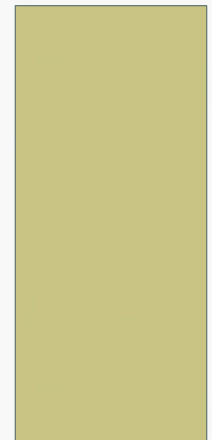


LAND USE AND LAND COVER CHANGE (LULCC) MAPPING  
AND ASSESSMENT OF CARBON STOCK CHANGES AT  
URBAN FOREST IN JOHOR

NURUN NADHIRAH MD ISA (PB123045)

MAIN SUPERVISOR: ASSOCIATES PROFESSOR DR ISMAIL BIN SAID

CO SUPERVISOR: DR MOHD NAZRI MDREBA



# RESEARCH AIM, OBJECTIVES AND QUESTIONS

## Research Aim

To develop a base line of carbon stock accumulation by five pioneer species in urban forest at Johor

Research Objective 1	Research Objective 2	Research Objective 3	Research Objective 4
To measure carbon stock accumulation in five pioneer tree species using dendrometric paramaters	To quantify crown cover and leaf area index of five tree species for estimating green area which occupy by these species	To identify vegetation area from 1975, 1985, 1995 and until 2005 from Enhance Vegetation Index (EVI)	To investigate relationship of EVI, plant disturbance indicator, carbon stock and temperature using Time Series Analysis

<b>Research Question 1</b>	How much carbon stock (Kg per Ha <sup>-1</sup> ) of these five pioneer species?
<b>Research Question 2</b>	Which species can absorb more carbon compare to the other species?
<b>Research Question 3</b>	How much green area occupy with these five species?
<b>Research Question 4</b>	What is the differences of vegetation area or green area from 1975 until 2005 from EVI?
<b>Research Question 5</b>	What are the relationship of EVI, pioneer species, carbon stock and temperature?
<b>Research Question 6</b>	How much temperature differences since 1975 ?

## Problem Statement


- Malaysia as a developing country plan for better life with modern infrastructure
- Urban forest converts to buildings, houses, factories and streets
- Finally, urban forest become smaller and fragmented therefore reduce number of urban trees
- Then, release higher amount of carbon dioxide to the atmosphere
- Create global warming (temperature high) and climate change

## Research Gap

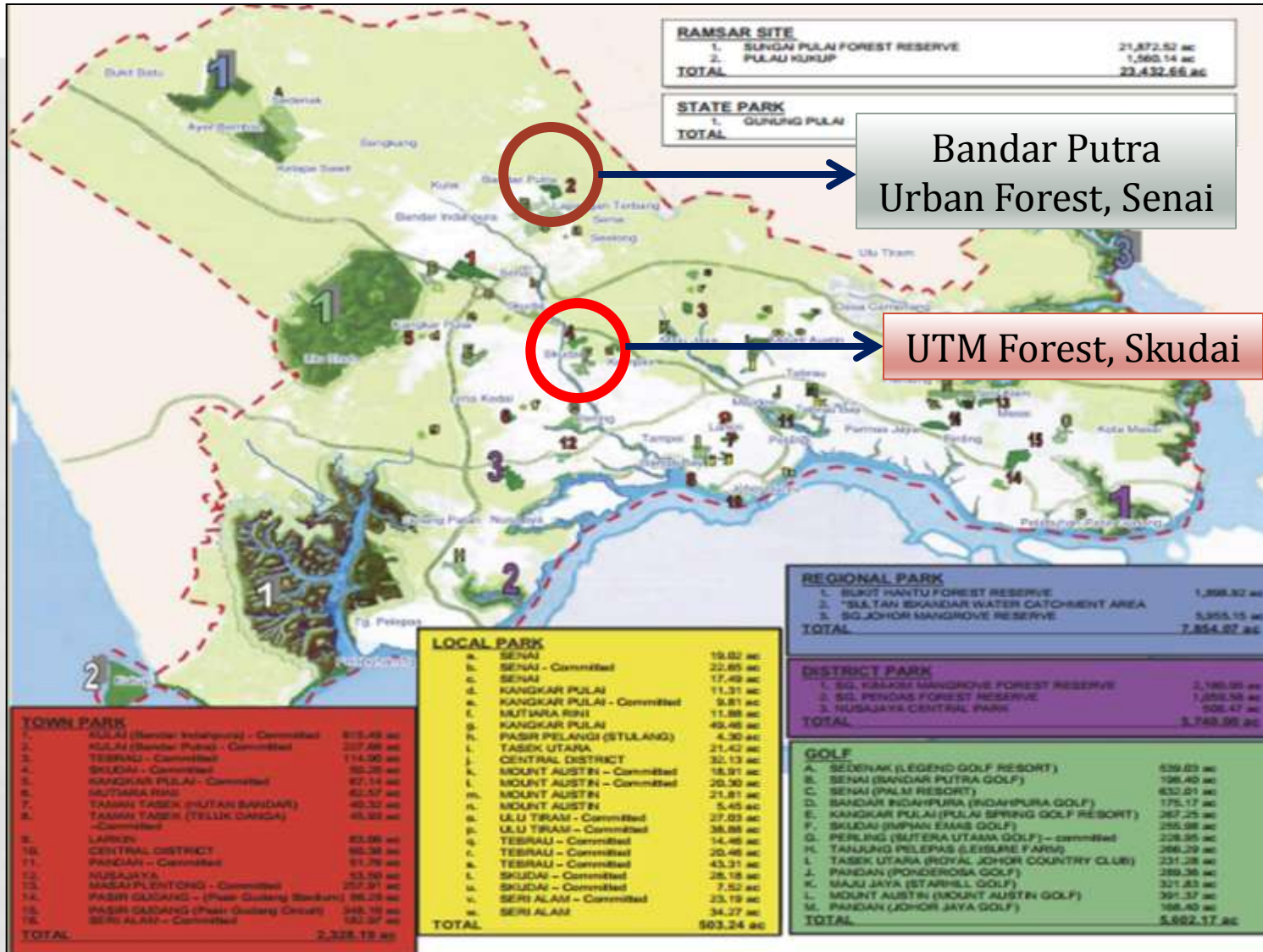
- A lot of study was done in temperate urban forest, agroforestry, reserve forest and plantation in Malaysia.
- However, lack of studies in monitoring carbon stock in urban forest focusing on pioneer species. Most of studies concentrate more to Dipterocarp tree which gives more advantage rather than pioneer species.
- But, these pioneer species also contribute to carbon stock since many forest convert to secondary forest mostly at urban area
- Therefore it is very important to measure carbon stock in urban forest that contain these five pioneer species

# FIVE TREE SPECIES

- These five tree species have been chosen based on 12 previous study.
- These species recognized as pioneer species.
- Pioneers are species whose seeds can only germinate in gaps in the forest canopy open to the sky and in which full sunlight impinges at ground level for at least part of the day (Swaine, 1988). There are:

<i>Macaranga gigentia</i> (Mahang Gajah)	<i>Dillenia suffruticosa</i> (Simpoh Air)	<i>Mallotus biaceae</i>	<i>Adinadra dumosa</i> (Tiup-tiup)	<i>Vitex pinnata</i> (Leban)
				

# STUDY AREA





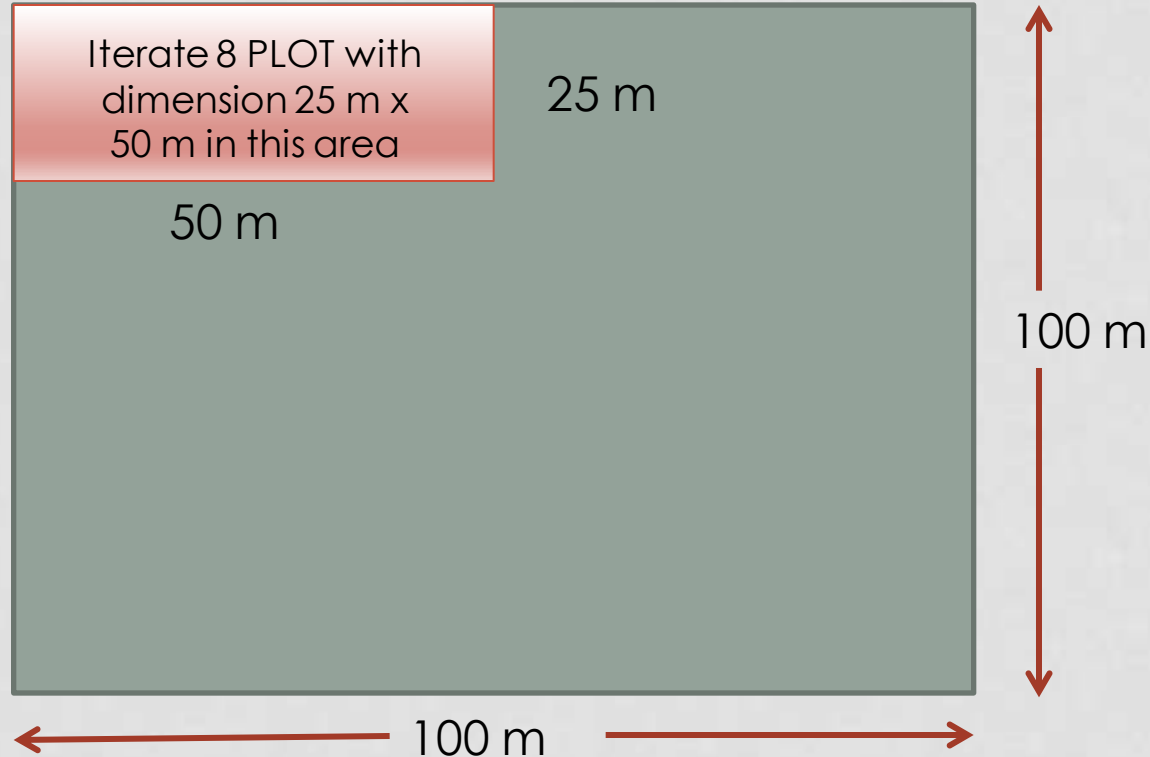
# HUTAN BANDAR PUTRA



- Near to Senai Airport
- Under MPKu management
- Areas about 20 acres (Total area of BP = 227.68 acres)

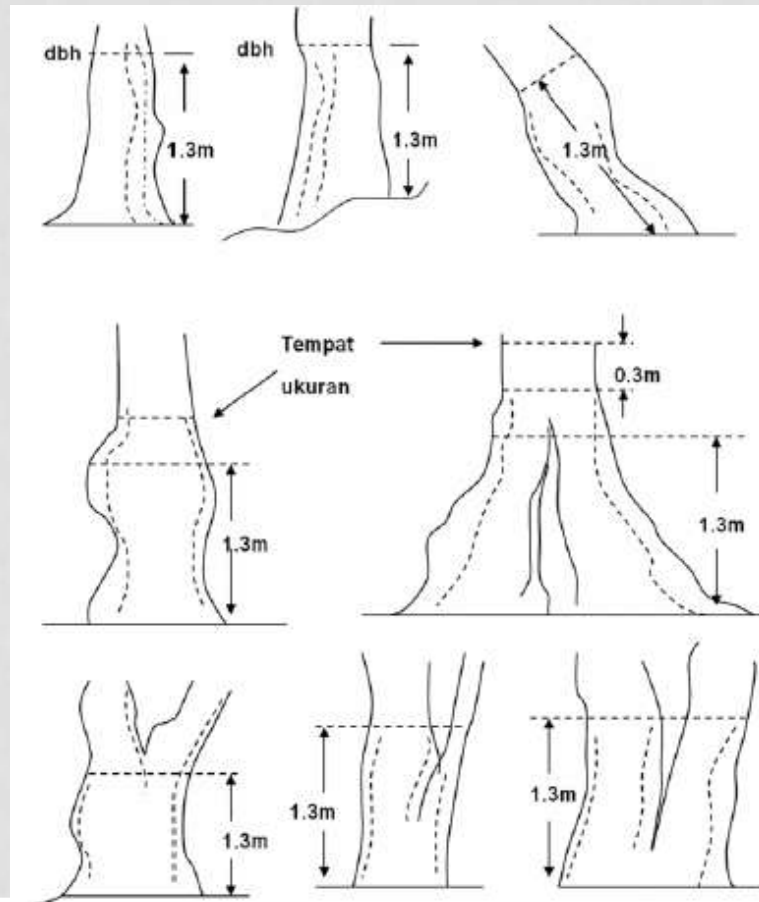
# PLOT SETTING

- Plot setting – built 1 hectare plot size (100 m x 100 m) for each study area.
- Plot size and setting refer to Hamdan, 2013.



# TREE MEASUREMENT

- After plot setting, five tree species that has been chosen will tag with different color to avoid any mistake for data recording.
- Diameter at breast height (DBH), tree height, crown cover and Leaf Area Index (LAI2200) will be taken.

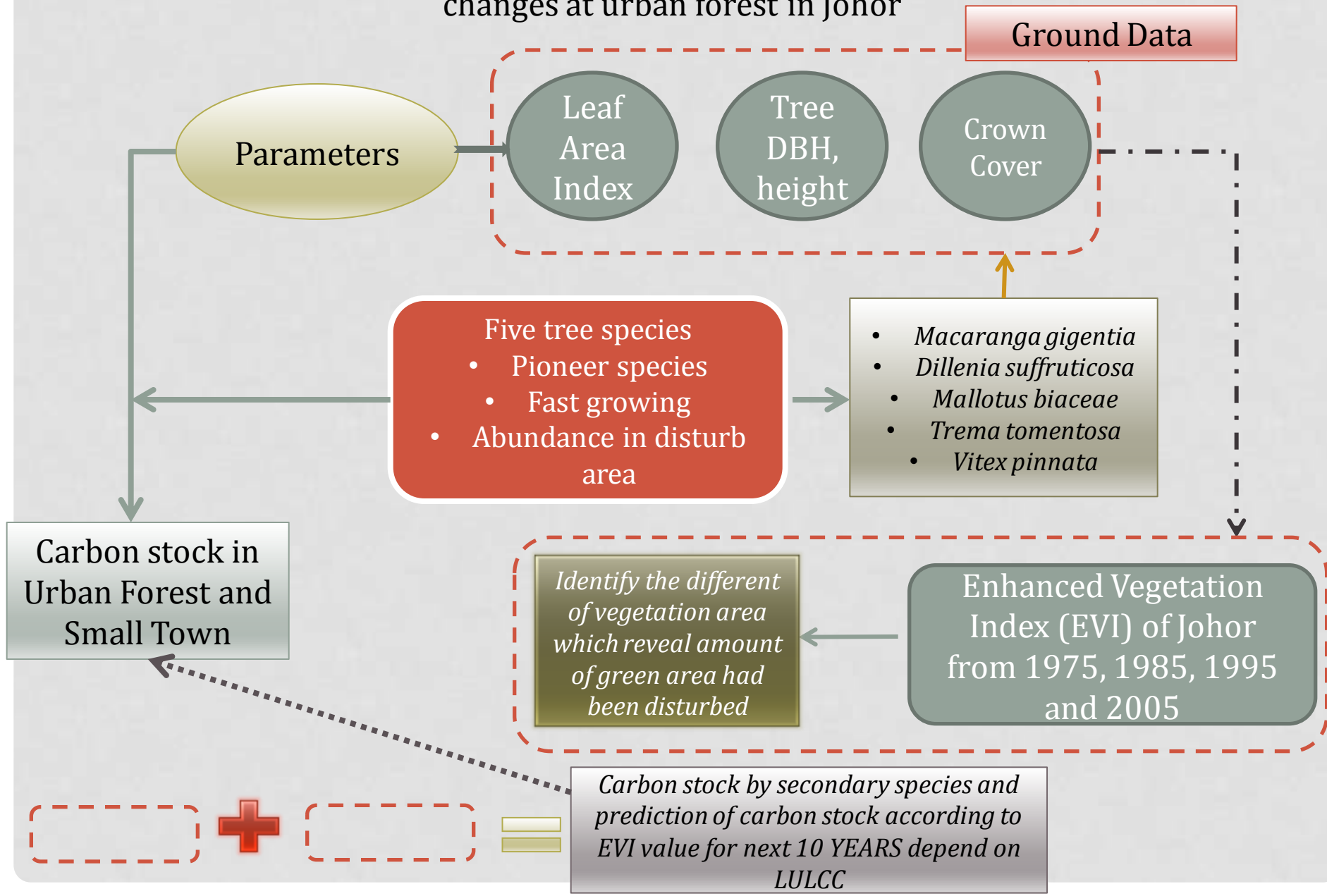


Guideline for measuring DBH  
based on Department of  
Forestry



# Research Framework

Land Use and Land Cover Change (LULCC) mapping and assessment of carbon stock changes at urban forest in Johor



# DATA COLLECTION FORM

<b>Name of collector</b>						
<b>Date</b>						
<b>Time</b>						
<b>Temperature</b>						
<b>Plot Number</b>						
<b>Plot Location</b>						
<b>Tree Details</b>						
<b>Species Name</b>	<b>Local name</b>	<b>Location</b>	<b>DBH (cm)</b>	<b>Height (m)</b>	<b>Leaf Area Index</b>	<b>Notes</b>

# PUBLICATIONS

- Factors Determining Amount Of Carbon Sequestration In Urban Trees: A Review. 8th SEATUC Symposium. 4-5 March 2014
- Submitted an abstract to the 1st International Conference of IASUR (International Alliance for Sustainable Urbanization and Regeneration)

# RESEARCH SCHEDULE AND MILESTONE

STAGE OF STUDY	YEAR 1		YEAR 2		YEAR 3	
	Sem 1	Sem 2	Sem 3	Sem 4	Sem 5	Sem 6
Research Proposal						
Completion Research Proposal		★				
Submission Paper 1 – SEATUC 8		★				
Literature Review						
Problem Statement,Aim, Objective formulation						
Methodology						
Data Collection						
Completion Data Collection				★		
Submission Paper 2 –Scopus				★		
Data input and analysis						
Findings						
Writing						
Completion First Draft					★	
Completion Second Draft						★
Completion Final Draft						★
Submission Paper 3 – Impact Factor Journal						★
Submission of Thesis						

THANK YOU