

Floral diversity and species composition of Teluk Bahang Forest Reserve, Penang

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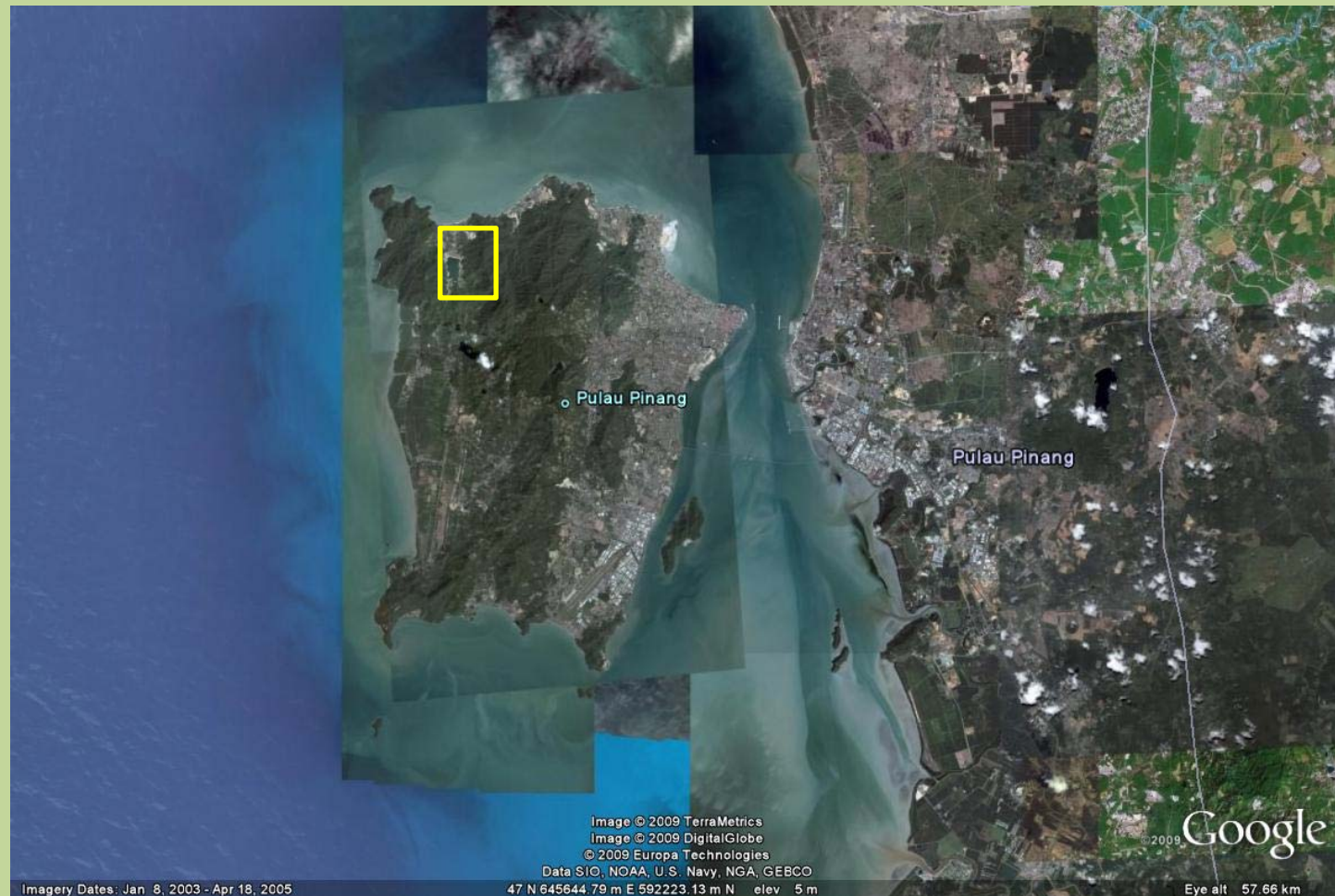
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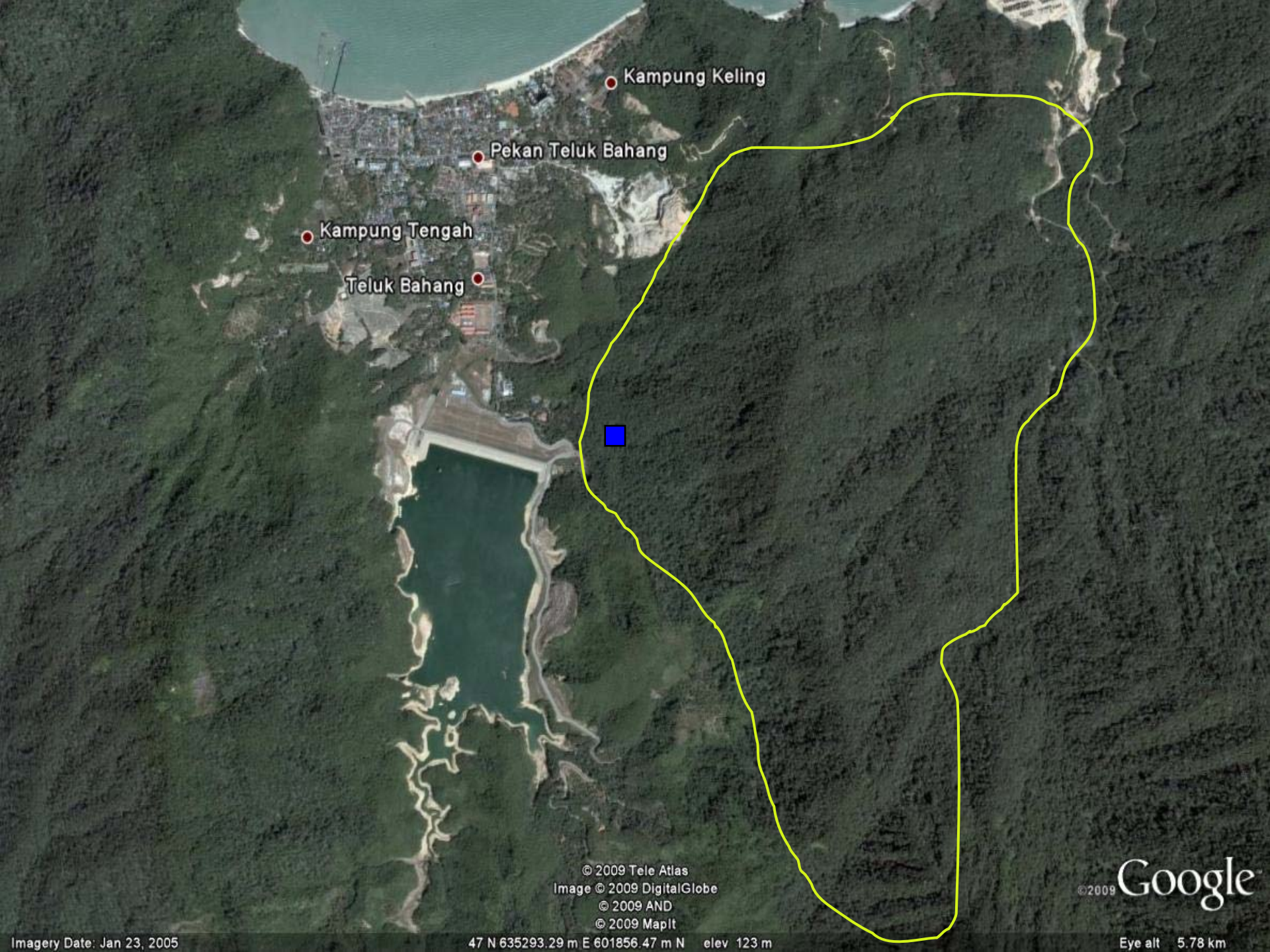
What are we doing

- Location: Teluk Bahang Forest Reserve, Penang, Malaysia



Teluk Bahang Forest Reserve

- Coverage: 473 ha
- Logging operation ceased by 1930s
- Bordered mainly by:
 - Bukit Kerajaan Forest Reserve (east)
 - Penang National Park (west)
- Affected by sea breeze and rocky hill soil condition
- Under constant pressure by development (e.g. hotels residences)



Kampung Keling

Pekan Teluk Bahang

Kampung Tengah

Teluk Bahang



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Imagery Date: Jan 23, 2005

47 N 635293.29 m E 601856.47 m N elev 123 m

Eye alt 5.78 km

Flora Diversity Assessment

- Study was initially started in March 2002 as a forest ecological study conducted by SBS, USM for the Penang State Forestry Department.
- This project was to create a permanent ecological plot in four forest reserves of Penang,
 - Teluk Bahang FR
 - Bukit Kerajaan FR
 - Bukit Panchor FR
 - Bukit Mertajam FR
- In Jan 2007, a more detail study has been carried out in Teluk Bahang FR

Flora Diversity Assessment

- We established one ha plot which was randomly choose from a collection of reference number already established from a topographic map.
- The plot was further divided into 100 subplots
- All standing trees of ≥ 10 cm DBH were measured (including height) and numbered with aluminum tag for future reference.
- Number of Arecaceae and Pandanaceae were recorded in each subplot.
- Other parameters were recorded as well (e.g. light intensity and soil pH)

Flora Diversity Assessment

Standard practice of assessing and discussing the study plot construction plan





Constructing the study plot — depends on site location and forest condition, this process may take sometime



Dryobalanops aromatica
(Dipterocarpaceae)
Local name: Kapur - with 5 wings

Gluta curtisii (Anacardiaceae)
Local Name: Rengas - with 5 wings
as well





From left:,

1=*Calophyllum canum* (Clusiaceae),

2=*Lithocarpus sundaicus* (Fagaceae),

3=*Brackenridgea hookeri* (Ochnaceae),

4=*Calophyllum kunstleri* (Clusiaceae) and

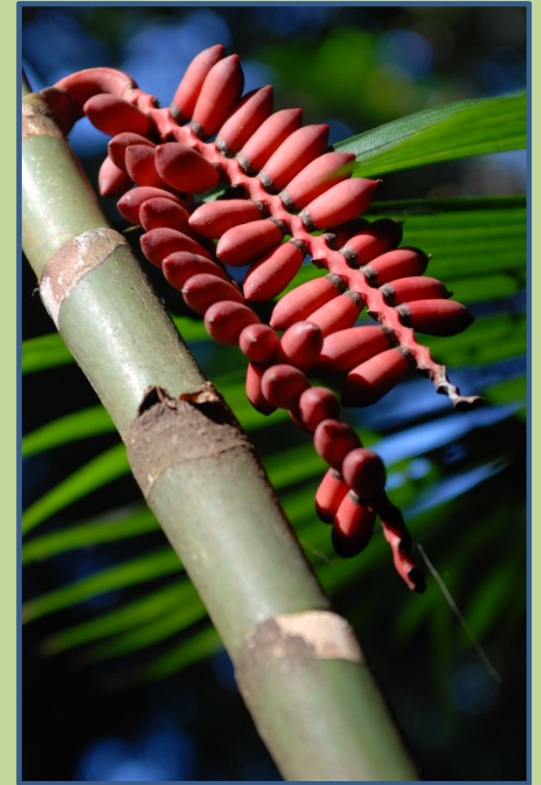
5=*Calophyllum lanceolate* (Clusiaceae).

Shorea leprosula – fissured bark





Pinanga malaiana



Pandanus ovatus (Pandan tikus)

Palm and Rattan



Calamus exilis



Eugeissona triste



Oncosperma tigillarum

- The plant segregation within the study plot is the coastal dipterocarp forest of the - *Shorea maxwelliana-Eugeissona triste* type
- *Eugeissona triste* (Arecaceae) and *Pandanus ovatus* (Pandanaceae) are the two most common species recorded as these species prefer low light irradiance (Montgomery and Chazdon, 2001; LaFrankie and Saw, 2005).
- Higher occurrence small size trees (dbh<10cm), Pandanaceae and Arecaceae may have suggested that this coastal forest is yet to reach its maturity stage.

Aquatic habitat assessment



We have done a preliminary survey on aquatic habitat of Teluk Bahang Forest Reserves...

...and site survey of headwater system in Royal Belum Forest Reserve



We are also working alongside the SBS fauna research group



Setting on traps for bats and avian

Future research activities

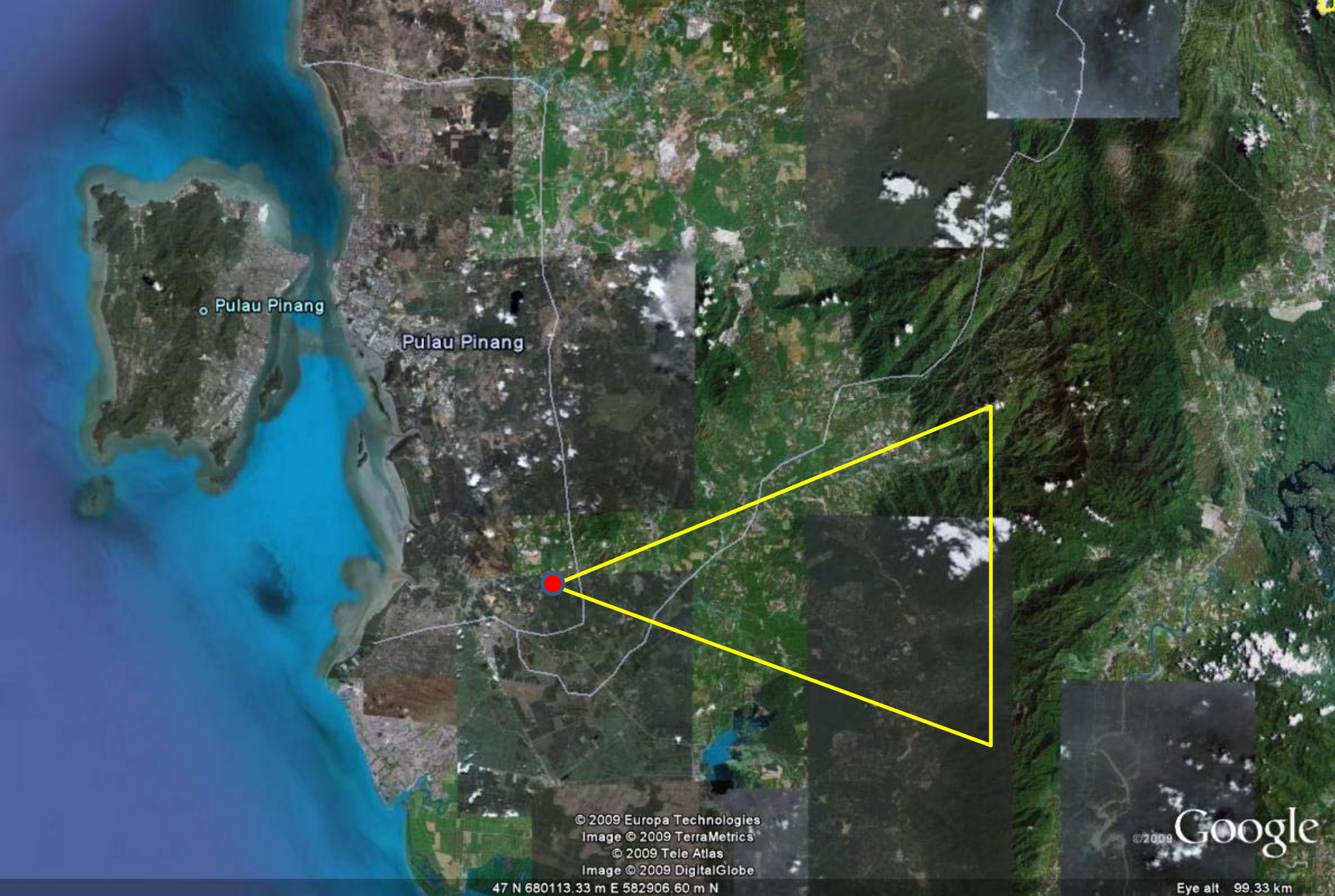
- We are looking into more details on
 - Forest resource utilization by fauna, e.g.:
 - frugivorous mammals (including bats)
 - Avifauna
 - Small mammals (e.g. tree shrew)
 - Aquatic habitats
 - Aquatic flora and fauna
 - Water quality

Future research activities

- Additional plots in Teluk Bahang FR are to be established
- In addition, we are establishing a number of permanent study sites from recently logged forest in the state of Perak and Kelantan.
- Data collected from these sites will be compared to existing study site in Penang.

Future research activities

- Using the GIS mapping program, we are also planning to tagged, marked and mapped the individual location of plant species within each study plots
- Include also data layer of
 - Forest resource utilization
 - Roaming – organisms movement
 - Aquatic habitat



Recent proposal by the Penang State Forestry, working alongside Kedah and Perak State FD to create a “Green Corridor” linking Bukit Panchor State Park to Bintang Range.

Penang National Park



**Jerejak Forest Reserve has
been proposed as another
Penang State Park**

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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6.26 mi

Jan 23, 2005

Eye alt 21.63 mi

47 N 640940.91 m E 592751.61 m N

THANK YOU

- ❖ Japan Society for The Promotion of Science (JSPS)
- ❖ Nagoya University, Japan
- ❖ Vice-Chancellors' Council of National Universities, Malaysia
- ❖ Dean, School of Biological Sciences, Universiti Sains Malaysia
- ❖ Research & Innovation Division, Universiti Sains Malaysia