

## Appendix 6: Number of biological collection stored by governmental institutions and ITBC-UMS

Table 6-1. Number of collection in ITBC-UMS

Taxa	No. of collection	No. of species identified
Mammals	509	45 species
Birds	494	101 species
Reptiles	200	20 species
Amphibian	1,404	64 species
Freshwater fishes	493	40 species
Insects		
Odonata	1,764	38
Orthoptera	3,500	74
Phasmida	200	26
Dermaptera	100	0
Mantodea	300	0
Blattaria	600	12
Homoptera	550	50
Heteroptera	1,200	4
Neuroptera	110	0
Diptera	700	0
Lepidoptera	4,862	370
Coleoptera	4,500	50
Hymenoptera (except ants)	2,000	19
Isoptera	1,000 +	-
Ants	10,363	-
Molluscs	2000 samples (20,000 specimens)	-
Angiosperm (flowering plants)	1,057	-
Fern	530	-
Bryophytes	1,100	-

Source: Information from ITBC-UMS and Mr. Itoh (personal communication)

Table 6-2-1. Number of collection in Zoological Museum at Kinabalu Parks of Sabah Parks

No.	Taxa	No. of family	No. of species	No. of specimens			Total
				Wet	Dry	Exhibit	
1	Mammals	25	106	926	382	92	1,400
2	Birds	38	242	671	863	94	1,628
3	Reptiles (lizards)	-	45	625	-	6	631
4	Reptiles (snakes)	7	92	377	18	4	399
5	Reptiles (tortoises)	-	6	22	-	6	28
6	Amphibians (frogs)	5	87	2,830	-	-	2,830
7	Amphibians (tadpoles)	5	34	2,572	-	-	2,572
8	Fishes (freshwater)	7	49	2,273	-	-	2,273
9	Fishes (marine)	-	-	-	-	-	-
10	Invertebrates (crabs)	-	-	112	-	-	112
11	Invertebrates (prawns)	-	2	88	-	-	88
12	Invertebrates (snails)	-	10	8	108	-	116
13	Skeletons and skins	8	17	-	-34	-	34
	Total	95	690	10,054	1,405	202	12,111

Table 6-2-2. Number of collection in Herbarium at Kinabalu Parks of Sabah Parks

No.	Class/group	No. of family	No. of genus	No. of species	No. of specimens		Total
					Herbarium	PEK spp *	
1	Angiosperm	166	960	2,058	12,885	5,928	18,813
2	Orchidaceae	1	88	311	1,207	162	1,369
3	Gymnosperm	6	12	30	303	37	340
4	Arecaceae	1	20	86	316	851	1,167
5	Ferns	34	156	380	1,553	100	1,653
6	Nepenthaceae	1	1	30	272	12	284
7	Fungi	1	47	32	152	-	152
8	Moss	18	25	3	54	-	54
9	Lichen	33	135	281	982	-	982
	Total	(261)	(1,444)	(3,211)	17,724	7,090	24,814

\* PEK: Project Ethnobotany Kinabalu

Table 6-2-3. Number of collection in Entomological Museum at Kinabalu Parks of Sabah Parks

No.	Order/group	No. of specimens			Total
		Dry	Wet	Exhibit	
1	Coleoptera	13,916	1,473	95	15,484
2	Lepidoptera	13,334	-	161	13,495
3	Hymenoptera	3,586	6,917	64	10,567
4	Homoptera	838	49	7	894
5	Hemiptera	945	107	5	1,057
6	Orthoptera	621	1	14	636
7	Diptera	269	341	-	610
8	Odonata	438	33	8	524
9	Dictyoptera	251	95	3	349
10	Phasmida	213	-	16	229
11	Isoptera	66	119	-	185
12	Megalauptera	47	7	-	54
13	Neuroptera	15	-	-	15
14	Dermaptera	12	-	-	12
15	Mecoptera	3	-	-	3
16	Ephemeroptera	2	2	-	4
17	Microlepidoptera	21	-	-	21
18	Aquatic insects	176	80	-	256
19	(Specimens from Japan)	362	-	-	362
	Total	35,160	9,224	373	44,757

Source: Table 6-2-1~Table 6-2-3: Information from Sabah Parks

Table 6-3. Number of collection in Forest Research Centre in Sandakan

Taxa	No. of Collection
Plants specimens in herbarium	± 240,00
Insect specimens in entomology division	± 110,000 (4,800 identified species)

Source: Brochure of Forest Research Centre (FRC)

Table 6-4. Number of collection in Sabah Museum in 1965 and 1994

Collection field	Collection items	No. of Collection	
		1965	1994
Biology	Zoology collections	300	5,340
	Ethnobotany collections	-	12,480
Ethnography and Archaeology	Ethnography collections	780	7,265
	Archaeology and prehistory collections	9,430	58,630
	Borneo and Malaysiana collections	-	16,000
Others	Science and technology collections	-	410
	Photography collections	4,000	32,590

Source: Sintiong Gelet (1996), Sabah Museum Journal Vol. 1: 63-99

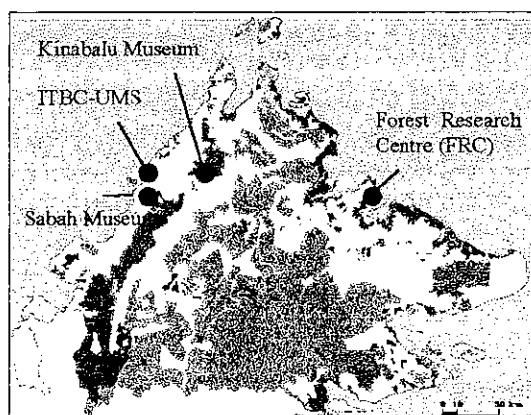


Figure 6-1. Location of major institutes and museum for biological collection

## Appendix 7: Major facilities for field research in Sabah

Table 7-1. Major field research stations and administration stations in Sabah

No	Area and station	Management organization	Note
1	Danum valley field centre	Danum Valley Management Committee	Supported by the Royal Society and the Sabah Foundation. UMS has accommodations.
2	Maliau Basin research station (Agathis camp, Camel trophy camp)	Maliau Basin Management Committee	Supported by DANCED and the Sabah Foundation (ongoing project)
3	Kinabalu Park research station	Sabah Parks	Kinabalu Museum
4	Tawau Hill Park research station	Sabah Parks	Under construction (open in 2002)
5	Tunku Abdul Rahman Park; Sabah Parks marine research station	Sabah Parks	Marine research station under Sabah Parks
6	Turtle Island Park; Marine turtle hatchling station	Sabah Parks	Station for marine turtle hatchling station
7	Tabin Wildlife Reserve station	Sabah Wildlife Department	UMS has accommodations
8	Wildlife Department station in Lower Kinabatangan	Sabah Wildlife Department	Administration station
9	Wildlife Department station in Gomantong cave	Sabah Wildlife Department	Visitor facilities

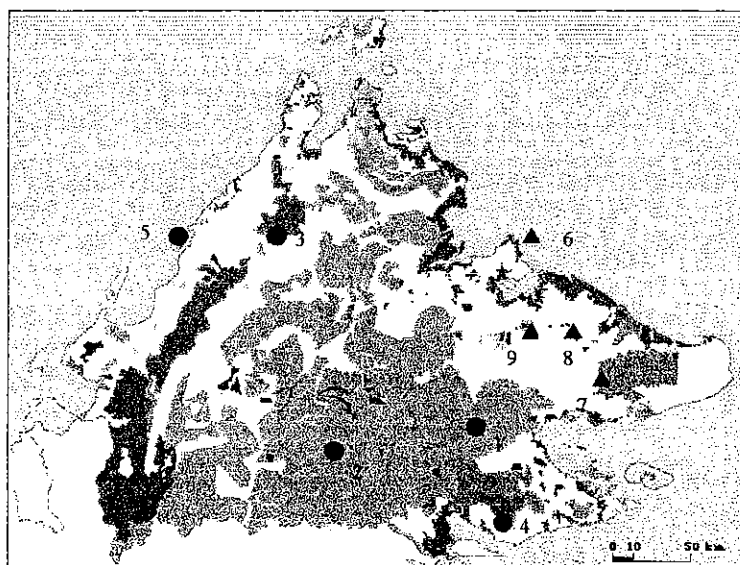


Figure 7-1. Major field research station (●) and administration station (▲) for biodiversity study and conservation (No. correspond to Table 1)

## Appendix 8: Land use and forest types in Sabah

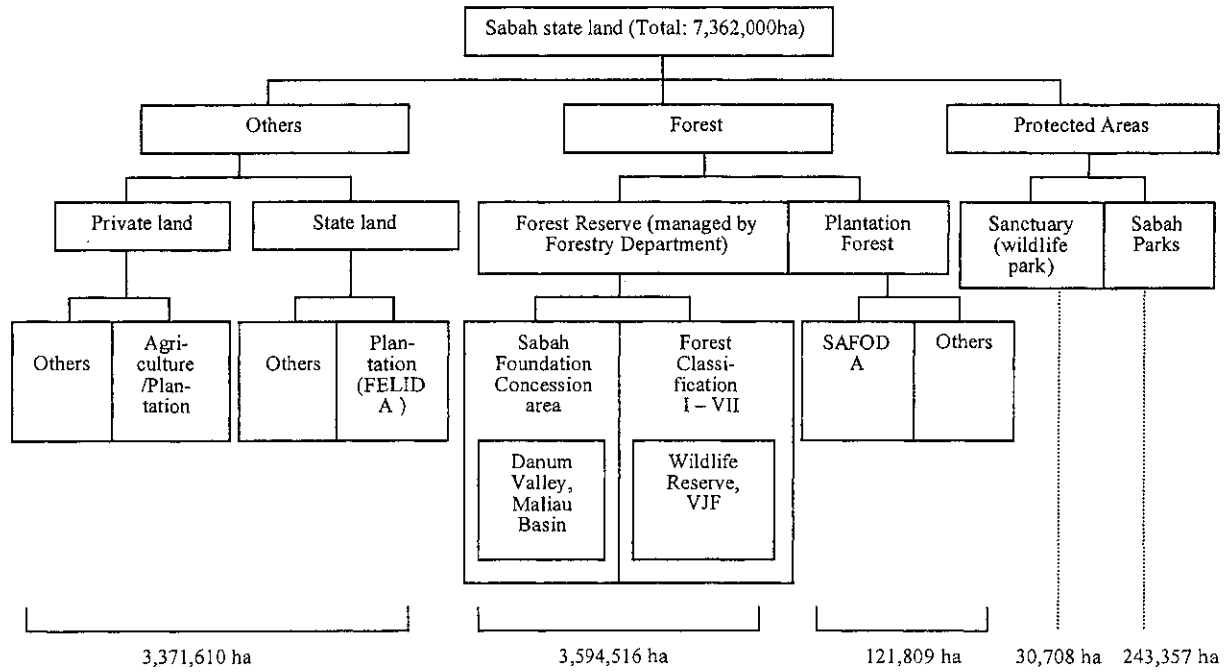


Figure 8-1. Land use, forest and protected area type classification in Sabah

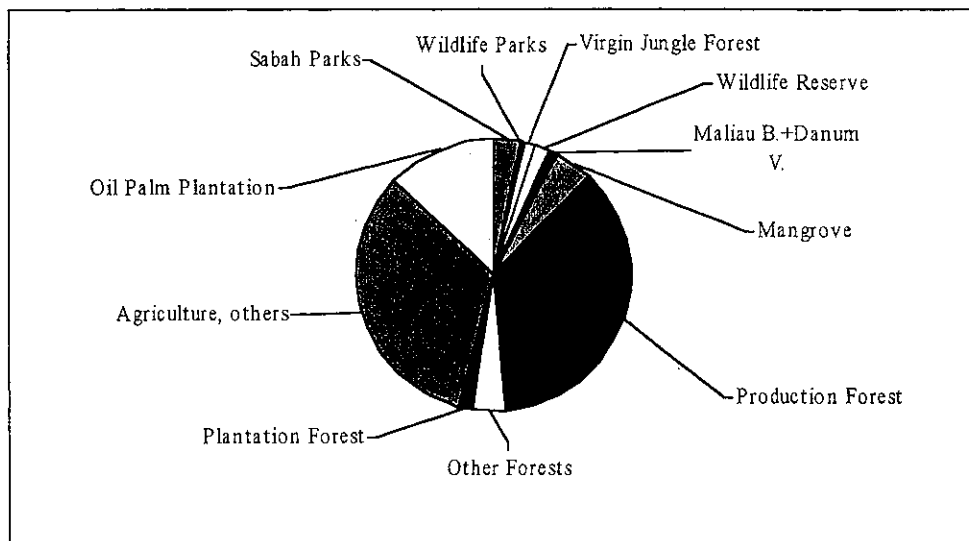


Figure 8-2. Land use, forest and protected areas proportion in Sabah

## Appendix 9: List of protected areas in Sabah

Table 9-1. Protected areas in Sabah

Name	IUCN Category	Area (ha)	Year established
1 Brantian-Taatulit Virgin Jungle Reserve (VJR)	I	4,140	1984
2 Crocker Range VJR	I	3,279	1984
3 Gomantogn-Materis-Bod Tai-Keruak-Pangi VJR	I	1,816	1984
4 Kabili-Sepilok VJR	I	4,294	1931
5 Kalumpang VJR	I	3,768	1984
6 Lungmanis VJR	I	6,735	1984
7 Mdai-Baturong VJR	I	5,867	1984
8 Maligan VJR	I	9,240	1984
9 Mengalong VJR	I	1,008	1984
10 Milian-Labau VJR	I	2,812	1984
11 Pin Supu VJR	I	4,696	1984
12 Pin Batik VJR	I	353	1984
13 Pin Berhala VJR	I	173	1984
14 Pin Sakar VJR	I	760	1984
15 Sepagaya VJR	I	4,128	1984
16 Sepilok VJR	I	1,235	1931
17 Sg Imbak VJR	I	18,113	1984
18 Sg Kapur VJR	I	1,250	1984
19 Sg Lokan VJR	I	1,852	1984
20 Sg Siliawan VJR	I	2,136	NA
21 Sg Simpang VJR	I	1,149	1984
22 Tabawan-Bohayan-Maganting-Silumput Islands	I	1,009	1984
Subtotal		79,813	
1 Crocker Range Park	II	139,919	1984
2 Kinabalu Park	II	73,370	1964
3 Tunku Abdul Rahman Park*	II	1,289	1974
4 Turtle Island Park*	II	15	1977
5 Pulau Tiga State Park*	II	607	1978
6 Tawau Hills Park	II	27,972	1979
Subtotal		243,172	
1 Kulamba Wildlife Reserve	VI	20,682	1984
2 Tabin Wildlife Reserve	VI	120,521	1984
3 Kota Belud-Tempasuk Plain Bird Sancturay	VI	12,000	NA
4 Pulau Sipadan Bird Sanctuary	VI	11	NA
5 Pulau Mantanani Bird Sancturary	VI	NA	NA
Subtotal		153,214	
Danum Valley Conservation Area**	-	43,800	1995 (upgrade)
Maliau Basin**	I	39,000	1983, 1998(upgrade)
Subtotal		82,800	
Grand total		558,999	

\* Not including sea water area of Marine parks

\*\* Newly upgrade, so that not shown IUCN protected area category

Source: MOSTE (1997) and IUCN data

## Appendix 10: Protected area management plans

Table 10-1. Management plan of the 6 Sabah Parks

Park	Year established	Total area (ha)	Name of management plan / Evaluation report	Year approved	Note
Kinabalu Park	1964	75,370	The Kinabalu Park Development Masterplan Towards Sustainable Development	1992	Sabah Parks and Lybrand Management Consultants
Tunku Abdul Rahman Park	1974	4,929	Tunku Abdul Rahman Park Gardens (Environmental evaluation for expanded tourism development)		
Turtle Island Park	1977	1,740	Development and Management Plan: Turtle Island Park	1996	by Univ. Pertanian Malaysia Sabah, UMS, Sabah Parks
Pulau Tiga State Park	1978	15,864	Development and Management Plan: Pulau Tiga Park	1996	by Univ. Pertanian Malaysia Sabah, UMS, Sabah Parks
Tawau Hills Park	1979	27,972	Not yet		
Crocker Range Park	1984	139,918	Not yet		

Source: Sabah Parks

Table 10-2. Management plan of the wildlife reserve/sanctuaries under the Sabah Wildlife Department

Reserve/sanctuaries	Year established	Total area (ha)	Name of management plan	Year approved	Note
Tabin Wildlife Reserve	1984	120,521	Tabin Wildlife Reserve Management Plan	1994	WWF-Malaysia prepared
Tabin and Kulamba WR	1984	120,521 + 20,682	Sabah Environmental Management Plan, Tabin and Kulamba Wildlife Reserve. End of Assignment report of Tabin WR Manager.	1992	ANZDEC LIMITED
Kulamba Wildlife Reserve	1984	20,682	Not yet		
Lower Kinabatangan Wildlife Sanctuary	--	41,765 (27,800)*	Wildlife Management Plan for the Lower Kinabatangan Basin	(1994)	WWF-Malaysia prepared
Kota Kinabalu City Bird Sanctuary (Likas)	1997	24	A development and management plan for the Likas wetlands, Sabah	1997	WWF-Malaysia
Sepirok orang-utan rehabilitation centre	1931	1,235 (VJR)	Sepilok forest management plan was prepared by FDS		
Gomantong and Supu Forest Reserve (VJR)	1984	1,816	The management of edible bird's nest caves in Sabah	1987	Wildlife Section, Sabah Forestry Dept.
Pulau Sipadan Bird Sanctuary	NA	11	Not yet		
Kota Belud -- Tempasuk Plain Bird Sanctuary	NA	12,000	Kota Belud Bird Sanctuary, A development plan for wildlife and tourism, A site international importance for bird conservation.	1985	WWF-Malaysia (Dr. Junaidi Payne)
Pulau Mantanani Bird Sanctuary	NA	20*	Not yet approved by local government		

Source: Sabah Wildlife Department. \* Sabah State Government (1998) Forestry in Sabah.

Table 10-3. Management plan of Danum valley and Maliau Basin

Area	Year established	Total area (ha)	Name of management plan	Year approved	Note
Danum Valley	1981, 1995 (upgrade)	43,800	Danum Valley Conservation Area, Management plan	1995	
Maliau Basin	1998 (upgrade)	39,000	Maliau Basin management plan	under preparing	Supported by DANCED

Source: Danum Valley Annual Report and information from DANCED

## Appendix 11: Number of visitors of protected areas

Table 11-1. Number of tourist of 6 Sabah Parks

Park	Visitor and Entrance fee	Year				
		1997	1998	1999	2000	2001*
Kinabalu	International	24,913	21,423	32,336	106,027	37,796 (June)
	Domestic	193,820	159,287	161,397	118,923	45,472 (June)
	Total	218,733	180,710	193,733	224,950	83,268 (June)
	Entrance fee (RM)	349,691	310,072	403,823	510,716	nd
Tawau Hills Park	International	351	175	219	160	22 (May)
	Domestic	24,286	13,986	14,899	36,445	41,141
	Total	24,637	14,151	15,118	36,605	41,163
	Entrance fee (RM)	31,128	27,910	23,812	59,340	76,963 (June)
Crocker Range Park	International	10	25	12	76	nd
	Domestic	nd	nd	nd	14	nd
	Total	nd	nd	nd	nd	nd
	Entrance fee (RM)	not charge	not charge	not charge	not charge	not charge
Tunku Abdul Rahman Park	International	60,688	74,619	114,343	150,956	52,996 (APR.)
	Domestic	71,292	62,106	57,576	54,896	10,014
	Total	131,980	136,725	171,919	205,852	72,010
	Entrance fee (RM)	231,764	235,078	399,755	557,070	290,413 (June)
Turtle Island Park	International	4,494	5,462	8,347	9,844	3,247 (May)
	Domestic	540	264	385	287	103
	Total	5,034	5,726	8,732	10,131	3,350 (May)
	Entrance fee (RM)	3,483	9,855	25,676	29,764	11,334 (June)
Pulau Tiga State Park	International	192	170	167	300	234 (May)
	Domestic	519	692	842	905	413
	Total	711	862	1,009	1,205	647
	Entrance fee (RM)	nd	nd	727	823	234 (June)
Total	International	90,648	101,874	155,424	267,363	94,295 (Apr/Jun)
	Domestic	290,456	236,335	235,099	211,470	106,143
	Ground total	381,104	338,209	390,523	478,833	200,439
	Entrance fee (RM)	616,066	582,915	853,793	1,157,713	

Source: Sabah Parks

Table 11-2. Number of international tourist of whole Sabah and Sabah Parks

Year	Number of international visitors					Receipt from visitor (1,000 RM)		
	Total Sabah (a)	Sabah Parks (b)	% of Sabah Parks to total (b/a %)	Kinabalu Parks (c)	% of Kinabalu to total (c/a %)	Whole Sabah (d)	Sabah Parks fee (e)	Sabah Parks fee / total receipt (e/d %)
1997	159,705	90,648	56.8%	24,913	15.6%	289,400	616	0.21%
1998	264,898	101,874	38.5%	21,423	8.1%	365,100	582	0.16%
1999	335,931	155,424	46.3%	32,336	9.6%	488,000	854	0.18%
2000	408,938	267,363	65.4%	106,027	25.9%	723,500	1,158	0.16%

Source: Sabah Tourism Association (STA) and Sabah Parks  
Sabah Park fee including fee from domestic visitors

Table 11-3. Number of tourist of wildlife reserves and sanctuaries (1996) \*

Wildlife Reserve/ Sanctuary	Number of Visitors in 1996	%
Sepirok orang-utan rehabilitation centre	55,869	79
Gomantong and Supu Forest Reserve	5,043	7
Lower Kinabatangan Wildlife Sanctuary (Sukau)	2,467	3
Tabin Wildlife Reserve	499	1
Pulau Sipadan Bird Sancturay	7,188	10
Total	71,066	100

Source: Laporan Tahunan 1996 (Jabatan Hidupan Liar Sabah (SWD))  
Other year's data and more detail information were not provided from SWD

Table 11-4. Number of visitor of Danum Valley (1990-1999)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total number of visitors	1,282	1,505	2,413	2,818	2,405	2,692	2,227	2,539	2,682	2,602

Source: Danum Valley Annual Report (1999)

Table 11-5. Number of visitors categorized of Danum Valley (1999)

Visitor Category	Resident: International	Resident: Local	Day visit	Total
Official	161	24		185
Researcher	36	96		132
Students	358	36		394
BRL Guests	32	0		32
EE Programme	764	56		820
Others	480	93	466	1,039
Total	1,831	305	466	2,602

Source: Danum Valley Annual Report (1999)



## Appendix 12: Public awareness facilities and programmes conducted

Table 12-1. Major information centre for public awareness on biodiversity / nature conservation in Sabah

Location	Name of information centre	Management organization	Note
Kinabalu park	Information Centre	Sabah Parks	
Sepilok orang-utan rehabilitation centre	Sepilok Information Centre	Sabah Wildlife Department	Supported by WWF-Malaysia
Sandakan (near Forest Research Centre)	Rainforest Interpretation Centre	Forest Research Centre – Sabah Forestry Department	
Danum Valley	Nature information Centre	Sabah nature club – Sabah Foundation	
Kota Kinabalu City Bird Sanctuary	Kota Kinabalu City Bird Sanctuary (KKCBS) information centre	Sabah Wildlife Department, and WWF-Malaysia	ITBC-UMS and Sabah Nature Club corroborate it.

Table 12-2. Existing public awareness activities by implementing organizations and NGOs

Organization	Programme /Activity	For general public	For School	For Communities	Lobbying & advocacy	Others
UST	Funding People and forest				Solicit fund	
SWD	Limestone information Ctr. (R)	Exhibition, talk and dialog	Camp (60 children)	Exhibition, dialog, seminar		
	Lowland rainforest information Ctr. (Tabin) (periodic)	Exhibition, talk and dialog (P)	Camp (90 children)	Exhibition, dialog, seminar		
	Wetland information Ctr. (P)		Camp (60 children)			
	Marine ecology information Ctr. (Likas) (P)		Camp (90 children)	Exhibition, dialog, seminar		
	Mountain information Ctr. (Crocker Range Park) (P)		Camp (60 children)			
Sabah Parks	Activities for community	Exhibition, talk (R)	Special programme (Scholl) (R)	Mobil talk (Adopted villages: Kinabalu Park; 2-3 villages/ month, CRP; start from August) (R)		Collaboration with school
	Activities for Park visitors	Tour guide (R), Special programme (R)	School programme (R),			
	Others	1) General ecological talk (R), 2) Environmental general talk	Forest exploration			
FDS	Fire prevention (awareness) (R)	Exhibition (R)	Quiz, drawing, painting, competitions (1 school/ 1 district, year)	Dialog, talks, discussion (R)		
	Information Ctr.	Distribution of publications (R)				
ECD	Moyong River Campaign, 2001			Pollution sources survey, funding instruction manual		
	My green school and recycle		Tree planting; recycling			
	ECD JV project with SMK tamparuli (R)		Environment management Sabah; pollution problems; roles and responsibility of ECD			
	Environment talk					
	Environmental education programme		Workshop for teachers			

Organization	Programme /Activity	For general public	For School	For Communities	Lobbying & advocacy	Others
ECD	Campaign (for developer and politicians) (P)					Sand mining seminar, hill-slope Development workshop, forestry
	Environmental exhibition	Topics; Environmental management in Sabah				
	Environmental awareness materials production (R)					Calendar, poster, on prescribed act
	Production of brochures (ECD, ECD-CAB project) (Construction on hill-slope, sand mining)					
	Guidelines and procedures (R)					Topics; 1) EIA in Sabah, 2) sand mining
		Gaya street campaign and exhibition	Talks			
UMS	Plastic bag reduction	Gaya street campaign and exhibition		Activities in adopted Kampongs (R)		
	3 R Programme (Recycle, refuse, reduce) (R)			University staff and students (R)		
	Borneo jungle school		Local and international school children integration (R)			Hyogo museum collaboration
	Kampung adoption (R)	Awareness campaign	Talks. drawing competition (R)	Gotong Royong (community services)		
	Environmental awareness camp for children		Talks			
	Science shop	Articles		Exhibition, 3 R (Recycle, refuse, reduce)		
	Publication			Academician (proceeding, papers)		
EAC	Plastic reduction campaign	Road-shows (exhibition), media	Drawing competitions / talks	Talks, pamphlets (R)		Collaboration with UMS and DBKK
	Environmental awareness camp (R)		Camp, talks, and others			
	Love K.K. campaign	Exhibition				Collaboration with DBKK
WWF-M	Likas bird sanctuary education ctr. (R)	Newspaper, publicity, website, newsletter	Competitions (essay, art, poetry); events; half-day visits; teacher support group		Committee	
	Sulu-Sulawesi Sea conservation ®				Partnership with Fisheries Dept; anti-fish bombing committee	
	Orchid survey and conservation (P)	Website		Employment; training	with Agriculture Dept; documents, maps	
	Forest rehabilitation (Ad hoc)			Employment; training	with FDS	

Organi- zation	Programme /Activity	For public	general	For School	For Communities	Lobbying & advocacy	Others
WWF-M	Semporna Island project			Quiz, competition, mural painting	Seminars, visits, compile views (opinion surveys)	Joint activities with Sabah Parks; technical reports, maps, surveys	
	Eco-tourism business development (MESCOT) (R)				Tourism development; business skills development training	Promotion business certification	
	People and plants (R)	Newspaper articles			Tourism development; water supply protection, "Forest park" development	Liaison with private sector, workshop, technical reports	
	Partners for wetlands (R)	Newspaper, articles, website, newsletter			Tourism development; talks; business development	Seminars, workshops, publications, liaison with private sector (agriculture, tourism)	
	Asian Rhino and elephant action strategy (R)	Brochures, awareness on trade				Mapping, brochures, survey results, with SWD	
Sabah Nature Club	Environmental awareness camps (R)			○			
	Nature orientation courses (5-7 days) (R)			○			
	Nature Camps (3 day programme) (R)			○	○		
	Nature interpretation programmes (R)	○		○			
	Diving school and marine kit (R)			○			
	Community forestry project (Ethonobotany) (R)	○		○			
	Environmental education trip to 1. Danum valley, 2. Maliau Basin, 3. Karamuak	○		○		○	

R: Regular activity, P: Plan

Source: Workshop on public awareness component (July 20, 2001)

Table 12-3. Number of memberships of Sabah Nature Club (SNC)

Member category	New member in 2001	Renewal member in 2001	Total (September 2001)	Accumulated number of memberships from 1988 to 2001
Number of membership (person)	981	272	1,253	36,447

Source: Information from Sabah Nature Club

## Appendix 13: Major publications for biodiversity study on target protected areas and scientific journals in Malaysia and Sabah

Table 13-1. Major publication list for biodiversity study on target protected areas

Target Protected Areas	Author/Editor (year)	Name of Publication
Crocker Range Park	Ghazally Ismail Lamriali (2001)	Crocker Range National Park, Sabah Vol. 1. Natural Ecosystem and species components
		Crocker Range National Park, Sabah Vol. 2. Socio-cultural and human dimension
	Ministry of Culture, Environment and Tourism	Sabah Biodiversity Conservation Project. Identification of Potential Protected Areas. Crocker Range foothills.
Tabin Wildlife Reserve	Maryati Mohamad et al. (1997), UMS	Tabin Scientific Expedition
	Ecotone Management Sdn. Bhd. (1998)	Preliminary Environmental Impact Assessment for upgrading of the 23-km old logging road in Tabin Wildlife Reserve, Lahad Datu, Sabaha
		There are several other reports on elephants, primates, Sumatra rhino and other wildlife
Kulamba Wildlife Reserve	WWF-Malaysia and Sabah Wildlife Department (1995)	Mammal and bird survey in the lower Segama region, Sabah with emphasis on the proboscis monkey (Study on the area between Tabin WR and Kulamba WR)
Lower Kinabatangan		There are several reports on orang-utan (genetic survey), proboscis monkey and other wildlife.
Maliau Basin	Maryati Mohamad et al. (1999), UMS	Mariau Basin Scientific Expedition

Source: "Resource room" of ITBC-UMS and others and others

Table 13-2. Major scientific journals/bulletin for biodiversity research in Malaysia and Sabah

Publish/editor institute/association	Name of journal	Year of established
Faculty of Science, University Malaysia	Malaysian Journal of Science	1972
Malaysian Society of Applied Biology	Malaysian Applied Biology	1977
Universiti Kebangsaan Malaysia	"SERANGGA" (A journal published by the centre for insect systematics)	1996
Department of Wildlife and National Parks, Peninsular Malaysia	The Journal of Wildlife and Parks	1982
School of Science & Technology, Universiti Malaysia Sabah (SST-UMS)	Borneo Science	
Sabah Parks	Sabah Parks Nature Journal	1998
Sabah Wildlife Department (SWD)	"Sabah", the journal of wildlife management and research	1997
Forest Research Centre, Forestry Department, Sabah	"Sandakania"	1992
Sabah Museum	Sabah Museum Monograph	
Sabah Museum	Museum and Archives Journal	
Sabah Society	Sabah Society Journal	1982
Sabah Inter-Agency Tropical Ecosystem Research Seminar Committee (S.I.T.E.)	Tropical Ecosystem Research in Sabah (Proceeding of seminars)	1996
The Institute for Development Studies (Sabah)	Borneo Review	1990
The Museum Kuching, Sarawak	The Sarawak Museum Journal	1992

Source: "Resource room" of ITBC-UMS and others

## Appendix 14: Research theme conducted by ITBC-UMS

Table 14-1. Subjects of staffs and students of ITBC-UMS

### A: Teaching staff

	Name	Degree	Position	Subject
1	Datin Dr. Maryati Mohamed	Ph D	Director of ITBC	1) Aquatic insects, 2) Effect of forest fire, 3) Ponerinae data base, 4) Pest control
2	Dr. Mohad Zabedi Daud	Ph D	Professor	1) Urban biodiversity, 2) Potential vector
3	Dr. Menno Schilthuizen	Ph D	Assoc. Profesor	1) Limestone invertebrates, 2) Trichogramma parasitoides of Malaysia
4	Dr. Mashitah Yusoff	Ph D	Deputy director	1) Antimicrobial and cytotoxic effect of Zingiberaceae, 2) Traditional medicine plants
5	Dr. Monica Suleiman	Ph D	Lecturer	1) Bryophytes diversity, 2) BORNENSIS
6	Dr. Homathevi Rahman	Ph D	Lecturer	1) Heavy metal use by termites, 2) Soil biodiversity
7	Mr. Henry Bernard	M Sc	Lecturer	Effect of logging to small community
8	Mr. Zulhazman Hamzah	M Sc	Lecturer	Tourism carrying capacity assessment
9	Mr. Mahadimenakbar Mohd. Dawood	M Sc	Lecturer	Taxonomy and ecology of horn beetles
10	Mr. Bakhtiar Effendi Yahya	M Sc	Tutor	Taxonomy and Ecology of canopy ants
11	Mr. Mohad Fairus Jalil	M Sc	Tutor	Conservation of orang-utan in Lower Kinabatangan

### B: Postgraduate students

	Name	Course	School year	Current research theme	Supporter
1	Gunik Gunsalam	M. Sc	1996-2001	Comparison studies on diversity and distribution of aquatic insects between highland (Mount Kinabalu) and lowland (Danum valley) streams.	UMS
2	Tanrang Yusin	M. Sc.	1996-2001	Anopheles maculatus studies as a vector for malaria disease in Sabah, Malaysia	UMS
3	Hairul Hafiz Mahsol	M. Sc.	1997-2001	Soil transmitted helminthes infections: the relation of helminthes infection with academic performance and cognitive abilities of children in Kota Kinabalu, Sabah	UMS
4	Mohad Nadzri Ishak	M. Sc.	1998-2002	The use of fish and insect communities in evaluating the quality of aquatic ecosystem	UMS
5	Ahmad Sudin	M. Sc.	1998-2002	Effect of forest fire on selected organisms	UMS
6	Abdul Said Abdul Rashid	M. Sc.	1998-2001	A study on the potential of Ascogreganina sp. as a disease vector	
7	Jimmy Omar	M. Sc.	1998-2002	The biodiversity of macrofungi associated with insects in Dipterocarp forest	DANCED
8	Rose John Kidi Jontill	M. Sc.	1998-2002	Diversity and ecology of native plants of Danum valley which has potential as ornamental plants	DANCED
9	Augustine Tuuga	M. Sc.	1998-2002	Impact of development on water quality and diversity of fish fauna on selected rivers leading to Darvel Bay	DANCED
10	Jupailin Naiman	M. Sc.	1999-2002	Potential of social wasps as bioindicator of tropical rainforest disturbance. A case study on logging impact in Deramakot, Sabah	GTZ
11	Lee Shan Kee	M. Sc.	1999-2002	Human-elephant conflicts in lower Kinabatangan	WWF
12	Peter Choeng Chiew Hing	M. Sc.	1999-2002	Pest control compounds from Dollchoderus sp (thoracicus groups) of Sabah	UMS, KOSINAR
13	Januarius Gobilik	M. Sc.	1999-2002	Chemical and biological studies of Zingiberaceae of Tabin Wildlife Reserve	DANCED
14	Kertijah Abdul Kadir	M. Sc.	1999-2002	Conflict between human and wildlife in Tabin	DANCED
15	Ting Teo Ming	M. Sc.	1999-2002	Biogeochemical aspect of mud volcano and salt water spring at Tabin Wildlife Reserve, Lahad Datu, Sabah	DANCED
16	Rashid Saburi	M. Sc.	1999-2002	A study of human-Orang utan conflicts in lower Kinabatangan	
17	Rabiatul Munnawirah Ahmad	M. Sc.	2000-2002	Odonata (Anisoptera) as bioindicator	DANCED
18	Julia George Kunai	M. Sc.	2000-2002	Rapid Biodiversity Assessment (RBA): ants as a model	DANCED
19	Lam Nyee Fan	M. Sc.	2000-2002	Phylogenetic distribution of phtochemical properties in Boesenbergia species	DANCED
20	Kueh Boon Hee	M. Sc.	2000-2002	The diversity and distribution of frogs and its correlation with land use for establishment of WORLDMAP	DANCED
21	Aman Hadl Mohmad	M. Sc.	2000-2002	Systematic and ecology of bioindicator aquatic insects family in rivers of Tabin, Lahad Datu, Sabah	DANCED
22	Noraini Hasaruddin	M. Sc.	2001-2002	Tabin as Nature Tourism Site	DANCED
23	John T. Sapalo	M. Sc.	2001-2003	Ecology of Sumatran Rhinoceros (Dicerorhinus sumatrensis) in Tabin Wildlife Reserve Forest, Lahad Datu, Sabah	SOS-RHINO

Source: Information from ITBC

## Appendix 15: List of protected animals and plants in Sabah

Taxon	Local name	English name	Scientific name	
<b>Class I: Totally Protected Animals</b>				
1	<b>Mammals</b>	Badak Sumatra	Sumatra Rhinoceros	<i>Dicerorhinus sumatrensis</i>
2		Orang Utan	Orang Utan	<i>Pongo pygmaeus</i>
3		Beruang Madu	Sun Bear	<i>Helarctos malayanus</i>
4		Duyung	Dugong	<i>Dugong dugon</i>
5		Monyet Bangkatan	Proboscis Monkey	<i>Nasalis larvatus</i>
6		Harimau Dahan	Clouded Leopard	<i>Neofelis nebulosa</i>
7	<b>Reptiles</b>	Buaya julung-julung	Charial	<i>Tomistoma schlegeli</i>
8		Penyu Hijau	Green Turtle	<i>Chelonia mydas</i>
9		Penyu Sisik	Hawksbill Turtle	<i>Eretmochelys imbricata</i>
<b>Class II: Totally Protected Plants</b>				
1		Priuk Kera		<i>Nepenthes Rajas</i> spp
2		Orkid Selipar		<i>Pahioepidium</i> spp
3		Rafflesia		<i>Rafflesia</i> spp
4		Pokok Perumah Rafflesia		<i>Tetrastigma</i> spp
<b>Class II: Protected Animals</b>				
1	<b>Mammals</b>	Cencurut Kinabalu	Kinabalu Shrew	<i>Crociodura Baluensis</i>
2		Kelawar Ladang-bulat Dayak	Dayak Roundleaf Bat	<i>Hipposideros dyacorum</i>
3		Kelawar Hidung Pendek Tembaga	Coppery Pipistrelle	<i>Pipistrellus cuprosus</i>
4		Kelawar Hidung Laras Emas	Gilded Tube-nosed Bat	<i>Murina rozendaali</i>
5		Kubung	Flying Lemur	<i>Cynocephalus variegatus</i>
6		Kongkang	Slow Loris	<i>Nycticebus concang</i>
7		Kera Hantu	Tarsier	<i>Tarsius bancanus</i>
8		Monyet Merah	Maroon Leaf Monkey	<i>Presbytis rubicunda</i>
9		Monyet Kikok	Grey Leaf Monkey	<i>Presbytis hosei</i>
10		Monyet Kelabu	Silver Leaf Monkey	<i>Presbytis cristata</i>
11		Kera	Long-tailed Macaque	<i>Macaca fascicularis</i>
12		Beruk	Pig-tailed Macaque	<i>Macaca nemestrina</i>
13		Kelawat	Gibbon	<i>Hyllobates muelleri</i>
14		Tenggiling	Pangolin	<i>Manis javanica</i>
15		Tupai Kerawak Putih-kuning	Giant Squirrel	<i>Ratufa affinis</i>
16		Tupai Kinabalu	Kinabalu Squirrel	<i>Calosciurus batuensis</i>
17		Babut	Giant Tufted Ground Squirrel	<i>Rheithrosciurus macrotis</i>
18		Tupai Terbang Kecil	Hose's Pigmy Flying Squirrel	<i>Petaurillus hosei</i>
19		Tupai Terbang Dada Putih	Temminck's Flying Squirrel	<i>Petinomys setosus</i>
20		Tupai Terbang Ekor Merah	Horsfield's Flying Squirrel	<i>Iomys horsfield</i>
21		Tupai Terbang Pipi Kelabu	Grey-cheeked Flying Squirrel	<i>Hylotropes lepidus</i>
22		Tupai Terbang Hitam	Black Flying Squirrel	<i>Aeromys tephromelas</i>
23		Tupai Terbang Kotor	Smoky Flying Squirrel	<i>Pteromyscus pulverulentus</i>
24		Tupai Terbang Berjambang	Whiskered Flying Squirrel	<i>Petinomys genibarbis</i>
25		Tupai Terbang Bintang	Spotted Giant Flying Squirrel	<i>Petaurista elegans</i>
26		Tupai Terbang Merah	Red Giant Flying Squirrel	<i>Petaurista petaurista</i>
27		Tupai Terbang Merah	Thomas's Flying Squirrel	<i>Aeromys thomasi</i>
28		Landak Padi	Long-tailed Porcupine	<i>Trichys fasciulate</i>
29		Landak Borneo	Thick-spined Porcupine	<i>Thecurus crassispinis</i>
30		Mengkira	Yellow-throated Marten	<i>Martes flavigula</i>
31		Pulasan Tanah	Malay Weasel	<i>Mustela nudipes</i>
32		Pulasan Lamri	Ferret-Badger	<i>Melogale personata</i>
33		Teledu	Malay Badger	<i>Mydaus javanensis</i>
34		Memerang Kumis	Hairy-nosed Otter	<i>Lutra sumatrana</i>
35		Memerang Licin	Smooth Otter	<i>Lutra perspicillata</i>
36		Memerang Kecil	Oriental Small-clawed Otter	<i>Aonyx cinerea</i>
37		Musang Tanggalong	Malays Civet	<i>Viverra tangalunga</i>
38		Musang Memerang	Otter-Civet	<i>Cynogale bennettii</i>
39		Musang Binturong	Binturong	<i>Arctictis binturong</i>
40		Musang Akar	Small-toothed Palm Civet	<i>Arctogalidia trivirgata</i>
41		Musang Lamri	Masked Palm Civet	<i>Paguma Larvata</i>
42		Musang Pulut	Common Palm Civet	<i>Paradoxurus hermaphroditus</i>
43		Musang Hitam Pudar	Hose's Civet	<i>Hemigalus hosei</i>
44		Musang Belang	Banded Palm Civet	<i>Hemigalus derbyanus</i>
45		Musang Linsang	Banded Linsang	<i>Prionodon linsang</i>
46		Bambun Ekor Panjang	Collared Mongoose	<i>Herpestes semitorquatus</i>
47		Bambun Ekor Pendek	Short-tailed Mongoose	<i>Herpestes brachyurus</i>
48		Kucing Batu	Leopard Cat	<i>Felis bengalensis</i>

Taxon	Local name	English name	Scientific name
49	Kucing Dahan	Marbled Cat	<i>Felis marmorata</i>
50	Kucing Hutan	Flat Headed Cat	<i>Felis planiceps</i>
51	Kucing Merah	Bay Cat	<i>Felis Badia</i>
52	Gajah	Asian Elephant	<i>Elephas maximus</i>
53	Tembadau	Banteng	<i>Bos javanicus</i>
54	Ikan Paus Sei	Sei Whale	<i>Balanoptera horealis</i>
55	Ikan Paus Bryde	Bryde's Whale	<i>Balanoptera edent</i>
56	Ikan Paus Buding	Killer Whale	<i>Orcinus orca</i>
57	Ikan Paus Pendek Sirip	Short-finned Pilot Whale	<i>Globicephala macrorhynchus</i>
58	Ikan Paus Nayan	Pigmy Sperm Whale	<i>Kogia breviceps</i>
59	Dolfin Kelabu	Grey Dolphin	<i>Grampus griseus</i>
60	Dolfin Hindung Botol	Bottlenose Dolphin	<i>Tursiops truncatus</i>
61	Dolfin Bongkok Bernie	Indo-Pacific Hump-backed Dolphin	<i>Sousa chinensis</i>
62	Dolfin Empesut	Irrawaddy Dolphin	<i>Orcaella brevirostris</i>
63	Ikan Lumba-lumba Ambu	Finless Porpoise	<i>Neophocaena phocaenides</i>
64	Dolfin Fraser	Fraser's Dolphin	<i>Lagenodelphis hosei</i>
65	Dolfin Hindung Mancung	Long Snouted Spinner Dolphin	<i>Stenella longirostra</i>
66 Reptiles	Buaya	Estuarine Crocodile	<i>Crocodylus porosus</i>
67	Buaya julung-julung	False Gharial (Gavial)	<i>Tomistoma schlegeli</i>
68	Biawak	Monitor Lizard	All varanus species
70	Uiar Sawa Darah	Blood Python	<i>Python curtus</i>
71	Ular Tedung Selar	King Cobra	<i>Ophiophagus hannah</i>
72	Kura-kura Bukit	Forest Tortoise	<i>Tetsudo emys</i>
73	Juku-juku Besar	Asian Giant Turtle	<i>Orlitia borneensis</i>
74 Birds	Simbang Pulau Christmas	Christmas Island Frigatebird	<i>Fregata andrewsi</i>
75	Simbang Kecil	Lesser Frigatebird	<i>Fregata ariel</i>
76 (Cormorants and Darters)	Dandang Air	Great Cormorant	<i>Phalacrocorax carbo</i>
77	Kosa	Oriental Darter	<i>Anhinga melanogaster</i>
78 (Herons and bitterns)	Bangau Bakau	Great-billed Heron	<i>Ardea sumatrana</i>
79	Bangau Paya	Purple Heron	<i>Ardea purpurea</i>
80	Seriap	Grey Heron	<i>Ardea cinerea</i>
81	Bangau Laut	Reef Egret	<i>Egretta sacra</i>
82	Bangau Kecil	Little Egret	<i>Egretta gazetta</i>
83	Bangau Cina	Chinese Egret	<i>Egretta eulophotes</i>
84	Bangau Kerbau	Intermediate Egret	<i>Egretta intermedia</i>
85	Pucong Keladi	Little Heron	<i>Butorides striatus</i>
86	Pucong Kuak	Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
87	Pucong Malam	Rufous Night Heron	<i>Nycticorax caledonicus</i>
88	Pucong Rimau	Malayan Night Heron	<i>Gorsachius melanolophus</i>
89	Pucong Merah	Yellow Bittern	<i>Ixobrychus sinensis</i>
90	Pucong Gelam	Schrenck's Bittern	<i>Ixobrychus eurhythmus</i>
91	Pucong Hitam	Black Bittern	<i>Ixobrychus flavicollis</i>
92	Pucong Bendang	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>
93 (Storks)	Botak Storm	Storm's Stork	<i>Ciconia stormi</i>
94	Botak Kecil	Lesser Adjutant Stork	<i>Leptoptilos javanicus</i>
95 (Ibises)	Sekendi Kepala Hitam	Black-headed Ibis	<i>Threskiomys melanocephalus</i>
96 (Hawks eagles)	Helang Malam	Bat Hawk	<i>Machaeramphus alcinus</i>
97	Helang Baza	Jerdon Baza	<i>Avicedo jerdoni</i>
98	Helang Lebah	Crested Honey-Buzzard	<i>Pemis ptilorhynchus</i>
99	Helang Merah	Brahminy Kite	<i>Haliastur indus</i>
100	Helang Kembara Hitam	Black Kite	<i>Milvus migrans</i>
101	Helang Hitam	Black Eagle	<i>Ictinaetus malayensis</i>
102	Helang Kangok	Lesser Fish-Eagle	<i>Ichthyophaga humilis</i>
103	Helang Kepala Kelabu	Grey-headed Fish-Eagle	<i>Ichthyophaga ichtyaetus</i>
104	Helang Kinabalu	Kinabalu Serpent-Eagle	<i>Spilomis kinabaluensis</i>
105	Helang Berjambul	Crested Serpent-Eagle	<i>Spilomis cheela</i>
106	Helang Pipit	Bersa	<i>Accipiter virgatus</i>
107	Helang Putih	Crested Goshawk	<i>Accipiter trivirgatus</i>
108	Helang Selat	Wallace's Hawk-Eagle	<i>Spizaetus nanus</i>
109 (Osreys)	Helang Tiram	Osprey	<i>Pandion haliaeetus</i>
110 (Falcons)	Falko Dahi Putih	White-fronted Falconet	<i>Microhierax latifrons</i>
111	Falko Belalang	Peregrine Falcon	<i>Falcon peregrinus</i>
112	Falko Biasa	Common Falconet	<i>Microhierax caerulescens</i>
113	Falko Timor	Oriental hobby	<i>Falco Severus</i>

Taxon	Local name	English name	Scientific name
114	Palko Serani	Eurasian Kestrel	Falco tinnunculus
115 (Megapodes)	Tambun	Tabon Scrubfowl	Megapodius cumingii
116 (Partridges and Pheasant)	Pikau	Blue-breasted Quail	Coturnix chinensis
117	Siul Selanting	Long-billed Partridge	Rhizothera longirostris
118	Sang Seruk Rimba	Ferruginous Partridge	Caloperdix oculea
119	Siul Dada Merah	Red-breasted Partridge	Arborophila hyperythra
120	Sang Seruk	Chestnut-necklaced Partridge	Arborophila charltonii
121	Siul Benam	Black Wood-Partridge	Melanoperdix nigra
122	Siul Berjambul	Crested Partridge	Rollulus rouloul
123	Siul Kepala Merah	Crimson-headed Partridge	Haematortyx sanguiniceps
124	Ayam Pegar	Crested Fireback	Lophura ignita
125	Merah Mata	Crestless Fireback	Lophura erythrophthalma
126	Pakiak	Bulwer's Pheasant	Lophura bulweri
127	Merak Pongsu	Bornean Peacock-Pheasant	Polyplectron schlieimacheri
128	Kuang Raya	Great Argus	Argusianus argus
129 (Plovers)	Rapang Pasir	Malaysian Plover	Charadrius peronii
130	Kedidi Timor	Far Eastern Curlew	Numenius madagascanensis
131	Kedidi Kaki Hijau Berbintik	Nordmann's Greenshank	Tringa guttifer
132	Kedidi Dada Merah	Asian Dowitcher	Limnodromus semipalmatus
133 (Thick-Knees)	Burung Lutut Tebal	Beach Thick-knee	Esacus magnirostris
134 (Skuas, Gulls and Turns)	Camar Tengkuik Hitam	Black-naped Tem	Sterna sumatrana
135	Camar Batu	Bridled Tem	Sterna anaethetus
136	Camar Cina Berjambul	Chinese-crested Tem	Sterna bemsteini
137 (Pigeons and Doves)	Lengguak	Large-Green Pigeon	Treron capellei
138	Punai Bakau	Cinnamon-headed Green-Pigeon	Treron fulvicollis
139	Punai Tengkuik Hitam	Black-naped Fruit-Dove	Ptilinopus melanospila
140	Merpati Raja Kelabu	Grey Imperial Pigeon	Ducula pickeringi
141	Merpati Kayu	Metalic Wood-Pigeon	Columbia vitiensis
142	Punai Tanah	Emerald Dove	Chalcophaps indica
143	Punai Emas	Nicobar Pigeon	Caloenas nicobarica
144 (Parrots)	Bayan Tengkuik Biru	Blue-naped Parrot	Tanygnathus lucionensis
145	Bayan Puling	Blue-rumped Parrot	Psittinus cyanurus
146	Bayan Nun	Long-tailed Parakeet	Psittacula longicauda
147	Bayan Kecil/Serindit	Blue-crowned Hanging-Parrot	Loriculus galgulus
148 (Cuckoos, Malkohas and Coucals)	Sewah Rembah	Violet Cuckoo	Chrysococcyx xanthorhynchus
149	But-But Jari Pendek	Short-toed Coucal	Centropus rectunguis
150	Sewah Tanah	Sunda Ground-Cuckoo	Carpococcyx radiceus
151 (Owls)	Jampuk Pantai	Bay Owl	Phodilus badius
152	Hantu Merah	Reddish Scops-Owl	Otus rufescens
153	Hantu Gunung	Mountain Scops-Owl	Otus spilocephalus
154	Hantu Reban	Collared Scops-Owl	Otus lempiji
155	Hantu Mantanani	Mantanani Scops-Owl	Otus mantanensis
156	Hantu Bubu	Barred Eagle-Owl	Bubo sumatrana
157	Hantu Kuning	Buffy Fish-Owl	Ketupa ketupu
158	Hantu Kecil	Collared Owlet	Glaucidium brodiei
159	Hantu Betemak	Brown Boobook	Ninox scutulata
160	Hantu Punggor	Brown Wood-Owl	Strix leptogrammica
161 (Frogmouths)	Segan Besar	Large Frogmouth	Batrachostomus auritus
162 (Nightjars)	Tukang Bonarparte	Bonaparte's Nightjar	Caprimulgus concretus
163 (Swifts)	Layang-Layang Hantu	Waterfall Swifts	Hydrochous (Collocalia) gigas
164	Layang-Layang Gua	Edible-nest Swiftlet	Aerodramus (Collocalia) fuciphagus
165	Layang-Layang Padi	Black-nest Swiftlet	Aerodramus (Collocalia) maximus
166	Layang-Layang Besar	Brown-backed Needletail	Hirundapus giganteus
167 (Hornbills)	Eggang Berkedut	Wrinkled Hornbill	Rhyticeros corrugatus
168	Eggang Gugun	Wreathed Hornbill	Rhyticeros undulatus
169	Eggang Jambul Putih	White-crowned Hornbill	Berenicomis comatus
170	Eggang Belukar	Bush-crested Hornbill	Annorhynchus galeritus
171	Eggang Gatal Birah	Black Hornbill	Anthracoceros malayanus
172	Eggang Tangling	Pieced Hornbill	Anthracoceros coronatus
173	Eggang Badak	Rhinoceros Hornbill	Buceros rhinoceros
174	Eggang Terbang Mentua	Helmeted Hornbill	Rhinoplax vigil
175 (Honey Guides)	Gembala Lebah	Malaysian Honeyguide	Indicator archipelagicus
176 (Woodpeckers)	Belatok Belang	Speckled Piculet	Picumnus innominatus



Taxon	Local name	English name	Scientific name
177	Belatok Kecil	Rufous Woodpecker	<i>Ceelus brachyurus</i>
178	Belatok Gajah	White-bellied Woodpecker	<i>Dryocopus javensis</i>
179 (Pittas)	Pacat Besar	Giant Pitta	<i>Pitta caerulea</i>
180	Pacat	Fairy Pitta	<i>Pitta nympha</i>
181	Pacat Kepala Merah	Blue-headed Pitta	<i>Pitta baudi</i>
182	Pacat	Blue-banded Pitta	<i>Pitta arquata</i>
183	Pacat Bukit	Banded Pitta	<i>Pitta guajana</i>
184	Pacat Sayap Biru	Blue-winged Pitta	<i>Pitta moluccensis</i>
185	Pacat Gembala Pelandok	Hooded Pitta	<i>Pitta sordida</i>
186 (Bulbuls)	Barau-barau	Straw-headed Bulbul	<i>Pycnonotus zeyianicus</i>
187	Merbah	Hook-billed Bulbul	<i>Setomis criniger</i>
188 (Thrushes)	Murai Everett	Everett's Thrush	<i>Zosterops everetti</i>
189	Murai Cegar Bulukar	White-crowned Forktail	<i>Enicurus leschenaulti</i>
190	Murai Rimba	White-rumped Shama	<i>Copsychus malabaricus</i>
191	Murai Kampung	Magpie Robin	<i>Copsychus saulari</i>
192 (Babblers)	Burung Telanjuk	White-chested Babbler	<i>Trichastoma rostratum</i>
193	Rimba Sampah	Ferruginous Babbler	<i>Trichastoma bicolor</i>
194	Rimba Dahan	Grey-breasted Babbler	<i>Malacopteron albobulgare</i>
195	Rimba Borneo	Bornean Wren-Babbler	<i>Ptilocichla leucogrammica</i>
196 (Flycatchers)	Sambar Biru Sunda	Sunda Blue Flycatcher	<i>Cyornis caerulea</i>
197	Sambar Biru Malaysia	Malaysian Blue Flycatcher	<i>Cyornis turcosa</i>
198	Sambar Ekor Panjang	Asian Paradise Flycatcher	<i>Tersiphone paradisi</i>
199 (Whistlers)	Sambar Siul Belukar	Mangrove Whistler	<i>Pachycephala cinerea</i>
200 (Flowerpeckers)	Sepah Puteri Gunung	Brown-backed Flowerpecker	<i>Dicaeum everetti</i>
201 (Starling and Mynas)	Tiong Mas	Hill Myna	<i>Gracula religiosa</i>
202 (Bristleheads)	Burung Jambul	Bornean Bristlehead	<i>Pityriasis gymnocephala</i>
203 (Jays and Crows)	Murai Hitam	Black Magpie	<i>Platysmurus leucopterus</i>
204	Murai Hijau	Short-tailed Green Magpie	<i>Cissa thalassina</i>
205 Insects	Kupu-Kupu Rajah	Rajah Brooke's Birdwing	<i>Trogonoptera brookiana</i>
206	Kupu-Kupu (semua species Troides)	Common Birdwing	All Troides species
<b>Class II: Protected Plants</b>			
1	Batu		<i>Caryota</i> spp
2	Rotan		<i>Ceratolobus</i> spp
3	Gobang		<i>Corypha</i> spp
4	Paku Laut		Cycadaceae
5	Paku		Cytoceae
6	Halia Hutan		Zingiberaceae
7	Pinang Hutan		<i>Nenga</i> spp
8	Periuk Kera		Nepenthaceae
9	Anggerek Hutan		Orchidaceae
10	Lampias		<i>Podocarpus</i> spp (Commercial spp)
11	Mawar Hutan		<i>Rhododendron</i> spp
12	Silad		<i>Livistonia</i> sp
13	Polod		<i>Arenga</i> sp

Source: Sabah Wildlife Department

## Appendix 16: Existing thematic maps prepared by governmental organizations and NGO

Table 16-1. Existing thematic maps of Sabah for natural environment management and study

Thematic map	Geographic institute	Forestry Dept.	Land and Survey Dept.	Wildlife Dept.	WWF-Malaysia
Topographic map	1/250,00 1/50,00	Yes			
Aerial photo	Yes	Yes (forest reserve)	Yes (10 year interval)		-
Land classification (Alienated land boundary)			●		
Physiographic region					○
Geological map		●			
Climate					○
River system and catchment area		●	●		○
Slope map		●			
Area affect forest fire		●			○
Forest fire risk		●			
Vegetation		●			
Forest classification		●			
Forest management unit		●			
Logging area record		●			
State Park boundary		●			
Wildlife Reserve/ sanctuary boundary		●			
Specific animal distribution				○ (Land mammals of Sabah)	○ (elephant, orang-utan, rhino, etc.)
Shifting agriculture					○
Agriculture suitability					○

●: digitized map, ○: non digitized map

Source: Interview and report of each organization

## Appendix 17: Forest reserve and other forestland in Sabah (next page)

This map is prepared by Mapping Division of the Forestry Department Sabah

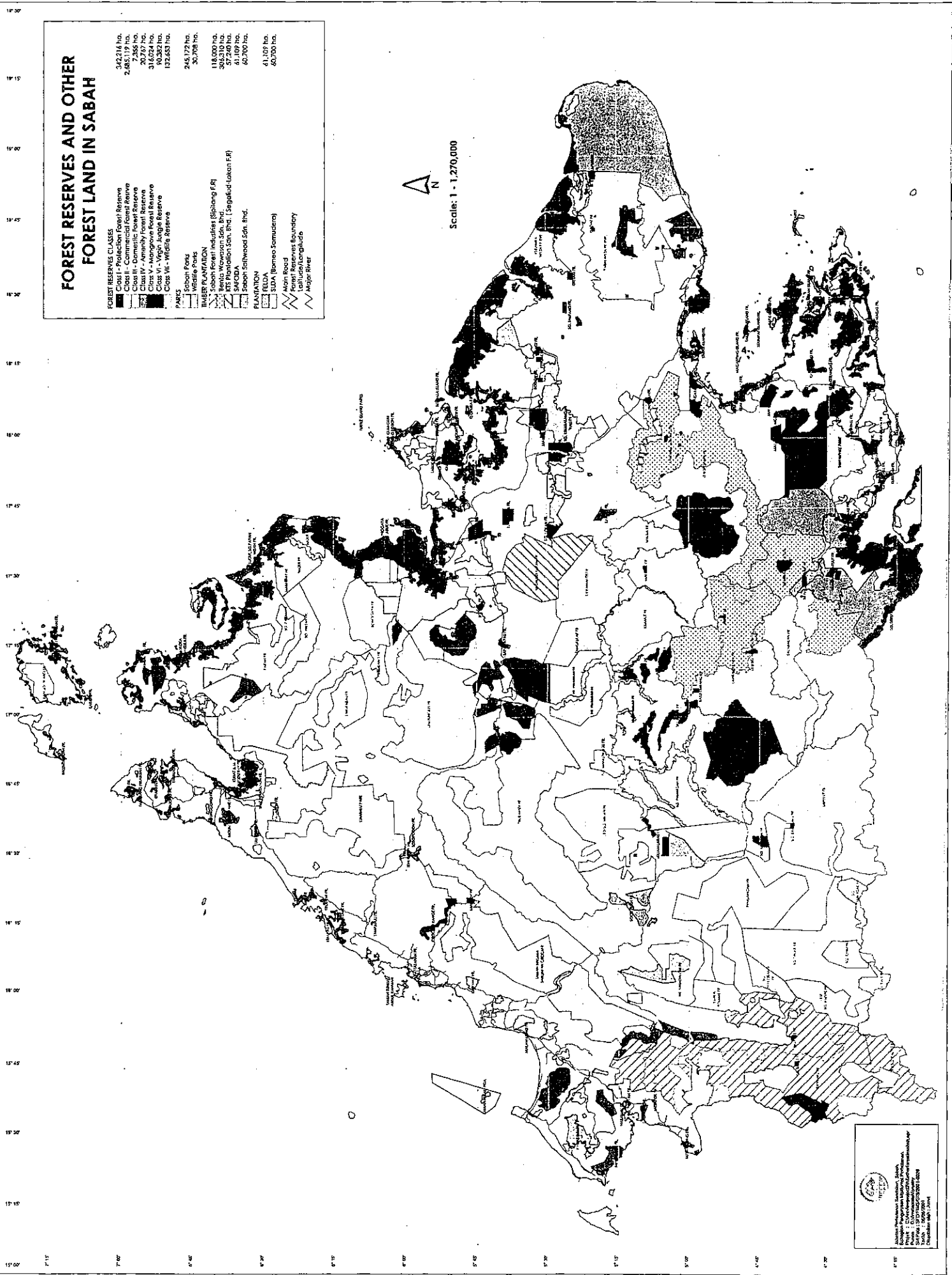
# FOREST RESERVES AND OTHER FOREST LAND IN SABAH


FOREST RESERVE CLASSES	Area (ha)
Class I - Protection Forest Reserve	342,214
Class II - Commercial Forest Reserve	2,685,119
Class III - Domestic Forest Reserve	7,355
Class IV - Wildlife Reserve	11,000
Class V - Mergopore Forest Reserve	31,624
Class VI - Virgin Jungle Reserve	10,382
Class VII - Wildlife Reserve	132,653
<b>TOTAL</b>	<b>3,920,127</b>

PLANTATION	Area (ha)
SBPA (Borneo Sempadan)	245,172
SBPA (Borneo Sempadan)	30,708
SBPA (Borneo Sempadan)	118,000
SBPA (Borneo Sempadan)	308,210
SBPA (Borneo Sempadan)	57,246
SBPA (Borneo Sempadan)	41,109
SBPA (Borneo Sempadan)	60,700
<b>TOTAL</b>	<b>807,145</b>

Scale: 1 - 1,270,000




  
 Department of Forestry, Sabah
   
 Forest Reserves and Other Forest Land in Sabah
   
 Scale: 1 : 1,270,000
   
 Date: 1998