



# Distribution of *Rafflesia* populations in Upper Perak, Peninsular Malaysia

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Rafflesia is well known for its  
gigantic size & unpleasant smell



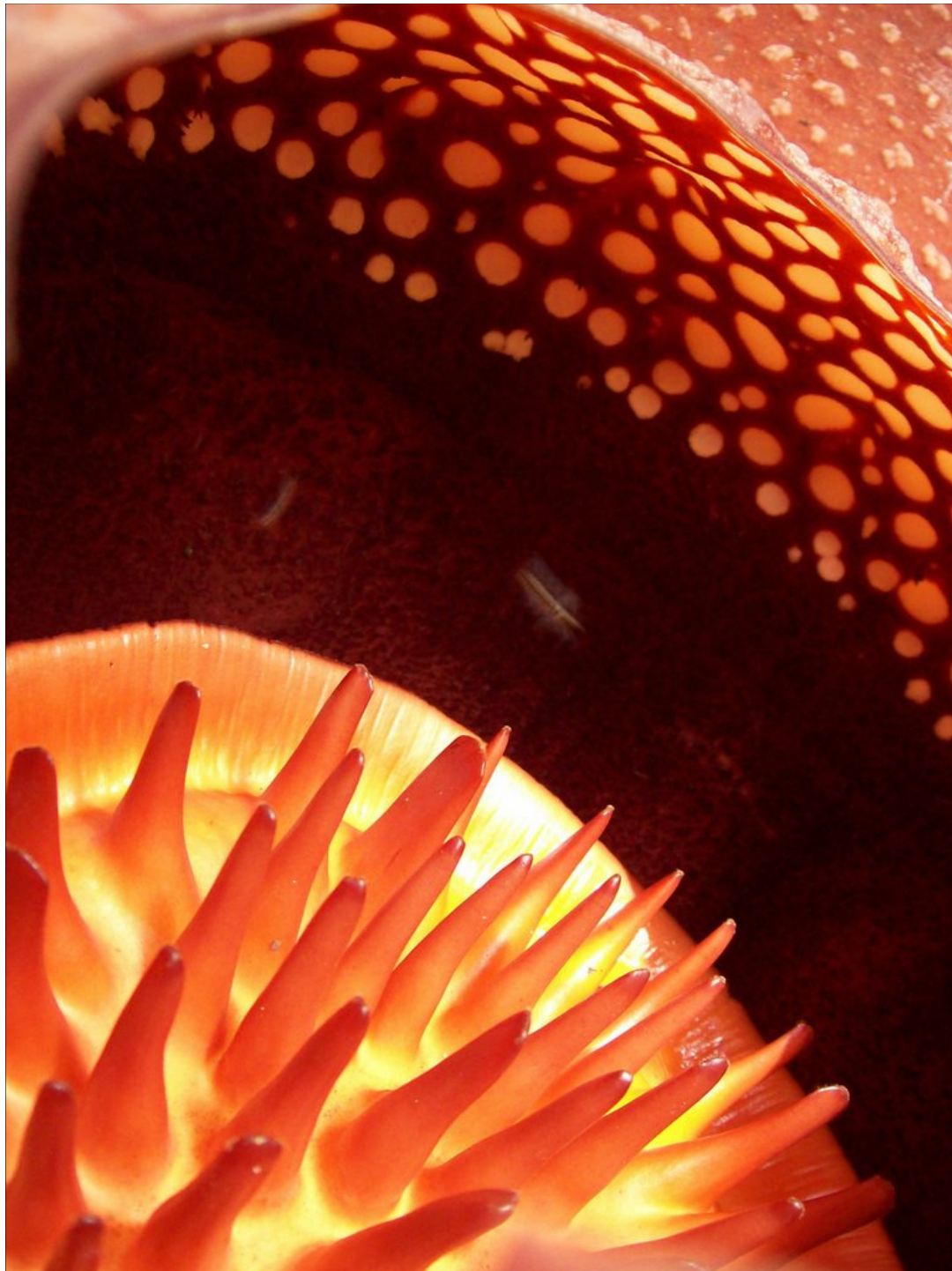




# About Rafflesia..

- **Family**  
**Rafflesiaceae**
- **Holoparasitic**  
**flowering plants**
- **Host- Tetrastigma**  
**(Vitaceae)**





# Endemic to West Malesia



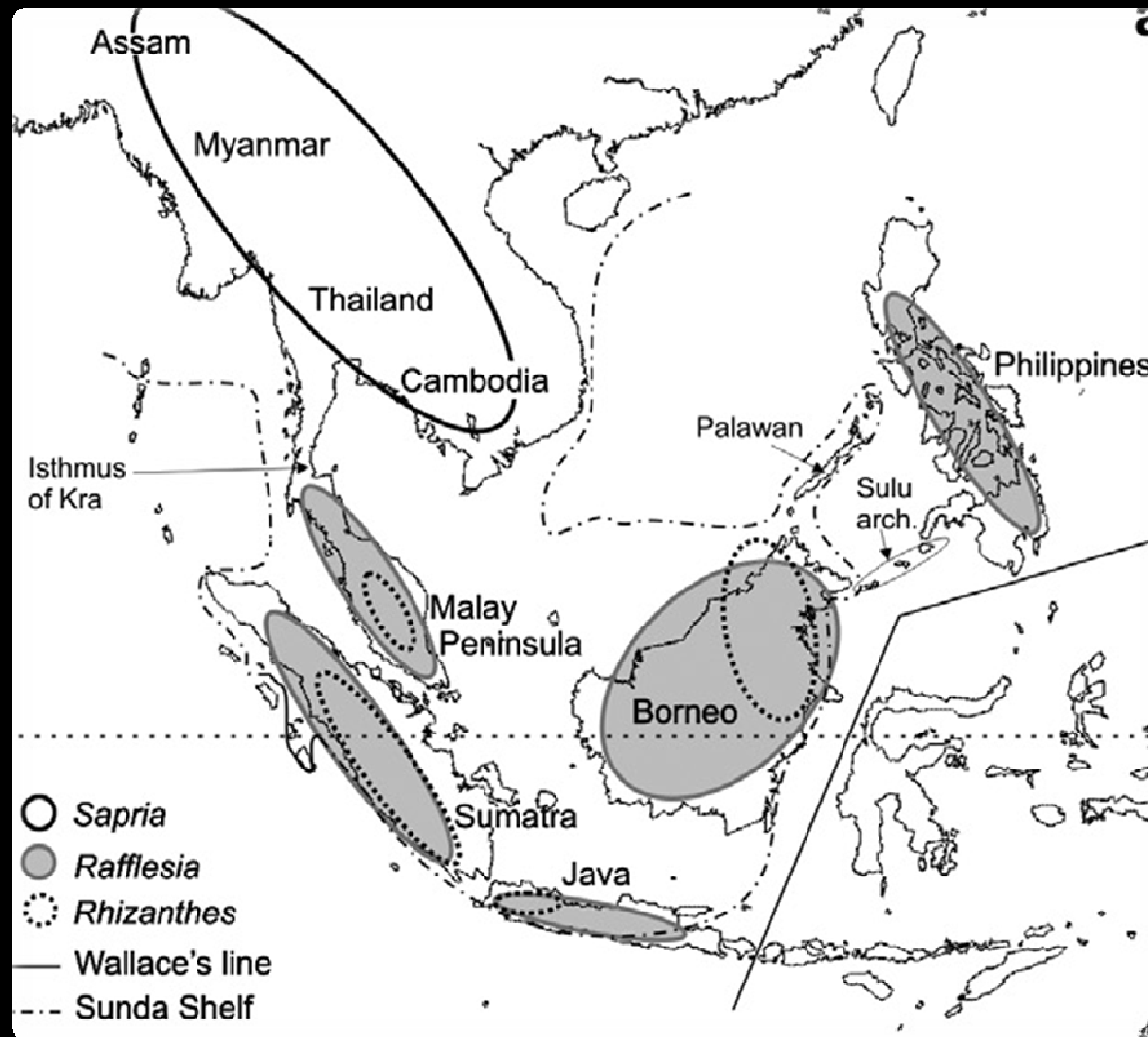
Source: Mika, B. et al 2010





# Peninsular Malaysia





Source: Mika, B. et al 2010

- **Rafflesia**  
(c.30 species)
- **Rhizanthus**  
(4 species)
- **Sapria**  
(3 species)

- **Restricted to tropical rainforests of Southeast Asia and occurs exclusively to the west of Wallace's line.**

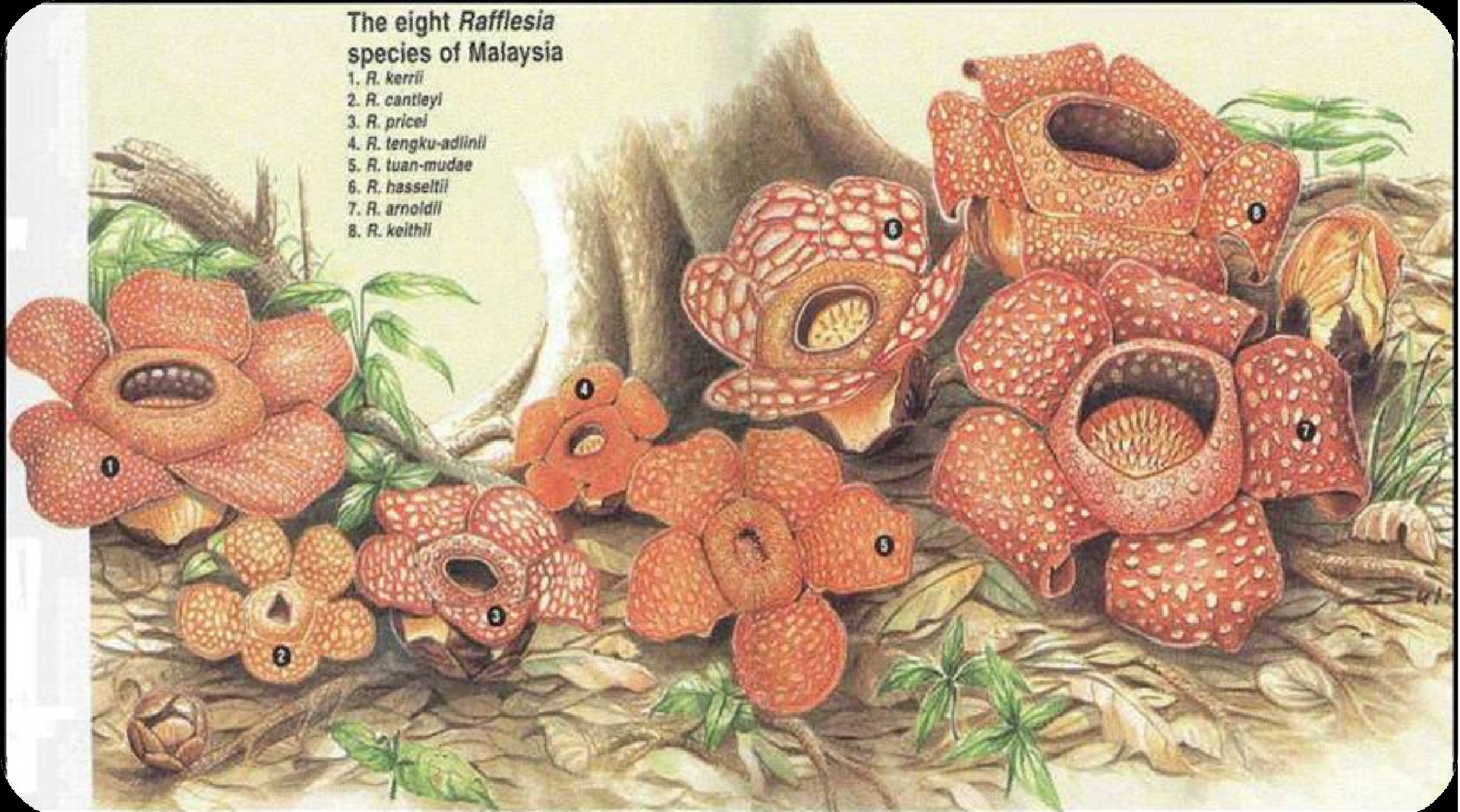


# *Rafflesia* of Malaysia

**6 species in Borneo**  
**4 species in Peninsular Malaysia**

The eight *Rafflesia* species of Malaysia

1. *R. kerrii*
2. *R. cantleyi*
3. *R. pricei*
4. *R. tengku-adlinii*
5. *R. tuan-mudae*
6. *R. hasseltii*
7. *R. arnoldii*
8. *R. keithii*



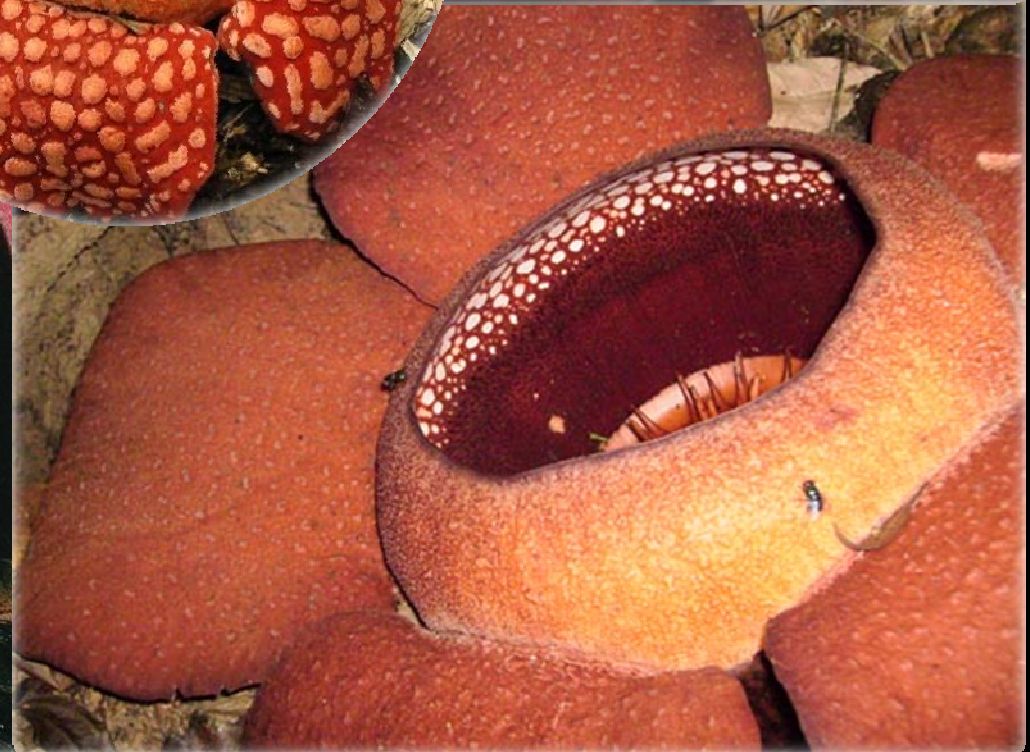
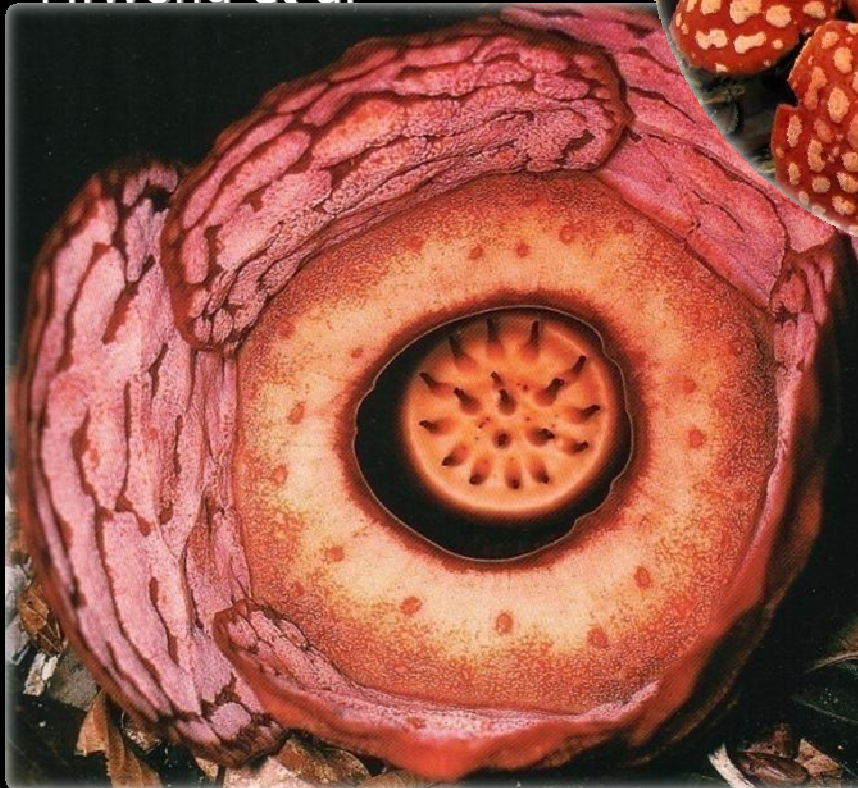


## Our Current Understanding on *Rafflesia* of the Peninsular Malaysia

**Four species have been described;**

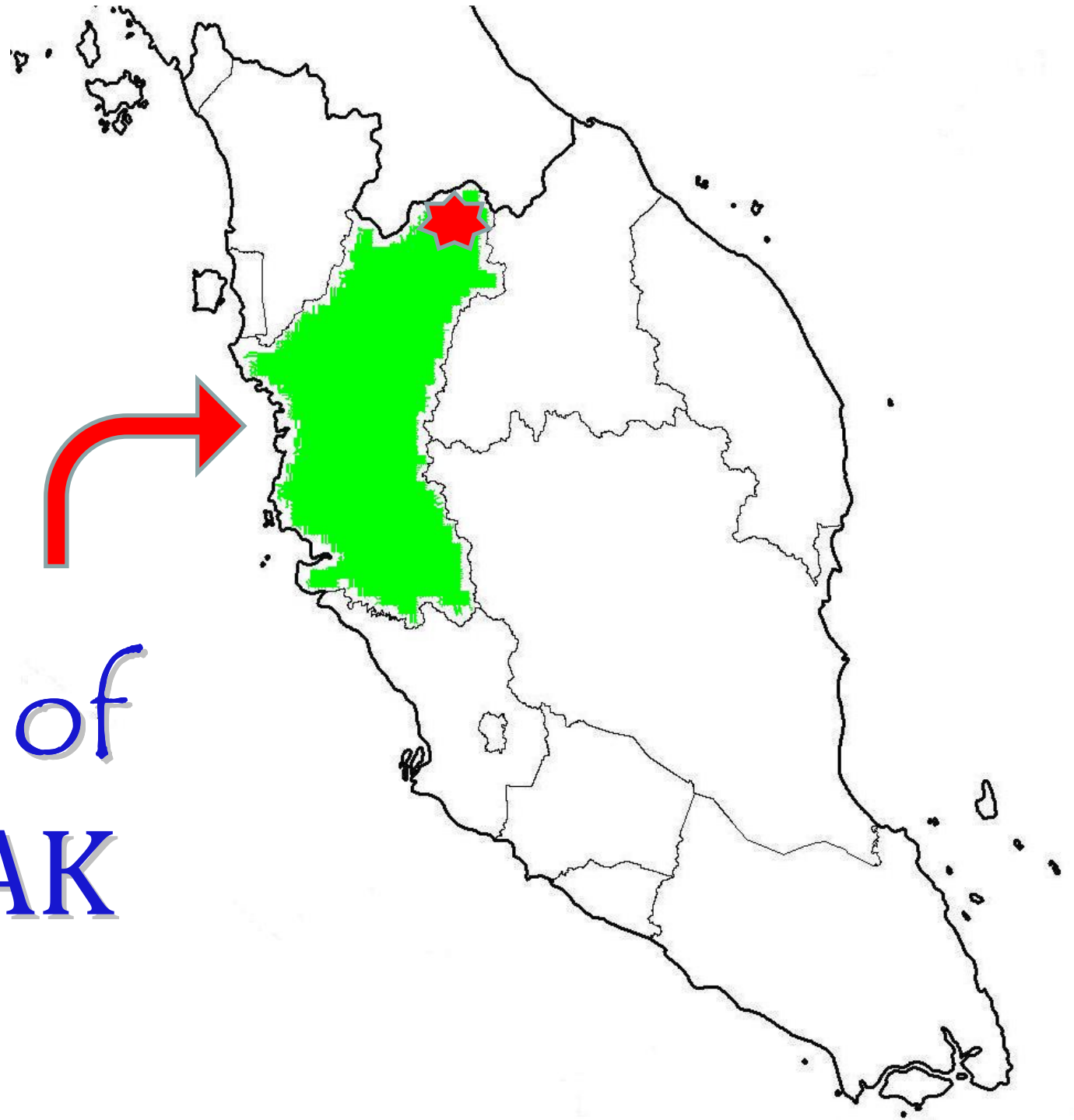
1. *Rafflesia cantleyi* Meijer
2. *Rafflesia azlanii* Latiff et Wong
3. *Rafflesia kerrii* Meijer
4. *Rafflesia su-meiae* M. Wong et al

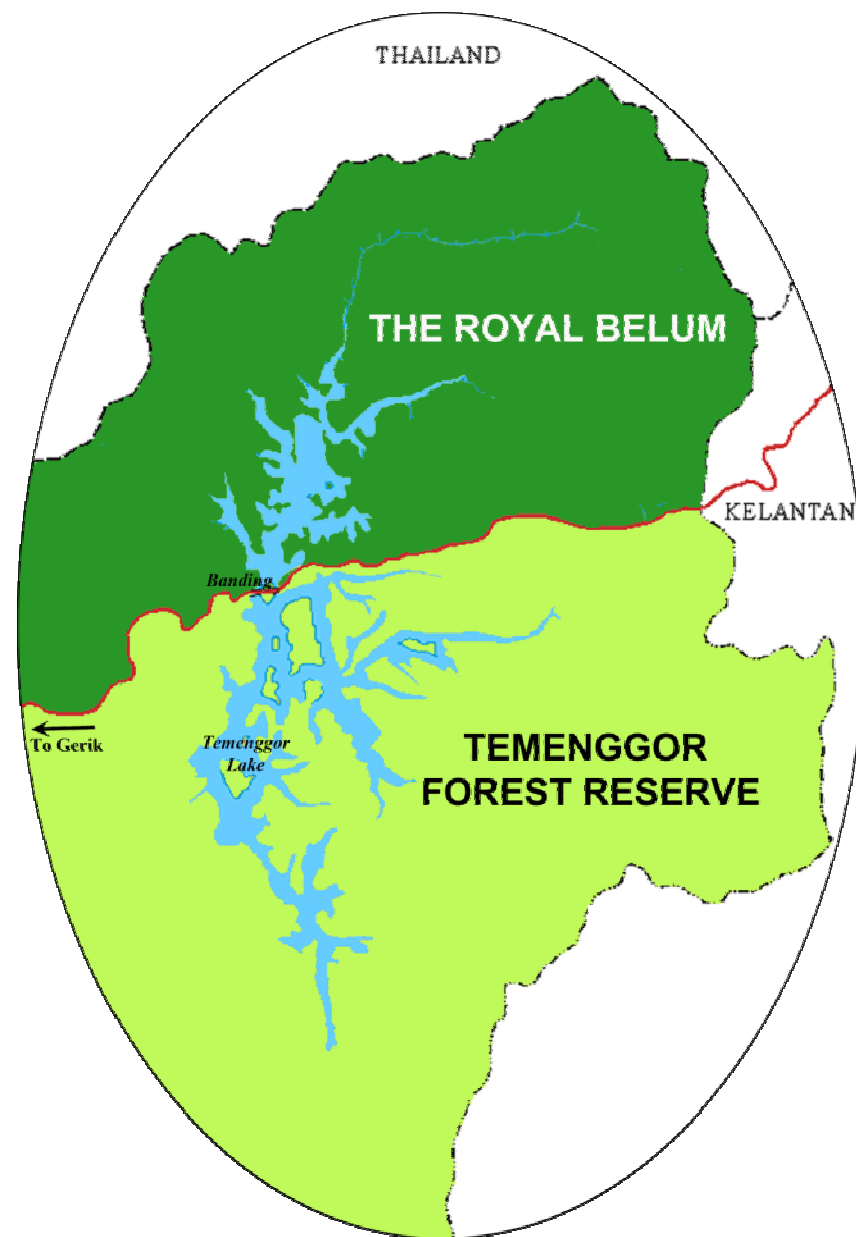
© Matthew, W.





# State of PERAK







# BELUM-TEMENGOR

- Royal Belum State Park (RBSP) - a total area of 1175 km<sup>2</sup> (117,500 ha)
- Totally protected area
- The park lies within Belum Forest Reserve (FR), which itself is part of a much larger tract of contiguous forest spanning 4000 km<sup>2</sup> (400,000 ha), known as the **Belum-Temengor-Stong Forest Complex (BTSFC).**

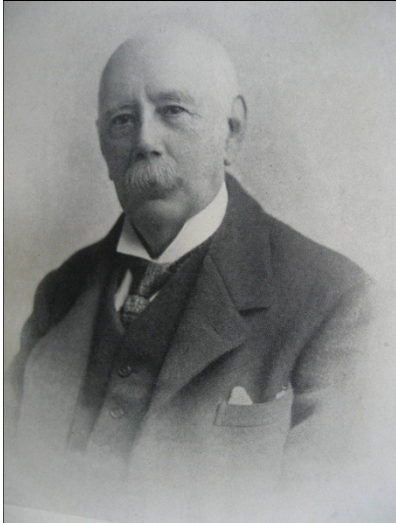








# History Rafflesia in Belum-Temenggor



Director of Gardens and Forests, S.S. (1888-1900), Director of Singapore Botanic Gardens (1901-1912). "Mad" Ridley is famous for his passion on para rubber (*Hevea brasiliensis*) introduction to Malaya

- H.N.Ridley- A Scientific Expedition to Temengoh July 1909

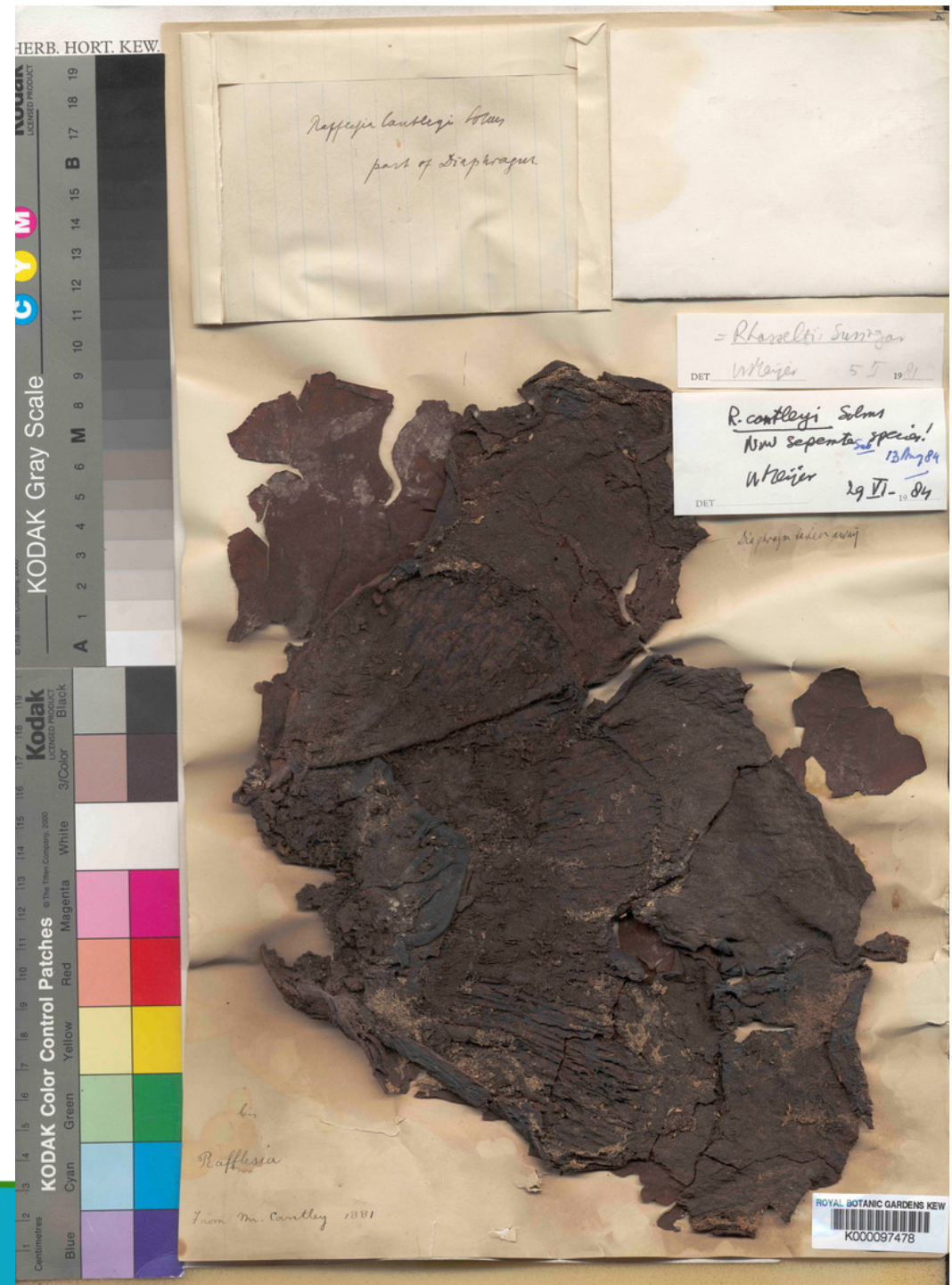
*"Rafflesia we found in flower in the woods at Kuala Temengoh and at the upper camp at Ulu Temengoh. I had never seen fully opened flowers of any species of Rafflesia before, though it appears to be common in some parts of Perak, the Malays collecting it for medicine. It is a most wonderful object with its bright red petals ornamented with irregular raised white bosses. The scent was not strong, a faint odour of Amorphophallus, something like a decaying animal. Only two flower were seen."*

**"*Rafflesia hasseltii*"**  
**was one of his finding**  
**in Temenggor Forest**

-Ridley 1909-



# Type specimen of *Rafflesia cantleyi* Solms-Laubach







# BELUM-TEMENGGOR FOREST as the refugia for *Rafflesia*

*“The two forest reserves known as Belum-Temenggor are an extensive area that will make a huge difference to conservation in northern Perak”*

1. *Distribution*

2. *The species*

3. *Population*

4. *Conservation*

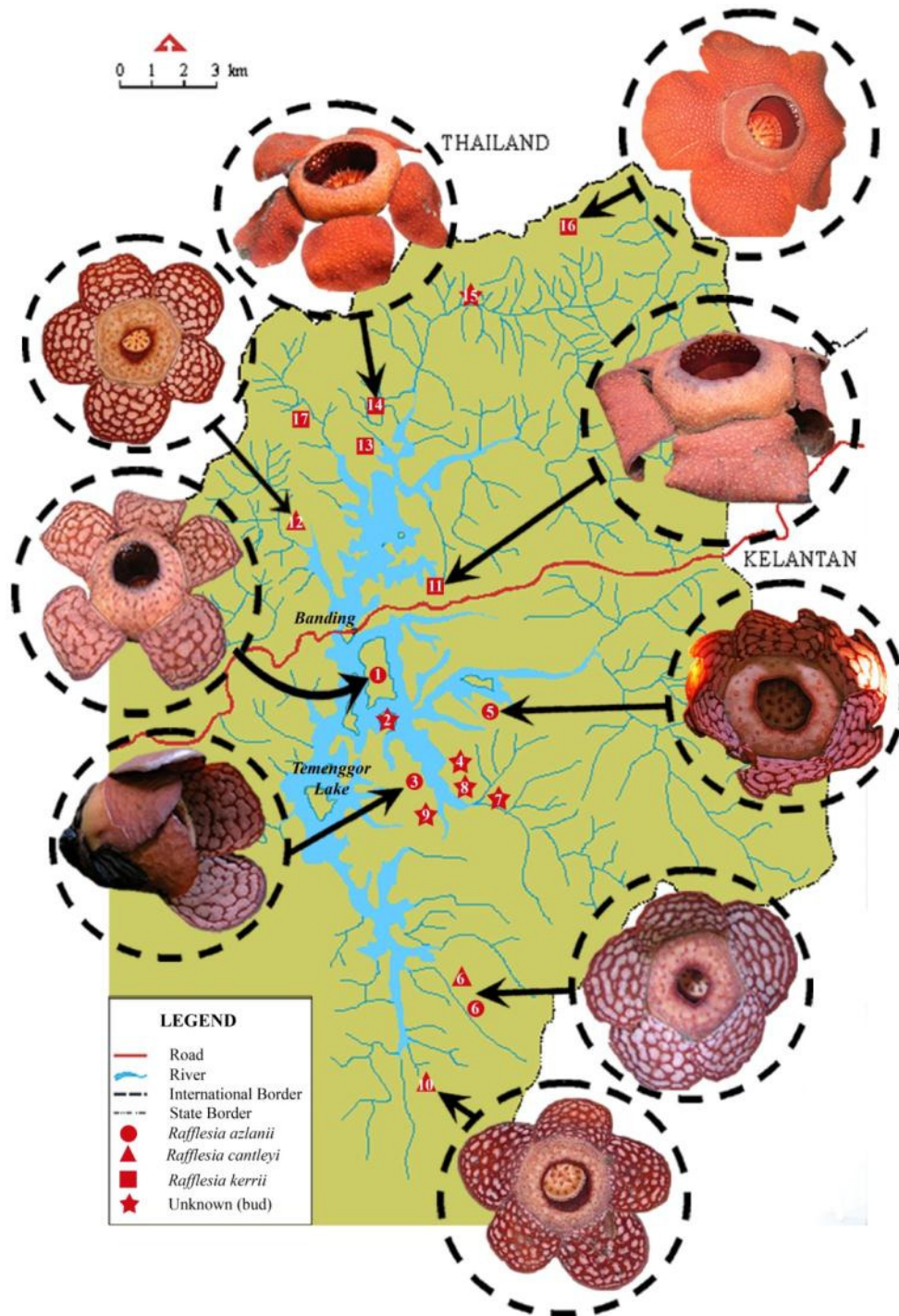


Distribution



**WHERE ARE  
THE RAFFLESIA??**





- 1- Pulau Besar
- 2- Sg. Dok
- 3- Sg. Chuweh
- 4- Kiroi
- 5- Sg. Halong
- 6- Sg. Kenyer
- 7- Kg. Chiong
- 8- Sg. Tebang
- 9- Sg. Cap
- 10- Kelaweh
- 11- Sg. Ruok
- 12- Sg. Gadong
- 13- Sg. Tan Hain
- 14- Sg. Selantan
- 15- Sg. Kejar
- 16- Belum Lama
- 17- Sg. Kenarong

The species??



**Rafflesia azlanii**





**Rafflesia kerrii**



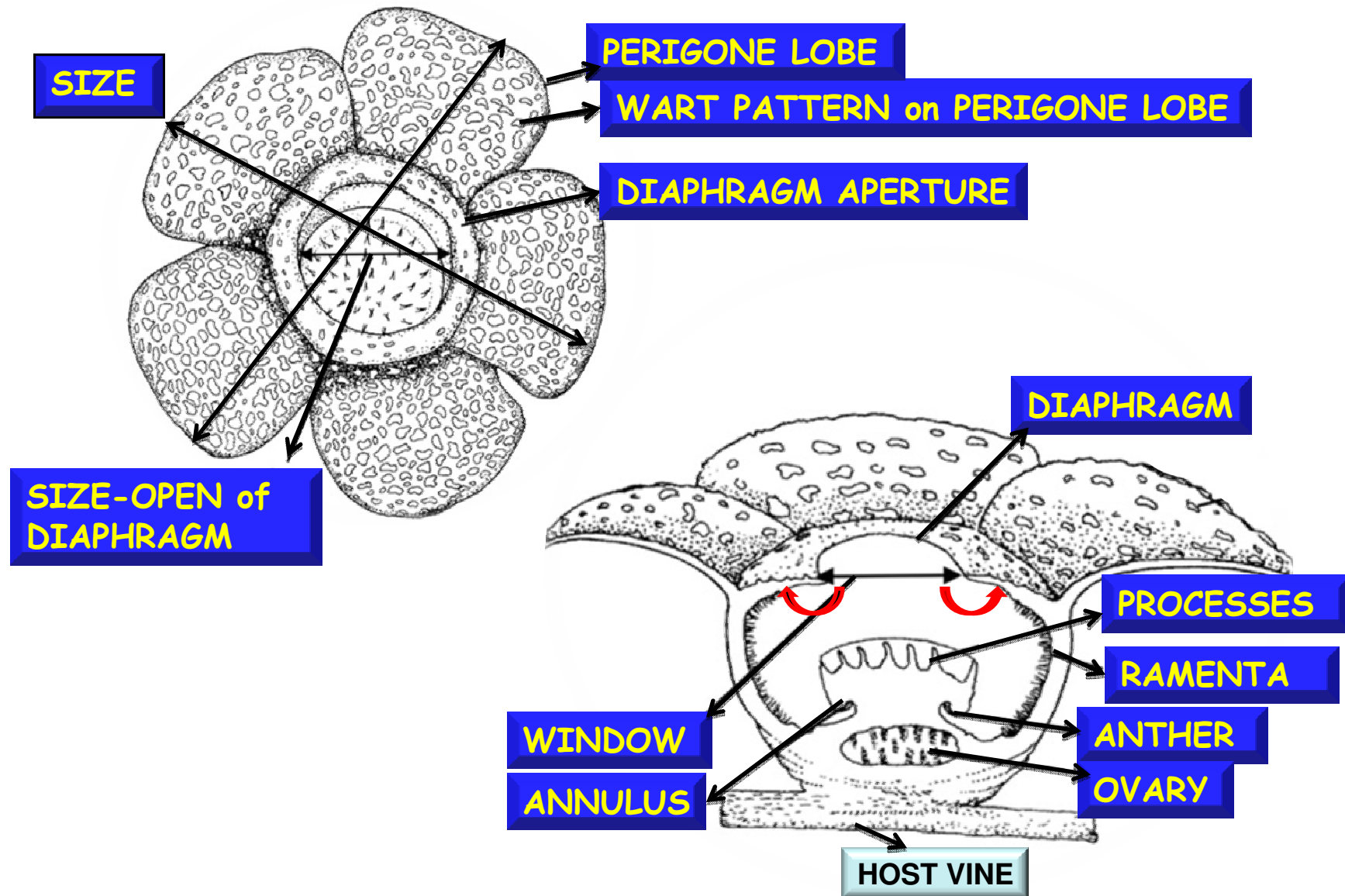




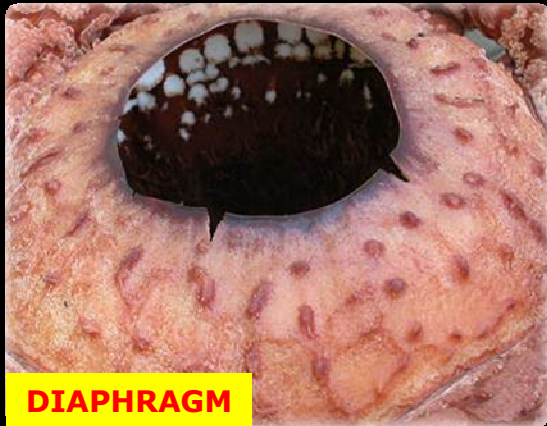
**Rafflesia cantleyi**



# CHARACTERS TO DETERMINE SPECIES :



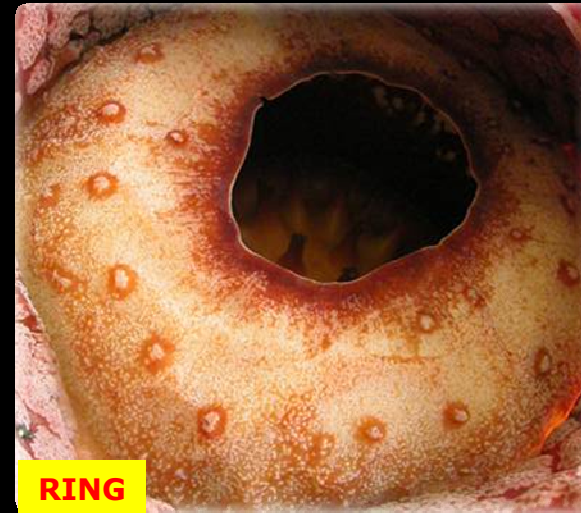




**DIAPHRAGM**



**APERTURE**



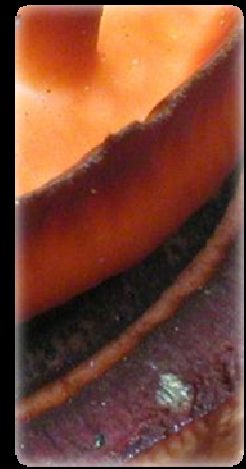
**RING**



**PERIGONE LOBE**



**WART PATTERN**



**DISK**



**PROCESSES**



**ANNULUS**

**Rafflesia azlanii**



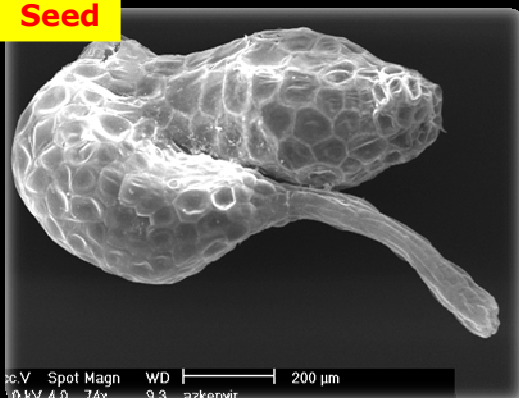
**Fruit**



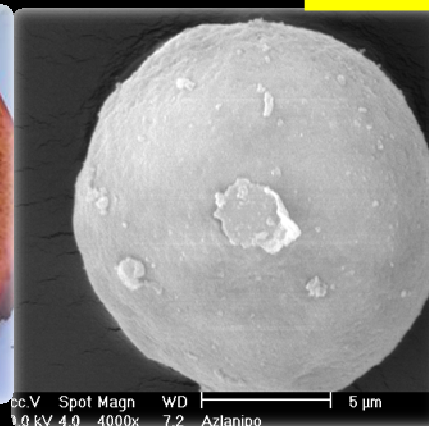
**Disk**



**Seed**



**Pollen**



**Ovary**



**Female Flower**

**Anther**



**Male Flower**

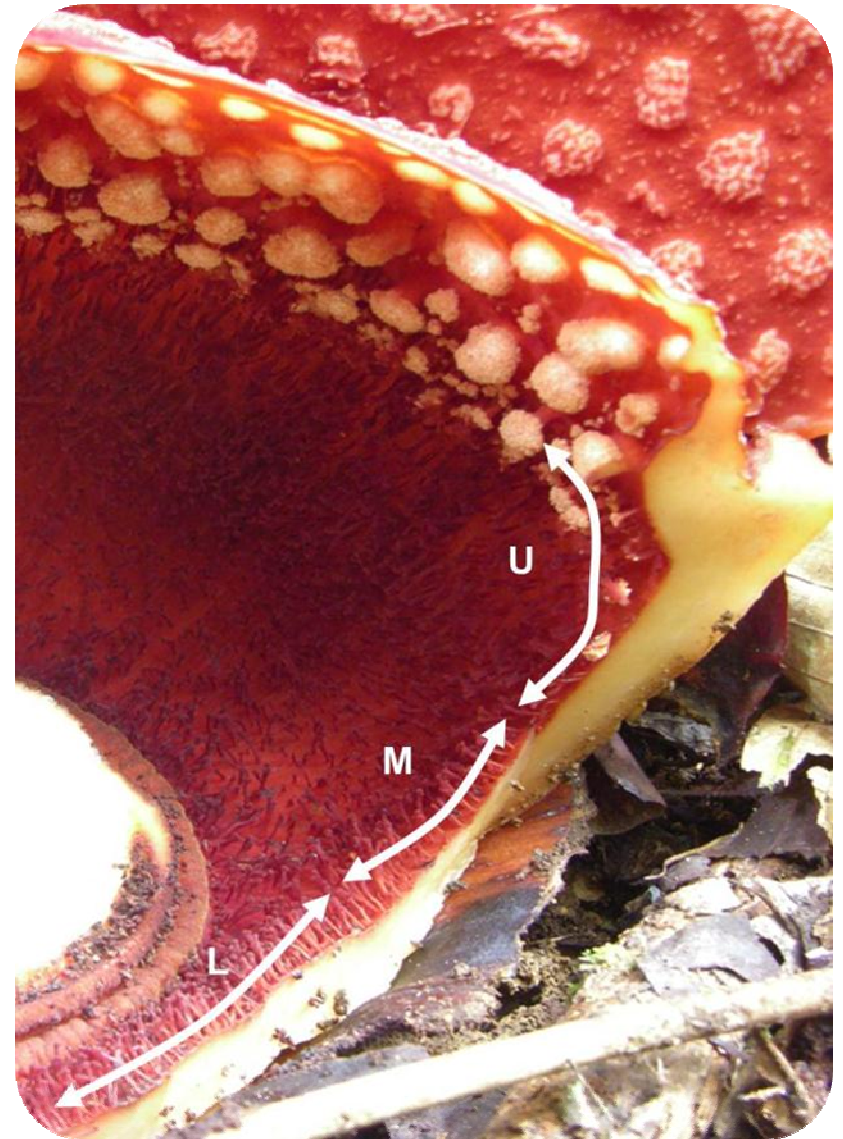
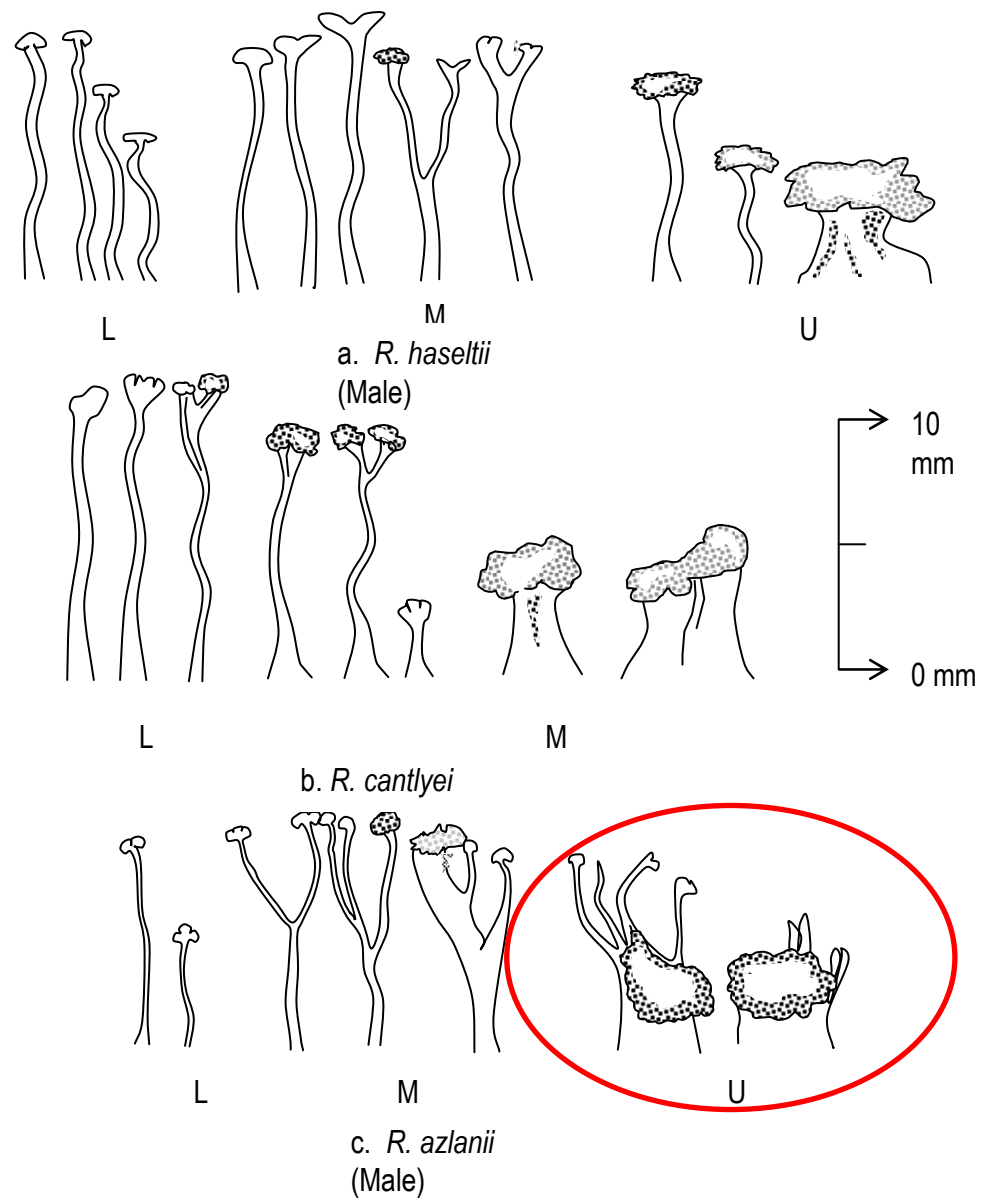




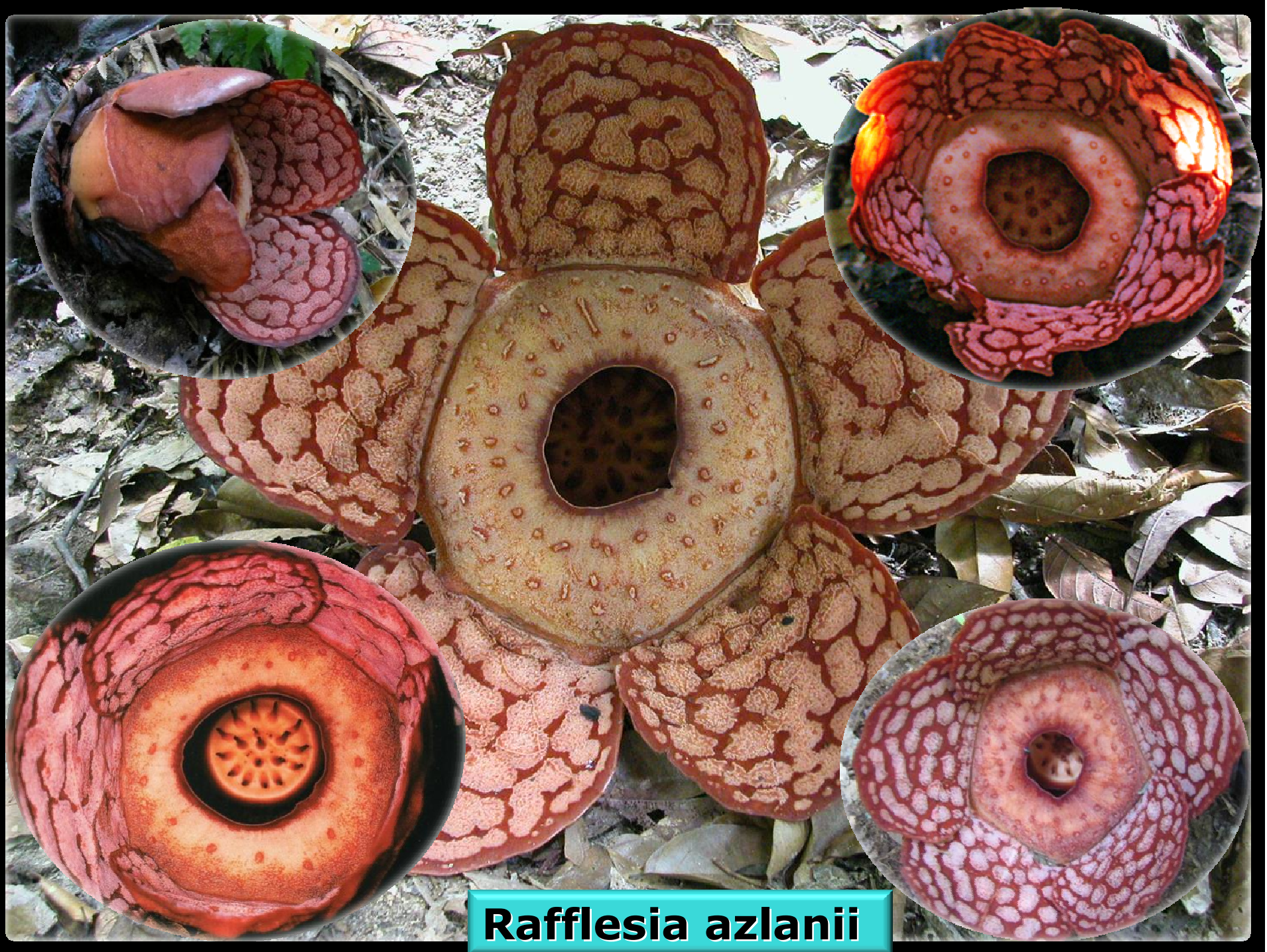
# RAMENTA

Rafflesia azlanii









**Rafflesia azlanii**



# Rafflesia cantleyi

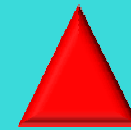
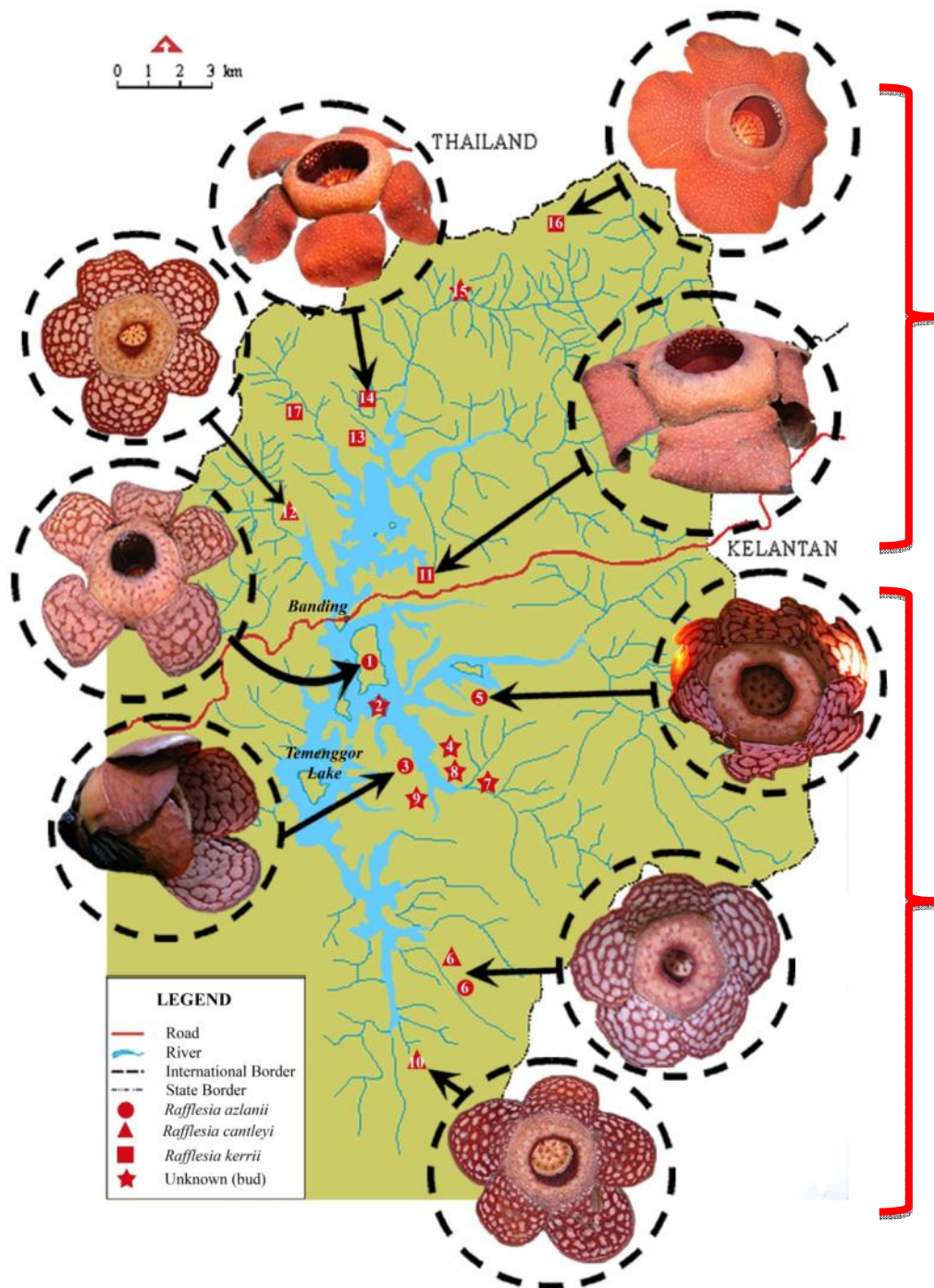




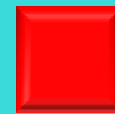


**Rafflesia kerrii**





***Rafflesia cantleyi***



***Rafflesia kerrii***



**Unknown**

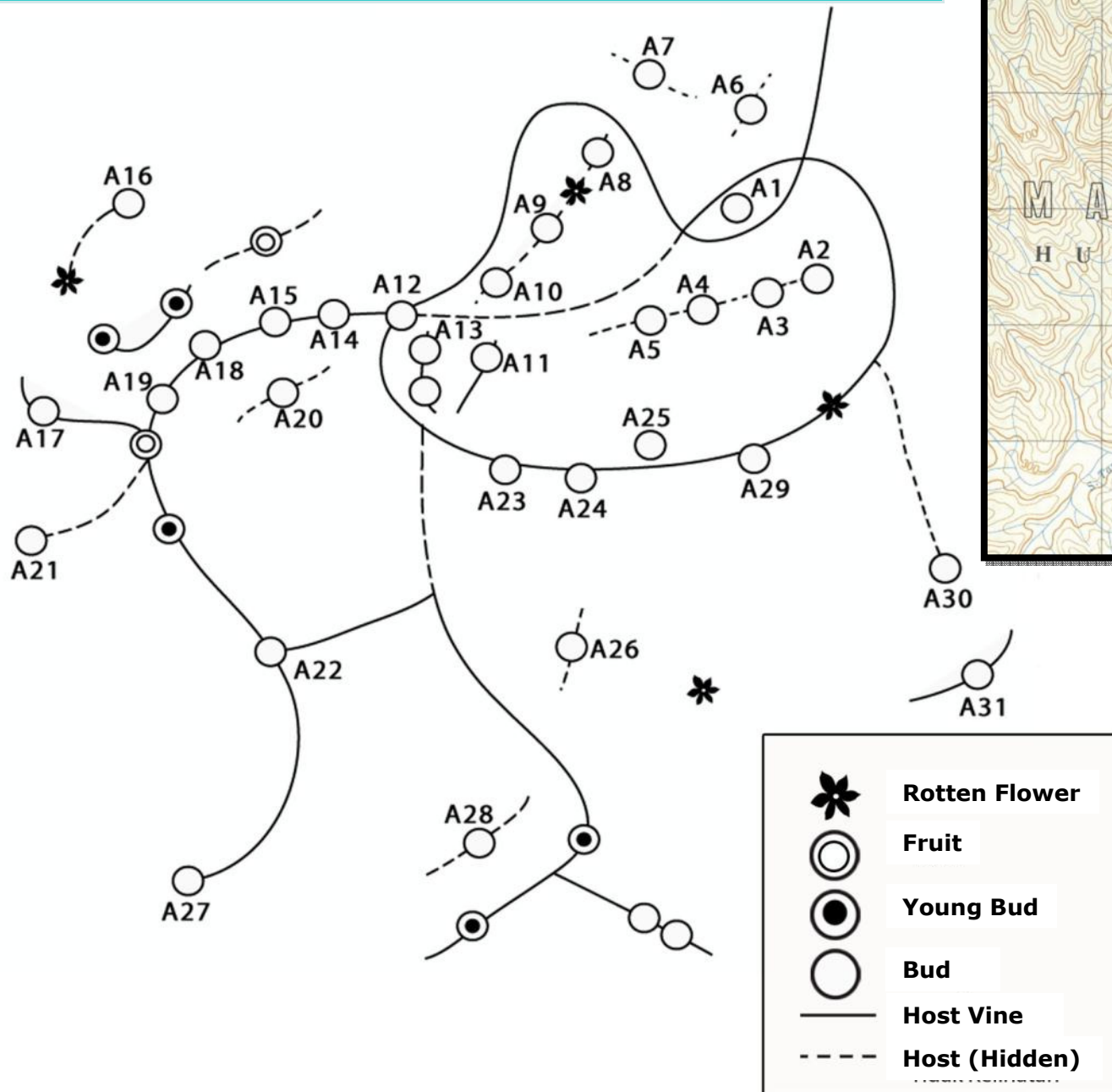


***Rafflesia azlanii***



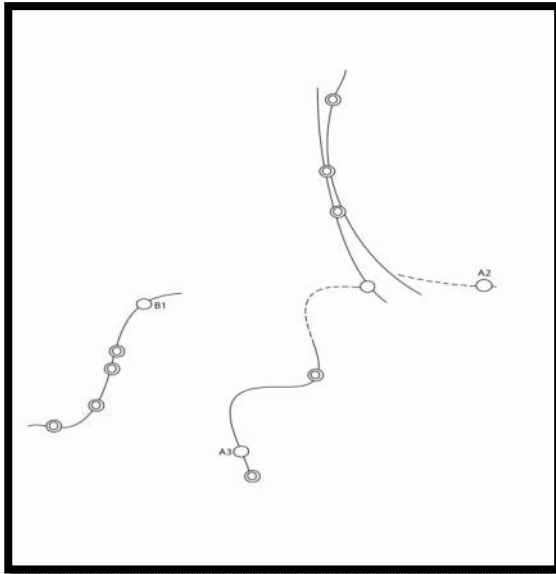
Population

# Map of Rafflesia population at Sg. Selantan

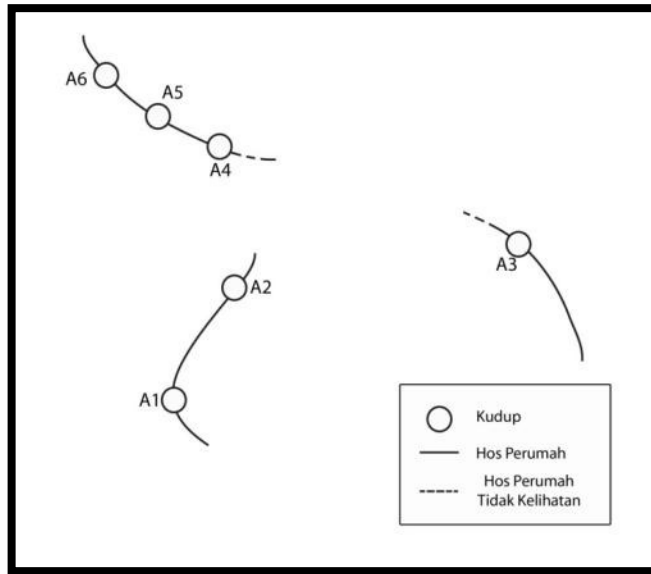




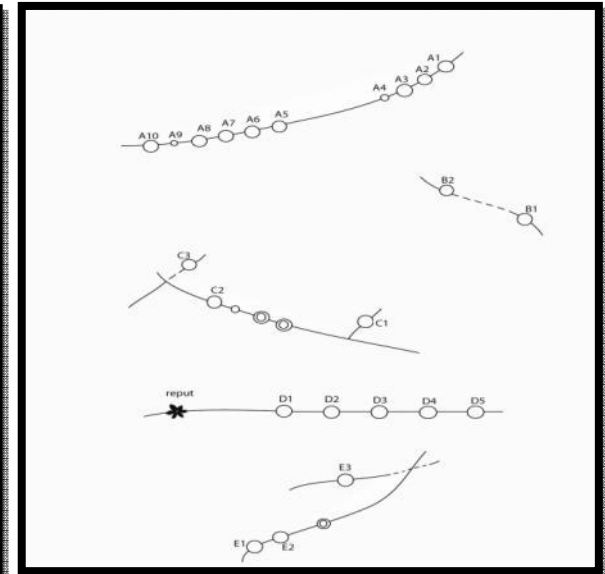
## Others..



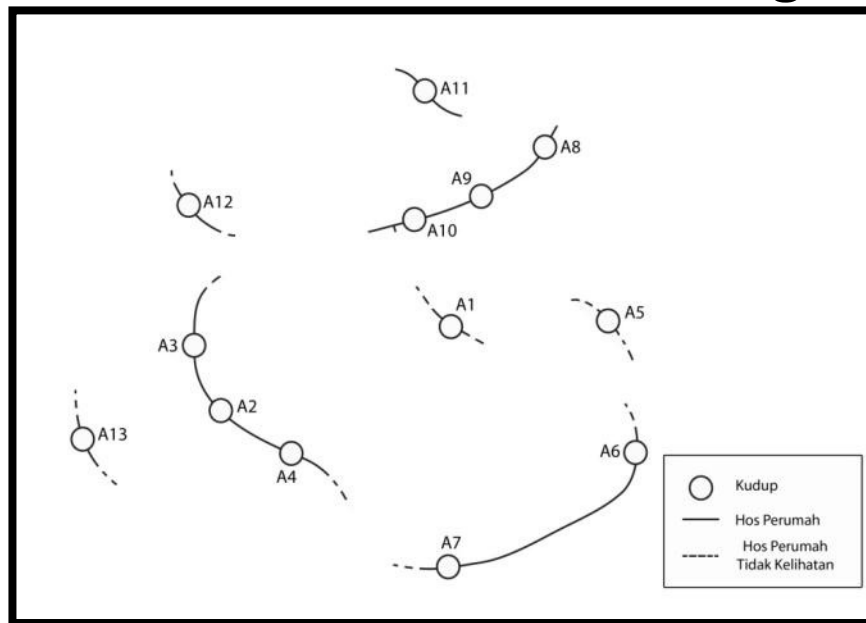
**Kiroi**



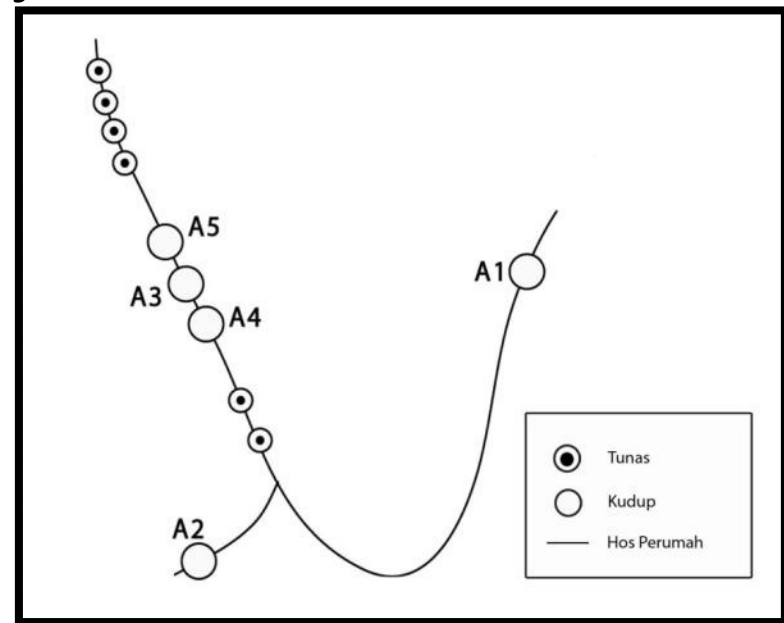
**Sg. Kejar**



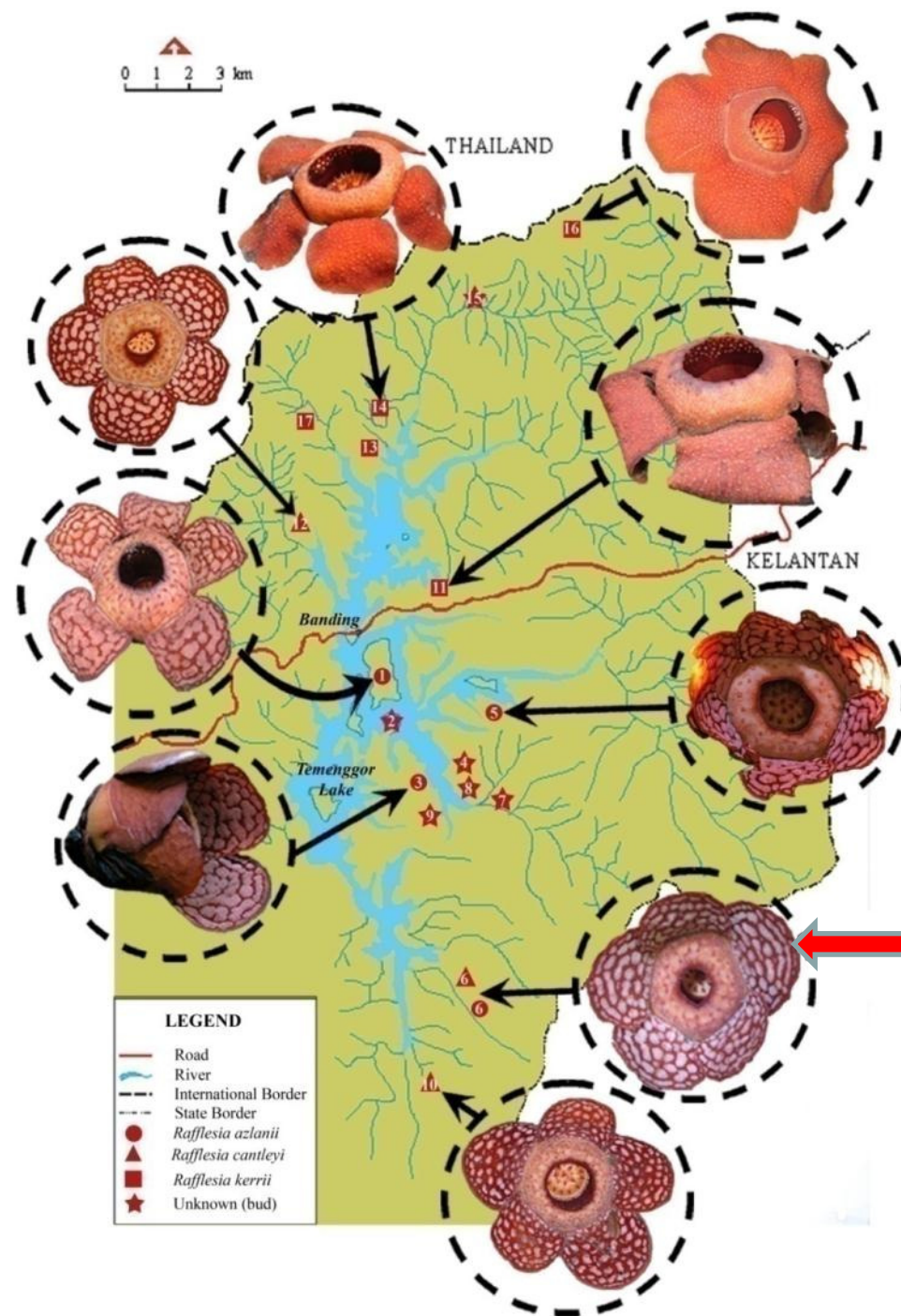
**Pulau Besar**



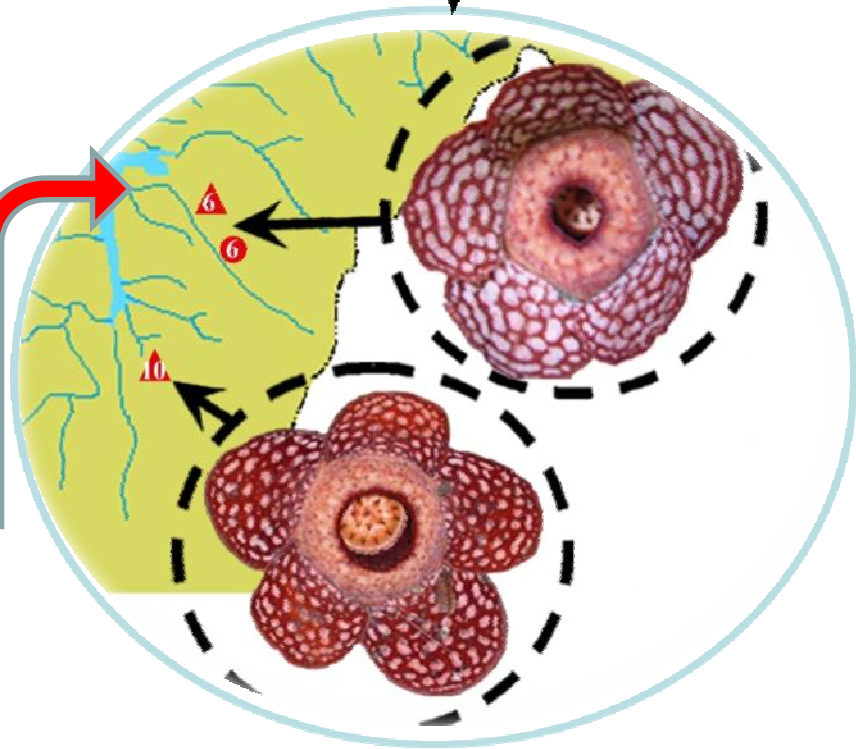
**Sg. Ruok**



**Sg. Gadong**



# CASE STUDY



**Locality 6- Sg. Kenyer**



1

Locality

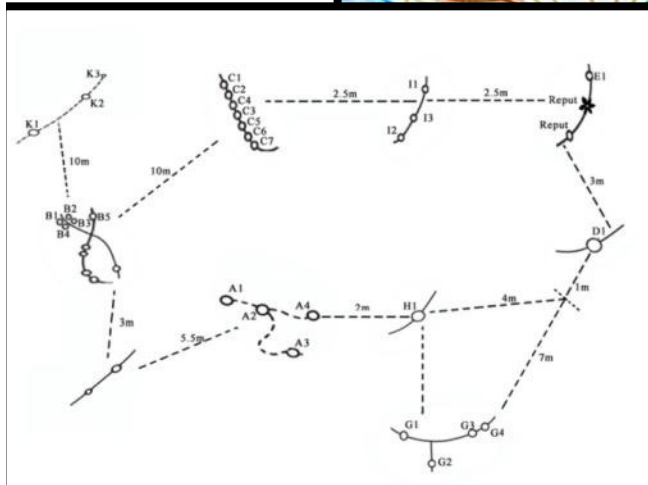
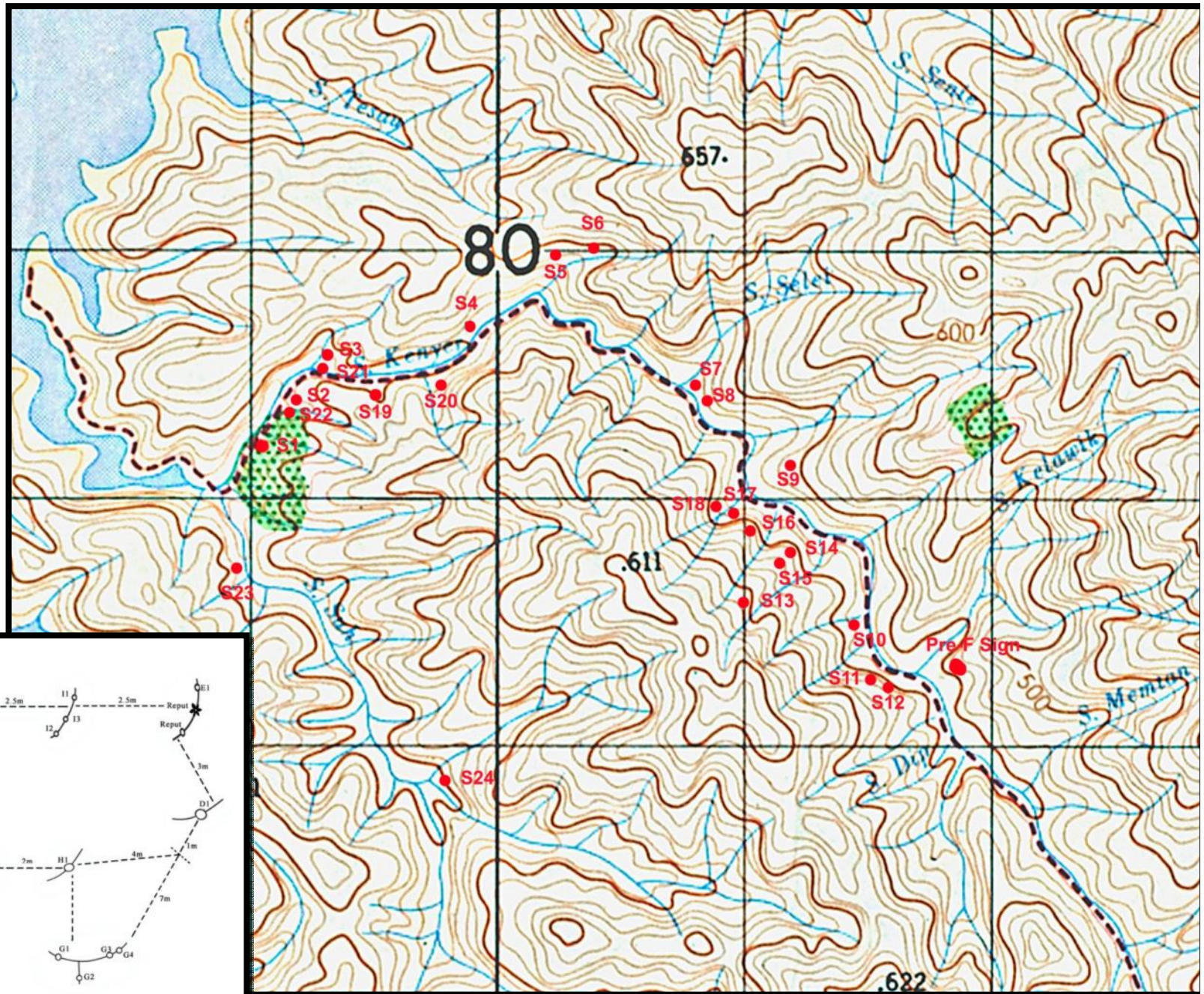
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24

Population



# Map of *Rafflesia* population at Sg. Kenyer





## Status *Rafflesia* population at Sg. Kenyer

Population	Number of Buds	Sex	Status*
1	6	Male & Female	Active
2	25	Male	Dynamic
3	3	Male	Active
4	2	Male	Active
5	-	Male	Dormant
6	2	Male	Active
7	9	Male	Dynamic
8	8	Male	Dynamic
9	10	Male	Active
10	7	Female	Active
11	8	Male	Active
12	3	Male	Active
13	20	Male	Active
14	1	Male	Active
15	10	Male	Active
16	3	Male	Active
17	4	Female	Active
18	2	Male	Active
19	-	Host	Dormant
20	60	Male	Dynamic
21	2	Female	Active
22	3	Female	Active
23	3	Male	Active
24	7	Male	Active

**\* Status:**

Active :

Dynamic :

Dormant :

The population has one stage of bud growth only

The population has all stage of bud/ flower growth

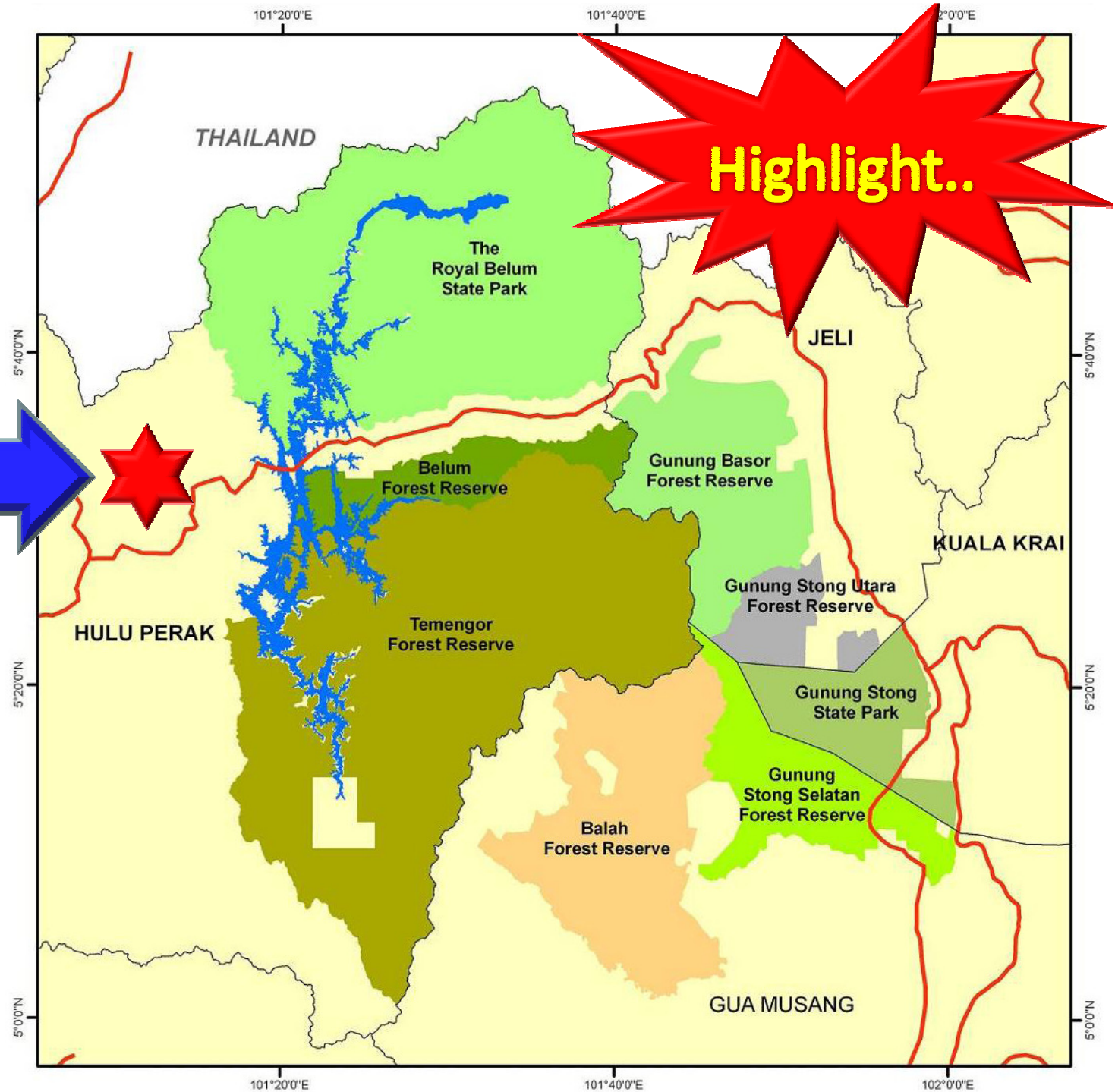
The population only has host with many scars and no new buds found

*Rafflesia* population at Sg. Kenyer





**BERSIA**





Highlight..

**10 *Rafflesia* population**  
(Nurnida, M.K. 2007)





**Rafflesia azlanii**



Conservation







# Orang Asli Villages



JAHAI PEOPLE





**JAHAI PEOPLE**











# Conclusion..

- **Amazing wonder of nature**
- **All the three species occur in the Belum-Temenggor FR**
- **The richest locality of *Rafflesia* species in Peninsular Malaysia**
- **The critical conservation importance**
- **Potential for ecotourism**





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*Thank you.*



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Mat Saleh





*Thank you..*



*See you again...*