

PRIVATE SECTOR PARTICIPATION IN FOREST CONSERVATION IN MALAYSIA - PULAU BANDING FOUNDATION'S EXPERIENCE

By

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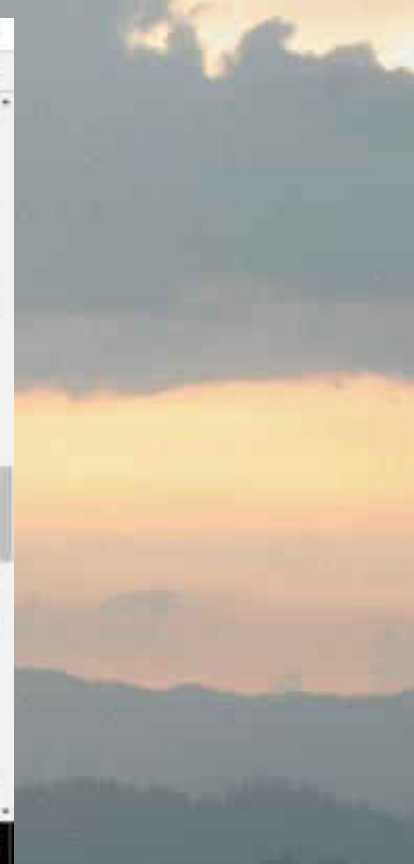
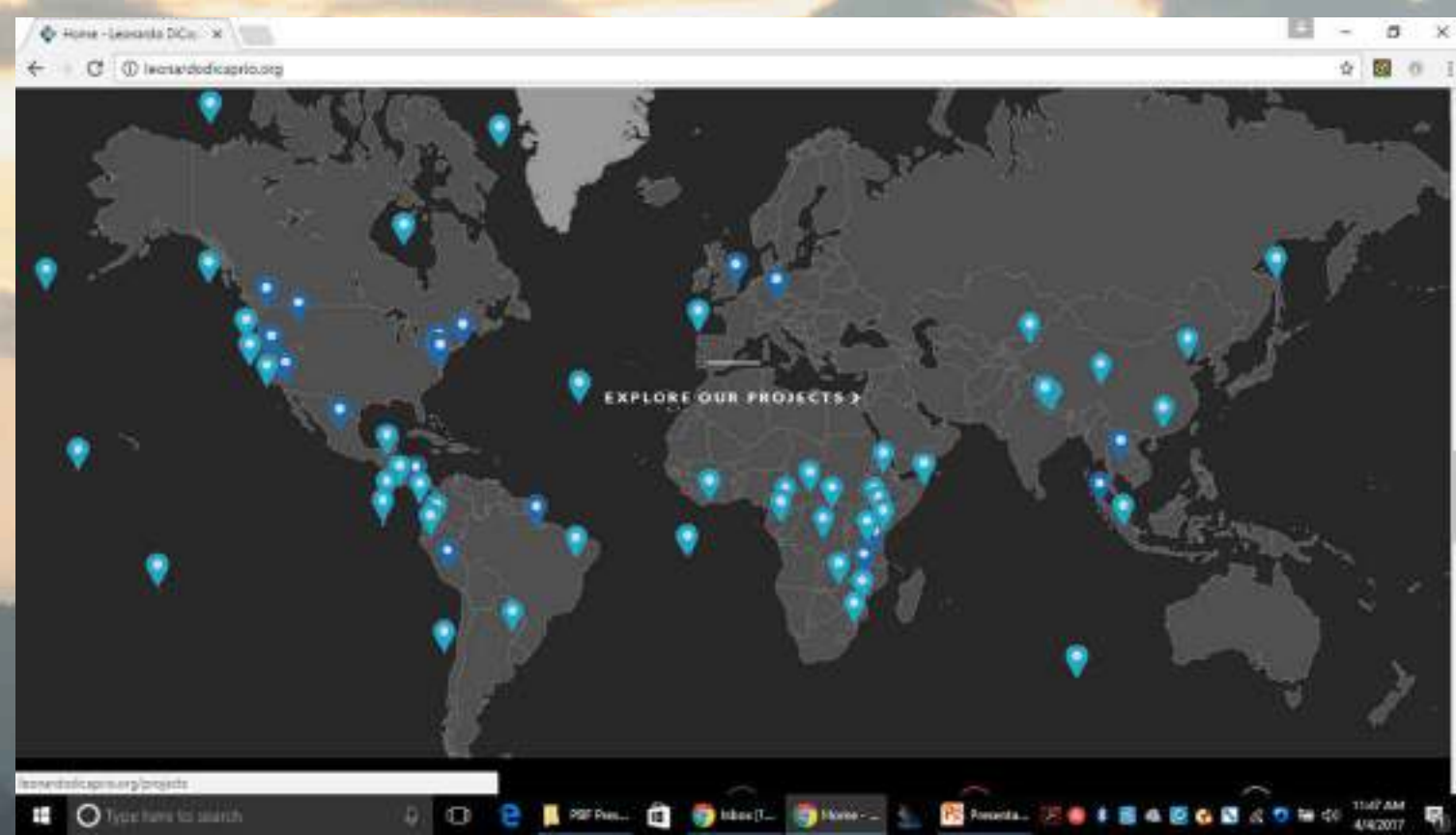


**CONSERVATION EXPENDITURE
2014 – USD6.0M**



**GRANTS AWARDED
SINCE 2010 IS USD62.0 M
TO MORE THAN
65 ORGANISATIONS**

WHERE WE WORK





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PBRRC



Dormitory



Belum Discovery Centre



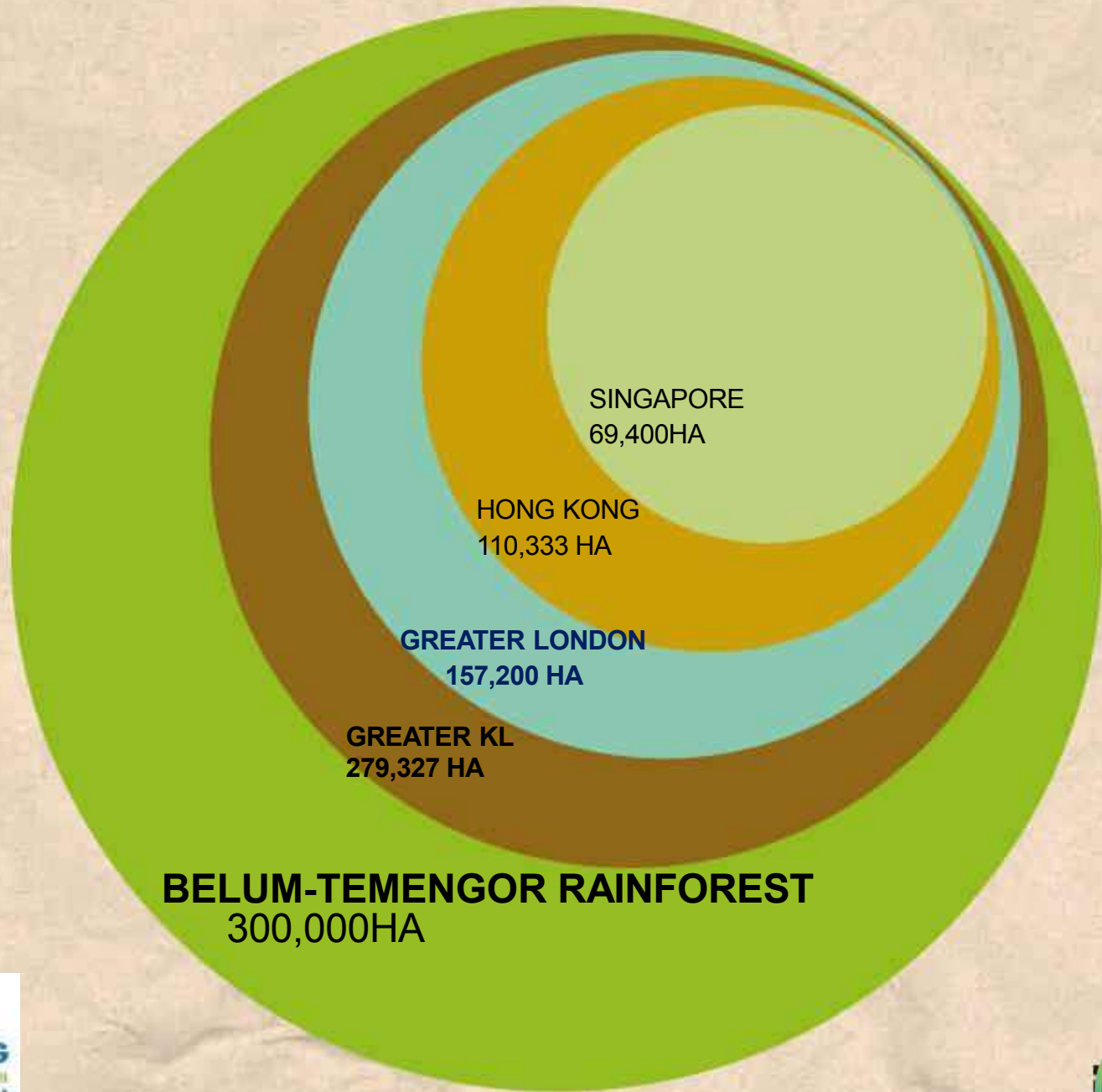
**SNAPSHOT OF BELUM-TEMENGOR
RAINFOREST COMPLEX (BTRC)**



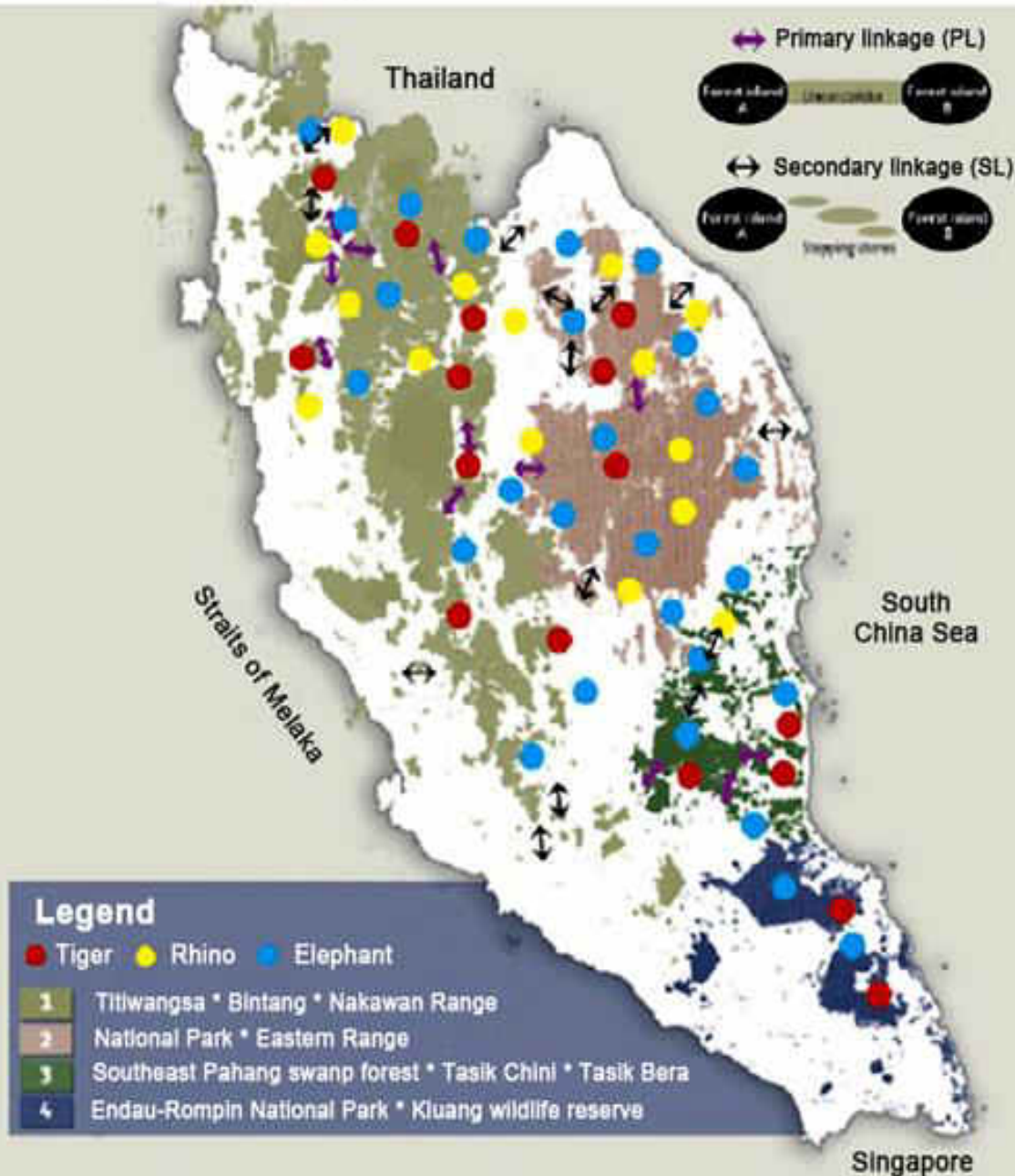
ROYAL BELUM STATE PARK

- Gazetted on 3 May 2007
- More than 130 million years old. Older than the Amazon and Congo Rainforest
- 4 times the size of Republic of Singapore
- More than 12,000 spp of flora and fauna
- The only reserve forest within Belum-Temengor Forest Complex.
- 25 acres patch of Temengor Forest support more types of trees than the whole of U.S.A
- Malaysia's newest eco destination & Potential World Heritage Site.

BELUM-TEMENGGOR RAINFOREST COMPLEX (BTRC)



Proposed linkages under the CFS Master Plan

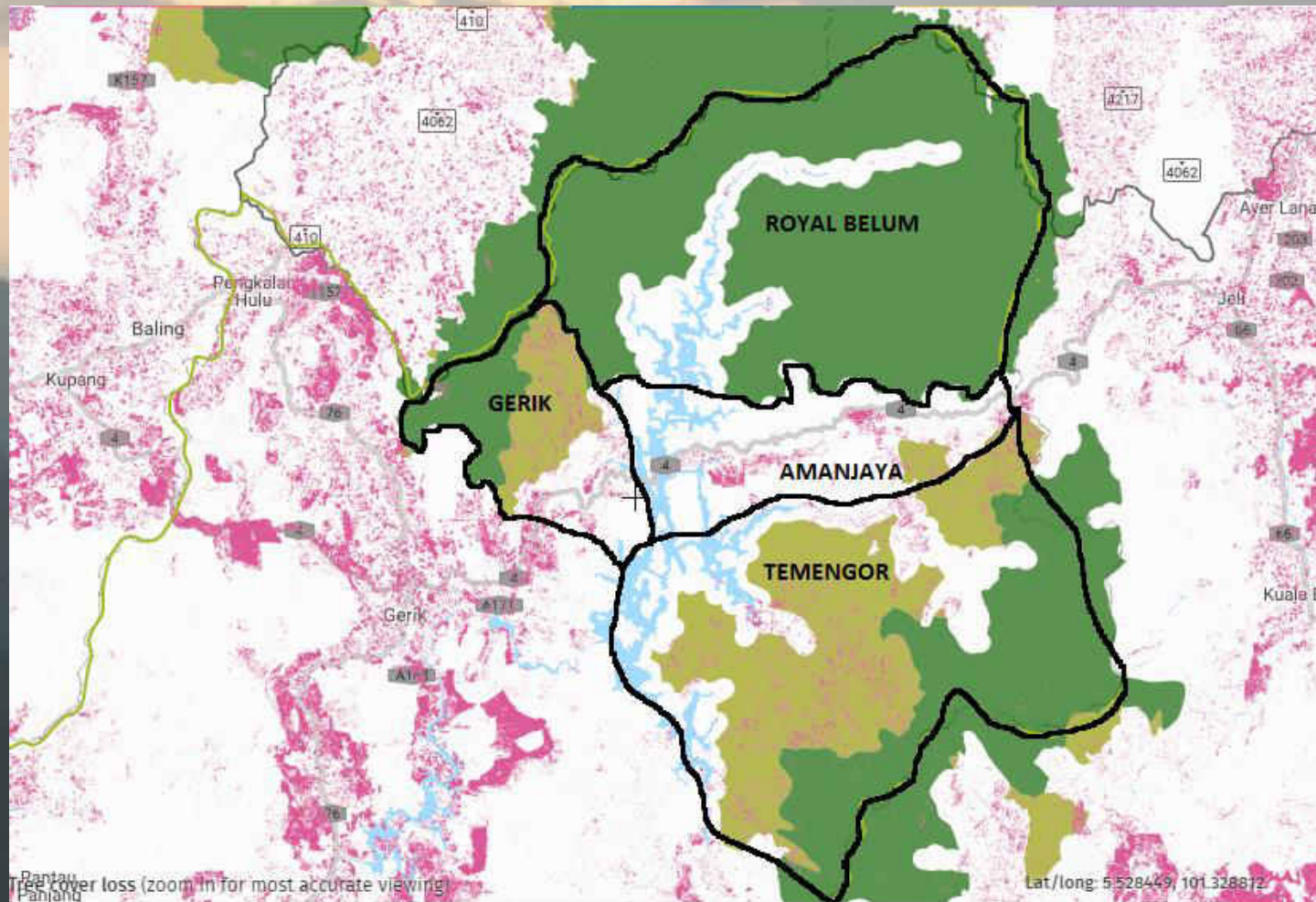


To link up 4 major forest complexes

To create one contiguous forested wildlife sanctuary.

A network of ecological or green corridors

LOSS OF TREE COVER IN BTRC 2001-2015 BY GLOBAL FOREST WATCH INITIATIVES



FOREST CHANGE

- Tree cover loss (annual, 30m, global, Hansen/UMD/Google/USGS/NASA)
Displaying loss with > 30% canopy density.
Tree cover loss is not always deforestation. ⓘ
- NOTE: 2015 tree cover loss is only for the tropics.
- ☑ 2015 data coverage ⓘ

LAND COVER

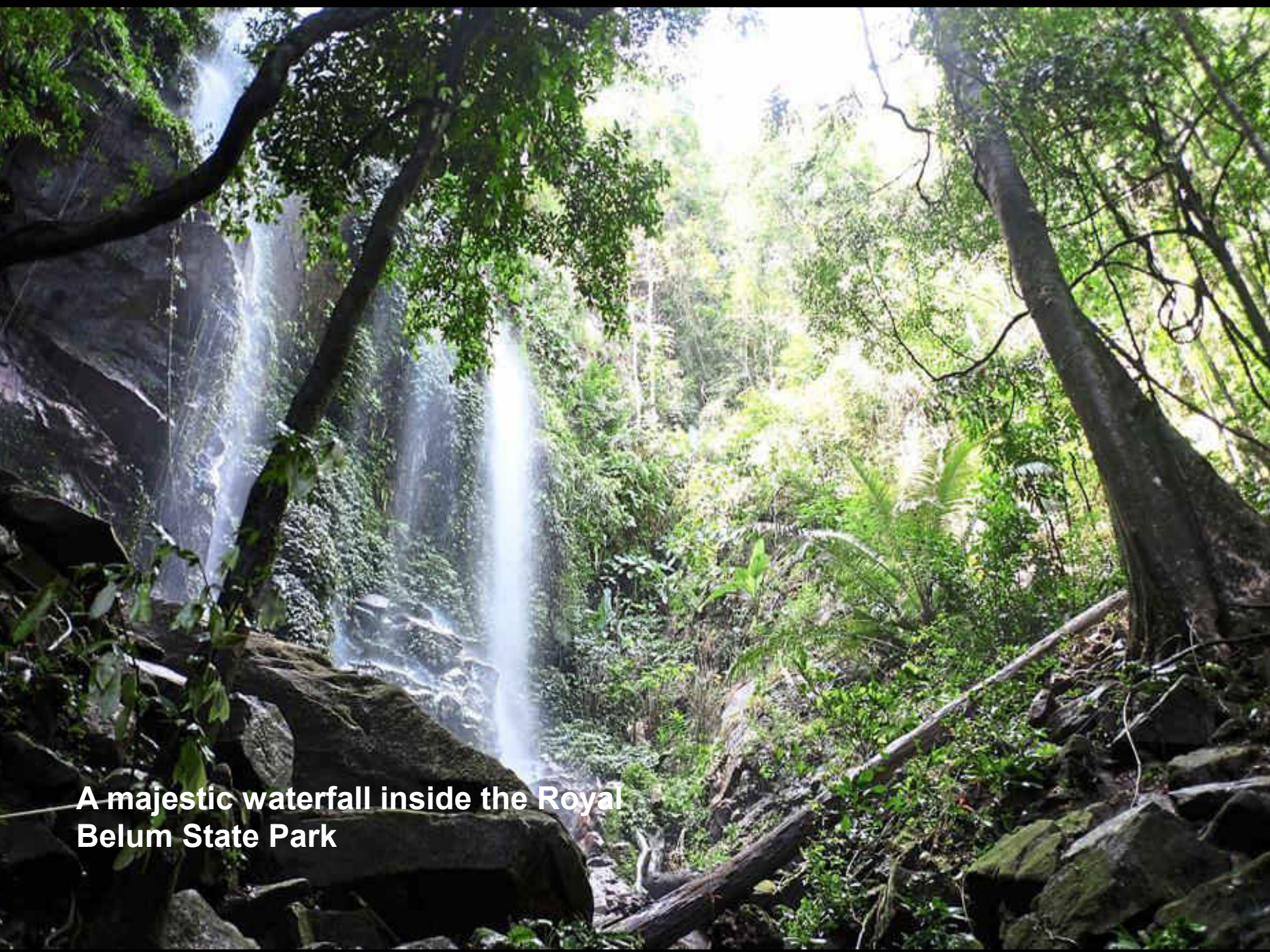
- Intact Forest Landscapes (2000/2013)
 - Intact Forest Landscapes
 - Reduction in extent 2000-2013



A jungle guide with the world's largest flower (the Rafflesia)

**A wild elephant spotted at the Belum-
Temengor forest of northern Perak.
Photo: MEME**





**A majestic waterfall inside the Royal
Belum State Park**

A dark, monochromatic photograph of a forest landscape. A path or road winds through the center of the frame, flanked by dense trees and foliage. The lighting is very low, creating a somber and mysterious atmosphere. The text is overlaid in the center in a bright, bold, sans-serif font.

WHY BELUM-TEMENGOR RAINFOREST?

HOME TO ENDANGERED SPECIES

ELEPHANT



RAFFLESIA



TIGER



**SUPER
6**

HORNBILLS



TAPIR



SELADANG




Home to all 10 spp. of hornbills in Malaysia





3 species
of rafflesias



36 species of
aquatic &
semi-aquatic
bugs



24 species of
amphibians

3000 Species of Flowering Plant





23

SPECIES OF
FRESHWATER
FISH



© WWF-Malaysia / Shariff Mohamad

Clouded leopard (*Pardofelis marmorata*)



WHAT WE DO

RESEARCH & DEVELOPMENT



UPM
UNIVERSITI PUTRA MALAYSIA
BERSAMA SAMA MELAKSANAKAN TRANSFORMASI



Water quality
& lab usage



Mosquito studies



Water quality studies



Elephant dung studies



Aquatic insect studies

A Limnological Study of Temengor Lake with Special Reference to Dark Zone	Prof Dr. Mashor Bin Mansor Research by: Nor Aisyah Bt. Omar, USM	1 year	RM 25,000.00
The Effect of Commercial Tilapia Cage Temengor Reservoir	Prof Dr. Mashor Bin Mansor Research by: Muzalifah Abd Hamid, USM	2 years	RM 25,000.00 RM 5, 000.00
Habitat Characterization and Effect to Global Warming on Aquatic Macro invertebrate in Selected Feeder Streams of Temengor Lake	Prof. Salmah Research by: Dhyia Syafiqah Bt. Ridzuan, USM	2 years	RM 25, 000.00
Research on Tapir – Function of the Communication via scent and vocalisation between Malayan Tapir	Yuko Tawa, Kyoto University, Japan	3 years	RM 20, 000.00
Royal Belum – Temengor Scientific Expeditions	Dr. Daniel Baskaran and Dato' Dr. Abdul Rashid Ab. Malik	2012 & 2015	RM 650, 000.00



4 salt licks
24 cameras
3 sq km area



**FUNCTION OF THE COMMUNICATION VIA SCENT
AND VOCALISATION BETWEEN MALAYAN TAPIRS**

SCIENTIFIC EXPEDITIONS

2012 - 2nd Temengor Scientific Expedition

2015 - 4th Royal Belum Scientific Expedition

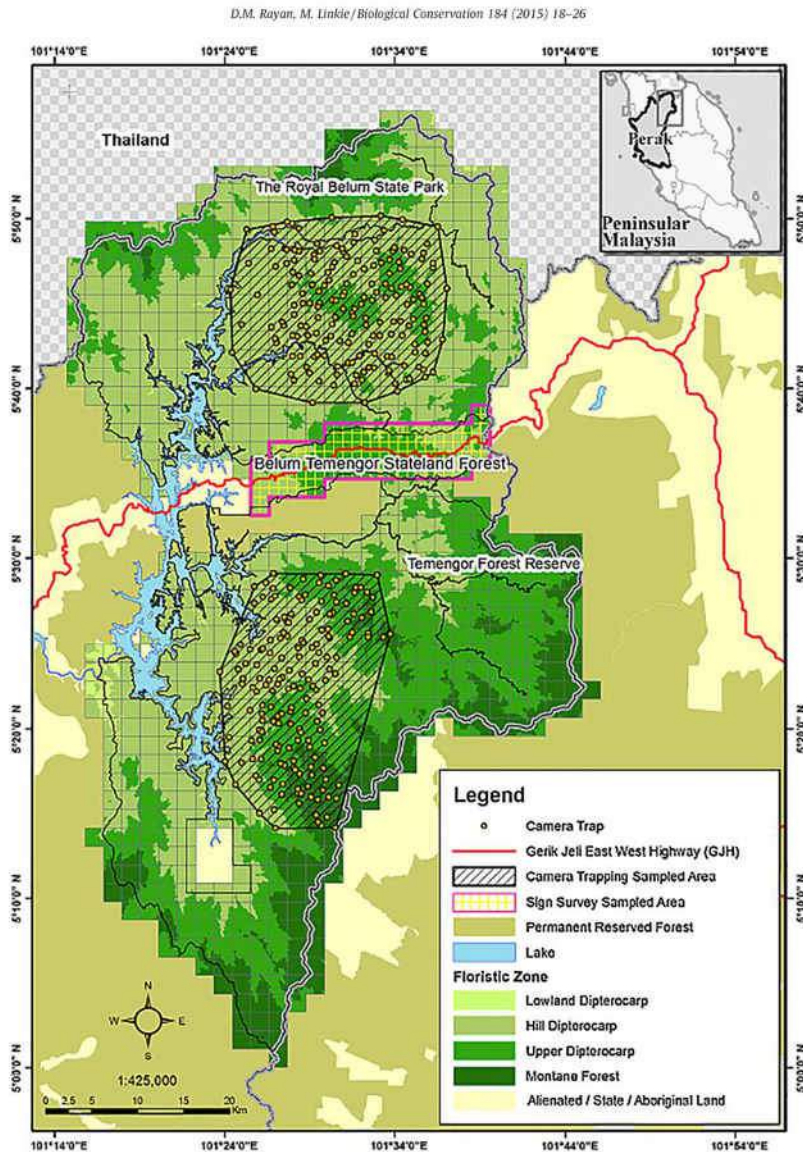


Fig. 1. Location of the three study areas: Royal Belum State Park, Temengor Forest Reserve and Belum Temengor State Land Forest in Perak State.

No.	Year	Studies	Areas	Agency/Individual
1	1910	General collection	Temengor Forest Reserve	H.N. Ridley, H.C. Robinson & C.B. Kloss
2.	1993-94	1 st Belum Expedition	Sg. Halong, Temengor Forest Reserve	Malayan Nature Society
3.	1997	Forest inventory	Temengor, Gerik & Banding Forest Reserve	Forestry Department Peninsular Malaysia
4.	1998	2 nd Belum Expedition	Sg. Tan Hain, Royal Belum State Park	Malayan Nature Society
5.	2003	3 rd Belum Expedition	Temengor Forest Reserve & Royal Belum State Park	Forestry Department Peninsular Malaysia & Forestry Department Perak
6.	2012	2 nd Temengor Scientific Expedition	Sg. Enam, Temengor Forest Reserve	Pulau Banding Foundation
7.	2015	4 th Royal Belum Scientific Expedition (this study)	Sg. Kejar & Sg. Tiang Royal Belum State Park	Pulau Banding Foundation

(Source : Mohd Maseri Nik Mohamad, 2013)

RECORDS FROM SCIENTIFIC EXPEDITION (TEMENGOR) 2012 ORGANIZED BY PULAU BANDING FOUNDATION



New lizard record for Malaysia
Narathiwat Round-eyed Gecko (*Cnemaspis narathiwatensis*)
Pic. – USM/Evan



New lizard record for the Belum-Temengor region
Lowland Bintang Range Bent-toed Gecko (*Cyrtodactylus bintangrendah*)
Pic. – USM/EVAN



New Record BTRC
Mueller's Blind Snake (*Typhlops muelleri*)
Pic. – USM Amirah Huzaid



New Record BTRC
Pink headed Reed Snake (*Calamaria schlegelii*)
Pic. – WWF-Malaysia/Nurol Nasir



New record BTRC
Speckle-bellied Keelback (*Rhabdophis chrysargos*)
Pic – WWF Malaysia/Nurol Nasir



New record BTRC
Scarce Wolf Snake (*Lycodon effraenis*)
Pic. – USM/EVAN



Oberonia bertoldii
Endemic to Peninsular
Malaysia
Pic. – Rusea Go



Hylophila lanceolata
First record in Peninsular
Malaysia.
Pic. Rusea Go

*Biermannia
laciniata* New
record to Perak.
Endemic to
Peninsular
Malaysia
Pic. – Rusea Go



Begonia variabilis Ridl.,

Endemic to Peninsular Malaysia

Pic – FRIM/Munira

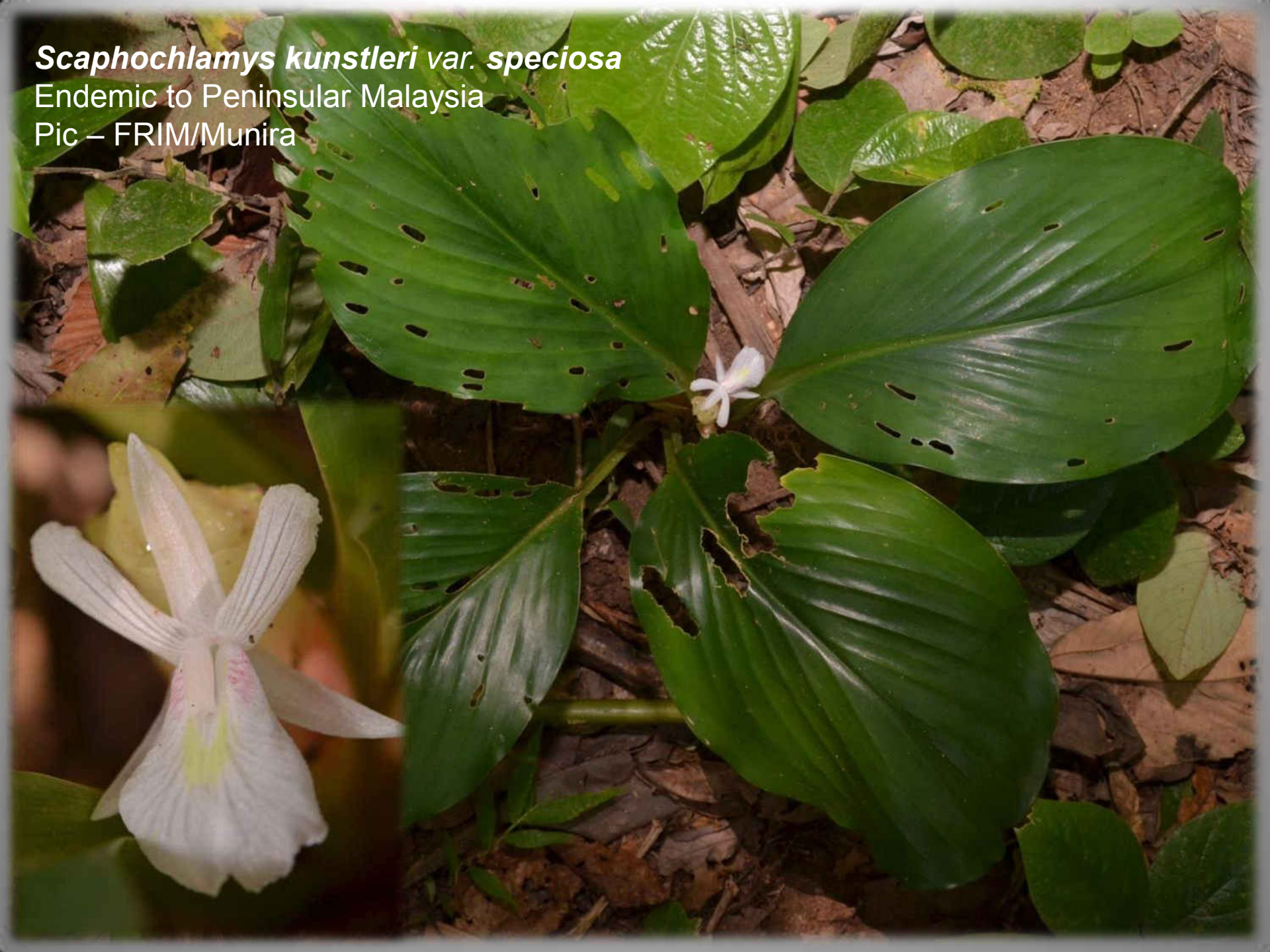


Begonia variabilis

Scaphochlamys kunstleri var. *speciosa*

Endemic to Peninsular Malaysia

Pic – FRIM/Munira





First collection in Temengor forest reserve and Peninsular Malaysia
Marasmius pellucidus



First record in Temengor
Leucophellinus hobsonii (Berk. Ex Cooke)
Ryvarden

4th Royal Belum Scientific Expedition Symposium, 22-25 May 2016





Figure 1.A. *Thottea parviflora* flower



Figure 6.A. *Zingiber griffithii* flower



Fungus new record
Durianella echinuleta

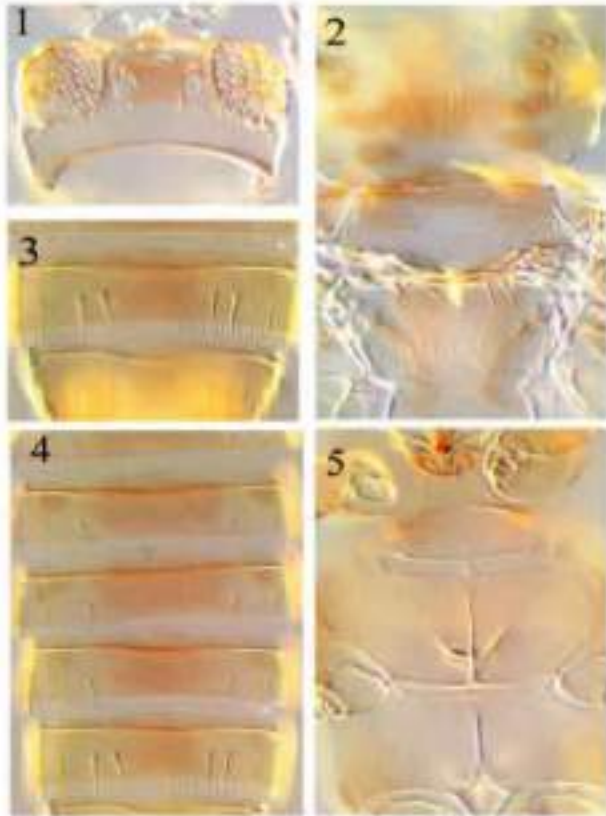


FIGURE 1. *Bitothrips perakensis* sp.n: (1) Head; (2) Pteronota; (3) Abdominal tergites VI-IX; (4) Abdominal tergites III-VI; (5) Meso- and metasterna.

Bitothrips perakensis
New spp recorded

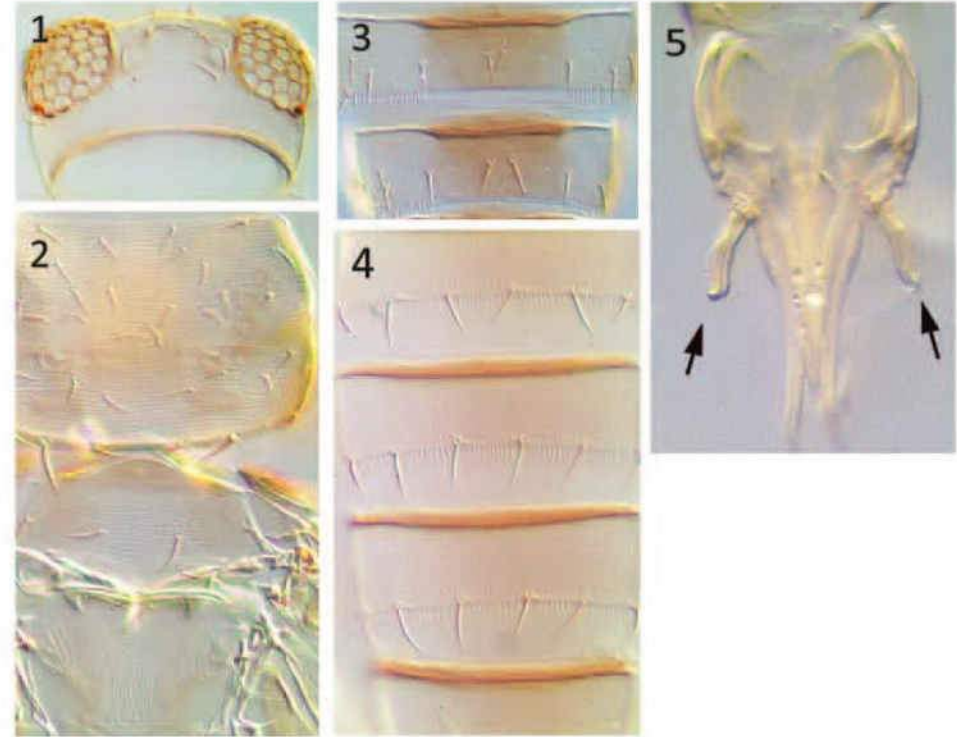


FIGURE 2. *Scirtpthrips temengorensis* sp.n: (1) Head; (2) Pteronota; (3) Abdominal tergites IV-V; (4) Sternites IV-VII; (5) Male abdominal segment X.

Scirtpthrips temengorensis
New spp recorded

Our Proof-of-Concept

(Based on a completed e-Science Project)

Natural Peroxisome Proliferator-activated Receptor-Gamma (PPAR- γ) Ligand screening platform

Extracts with no or little effect on adipocyte differentiation

Extracts that can stimulate the insulin-dependent glucose uptake

Extracts that can activate PPAR- γ Expression

Insulin sensitizing antidiabetic compound with low side effects



Source: Mohd Ilham Adnan. 2015



Bioprospecting @ Royal Belum Forest Reserve



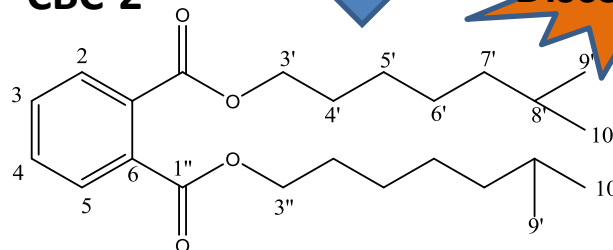
- Antidiabetic plant

RM

Rourea mimosoides
(Sembelit Merah Darah)



CBC-2



- Antidiabetic compound

1,2-Benzenedicarboxylic acid diisooctyl ester

Good potential due to its low adipogenic potential, hypoglycemia activity and its good ability to transactivate PPAR-gamma with a higher fold increase compared to the standard PPAR-gamma ligand, Rosiglitazone. This will open up opportunity to develop therapeutic agent with less side effect but with good efficacy.

Table 1. The plant extracts tested for potential antidiabetic properties in the screening platform

Location	Plant Code*	Adipocyte Differentiation	Glucose Uptake	PPAR γ Transactivation	Plant Identification
Hutan					
Belum	IPharm 395	Negative	Negative	ND	ND
Perak	IPharm 396	Negative	Negative	ND	ND
	IPharm 397	Negative	Negative	ND	ND
	IPharm 398	Negative	Negative	ND	ND
	IPharm 399	Negative	Negative	ND	ND
	IPharm 400	Negative	Negative	ND	ND
	IPharm 401	Negative	Negative	ND	ND
	IPharm 402	Negative	Negative	ND	ND
	IPharm 403	Negative	Negative	ND	ND
	IPharm 405	Negative	Negative	ND	ND
	IPharm 406	Negative	Negative	ND	ND
	IPharm 412	Negative	Negative	ND	ND
	IPharm 416	Negative	Negative	ND	ND
	IPharm 419	Negative	Negative	ND	ND
	IPharm 422	Negative	Negative	ND	ND
		IPharm 423	Negative	Positive	ND
	IPharm 426	Negative	Positive	Negative	ND

Plant codes for the remaining 107 is not shown as they showed adipogenic effect. ND: Not Determined

Nature Tourist-Guides Course - 2013



Kids for Temenggor Expedition (KITE)



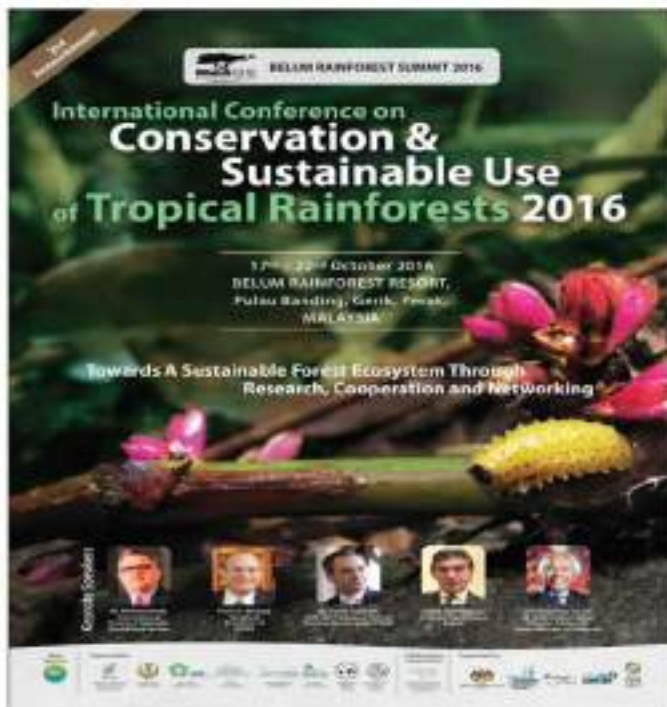
UN SECRETARY GENERAL SCIENTIFIC ADVISORY BOARD MEETING





The following main themes were discussed during the Summit:

1. *Biodiversity conservation and restoration*
2. *Tackling climate change issues*
3. *Global funding opportunities*
4. *Payment of ecosystem services and*
5. *Green and sustainable investment*





THE BELUM BLUEPRINT

The five-day Summit ended with the adoption of the "Belum Rainforest Blueprint" as the follow-up actions from the Summit:

1. *Increase the tiger population by 20% within four years.*
2. *Using the concept of payment for ecosystem services through the collaboration with the Federal Government of Malaysia to produce a biodiversity fund that can be used to preserve and properly maintain the Belum-Temengor rainforest complex.*
3. *Forming a new body such as a Belum Rainforest Council and a Joint Operation Force to improve internal stakeholder management.*
4. *The importance of youth as key players in the conservation movement.*



BELUM RAINFOREST MALAYSIA
20 - 22 OCTOBER 2016

THE VOICES OF YOUTH WISHLIST

With the youth,

COMMIT to reduce public awareness on laws that protect our forests and to report any wildlife trafficking activities. We challenge the government to educate the public on the true sustainability of palm oil plantations and hope that clearing of land for this industry is reduced and stop. We commit to use our resources wisely. We commit to practice the buying of second-hand books and to donate books after use to reduce the usage and wastage of paper, which affects our forest resources. To raise more awareness on the Belum-Temengor forests, we commit to creating programs and activities in our communities that aim to educate our friends, family and school. At the same time, we also will share our own experiences in Belum with them. We also will commit to stop buying products made from wild animal parts to reduce the demand for poaching, which threatens our forests and its wildlife. Through social media, we will spread information on Belum-Temengor to a wider public.

We CHALLENGE the government to implement information to replace our logging forest policies. We also challenge them to block access points for poaching activities. More opportunity should be given for students and youth across the country to visit and learn about the flora and fauna of the Belum forests as well as the threats it faces from poaching and logging. We also urge the Palace Boarding Foundation to organize priority school visits to Belum. We also urge the Temengor to be gazetted and be provided with more resources to guard the forest area and borders. We challenge the government to make Belum-Temengor a UNESCO World Heritage Site. We challenge the state and federal government to enforce existing laws on forest protection.

This is our voice. Please hear us.



**VISIT BY H.E. MICHELLE GYLES
MC-DONNOUGH UNDP RESIDENT
REPRESENTATIVE TO MALAYSIA,
SINGAPORE AND BRUNEI**



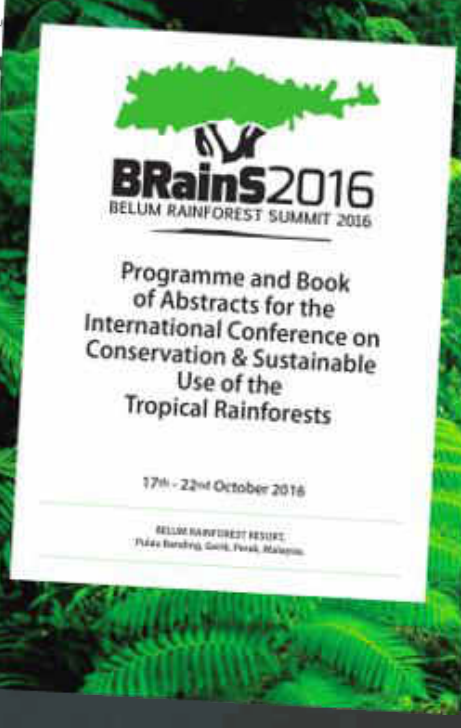
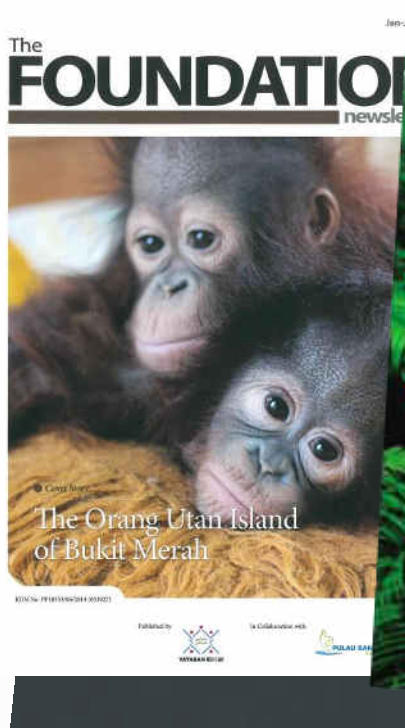
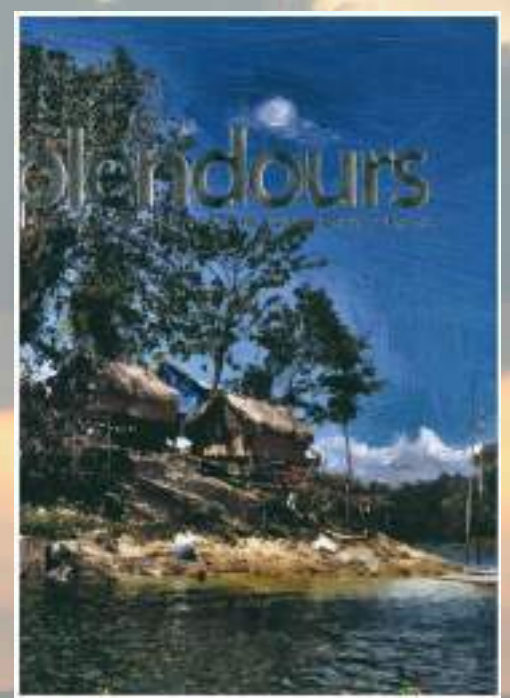
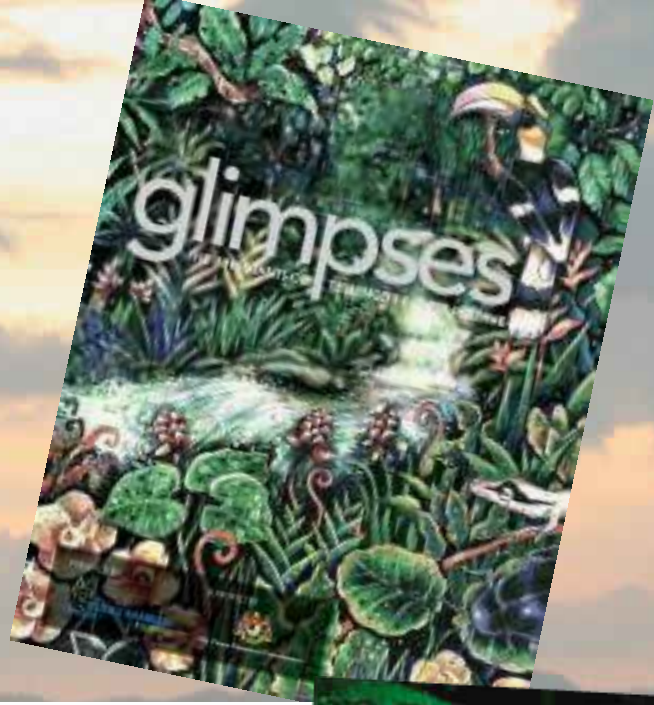
**VISIT BY HON. DATO SERI
HAJI ABDUL RAHMAN DAHLAN,
MINISTER OF PRIME MINISTER'S
DEPARTMENT**



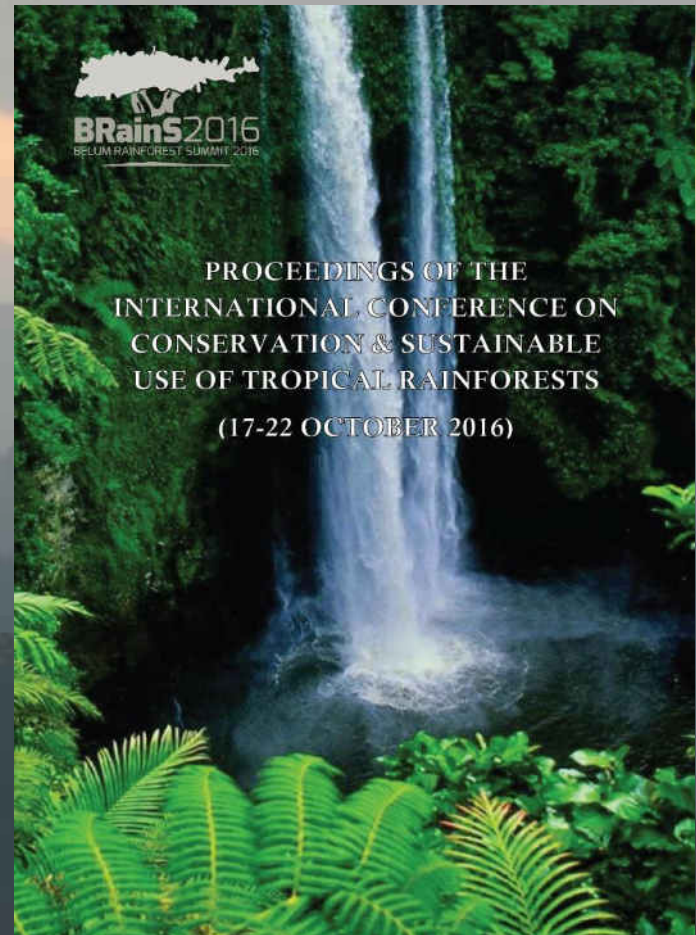
**NATIONAL REDD+ STRATEGY WORKSHOP,
22-23 MARCH 2017, PENANG**

CONCLUSIONS

- 1. PBF is working with a number of local and international research institutions to develop conservation strategies for sustainable use and management of BTRC**
- 2. PBF together with Yayasan EMKAY is assisting the indigenous community to improve their living standard**
- 3. PBF continues to play a greater role in the eco-tourism of BTRC via its conservation activities**



COMING SOON



**THANK YOU
TERIMA KASIH**



Pulau Banding Foundation www.pbf.org.my