# LEPIDOPTERA OF ECONOMIC IMPORTANCE IN FORESTRY

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# Intro

- Out of about 1,000 butterflies and 10,000 moths in Malaysia, only few are forest pests
- Most are beneficial:

  Pollinators

  Preventing dominance in diverse tropical forest

  Food for vertebrates
- Those labelled as pests in:
  - Forest Plantations
  - Forest Rehabilitation

# FOREST PEST LEPIDOPTERANS

- Caterpillars
  - 1. Defoliators: mostly moths (e.g. Pyralidae), few butterflies (e.g. Pieridae)
  - 2. Stem-/ Shoot-Borers: moths (e.g. Cossidae, Hepialidae)
  - 3. Seed Predators: micromoths

# DEFOLIATORS

*Daphnis hypothous* on Laran (*Anthocephalus chinensis*). From Chey 2001

*Arthrochista hilaralis* on Laran (*Anthocephalus chinensis*).
From Chey 2001

*Paliga damastesalis* on teak (*Tectona grandis*).

From Chey 1996

Gregarious caterpillars of *Eurema hecabe* on *Paraserianthes falcataria* seedling.

From Chey 1996

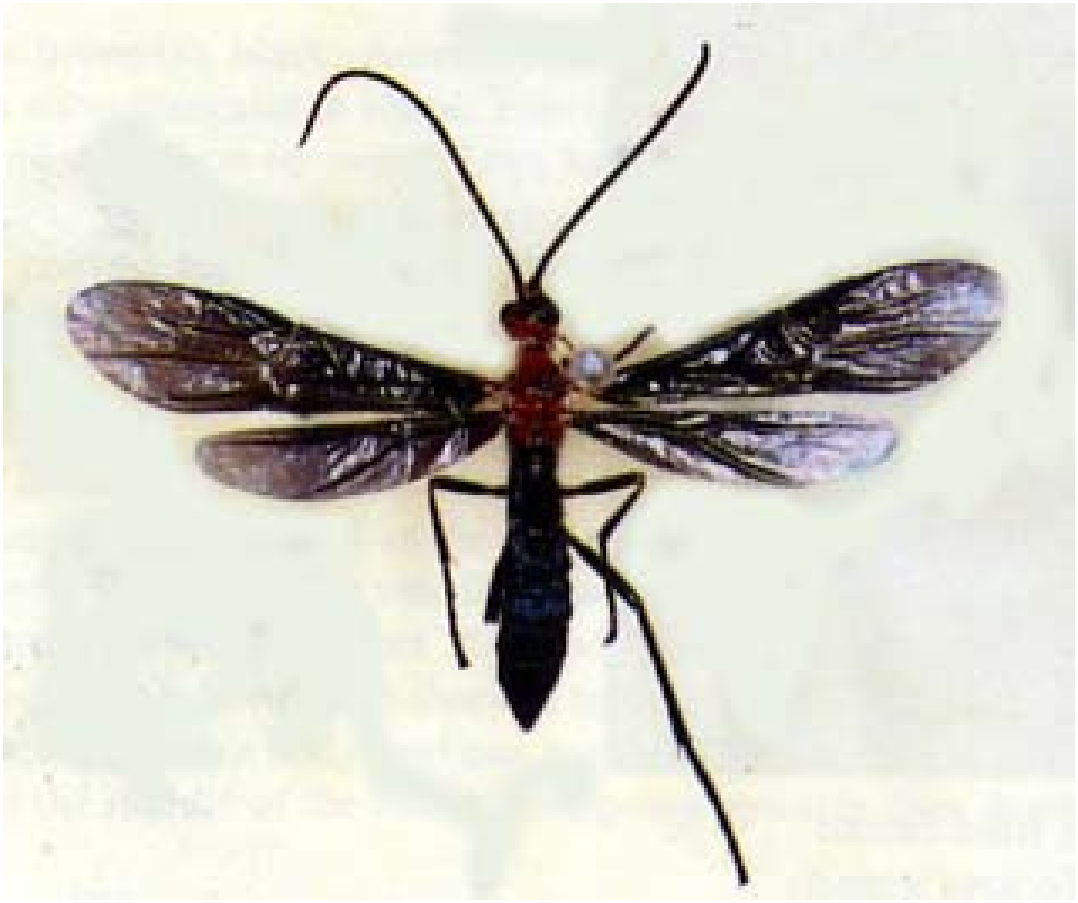
# Control of Defoliators

- In many cases, trees can recover with no serious impact. Control by chemicals unfriendly to environment and unnecessary
- For seedlings and young plantings, biocides (e.g. *Bacillus thuringiensis*) or pyrethrins with low mammalian toxicity may be used

# STEM-/ SHOOT-BORERS

*Endoclita aroura* on teak.

From Chey 1996



*Hybogaster* sp., parasitoid on *Endoclita aroura*.

From Chey 1996

# Control

- Encourage abundance of natural enemies, e.g. parasitoids
  - Avoid herbicides: wipe out beneficial insects too
  - allow growth of understorey in plantation: source of nectar

*Xyleutes ceramica* on teak.

From Chey 1996

# Control

- Integration of methods:
  - Silvicultural
  - Pheromonal
  - Biological

  (Mathew 1990)

*Hypsipyla robusta*, mahogany shoot-borer.

From Chey 1996

# Control

- By silvicultural methods:
  - Planting on suitable soils to promote vigorous growth
  - Close planting to promote height growth
  - Pruning of superfluous shoots to remove potential food source

# SEED PREDATORS

*Conogethes evaxalis* on *Dipterocarpus grandiflorus* seed.

From Chey 2002

*Andrioplecta shoreae*. Most common predator on many dipterocarp seeds.

From Chey 2002

# SUMMARY

- Most lepidopterans are beneficial (pollinators, agents preventing dominance)
- But some are labelled pests particularly in forest plantations
- Use of chemicals is best avoided
- Combination of biological, silvicultural methods recommended