 times per year, by FORRU-CMU staff.

**Table 3 List of half grown seedlings species in the nursery (for planting in 2013)**

Local name	Scientific name	Family	Number of seedlings
Wah	<i>Garcinia hombroniana</i>	Guttiferae	168
Kumchum	<i>Lepisanthes rubiginosa</i>	Sapindaceae	128
Mau	<i>Eugenia grandis</i>	Myrtaceae	588
Tang kinoo	<i>Litsea grandis</i>	Lauraceae	225
Gor Khao	<i>Castanopsis schefferiana</i>	Fagaceae	108
Kor Haeng	<i>Carallia brachtiata</i>	Rhizophoraceae	180
Op cheuy	<i>Cinnamomum iners</i>	Lauraceae	169
Grisana	<i>Aquilaria malaccensis</i>	Thymelaeaceae	182
Kia Dai	<i>Eugenia cerasiformis</i>	Myrtaceae	312
Sai Yoi	<i>Ficus benjamina</i>	Moraceae	40
Haad room	<i>Artocarpus dadah</i>	Moraceae	90
Niang	<i>Archidendron jiringa</i>	Leguminosae, Mimosoideae	876
Plong	<i>Drypetes hainanensis</i>	Euphorbiaceae	33
Tam sao	<i>Fagraea fragrans</i>	Loganiaceae	120
Yang Pai	<i>Dipterocarpus kerrii</i>	Dipterocarpaceae	216
Yang Kiam	<i>Dipterocarpus sp.</i>	Dipterocarpaceae	480
Lor	<i>Macaranga tanarius</i>	Euphorbiaceae	70
Wah Nam	<i>Eugenia sp.</i>	Myrtaceae	216
Sam Rong	<i>Scaphium scaphigerum</i>	Sterculiaceae	273
<b>Total</b>			<b>4,474</b>

## PLANTING

### Organization of restoration plantings for 2012

Following on from the corridor designed during the previous project, a field survey was carried out on in February 2012 to identify plots to be planted to extend the corridor. A total of 10 plots (about 10 rais) connecting with the corridor sections planted last year were identified along with the local land users (oil palm and rubber plantation owners). A new GPS receiver was purchased with project funds and used to mark the GPS locations of all plot boundaries. All land occupiers along the corridor strip were invited to a workshop in March, to confirm which plots are available for corridor planting this year (2012) and the plots we visited by participants on the last day of the workshop.

Also in February 2012, we met with the Wildlife Sanctuary Chief and he suggested 2 main areas reclaimed from encroachment (10 and 28 rais in the Non Hunting Area and the Reserved Forest respectively) that might suitable for planting this year. Both areas are regarded as critical watershed forest (to prevent flooding) and are also suitable habitat for Gurney's Pitta. The sites were surveyed prior to the March workshop by FORRU-Krabi team and WS staff.

In addition, 12 members of the local conservation group were interested to plant the native forest tree species on their lands, to create more potential corridors.

The GPS location data collected by FORRU-Krabi staff for all these sites are presented in Table 3.

**Table 4 GPS locations of potential planting sites**

Location	GPS location	Land owner
Corridor areas	47N0528075 E0875568, N0527589 E0875543, N0529124 E0871267, N0529517 E0871371, N0529649 E0871417, N0529124 E0871248, N0529770 E0871448, N0529104 E0871201, N0529134 E0871183, N0529789 E0871363, N0529313 E0871178, N0529392 E0871195, N0529972 E0871398, N0529466 E0871198, N0529566 E0871215, N0530180 E0871390, N0530296 E0871436, N0530335 E0871421, N0530293 E0871391	Local villagers
Kuan Sai Teiy	47 N0531062 E0874207, N0531058 E0874226, N0531104 E0874274, N0531161 E0874289, N0531245 E0874280, N0531286 E0874261, N0531251 E0874224, N0531207 E0874191	Non Hunting Area
Naew Pra Pa	47 N052883 E0876454, N0528784 E0876452, N0528792 E0876387, N0528754 E0876309, N0528705 E0876280, N0528702 E0876156, N0528692 E0876068, N0528830 E0876101, N0528948 E0876132, N0528942 E0876217	Reserved Forest
Plantations	47 N0523619 E0877467, N0523793 E0877352, N0527063 E0876474, N0524210 E0877677, N0524249 E0877852, N0524572 E0878156, N0524503 E0878395, N0524484 E0878361, N0524877 E0878835, N0526379 E0879422, N0526281, E0879463, N0526750 E0879345, N0526606 E0880934	Members of the Local Conservation Club

### Implementation of planting

The planting events were largely implemented by a local conservation organization APE, who helped with nursery work, shifting seedlings and equipment to the sites and brought in a foreign volunteer organization (“Volunteers Abroad”), which not only helped with labour but also resulted in some financial support for fertilizer etc. for the planting days. The project’s link with APE has proved to be invaluable, since APE co-ordinators live on-site and have excellent relationships with key community members (village head, teachers etc.) and FORRU-CMU staff are limited in the budget and time available to spend on-site.

As a result from previous field survey and discussion during the March workshop, a total of 9 rai of corridor was planted on 28 May 2012 (a total of 4,534 seedlings, 26 species). The six land users who agreed to tree planting among their oil palm and rubber plantations were Nukul Chanakul (2 rai), Samniang Maitong (1 rai), Jitpatana Wattanasin (1 rai), Taworn Phootong (2 rai), Sompong Boonsong (1 ½ rai) and Nipa Manichakul (1 ½ rai).

The project also supported 3 members of the local conservation group to plant the native forest tree species for increasing biodiversity in their lands and along roadsides. Moreover, under collaboration between the local conservation group and Rajamangala University of Technology Srivijaya (Trang Campus), the project provided 2,036 seedlings to replant 4 rai at the base of Khao Nor Chuchi (“Nah Khao Nor”) on 14 July 2012 (this area had been fire planted during the previous project, but had suffered heavy damage due to beetle infestation and fire).





community roadside planting June 2012 (photo courtesy APE)





Planting the “Nah Khao Nor” site, July 2012 (photo courtesy APE)



However, two main areas reclaimed by the forest authorities from encroachment (10 and 28 rais in the Non Hunting Area and the Reserved Forest respectively) were not yet proceed by the Wildlife Sanctuary with any planting activity due to lacking of financial support. In addition, an area which had been encroached by ring-girdle technique in the Royal Forestry Department was visited during the workshop on March 2012, to find out the way to solve the problem. Unfortunately, no action can be taken so far in the area because the case is now under prosecution.

**Maintenance of previously planted sites**

Maintenance operations on planted trees (weeding and fertilizer application) were applied four times during the rainy season as follows in Table 1.

**Table 5 - List of weeding and fertiliser application dates**

Plot	Weeding and fertiliser application
2009	8 July 2012
2010.1 (10 rais)	25 April 2012
2010.2 (16 rais)	2 May 2012
2012	18-20 August 2012





FORRU-Krabi staff carried out fertilizer application to the seedlings after weeding during rainy season.

### Monitoring data collection and analysis of previously planted sites

Two previous plots (2010 and 2011) were monitored, but only the results from corridor planting site (plot 2011) are presented in Table 3. Labelled trees were monitored twice, about 2 weeks after planting time (to provide baseline data) and at the end of 1st rainy season to calculate growth performance. Initial results from the 2011 plots suggest that *Antidesma montanum* is the highest performing species planted the stream. Seedlings of this species showed the lowest mortality percentage and highest mean height at the end of 1st rainy season. Most species had lower mortality than 10% at about 2 weeks after planting but unfortunately the mortality rate after 1st rainy season could not be calculated because numbers of seedling were lost because of riverbank erosion during rainy season.





Riverbank erosion caused many seedlings planted in 2011 to collapse during rainy season. However, surviving seedlings showed good growth performance after 1st rainy season.

**Table 6 Results of corridor planting in 2011 plot**

SPECIES	Mean RCD		Mean HEIGHT		%MORTALITY
	Post-planting	After 1st rainy season	Post-planting	After 1st rainy season	Post-planting
<i>Aglaia elacegnoidea</i>	3.13	3.33	16.96	18.00	10.00
<i>Antidesma montanum</i> Bl. var. <i>montanum</i>	3.57	9.63	46.80	95.13	0.00
<i>Baccaurea ramiflora</i> Roxb.	3.12	6.33	28.28	42.82	6.67
<i>Calophyllum soulattri</i> Burm. f.	3.30	7.58	51.00	78.36	10.00
<i>Cassia fistula</i> L.	2.00	4.69	22.50	31.13	6.67
<i>Elaeocarpus stipularis</i> Bl.	3.37	5.29	30.74	47.18	3.33
<i>Eugenia cumini</i> (L.) Druce	4.20	6.87	23.76	39.71	3.33
<i>Garcinia cowa</i> Roxb.	3.73	5.24	33.04	42.31	3.33
<i>Morinda elliptica</i> (Hk.f.) Ridl.	4.22	8.55	41.16	50.62	3.33
<i>Palaquium obovatum</i> (Griff.) Engl.	3.23	5.54	25.08	42.86	6.67
<i>Sindora siamensis</i> Teysm. Ex Miq. var. <i>maritima</i> (Pierre) K. & S. S. Lar.	3.23	4.67	30.73	39.50	6.67
<b>Mean</b>	3.37	6.16	31.82	47.97	5.45
<b>SD</b>	0.60	1.86	10.56	21.36	3.08



In the 2012 corridor site, 850 labelled trees of 25 species were monitored, 2 weeks after planting time to provide baseline data (Table 2). Initial results from the 2012 plots suggest that all species had higher than 64% survival. Fifteen species showed survival percentage higher than 80%, especially four species, which had the highest percent survival (94%) they were *Aquilaria malaccensis*, *Cinnamomum iners*, *Cinnamomum porrectum* and *Saraca indica*. Means of root collar diameter, height and crown width were 3.46 mm, 27.93 mm and 18.62 mm respectively.

### Education and Training

To deal with the problem of river bank erosion it was suggested to plant more *Ficus* spp trees along the river bank edges. Fig tree root systems are very dense and strong and are capable of reducing soil erosion. When the trees mature, their figs provide a valuable food source to birds and mammals, attracting seed dispersers into planted sites. Therefore we hired a fig expert, Dr. Cherdtrak Kuaraksa to provide a two day training course in the propagation of *Ficus* spp trees on March 29-30 and to encourage the nursery staff to grow more *Ficus* trees ready for planting next year. He provided intensive training in growing *Ficus* trees from seed, wildlings and cuttings. A novel technique he introduced was to extract *Ficus* seedlings from between the culms of oil palm trees, where *Ficus* seeds often become trapped and germinate. His recommendation were:

- In the case of dioecious figs, propagation from seed is recommended and .
- In the case of monoecious figs (strangler figs), collecting wildlings from palm trees is simple and effective.



Fig tree workshop. Extracting fig seeds (top left). Sowing seeds (top right). Dr. Cherdtrak shows staff how to identify *Ficus* species (bottom left). Extracting wildlings from palm trees (bottom right)



Species	Rai 1							Rai 2							All						
	RCD		Height		Canopy width		% survival	RCD		Height		Canopy width		% survival	RCD		Height		Canopy width		% survival
	Mean	SD	Mean	SD	Mean	SD		Mean	SD	Mean	SD	Mean	SD		Mean	SD	Mean	SD	Mean	SD	
<i>Garcinia hombroniana</i>	4.71	1.11	41.86	18.17	9.94	13.06	41.18	5.39	1.36	54.19	16.44	30.53	9.07	94.12	5.19	1.31	50.43	17.55	28.50	8.94	67.65
<i>Shorea roxburghii</i>	3.29	0.85	24.92	5.71	17.54	3.71	82.35	3.68	0.60	24.65	5.06	19.41	3.66	100.00	3.51	0.73	24.77	5.26	18.60	3.74	91.18
<i>Lepisanthes rubiginosa</i>	3.74	0.95	31.87	11.89	20.53	4.49	88.24	3.31	0.61	28.67	6.87	25.60	5.83	88.24	3.52	0.81	30.27	9.68	23.07	5.72	88.24
<i>Litsea grandis</i>	3.15	0.77	28.93	6.56	14.47	7.61	88.24	2.89	0.93	26.53	8.50	18.20	6.60	88.24	3.02	0.85	27.73	7.56	16.21	7.35	88.24
<i>Castanopsis schefferiana</i>	2.29	0.60	21.43	5.73	16.64	6.74	82.35	3.06	1.21	23.24	5.88	19.94	4.12	100.00	2.63	1.13	21.72	6.94	17.88	6.41	91.18
<i>Parkia timoriana</i>	2.35	0.62	21.00	6.31	17.36	5.32	64.71	2.44	0.39	21.13	4.18	17.13	4.92	94.12	2.32	0.66	20.32	6.35	16.61	5.88	79.41
<i>Alstonia macrophylla</i>	2.74	0.57	21.23	4.75	18.77	3.61	76.47	2.59	0.50	20.67	3.87	23.20	4.11	88.24	2.66	0.53	20.93	4.22	21.14	4.43	82.35
<i>Cinnamomum iners</i>	4.99	0.84	47.69	8.81	23.69	6.78	94.12	4.86	1.13	50.19	11.87	26.69	5.35	94.12	4.93	0.98	48.94	10.36	25.19	6.20	94.12
<i>Litsea salicifolia</i>	2.67	0.83	22.54	3.50	15.77	4.02	76.47	2.47	0.58	23.18	5.43	16.00	3.24	100.00	2.56	0.69	22.90	4.63	15.90	3.54	88.24
<i>Clausena excavata</i>	1.87	0.58	21.73	4.03	17.73	3.26	64.71	1.82	0.25	21.50	3.16	17.29	4.10	82.35	1.77	0.55	20.77	5.44	16.81	4.98	73.53
<i>Hopea avellanea</i>	4.01	1.37	36.79	9.59	24.07	6.88	82.35	4.14	0.87	25.94	9.43	18.69	8.25	94.12	4.08	1.11	31.00	10.84	21.20	7.99	88.24
<i>Radermachera pinnata</i>	3.86	1.30	15.82	5.93	12.82	6.27	64.71	5.17	1.46	13.79	4.77	22.50	6.77	82.35	4.42	1.74	14.12	5.94	17.54	8.69	73.53
<i>Nephelium hypoleucum</i>	3.27	0.84	28.91	6.19	11.36	5.14	64.71	3.55	0.51	32.71	7.06	11.64	5.83	82.35	3.43	0.67	31.04	6.83	11.52	5.42	73.53
<i>Aquilaria malaccensis</i>	3.53	0.75	28.94	2.11	15.00	7.61	94.12	3.43	0.65	27.09	4.51	16.56	3.46	94.12	3.48	0.69	28.02	3.59	15.78	5.87	94.12
<i>Eugenia cerasiformis</i>	3.82	1.29	26.54	9.25	21.08	7.04	76.47	3.79	0.74	30.00	6.48	19.13	6.10	88.24	3.80	1.01	28.39	7.93	20.04	6.51	82.35
<i>Saraca indica</i>	4.15	1.26	28.20	7.74	18.27	5.08	88.24	4.09	0.65	30.71	6.69	22.71	5.31	100.00	4.12	0.97	29.53	7.19	20.63	5.59	94.12
<i>Cinnamomum porrectum</i>	3.91	0.59	30.27	5.11	16.93	4.08	88.24	3.61	0.67	30.38	5.13	19.76	4.02	100.00	3.75	0.64	30.33	5.03	18.44	4.23	94.12
<i>Eugenia oleina</i>	2.86	1.11	20.71	5.14	19.79	5.56	82.35	2.65	0.44	17.60	4.67	16.30	8.15	58.82	2.78	0.89	19.42	5.09	18.33	6.82	70.59
<i>Morinda elliptica</i>	3.27	0.90	23.30	4.40	16.80	4.89	58.82	3.90	1.09	30.08	8.78	17.17	7.02	70.59	3.62	1.03	27.00	7.79	17.00	6.01	64.71
<i>Mesua ferrea</i>	4.93	0.86	35.10	6.66	15.30	3.06	58.82	5.03	0.91	38.00	5.83	16.53	7.68	88.24	4.99	0.87	36.84	6.21	16.04	6.19	73.53
<i>Palaquium obovatum</i>	3.45	1.13	36.36	5.12	19.91	10.34	94.12	3.46	0.82	31.40	6.66	25.47	6.46	88.24	3.46	0.94	33.50	6.45	23.12	8.60	91.18
<i>Hopea odorata</i>	3.51	1.12	30.00	10.66	21.13	4.98	70.59	3.69	1.35	36.07	10.44	23.93	8.67	82.35	3.59	1.21	32.83	10.82	22.43	6.97	76.47
<i>Garcinia merguensis</i>	2.27	0.52	21.75	3.77	9.75	4.25	82.35	2.53	0.49	22.57	5.09	14.27	3.88	88.24	2.41	0.51	22.20	4.49	12.26	4.58	85.29
Unknown	3.42	1.55	28.07	9.40	15.43	6.19	70.59	3.16	1.18	28.38	8.41	14.88	6.38	94.12	3.28	1.34	28.23	8.73	15.13	6.19	82.35

<i>Scaphium scaphigerum</i>	3.17	0.37	16.00	2.95	16.33	2.42	70.59	3.06	0.49	18.00	3.37	16.21	4.64	82.35	3.11	0.43	17.08	3.29	16.27	3.72	76.47
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**Table 7 Results of corridor planting in 2012 plot**

The “Treasure Tree Program” did not take place as usual in the last six month (April-September 2012) due to problems with communication between the Krabi staff and the project partner BCST, funding, since BCST carried the budget line for education. However, we managed to work closely with APE (Table 6) and the local conservation group (Table 7) on various education activities. In addition, we collaborated with the Rachaburi Electricity Generating Holding PCL., to work with local schools on the project “Smiling seedlings” (Table 8).

**Table 8 Education events with APE and Volunteers Abroad**

No.	Date	Activities	Location	Number of participants
1	12 March 2012	Nursery care (weeding and fertilizing)	FORRU nursery	25
2	7 May 2012	Hardening seedlings (20 days before planting)	FORRU nursery	19
3	25 May 2012	Site preparation before planting (hole digging and putting bamboo stakes)	Corridor site 2012	30
4	28 May 2012	Corridor planting	Corridor site 2012	24
5	4 June 2012	Planting along village road	Village no.8, Klong Thom Nue Sub-district	20
6	18 June 2012	Teaching nursery works (e.g. potting technique, grading, seed germination and seed pre-treatment)	Aao Nam Mao nusery at Aau Pra-Nang Sub-district, Muang, Krabi	22
7	3 July 2012	Seed collection and voucher specimen	Road to Pan Din Samur village, Klong Thom Nue Sub-district	22
8	9 July 2012	Site preparation for replanting 4 rais in plot 2009	Plot 2009	35
9	13 August 2012	Nursery care (weeding, fertilizing and cleaning)	FORRU nursery	22
10	20 August 2012	Plot maintenance (fertilizer application)	Corridor site 2012	22

**Table 9 Education activities with the local conservation group**

No.	Date	Activities	Location	Number of participants
1	6 February 2012	Give lecture on restoration work	Huay Yoong Agricultural Collage, Nue Klong District, Krabi	25
2	17 June 2012	Site visit with students from Rajamangala University of Technology Srivijaya (Trang Campus)	Plot 2009	15
3	14 July 2012	Give lecture on framework species method to students from Rajamangala University of Technology Srivijaya (Trang Campus)	Plot 2009	74

**Table 10 Education activities with Ratchaburi Electricity Generating Holding PCL.**

No.	Date	Activities	Location	Number of participants
1	1 August 2012	Teaching the values of native tree species and planting technique	Klong Thom Nue Sub-district, Klong Thom District, Krabi	70
2	3 August 2012	Teaching the values of native tree species and planting technique	Na Kayad School, Na Kayad Sub-district, Kuan Kanoon District, Phattalung	200
3	10 August 2012	Teaching the values of native tree species and planting technique	Rad Rang Sun School, Klong Thom, Krabi	1,000



FORRU and APE staffs carried out education activities with school kids, local villagers, and volunteers from the Project Abroad.



## March workshop

FORRU-CMU and APE staff helped to organize the annual project workshop which aimed to facilitate links between the established local conservation group and land owners within identified corridor areas, and to promote the reforestation scheme with local land users, including the potential ecosystem benefits was held on 19-21 March 2012, at the educational centre in Ban Bang Tiew. The program is shown in Table 9. Since this event did not have a budget line in the original project proposal, most of the funding for it came out of the FORRU-CMU part of the grant, paid for mostly with money left over from the previous project. BCST staff were responsible for reporting on the outcomes of the meetings.

**Table 11 Workshop program 19-21 March 2012**

Program for Workshop on Habitat Restoration for Gurney's Pitta: Planning Forest Corridors					
Day	Date	Time	Subject	Location	Facilitator(s)
MON	19/3/12	8:30 AM	Registration	Educational Centre	FORRU-Krabi/APE
		9:00 AM	Opening remarks	"	Wildlife Sanctuary Chief
		9:20 AM	Introductions – expectations. Objectives.	"	FORRU-CMU
		9:40 AM	Current works on conservation - WS - Reserved Forest - BCST	"	WS/Reserved Forest/BCST
		10:40 AM	Coffee Break		FORRU-Krabi
		11:00 AM	Current works on conservation (continue) - FORRU - APE - Local Conservation Group	"	FORRU
		12:00 PM	Lunch	"	FORRU-Krabi
		1:00 PM	Orientation – Target planting sites 2012	"	FORRU
		1:30 PM	Discussion with stakeholders	"	FORRU
		4:00 PM	Summary of target site	"	FORRU
		4:30 PM	Visit agroforestry site	Mr.Somboon site	Mr.Somboon
TUE	20/3/12	8:30 AM	Registration	Educational Centre	FORRU-Krabi/ APE
		9:00 AM	Field trip to target sites for planting 2012	Target sites	All
WED	21/3/12	9:00 AM	Working group on education matters	WSHQ	BCST
		12:00 PM	Lunch	Morakot Resort	FORRU/BCST

## Curriculum development

After the workshop in March 2012, there was one major meeting among partner organizations to progress about curriculum development for local primary schools. BCST suggested an expert (Mr.Wachara) to be the key person on this matter, especially producing educational materials and activities. The objective of this curriculum was to raise awareness on forest and wildlife conservation among young generations with these 5 topics as a tool, they were 1) new way of teaching 2) biology and environment 3) Gurney's Pitta 4) planting forest for all and 5) climate change.



Steve Elliott and Panitnard Tunjai 9/10/12