

ANNUAL REPORT 2009

**TANGKULAP-SG. PINANGAH FOREST
RESERVE – FMU 17A**

Tangkulap Forest Reserve and part of Sg. Pinangah Forest Reserve forms Part 'A' of FMU 17 and covers an area of 50,070 hectares. It is under the management of Deramakot Forestry District of the Sabah Forestry Department. It is made up of 91 compartments with the following forest functions:

1) Conservation	1,909 ha (5 compartments)
2) Production (NFM)	37,396 ha (66 compartments)
3) Production (Intensive Forest Restoration)	10,715 ha (20 compartments)

According to the approved 10-year Forest Management Plan (2006-2015) and Annual Work Plan for the year 2009, the major forest management activities are:

- Silviculture Tending
- Forest Rehabilitation
 - Intensive Forest Restoration involving harvesting for site preparation
 - Enrichment Planting
- Protection (against poaching, illegal logging and encroachment)

2 private companies have been awarded long term licences to carry out Intensive Forest Restoration and 1 private company, a contract to do tending (silviculture) and enrichment planting. They are:

- Lebihasil S/B (SFMLA 01/2005)
Compartments 55 (545 ha) and 56 (627 ha)
- Maxland S/B (SFMLA 01/2007)
Compartments 70 (655 ha) and 71 (322 ha)
- Bumi Hijau S/B
4,000 ha annually (tending)
250 ha annually (enrichment planting)

Under the 9th Malaysia Plan (2006 – 2010), the State Government of Sabah has allocated RM18,998,600 to manage FMU 17A under SFM. For the year 2009, a budget of RM3,868,290 was approved.

It is also planned for FMU 17A to be certified under the Forest Stewardship Council (FSC) in 2010. Pre-assessment by the Global Forest Services (GFS), to identify gaps prior to auditing for certification has been carried out and all gaps have been addressed. The Society Generale De Surveillance (SGS-Malaysia), the chosen certifying body (CB) recommended that FMU 17A be placed as an extension to the Deramakot Forest Reserve for forest certification. However, SGS has imposed a self moratorium and cannot certify new forests and the idea was later dropped because of implications it will bring to the already FSC certified forest of DFR. Other CBs

considered to carry out auditing for FSC certification of FMU 17A are, SMARTWOOD and the Scientific Certification Systems (SCS). Both CBs are accredited by the FSC.

FOREST OPERATIONS

1. HARVESTING

Although there is no harvesting as planned in the FMP, site preparation for Intensive Forest Restoration which involves harvesting are carried out in compartments 55, 56, 70 and 71, by Lebihasil S/B-SFMLA 01/2005 and Maxland S/B-SFMLA 01/2007 respectively (Table 1).

Compartment	Size (ha)	Volume (m ³)	Royalty (RM)
55 & 56	1,037	25,193.09	1,397,259.76
70 & 71	897	13,898.86	785,694.41
Total	1,934	39,091.95	2,182,954.17

Table 1. Harvesting by Lebihasil S/B and Maxland S/B

2. TENDING (SILVICULTURE)

The objective of silviculture tending is to liberate and enhance growth of future crop trees and bring them to harvestable size at the shortest time possible.

As of 2009, **19,438 ha** have been tended at a cost of **RM6,803,250**.

Year	Compartment No	Area Treated (ha)	Contract Fee (RM)
2004	12	143	50,000
2005	12,13,14,15	2,000	700,000
2006	1,2,3,16,32,33,49	4,000	1,400,000
2007	32,33,49,50,60,51,48,52 (AWP 2007)	4,000	1,400,000
	52,36,46 (addition)	1,295	453,250
2008	36,46,45,44,7,22,23,37	4,000	1,400,000
2009	5,6,8,9,24,25,26,40	4,000	1,400,000
TOTAL		19,438	6,803,250

Table 2. Silviculture tending by Bumi Hijau S/B

3. INTENSIVE FOREST RESTORATION

3.1 Lebihhasil S/B (SFMLA 01/2005)



Lebihhasil S/B SFMLA signage



Intensive Forest Restoration in compartment 56 by Lebihhasil S/B

Except for “Block F” in compartment 55, about 781 hectares of the SFMLA licence area has been virtually planted with fast growing indigenous tree species (Table 3).

Compt. #	Planting Block	Size (ha)	Species	Status
55	A	97	Batai	Planting completed
	B	100	Binuang & Laran	Planting completed (Nursery/Saw mill/Campsite)
	C	56	Binuang & Laran	Planting completed
	D	53	Binuang, Laran & Magas	Planting completed
	E	59	Batai, Laran & Binuang	Planting completed
	F	50	<i>Khaya ivorensi</i> , Medang banking, Laran, Binuang, Magas, <i>Hoop pine (Araucaria cunninghamii)</i> & <i>Klinki pine (Araucaria hunstenii)</i>	Only 12.4 ha planted (Research)
56	A	146	Binuang, Laran & Magas	Planting completed
	B	86	Binuang, Laran & Magas	Planting completed
	C	134	Binuang, Laran & Magas	Planting completed
TOTAL		781		

Table 3. Intensive Forest Restoration in compartment 55 and 56 by Lebihasil S/B



2.5 year old (18 cm DBH) *Paraserianthes falcataria* (Batai), compartment 55, FMU 17A

3.2 Maxland S/B (SFMLA 01/2007)



Maxland S/B SFMLA signage



Mosaic planting in compartment 71, by Maxland S/B

The “Mosaic Planting” method as promoted by Maxland S/B is beneficial to biodiversity in a degraded landscape. Only about 389 hectares (Table 4) of the 977 hectares (compartment 70 and 71) SFMLA licence area are planted. Only fast growing indigenous tree species such as Laran, Binuang and Magas are planted. Gaharu is also planted for agarwood.

Compt. #	Planting Block	Size (ha)	Species	Status
70 & 71	A, B, C, D, E, F, H, I, J, K, L, M & N	164.90	<i>Paraserianthes falcataria</i>	Planting completed
		171.54	Laran	
		16.84	Binuang	
		14.33	Magas	
		9.81	<i>Khaya ivorensis</i>	
		11.76	Gaharu	
TOTAL		389.18		

Table 4. Intensive Forest Restoration in Compartments 70 and 71 by Maxland S/B



2 month old Binuang, compartment 70, FMU 17A

4. ENRICHMENT PLANTING

2,400 hectares are required under the Forest Management Plan for enrichment planting. As of 2009, a total area of 553 hectares have been planted (Table 5) with mixed Dipterocarps, fruit trees and fast growing indigenous tree species.

Compt. #	Planting Block	Size (ha)	Species	Date Planted
47	A	37	Mixed (Dipterocarps & fast growing indigenous)	Feb., 2007
47		241.16	Mixed (Dipterocarps & fast growing indigenous)	Feb., 2008
35		258.84	Mixed (Dipterocarps & fast growing indigenous)	Dis., 2008 & Feb., 2009
15		4	Sentul, Bako-bako, Keranji, Obah, Mata kucing, Kayu malam, Kerudung dan Sengkuang	Nov., 2006
22		12	Blnuang, Laran & Sepat	Nov., 2006
TOTAL		553		

Table 5. Enrichment planting

5. OCCUPATION PERMITS (OP)

17 occupation permits were issued for the year 2009. Roads for log extraction and log yards for temporary log storage are the two main purpose for the application of OPs in FMU 17A. A total fee of **RM 399,414.08** has been collected from 2005 to 2009.

Year	Fees (RM)
2005	86,914.08
2006	81,500.00
2007	91,750.00
2008	63,500.00
2009	75,750.00
Total	399,414.08

Table 6. Revenue collected from "Occupation Permit"



"Occupation Permit" JP(DFR) OP 02/2004, Rakyat Berjaya S/B, for log storage in FMU 17A

Table 7. Occupation Permit Issued (2009)

No.	OP #	OP OWNER	EFFECTIVE PERIOD	PURPOSE	AREA (ha)
1.	JP(DFR) OP 01/2004	Rakyat Berjaya Sdn. Bhd.	12.03.2009-11.03.2010	Log extraction	37
2.	JP(DFR) OP 02/2004	Rakyat Berjaya Sdn. Bhd.	19.08.2009-18.08.2010	Log yard	3.54
3.	JP(DFR) OP 01/2005	Rakyat Berjaya Sdn. Bhd.	01.01.2010-31.12.2010	Log extraction	79.5
4.	JP(DFR) OP 02/2005	Kontraktor Malaysia	01.04.2009-31.03.2010	Saw mill/log yard	2.177
5.	JP(DFR) OP 03/2005	Wajakaya Sdn. Bhd.	04.03.2009-03.03.2010	Extraction of oil palm produce	24
6.	JP(DFR) OP 04/2005	Rakyat Berjaya Sdn. Bhd.	01.09.2009-31.08.2010	Camp Site	0.436
7.	JP(DFR) OP 05/2005	Rakyat Berjaya Sdn. Bhd.	01.09.2009-31.08.2010	Log yard	1.197
8.	JP(DFR) OP 08/2005	Rakyat Berjaya Sdn. Bhd.	01.09.2009-31.08.2010	Log yard	1.01
9.	JP(DFR) OP 01/2006	Kontraktor Malaysia	21.03.2009-20.03.2010	Nursery	1.26
10.	JP(DFR) OP 02/2006	Bumi Hijau	23.03.2009-22.03.2010	Office/Nursery	2.0
11.	JP(DFR) OP 03/2006	Rakyat Berjaya Sdn. Bhd.	20.04.2009-19.04.2010	Workshop/Camp	1.7
12.	JP(DFR) OP 04/2006	Rakyat Berjaya Sdn. Bhd.	23.03.2009-22.03.2010	G/keeper's house	1.08
13.	JP(DFR) OP 01/2007	Lebihasil S/B	11.04.2009-10.04.2010	Saw mill/Camp/Log yard	1.99
14.	JP(DFR) OP 02/2007	Lebihasil S/B	11.04.2009-10.04.2010	Nursery	0.99
15.	JP(DFR) OP 03/2007	Rakyat Berjaya Sdn. Bhd.	22.05.2009-21.05.2010	Log yard	1.80
16.	JP(DFR) OP 04/2007	Maxland S/B	28.05.2009-27.05.2010	Camp/Nursery	2.4
17.	JP(DFR) OP 01/2009	Syt. Saricom Construction	01.07.2009-30.06.2010	Camp	0.53
TOTAL					162.61

6. WILDLIFE CONSERVATION AND HIGH CONSERVATION VALUES

6.1 Camera Trapping

Tracking Carnivores In Tangkulap Forest Reserve

By Andreas Wilting, Azlan bin Mohamed & Peter Lagan

The ConCaSa (Conservation of Carnivores in Sabah) project team headed by Andreas Wilting and assisted by Azlan bin Mohamad (WWF/UMS) shifted to Tangkulap Forest Reserve in February 2009, after having completed wildlife surveys in DFR using remote camera-traps and night spotlighting. Right after setting up the cameras, some astonishing photographs of the Sunda clouded leopard (*Neofelis diardi*) and marbled cat (*Pardofelis marmorata*), were retrieved there. This species was observed during night spotlight surveys but never photographed in Deramakot Forest Reserve (DFR).

In the following months that ensued, the team collected over 3,500 photographs of 32 mammalian species (see Table 1) from camera-trappings. A total distance of about 500km was covered by night spotlighting, and 107 wildlife encounters including 18 different species, recorded. Compared to DFR, the total encounter rate of mammals with camera-trappings and night spotlight surveys was lower, which might suggest that management practices in the past could have influenced the occurrence and abundance of several species. Nevertheless, it needs to be pointed out that there might be other reasons for this and that a closer wildlife species-specific survey and a comprehensive data analysis is needed to draw any conclusions.

In Tangkulap Forest Reserve we photographed four clouded leopards (two males and two females). The females were only recorded once during night spotlight survey and twice during systematic camera-trapping. The males are often trapped in our cameras and one adult male was photographed on 18 occasions and its minimum home range exceeds 65 km². Such a home range is already larger than the ones of clouded leopards estimated by radio-telemetry studies in Thailand. During one of the night spotlight surveys, a female clouded leopard with two young cubs were spotted. The team was able to videotape this brood for about 10 minutes and this video is even more exciting than the one in DFR (see "A Short Film Debut Of A Sunda Clouded Leopard In Deramakot Forest Reserve").

Among the most threatened species recorded in Tangkulap Forest Reserve were the endangered flat-headed cat and otter civet, two of the lowland specialist also regularly reported/recorded in the north-western part of DFR. Interestingly the photographs were retrieved from camera-traps deployed in the north and south of the Tangkulap Besar river and in water ponding areas, giving further testimony that they depend largely on water resources and wetland habitats.

Only one photograph of a marbled cat was taken throughout the course of the wildlife survey in Tangkulap Forest Reserve. Although the marbled cat was just photographed once, we were able to encounter this species during the night spotlight

surveys. On all occasions (except one), the marbled cat was observed resting on a bough high up in the tree canopy. This finding supports the assumption that marbled cats might be predominantly arboreal. So it comes as no surprise that it was hardly trapped by cameras deployed on the ground.

One of the most interesting species that can represent the differences between Tangkulap and Deramakot forest reserves at its best, is the banded civet (*Hemigalus derbyanus*). This species is almost exclusively recorded in closed canopy forest. It is regularly photographed in Deramakot, but is recorded on a much lower frequency in Tangkulap. These findings strongly support the earlier accounts of this species, which describe it as a ground dwelling species living in a close canopy dipterocarp forest. As this species seem to be more sensitive to disturbances than most carnivores, it could be a very good indicator species for forest disturbances.

The sun bear, orangutans, banteng and elephants also sauntered regularly pass the camera-traps. The presence of elephants led to several cameras being trampled and destroyed.

The lower encounter rate of wildlife species especially the forest dwelling specialists, like the banded civet, might be taken as an indication of impacts of previous management practises. Nevertheless, Tangkulap Forest Reserve is regenerating and it could be said that the abundance of these sensitive species will increase again, especially as individuals from a “source” population in DFR can migrate to the forests in Tangkulap Forest Reserve. Similarly in Deramakot, Tangkulap is one of the last strongholds for the lowland water-dependent species like the endangered flat-headed cat and the otter civet, and a long-term sustainable forest management undertaken by the Sabah Forestry Department will ensure that these species can survive in the Deramakot/Tangkulap forest block over the next hundreds of years.

Table 8: Mammal species recorded in Tangkulap Forest Reserve between February and October 2009.

Scientific name	Common name	Type of record ¹
Carnivora		
<i>Neofelis diardi</i>	Sunda Clouded Leopard	CT & NS
<i>Pardofelis marmorata</i>	Marbled Cat	CT & NS
<i>Prionailurus bengalensis</i>	Leopard Cat	CT & NS
<i>Prionailurus planiceps</i>	Flat-Headed Cat	CT
<i>Viverra tangalunga</i>	Malay Civet	CT & NS
<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	CT & NS
<i>Arctogalidia trivirgata</i>	Small-Toothed Palm Civet	NS
<i>Hemigalus derbyanus</i>	Banded Civet	CT
<i>Cynogale bennettii</i>	Otter Civet	CT

<i>Arctictis binturong</i>	Bearcat	DS
<i>Aonyx cinerea</i>	Asian small-clawed otter	CT
<i>Lutrogale perspicillata</i>	Smooth coated otter	CT
<i>Martes flavigula</i>	Yellow-throated marten	CT
<i>Mydaus javanensis</i>	Sunda (Malay) stink-badger	CT & NS
<i>Herpestes semitorquatus</i>	Collared mongoose	CT
<i>Herpestes brachyurus</i>	Short-tailed mongoose	CT & DS
<i>Helarctos malayanus</i>	Sun bear	CT

Rodentia (only porcupines & flying squirrels)

<i>Hystrix brachyura</i>	Malayan (common) porcupine	CT & NS
<i>Hystrix crassispines</i>	Thick-spined porcupine	CT & NS
<i>Trichys fasciculata</i>	Long-tailed porcupine	CT & NS
<i>Petaurista petaurista</i>	Common (Red) giant flying squirrel	NS
<i>Aeromys thomasi</i>	Thomas's flying squirrel	NS
<i>Aeromys tephromelas</i>	Black flying squirrel	NS

Primates

<i>Nycticebus coucang</i>	Greater slow loris	CT & NS
<i>Presbytis rubicunda</i>	Maroon leaf monkey (langur)	DS
<i>Macaca nemestrina</i>	Southern pig-tailed macaque	CT & DS
<i>Macaca fascicularis</i>	Crab-eating (long-tailed) macaque	CT & DS
<i>Pongo pygmaeus</i>	Orang-utan	CT & DS

Artiodactyla

<i>Sus barbatus</i>	Bearded pig	CT, NS & DS
<i>Rusa unicolor</i>	Sambar deer	CT, NS & DS
<i>Muntiacus atherodes</i>	Bornean yellow muntjac	CT
<i>Muntiacus muntjac</i>	Southern red muntjac	CT & DS
<i>Tragulus napu</i>	Greater mouse-deer	CT & NS
<i>Tragulus javanicus</i>	Lesser mouse-deer	CT & NS
<i>Bos javanicus</i>	Banteng	CT

Chiroptera (only flying fox)

<i>Pteropus vampyrus</i>	Large flying fox	NS
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Insectivora

<i>Echinosorex gymnura</i>	Moonrat	CT & NS
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Dermoptera

<i>Galeopterus variegatus</i>	Flying lemur (Colugo)	NS
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Pholidota

<i>Manis javanicus</i>	Malayan pangolin	CT
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Proboscidae

<i>Elephas maximus</i>	Asian elephant	CT, NS & DS
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¹ CT = Camera-trapping, NS = Night surveys observation, DS = Day surveys observation



Banded civet



Marbled cat



Pangolin



Slow loris



Yellow-throated marten



Sun bear

Some Wildlife Species Caught on Camera in FMU 17A

Photo Credits: A. Wilting & A. Muhamed

Deramakot-Tangkulap-Segaliud-Lokan Forest Complex – One of The Last Frontiers for the Endangered Flat-headed Cat

By Andreas Wilting, Azlan bin Mohamed & Peter Lagan

One of the smallest and most enigmatic species of cat is now threatened with extinction. According to our study, over 70% of the predicted flat-headed cat's habitat throughout South-East Asia has undergone conversion (agriculture), and just 16% of its current range is now protected. We, in collaboration with a group of international scientists have published in the PLoS ONE journal, a detail report on the decline of the cat's range.

Having never been intensively studied in its natural habitat, the tiny flat-headed cat (1.5 to 2 kg) is among the least understood of all the wild cat species. It has webbed feet, believed to be a unique adaptation to enable it to hunt fish and crabs in wetland habitats such as lowland river banks and flooded peat forests.

In an attempt to estimate how the species is faring, an international research team, gathered all known information about where the cat is thought to live, including sightings, pictures taken by camera-traps and museum specimens. These records are then used to create a computer model that predicts the cat's historical and current distribution.



Flat-headed cat (Photo credits: H. Matsubayasi)

We found that large tracts of previously suitable habitat for the flat-headed cat have already been converted to agricultural land. Even more crucial for the species' survival is that, just 16% of its historical range is fully protected according to the criteria laid down by the International Union for the Conservation of Nature (IUCN). Other areas that are also protected are the national parks, which in South-

East Asia tend to be located at higher elevations where the flat-headed cat is not thought to roam.

We identified 19 key localities throughout the distribution range highlighted by the model as vital for the long-term survival of this rare species. One of these hot spots is the Deramakot-Tangkulap-Segaliud Lokan Forest Complex and the Malua Forest Reserve. This contiguous tract of forests of High Conservation Values (HCVs) where sustainable forest management is practised, will ensure that the HCVs will not be degraded further.

6.2 Opportunistic Sightings

FMU 17A supports a variety of wildlife as evident in records of sightings (Opportunistic Sightings) camera trappings and Orang utan census. 53 wildlife species were identified, and 16 of these species are either listed as endangered or threatened by the International Union for the Conservation of Nature (IUCN). Refer to Table 9, Opportunistic Sightings 2009.

Table 9. Opportunistic Sightings (2009)

SPECIES AND FREQUENCY OF SIGHTINGS/ENCOUNTERS	
LOCALLY THREATENED	
1. Orangutan (<i>Pongo pygmaeus</i>)	10
2. Pygmy Elephant	154
3. Tembadau / Banteng (<i>Bos javanicus</i>)	2
4. Clouded Leopard (<i>Neofelis diardi</i>)	6
5. Proboscis Monkey (<i>Nasalis larvatus</i>)	1
6. Bornean Gibbon (<i>Hylobates muelleri</i>)	7
7. Red Leaf Monkey (<i>Presbytis rubicunda</i>)	3
8. Helmeted Hornbill (<i>Rhinoplax vigil</i>)	8
9. Flat-headed cat (<i>Prionailurus planiceps</i>)	2
10. Otter civet (<i>Cynogale bennettii</i>)	1
11. Binturong or Bearcat (<i>Artictis binturong</i>)	3
12. Sun bear (<i>Helarctos malayanus</i>)	1
13. Smooth-coated otter (<i>Lutrogale perspicillata</i>)	2
14. Marbled cat (<i>Pardofelis marmorata</i>)	1
15. Moonrat (<i>Echinosorex gymnura</i>)	5
16. Great Argus (<i>Argysianus argus</i>)	10
COMMON	
17. Sambar deer (<i>Cervus unicolor</i>)	93
18. Bornean yellow muntjac (<i>Muntiacus atherodes</i>)	17
19. Bearded pig (<i>Sus barbatus</i>)	101
20. Lesser mouse-deer (<i>Traulus javanicus</i>)	55
21. Greater mouse-deer (<i>Tragulus napu</i>)	43
22. Southern red muntjac (<i>Muntiacus muntjac</i>)	7
23. Leopard cat (<i>Felis bengalensis</i>)	68
24. Banded civet (<i>Hemigalus derbyanus</i>)	9
25. Malay civet (<i>Viverra zangalunga</i>)	134
26. Common palm civet (<i>Paradoxurus hermaphroditus</i>)	83
27. Malay badger (<i>Mydaus javanensis</i>)	46
28. Oriental small-clawed otter (<i>Aonyx (Amblonyx) cinerea</i>)	5
29. Long-tailed macaque (<i>Macaca fascicularis</i>)	28
30. Pig-tailed macaque (<i>Macaca nemestrina</i>)	43
31. Small-toothed palm civet (<i>Arctogalidia trivirgata</i>)	10
32. Thick-spined porcupine (<i>Thecurus crassispinis</i>)	25
33. Pangolin (<i>Manis javanica</i>)	12
34. Rhinoceros Hornbill (<i>Buceros rhinoceros</i>)	79
35. Giant (Red) flying squirrel (<i>Petaurista petaurista</i>)	8
36. Yellow-throated marten (<i>Martes flavigula</i>)	3
37. Reticulated Python	14
38. Flying Lemur/Colugo (<i>Galeopterus variegates</i>)	3
39. Crested Serpent-Eagle (<i>Spirionis cheela</i>)	73
40. Black Eagle (<i>Ictinaetus malayensis</i>)	24
41. Brown wood owl (<i>Strix leptogrammica</i>)	14
42. Oriental darter	28

43. Large flying fox (<i>Pteropus vampyrus</i>)	5
44. Slow loris (<i>Nycticebus coucang</i>)	3
45. Crested Fireback	15
46. Black cobra	3
47. Monitor lizard	53
48. Collared mongoose (<i>Herpestes semitorquatus</i>)	2
49. Short-tailed mongoose (<i>Herpestes brachyurus</i>)	3
50. Common porcupine (<i>Hystrix brachyuran</i>)	17
51. Long-tailed porcupine (<i>Trichys fasciculata</i>)	9
52. Western tarsier (<i>Tarsius bancanus</i>)	5
53. Banded linsang (<i>Prionodon linsang</i>)	3

6.3 Orang utan

The aerial census methodology by counting Orang utan nests from a helicopter along permanent transects, is being used. This exercise is carried out twice a year and the results are shown in **Table 10**.

Table 10. Orang utan population (Aerial Orang Utan Nest Census)

Date of Census	# of Individuals/km ²	# of Orang-utan in Tangkulap FR
June '05	0.84	189
November '05	0.93	210
June '06	1.01	228
November '06	0.9	203
August '07	0.83	187
November '07	1.16	262
May '08	1.48	334
November '08	2.07	467
May '09	1.65	372
November '09	2.00	451



Nest of an Orangutan, FMU17A

7. PROTECTION AND ENFORCEMENT

Encroachment – Oil Palm

Compartment 76 (655 ha) within the Sungai Pinangah Forest Reserve, which is part of FMU 17A was encroached by Syarikat Perladangan M & A. About 35 hectares of gazetted forestland were illegally cleared to plant oil palm. The oil palm were later destroyed and fines meted out. Reforestation of the encroached area will be carried out in 2010.



Satellite image and map of area encroached.



Uprooting and destruction of oil palm in compartment 76, FMU 17A



Bird's eye view of encroached area in compartment 76, FMU 17A, after the destruction of illegal oil palm

8. COST AND PROFIT

The government allocated budget for the year is RM3,868,290 which is also the actual costs of maintaining all forest management activities in FMU 17A (refer **Pie Chart**). Revenue from Occupation Permit fees and royalties is RM2,258,704.17.

