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Borneo: Treasure Island at Risk

- Maps -

Maps on Status of Forests, Wildlife and related Threats on the Island of Borneo



EDITORIAL

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FOREST COVER	 	 	

Forest Cover 1950 / 1985

Forest Cover 2000 / 2005

Forest Cover 2010 / 2020

The Future of Lowland Forest in Kalimantan

SPECIES – ORANG-UTAN DISTRIBUTION

Orang-utan Distribution prehistoric / 1930

Orang-utan Distribution 1989 / 1999

Orang-utan Distribution 2004 / 2020

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FOREST COVER

FOREST COVER



2005

The 2000 forest cover map provides the reference data for The 2000 forest cover map provides the reference data for future projection. Mapping of 2000 forest cover is at recon-naissance level only, based on interpretation from digital Landsat satellite imagery, without field checks. Forest is defined as natural forest that can be recognized as such on satellite imagery. The presence of a mapped forest cover is not a statement on the quality of that forest. Thus the forest may be undisturbed forest or natural forest that has been heavily damaged by logging.



--- province- or state boundary

——— country boundary







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2000

Forest cover based on Landsat 2000 imagery. Deforested area in the southeastern part of East-Kalimantan is mainly a result of the large forest fires in 1997/98.

Sources: See list of sources.

1985

Based on WCMC forest cover map 1985. Landsat imagery was used and crosschecked with aerial photography.

Sources: See list of sources.



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Projection of forest cover 2005 is based on map "forest cover 2000". Forest cover 2000 is reduced by total forest loss 2000-2005 of 4,320,000 ha. Total forest loss is placed around existing road network. These are areas where deforestation is most likely to occur.

Sources: See list of sources.





FOREST COVER



Projection of forest cover 2010 is based on map "forest cover 2000". Forest cover 2000 is reduced by total forest loss 2000-2010 of 8,640,000 ha. Total forest loss is placed around existing road network. These are areas where deforestation is most likely to occur. All forest of category "conversion forest" in Kalimantan is regarded as deforested by 2010.

Sources: See list of sources.

2020

Projection of forest cover 2020 is based on map "forest cover 2000". Forest cover 2000 reduced by total forest loss 2000-2020 of 17,280,000 ha. Total forest loss is placed around existing road network. These are areas where deforestation is most likely to occur.

Sources: See list of sources.





WWF 500 km non forest © WWF Germany

A) Conservative Projection until 2010:

for the prediction: 781,529 ha per year.

All forest 2010

Protected forested areas like National Parks can be adequately protected and are therefore still there in 2010. Category "Con-

version forest" is still regarded as forested. Forest loss outside

protected areas only occurs below 300 m asl. As Holmes

predicted, the peat swamp forests below 300 m will experi-

ence an average rate of 2% forest loss per year until 2010. A

long-term average (1985 - 2002 figure) on forest loss is used

The Future of Lowland Forest in Kalimantan

In February 2001 the World Bank predicted that all lowland rainforests in Kalimantan would disappear by 2010. The World Bank analysis was based on a study written by Derek A. Holmes in 2000. Holmes analysed long-term trends in land use change in Indonesia and data on loss of forest cover during the period 1985-1997. Holmes exact statement was: "... it is predictable that non-swamp lowland forest will become extinct ... in Kalimantan soon after 2010". Holmes differentiated between "swamp forests" and "non-swamp lowland forests" because he concluded that the major forest loss will take place in lowland areas below 300 m asl which are not regularly flooded or swampy. To check whether Holmes prediction is still valid, an alternative and straightforward calculation has been made for this report. It considers two different scenarios: a conservative (optimistic) and a more pessimistic prediction. They are based on the following assumptions:

B) Pessimistic Projection until 2010:

The assumptions are the same as in A) except that: Lowland forest in protected areas below 300m cannot be adequately protected and will therefore experience the same forest loss rate as forest outside protected areas. A more recent annual forest loss figure (2000 - 2002) is used for the prediction: 1,240,000 ha per year.

Both scenario give grounds for concern. Even by calculating with a long-term average rate for forest loss, the extermination of the drier lowland forests in Kalimantan can be expected for 2018. If the most recently observed rate of destruction continues unhampered Holmes prediction will become reality in 2012. The occurrence of an extreme El Niño year like the one which struck Southeast Asia in 1997/98 would make any optimistic projection futile and wipe out what is left of the lowland forests.



Lowland forest Forest on peat Forest above 300 m asl

and forest above 300 m asl country boundary province- or state boundary

non forest, peat forest

SPECIES - ORANG-UTAN



1930

Orang-utan Distribution over time 1930, 2004, 2020

1930
2004
2020

country boundary province- or state boundary ____

All maps showing probable centres of orang-utan distribution.

Methodology: see individual maps Sources: see list of sources.





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SPECIES – ORANG-UTAN

SPECIES – ORANG-UTAN

prehistoric

Probable natural distribution of orang-utan prior to human settlement. Suitable habitat for orang-utan defined as all forests below 500 m asl. Crocker Range, Kinabalu NP and some areas in Southeast Sabah were exempted from this classification.

Sources: See list of sources.

Probable natural distribution of orang-utan

based on Payne & Andau 1989 for Sabah and Sarawak and PHVA 1993 for Kalimantan. Modified by removing areas above 500 m asl. Crocker Range, Kinabalu NP and some areas in Southeast Sabah were exempted from this classification.

Sources: See list of sources.

1989

1930

Probable natural distribution of orang-utan based on Rijksen & Meijaard 1999. Modified by removing areas above 500 m asl. Crocker Range, Kinabalu NP and some areas in Southeast Sabah were exempted from this classification.

Sources: See list of sources.



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1999

Probable natural distribution of orang-utan based on Rijksen & Meijaard 1999. Modified by removing areas above 500 m asl. Crocker Range, Kinabalu NP and some areas in Southeast Sabah were exempted from this classification.

Sources: See list of sources.







Based on PHVA 2004 and Ancrenaz et al 2005 for Sabah. Modified by removing areas above 500 m asl in Kalimantan and Sarawak. As based on a new assessment 2004 orangutans may occur in some areas which are not indicated in previous maps.

Sources: See list of sources.



Eastern Sumatran Rhinoceros

At the beginning of the 20th century the Eastern Sumatran rhinoceros was fairly widespread and common throughout Borneo. However, the rhino has since suffered a serious decline in distribution and numbers. There are probably fewer than 30 individuals left in Sabah. The Eastern Sumatran Rhinoceros was added to Appendix I of the CITES convention in 1977 and is considered critically endangered by the IUCN.

Sources: See list of sources.

Bornean Pygmy Elephant

Elephants have a very limited distribution on Borneo. Until 2003 it was generally believed that elephants were introduced to Borneo in the late 18th century. Only recently has it become clear, that the population derived from a native species that was isolated from other Asian elephants at least 18,000 years ago.

Sources: See list of sources.



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2020

The projection for 2020 is based on the 2004 map. As most of the lowland forests (forest below 300 m asl) will be gone or be extremely fragmented by 2020 (as shown in map "approximate forest cover 2020"), main orangutan occurances are limited to protected areas.

Sources: See list of sources.





- Bornean Pygmy Elephant
 - forest cover 2000
 - country boundary
 - province- or state boundary

Forest Status of Kalimantan

Virtually all forests in Indonesian Borneo are state-owned and administratively defined forest lands are catagoriced as: Conservation Forest (4.6 million ha): Forest that is designated for wildlife or habitat protection. Protection Forest (6.4 million ha): Forest intended to serve and maintain environmental functions. **Production Forest** (14.2 million ha): Forest that falls within the boundaries of a timber concession and is managed for timber production. Degraded forests of this category are under threat of being changed to "conversion forest" category as timber extraction is no longer profitable. Limited Production Forest (10.6 million ha): Forest allocated for low-intensity timber production. Typically, limited production forest is found in mountainous areas where steep slopes make logging difficult. Conversion Forest (5.1 million ha): Forest that is designated for clearance and permanent conversion to another form of land use - mainly for oil palm development.

These are only administrative definitions for landuse planning. In many regions of Kalimantan they do not correspond any longer with the actual situation.

Sources: See list of sources.

Sabah see next page

Forest Status of Sabah

The Sabah Forestry Department divides its forest reserves into seven categories (Class I-VII). Total forest cover is classified as permanent forest estate (PFE). Of this 2.7 million ha are classified as Commercial Forest Reserve and are divided into 27 Forest Management Units.

Sources: See list of sources.









- Class I Protection Forest Reserve
- Class II Commercial Forest Reserve
- Class III Domestic Forest Reserve
- Class IV Amenity Forest Reserve
- Class V Mangrove Forest Reserve
- Class VI Virgin Jungle Reserve

- non forest use or forest (2,3 mill ha) outside PFE

plantations

forest allocated for industrial timber

- no data available
- **—**—— country boundary
 - province- or state boundary

Timber Plantations Kalimantan and Sabah

The total area allocated for development of Industrial Timber Plantations in Kalimantan is more than 3 million ha. Of this area about 82% have been planted by now, mainly through conversion of natural forest.

Sources: See list of sources.



Timber Plantations West-Kalimantan

Between 1998 and 2004 the area converted for industrial timber plantation in West-Kalimantan grew by 16%.

Sources: See list of sources.



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Oil Palm Plantations Kalimantan

Oil palm, with the highest per ha yield (4-8 tons) of all edible oils to date, is predicted to become the most important vegetable oil in the world. Today the conversion to oil palm plantations can be considered one of the biggest threats for the remaining forests on Borneo.

Sources: See list of sources.

Oil Palm Plantations West-Kalimantan

Since 1984 oil palm plantation area in West-Kalimantan grew from 13.000 ha to more than 400.000 ha. Loss of natural forests is the consequence.

Sources: See list of sources.









Betung Kerihun NP. Road development differs considerably in Sarawak and West-Kalimantan

Road Network of Borneo



protected areas

province- or state boundary

1

country boundary

Based on Landsat ETM7 2000 analysis for the road network.

Sources: See list of sources.



Bukit Baka - Bukit Raya NP. Encroachment by logging roads.



Tanjung Puting NP. The park suffers heavily from illegal logging.



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Deforestation is the biggest threat to the survival of forest ecosystems and their inhabitants. Road-building, logging, conversion to plantation, settlements, forest fires and illegal wildlife trade



need to be seen as interlinked. But it all starts with industrial road construction.

The biggest impact of modern technology on Borneo came with the introduction of two simple machines in the 1950s: The chainsaw and the caterpillar tractor. With these, roads can be constructed fairly rapidly on almost any kind of terrain, and massive trees can be felled in a matter of minutes. This was the beginning of an era where virtually no place on Borneo was off limits to trade and industry. Since then, the development of roads has been a key factor, changing the face of Borneo.

Before the emergence of roads, people would either not go to many of these areas, or they were only able to reach them by foot (to an extent also by boat) and could only harvest small quantities of forest products.



FOREST FIRES

Burnt Areas during Fire Season 1997 – 1998

One of the largest recent natural catastrophes for forests worldwide occurred during an unusual strong El-Niño period from July 1997 to May 1998 in Indonesia. In all of Kalimantan more than 6.5 million ha land were affected, the vast majority having been agricultural land and lowland forests.

It is estimated that fires in Indonesian peat forests released between 0,8–2,5 GT of carbon to the atmosphere in this period – the equivalent to 13-40 % of mean annual global carbon emission from fossil fuels. The fires were mostly man-made.

Sources: See list of sources.

Proposed Heart of Borneo Boundaries

There is only one place where the Indo-Malayan forests of Southeast Asia can still be conserved on a large enough scale to still be permanently viable. It covers the transboundary highlands of Indonesia and Malaysia, and reaches out trough the foothills into adjacent lowlands and to parts of Brunei. This area is called the Heart of Borneo. It consists of a network of protected areas and managed forests which are around 22 million ha in size. It is hoped that the governments of Brunei, Indonesia and Malaysia wholly adopt the Heart of Borneo Initiative and commit themselves to the protection and sustainable use of these forests.

Sources: See list of sources.



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non forest

--- country boundary

Forest cover

reported hot spots 01/1997- 12/1998

province- or state boundary A hot spot is an area of approx. 110 ha (a single pixle) on a satellite image. The temperature is measured by onboard AVHRR sensors on the NOAA satellites. NOAA satellite sensors does sense from several bands, including visible red, near infra red and infra red. For Kalimantan the forest cover is based on LANDSAT data 1990, for Sabah and Sarawak on WCMC data 1985.

Methodology





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FOREST CONSERVATION

INDONESIAN BORNEO

West Kalimantan

1. TWA Melintang 2. TWA Gunung Asuansang 3. Gunung Nyiut NR 4. Gunung Raya Pasi NR 21. Sungai Lulan & 5. Mandor NR 6. Danau Sentarum NP 7. Betung Kerihun NP 8. TWA Gunung Kelam 9. Gunung Palung NP 10. Kendawangan WR 11. Karimata island NR

Central Kalimantan

12. Tanjung Puting NP 13. Sebangau NP (designated) 14. Bukit Baka -Bukit Raya NP 15. Perarawen NR 16. Sepatuhan NR

Sungai Bulan NR 22. Selat Sebuku NR 23. Selat Laut NR 24. Teluk Kelumpang NR 25. Gunung Batu Besar NR East Kalimantan 26. Teluk Apar NR 27. Teluk Adang NR 28. Bukit Suharto GF

South Kalimantan 17. Nusa Gede Panjalu NR

18. Pulau Kaget NR 19. TWA Plaihari

20. Sultan Adam GF

29. Padang Luwai NR 30. Muara Kaman Sedulang NR 31. Kutai NP 32. Kayan Mentarang NP

MALAYSIAN BORNEO

Sarawak

33. Samunsan WS 34. Gunung Gading NP 35. Kubah NP 36. Semenggoh NR 37. Sama Jaya NR 38. Bako NP 39. Maludam 40. Rajang Mangrove NP 41. Batang Ai 42. Lanjak Entimau WS 43. Simalajau NP 44. Bukit Tiban NP 45. Niah NP 46. Loagan Bunut NP 47. Sibuti NP 60. Bidu-Bidu FR 48. Lambir Hills NP 61. Bukit Kuamas FR 49. Gunung Mulu NP 62. Bukit Taviu FR 50. Pulung Tau NP 63. Ulu Telupid FR 64. Tawai FR 65. Lungmanis FR Sabah 51. Maligan FR 66. Kabili Sepilok FR 67. Kinabatangan WS 52. Klias FR 53. Sungai Binsuluk FR 68. Kulamba WR 54. Taman Negara 69. Tabin WR Banjaran Crocker Park 70. Mount Hatton FR 55. Gunung Lumaku FR 71. Silabukan FR 56. Crocker Range FR 72. Danum Valley FR 57. Kinabalu Park 73. Sungai Imbak FR 58. Mandamai FR 74. Maliau Basin FR 59. Tawau Hills Park -75. Mount Pock PFR Ulu Kalumpang 76. Pulau TImbun Mata FR

Forest Protected Areas of Borneo

protected areas

province- or state boundary

——— country boundary

Sources: See list of sources.

11



29

15





Brunei

- 77. Belait Peatswamp FR
- 78. Anduki CF
- 79. Badas CF
- 80. Ulu Badas FRR
- 81. Bukit Sawat CF
- 82. Andulau CR
- 83. Keluyoh FRR
- 84. Sungai Liang FRR
- 85. Ulu Mendaram CF
- 86. Bukit Teraja PF
- 87. Bukit Batu Patam PF
- 88. Sungei Ingei CF
- 89. Bukit Ulu Tutong PF
- 90. Bukit Bedawan PF
- 91. Benutan Catchment PF
- 92. Berakas FRR
- 93. Ulu Temburong NP

CF = Conservation Forest

- FR = Forest Reserve
- FRC = Forest Reserve Complex
- FRR = Forest Research Reserve
- NP = National Park
- NR = Nature Reserve
- PF = Protection Forest
- TWA = Taman Wisata Alam (Recreation Park)
- WR = Wildlife Reserve
- WS = Wildlife Sanctuary

ADMINISTRATIVE



Sabah

BRUNEI DARUSSALAM

- 86. Belait
- 87. Tutong
- 88. Brunei Muara
- 89. Temburong

INDONESIAN BORNEO

South Kalimantan

- 27. Tanah Laut
- 28. Tanah Bumbu
- 29. Banjar
- 30. Barito Kuala
- 31. Kota Baru
- 32. Tapin
- 33. Hulu Sungai Selatan
- 34. Hulu Sungai Tengah
- 35. Hulu Sungai Utara
- 36. Balangan
- 37. Tabalong
- 38. Kota Banjarmasin
- 39. Kota Banjarbaru

East Kalimantan

- 40. Pasir
- 41. Kutai Barat
- 42. Kutai
- 43. Kutai Timur
- 44. Berau
- 45. Malinau
- 46. Bulungan
- 47. Nunukan
- 48. Penajam Paser Utara
- 49. Kota Balikpapan
- 50. Kota Samarinda
- 51. Kota Tarakan
- 52. Kota Bontang





A typical montane rainforest canopy



Danau Sentarum in West-Kalimantan



Peat swamp forest in Central Kalimantan





Palangkaraya

3

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Banjarmasin

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Typical small-scale deforestation by shifting cultivation

For all maps:

Federal state boundary (Malaysia) and country boundary: Environmental Systems Research Institute. Digital chart of the world
Provincial boundary (Indonesia): Base map, Directorate for Inventory (Dirjen Intag), 1997
Elevation: Shuttle Radar Topographic Mission, 90 m resolution DEM

Forest Cover 1900 and 1950

Based on remarks in a variety of historical records.

Forest Cover 1985

• United Nations Environment Programme – World Conservation Monitoring Centre. 1996, Tropical Moist Forests and Protected Areas: The Digital Files. Version 1

• Iremonger, S., Ravilious, C. and Quinton, T. (eds). 1997. A Global Overview of Forest Conservation. CD-Rom, WCMC and CIFOR, Cambridge.

Forest Cover 2000

LANDSAT ETM imagery 1999 and 2000, modified by images from 2002

Forest Cover 2005

Projection, based on LANDSAT imagery 2000. Reduced by 4,320,000 ha. Forest loss is placed around existing road network.

Forest Cover 2010

Projection, based on LANDSAT imagery 2000. Reduced by 8,640,000 ha. Forest loss is placed around existing road network.

Forest Cover 2020

Projection, based on LANDSAT imagery 2000. Reduced by 17,280,000 ha. Forest loss is placed around existing road network.

The Future of Lowland Forest in Kalimantan

• The prediction for 2010 is calculated from overall forest cover, forest above 300m and forest on peat sites, based on LANDSAT imagery 2000. Forest on peat is based on RePPProt land-use systems and updated with forest cover 2000.

• RePPProT, Regional Physical Planning Programme for Transmigration. Final report dated 1990. Prepared for the Ministry of Transmigration Republic of Indonesia and the Land Resources Division of the Overseas Development Administration, Government of UK

Orang-utan distribution prehistoric:

• Based on assumption that all of Borneo was forested and all habitat below 500 m asl is suitable for permanent orang-utan occurrence.

Orang-utan distribution 1930

• 1930 orang-utan distribution based on Rijksen, H. D. and Meijaard, E.: Diambang kepunahan 2001. Modified by removing occurrence above 500 m asl, except for Crocker Range National Park, Mt. Kinabalu and some areas in southeast Sabah.

Orang-utan distribution 1989

• Sabah: Payne, J. & Andau, M. (1989). Orang-Utan: Malaysia ,s mascot. Berita Publishing Sdn. Bhd.: Kuala Lumpur. Modified by removing all areas above 500 m asl, except for Crocker Range National Park, Mt. Kinabalu National Park and some areas in southeast Sabah.

• Kalimantan and Sarawak: Tilson, R., Seal, U.S. Soemarna, K., Ramono, W., Sumarja, E., Poniran,

S., van Schaik, C., Leighton, N., Rijksen, H., Eudey, A., 1993. Orang-utan PHVA (Population and Habitat Viability Assessment), Workshop 20 October 1993 in Medan North-Sumatra, modified by forest cover and by removing occurrence above 500 m asl.

Orang-utan distribution 1999

• Rijksen, H. D. and E. Meijaard, E. 1999. Our Vanishing Relative: The Status of Wild Orangutans at The Close of The Twentieth Century. Kluwer Academic Publishers, Dordrecht. Modified by removing occurrence above 500 m asl, except for Crocker Range National Park, Mt. Kinabalu and some areas in southeast Sabah.

Orang-utan distribution 2004

Kalimantan: Orang-utan PHVA (Population and Habitat Viability Assessment), Workshop 15-18 January 2004, Jakarta. Final Report, August 2004. Modified by removing occurrence above 500 m asl.
Sabah: Ancrenaz M, Gimenez O, Ambu L, Ancrenaz K, Andau P, et al. (2005) Aerial surveys give new estimates for orang-utans in Sabah, Malaysia. PLoS Biol 3(1): e3.

Orang-utan distribution 2020

Map shows probable orang-utan distribution only in areas where distribution of 2004 matches predicted forest cover 2020.

Kalimantan: Orang-utan PHVA (Population and Habitat Viability Assessment), Workshop 15-18 January 2004, Jakarta. Final Report, August 2004. Modified by removing occurrence above 500 m asl.
Sabah: Ancrenaz M, Gimenez O, Ambu L, Ancrenaz K, Andau P, et al. (2005) Aerial surveys give new estimates for orang-utans in Sabah, Malaysia. PLoS Biol 3(1): e3.

• Forest cover: Landsat 2000 Imagery as shown in map "forest cover 2000" reduced by 17,280,000 ha.

Sumatran Rhinoceros

Sebastian, A. (2005). Conservation Priorities for Species on Borneo. Report written for WWF Indonesia (Heart of Borneo Coordination Unit). April 2005.

Bornean Elephant

Sebastian, A. (2005). Conservation Priorities for Species on Borneo. Report written for WWF Indonesia (Heart of Borneo Coordination Unit). April 2005.

Forest Status of Kalimantan

Directorate for Inventory (Dirjen Intag), Ministry of Forestry: Forest land-use consensus (TGHK) 2001.

Forest Status of Sabah

Sabah Forestry Department 2005, http://www. sabah.gov.my/htan/data_1/a_toppage_main/ frames.htm, accessed June 2005.

Timber Plantation Kalimantan and Sabah

• Sabah: Industrial Timber Plantation (ITP), Sabah Forestry Department

• Kalimantan: Forestry Planning Agency (BaPlan), Ministry of Forestry, 2005. Digital data on the industrial forest plantation concession (HPHTI) development up to 2003.

Timber Plantation West-Kalimantan

• 1997: Directorate for Inventory (Dirjen Intag), Ministry of Forestry

• 2004: Estate Crop Service West-Kalimantan

(Dinas Perkebunan Kalimantan Barat)

Oil Palm Plantation Kalimantan Forest Planning Agency (BaPlan), Ministry of Forestry 2005. Digital data on the palm oil concession development up to 1998.

Oil Palm Plantation West-Kalimantan

• 1997: Directorate for Inventory (Dirjen Intag), Ministry of Forestry

• 2004: Estate Crop Service West-Kalimantan (Dinas Perkebunan Kalimantan Barat)

Road Network of Borneo

LANDSAT imagery 1999-2002

Burnt Vegetation during 1997/1998 • HOTSPOTS:

Kalimantan and Sarawak: NOAA satellite images. Resolution is 110 ha at nadir. NOAA sensors include visible red, near infra red and infra red. Sabah: SPOT Quicklook composite of the burnt area.

• FOREST COVER

Kalimantan: LANDSAT 1990; National Forest Inventory Project 1998, Directorate for Inventory, Ministry of Forestry,.

Sarawak and Sarawak: United Nations Environment Programme - World Conservation Monitoring Centre (WCMC). 1996, Tropical Moist Forests and Protected Areas: The Digital Files. Version 1.

Heart of Borneo Boundaries

Provisional Scope and Main Protected Areas. Map produced by WWF Malaysia and WWF Indonesia for Heart of Borneo Workshop "Three Countries - One Conservation Vision", 5.-6. April 2005, Bandar Seri Begawan, Brunei Darussalam.

Forest Protected Areas of Borneo

• Kalimantan: Forestry Planning Agency (BaPlan), MoF: Map of forested area 2002.

- Sabah: Sabah Forestry Department, updated by WWF Malaysia. 2004.
- Sarawak: Sarawak Forestry Department, 2003.

• Brunei: Edwards, D.S., 2005. Opportunities for transboundary conservation in Borneo: A national perspective from Brunei Darussalam. Presentation held at Heart of Borneo Workshop: Three Countries – One conservation Vision. Bandar Seri Begawan, Brunei Darussalam, 5.-6.April 2005. Maps based on Wong, K.M. and Kamariah, A.S., 1999. Forests and Trees of Brunei Darussalam.

Administrative Boundaries of Borneo

Kalimantan: PT. Pembina Peraga, Pembagian Administrasi Pemerintahan di Kalimantan. 2005 : PT. Pembina Peraga, Government Administrative Boundary in Kalimantan.

Topography of Borneo

Elevation: Shuttle Radar Topographic Mission, 90 m resolution DEM

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- ensuring that the use of renewable resources is sustainable and
- promoting the reduction of pollution and wasteful consumption.