Insect classification and biodiversity
ENT-304

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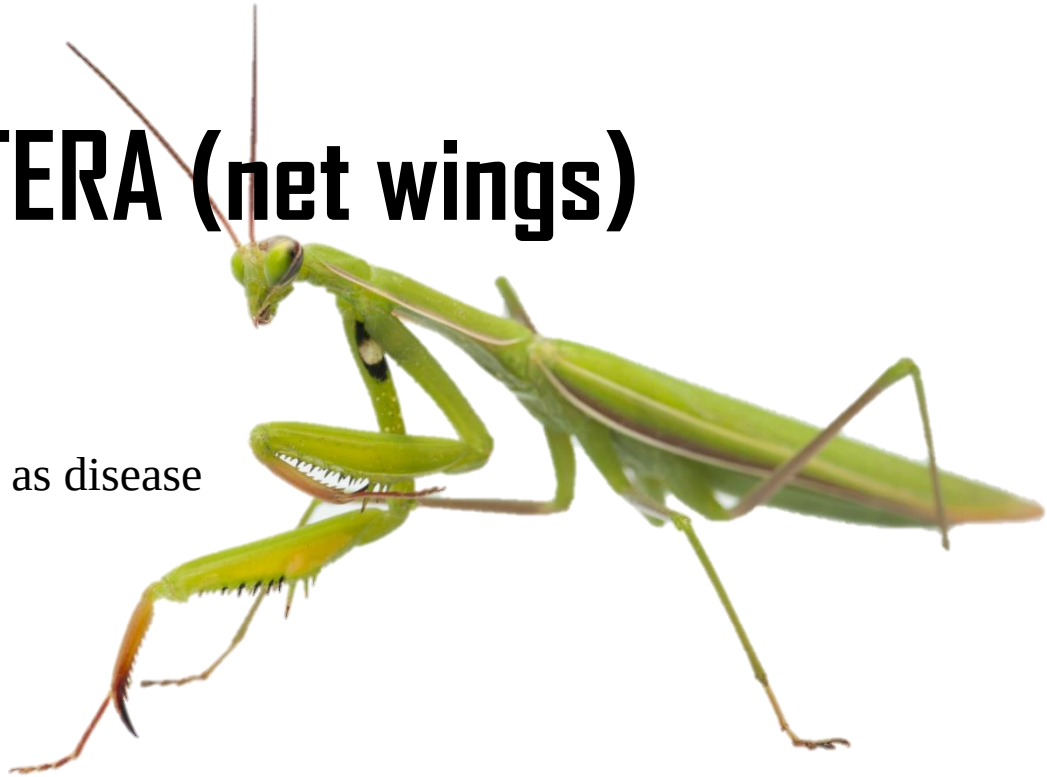
DICTYOPTERA (net wings)



A network of veins - hind wings

Cockroaches and **Preying mantis**

Some of them has economic importance as disease carrier such as cockroaches

CHARACTERS

Head:

- Antennae are long setaceous
- Mouthparts are chewing type

Thorax:

- Prothorax is formed a long neck or flattened but head is concealed under the pronotal shield.
- The forewings are slightly thickened while the hindwings are membranous.
- Legs are similar while the forelegs are raptorial (tibial spines well developed).
- Auditory and stridulatory organs are absent.
- Tarsi are 5 segmented.

Abdomen:

- Female with reduced ovipositor while in case of male genitalia asymmetrical
- Ninth abdominal sternum bears of styli.
- Cerci are short and unsegmented.

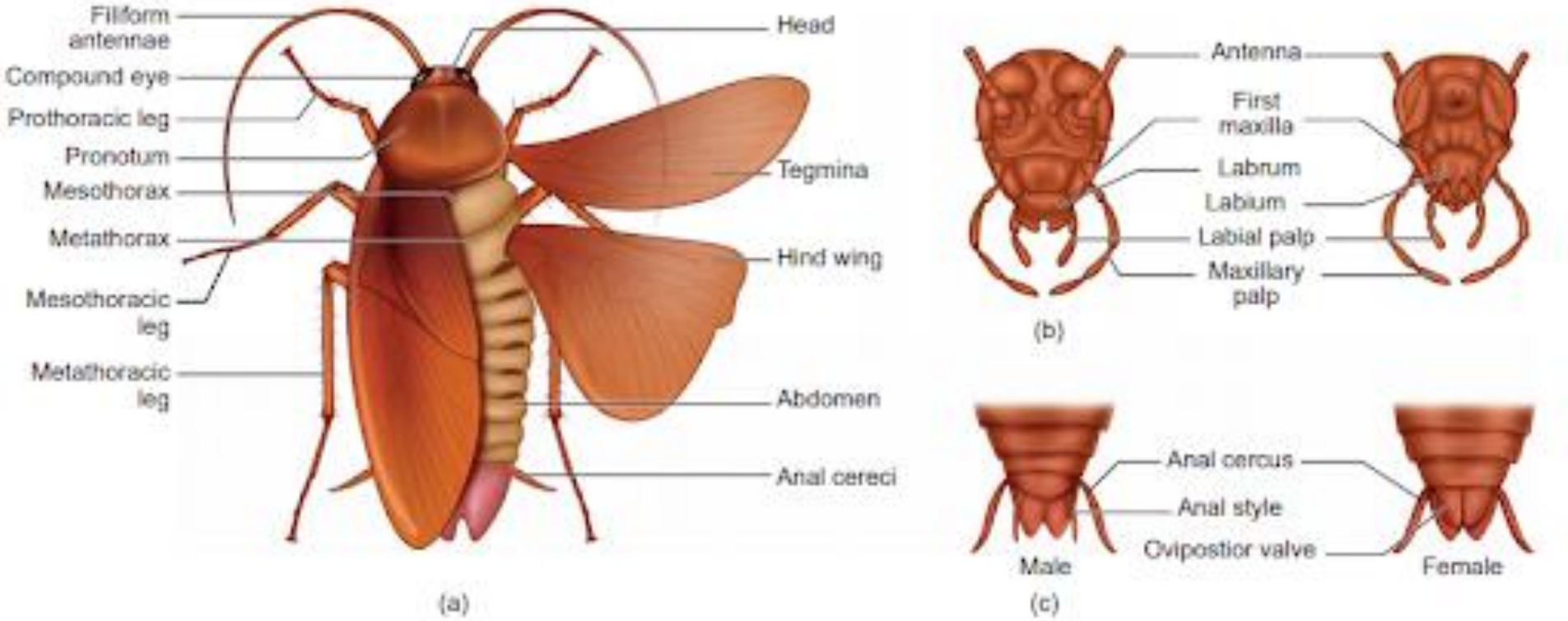


Figure 4.8 *Periplaneta americana:* (a) External features (b) Head dorsal and ventral view (c) Male and Female ventral view of posterior segment of abdomen

Classification

It is divided into 2 sub orders.

Suborder BLATTARIA with single family Blattidae e.g.
Cockroach.

- Head is concealed under the pronotal shield.
- Head is not mobile in all direction
- Legs are cursorial type

Suborder MANTODEA with single family Mantidae e.g.
Preying mantis.

- Pronotum is elongate and don't cover the head
- Head is mobile in all direction
- Legs are raptorial type

Collection:
Preying mantis available in all types of grasses and cockroach is available in gutters and stores.

ISOPTERA (equal wings)

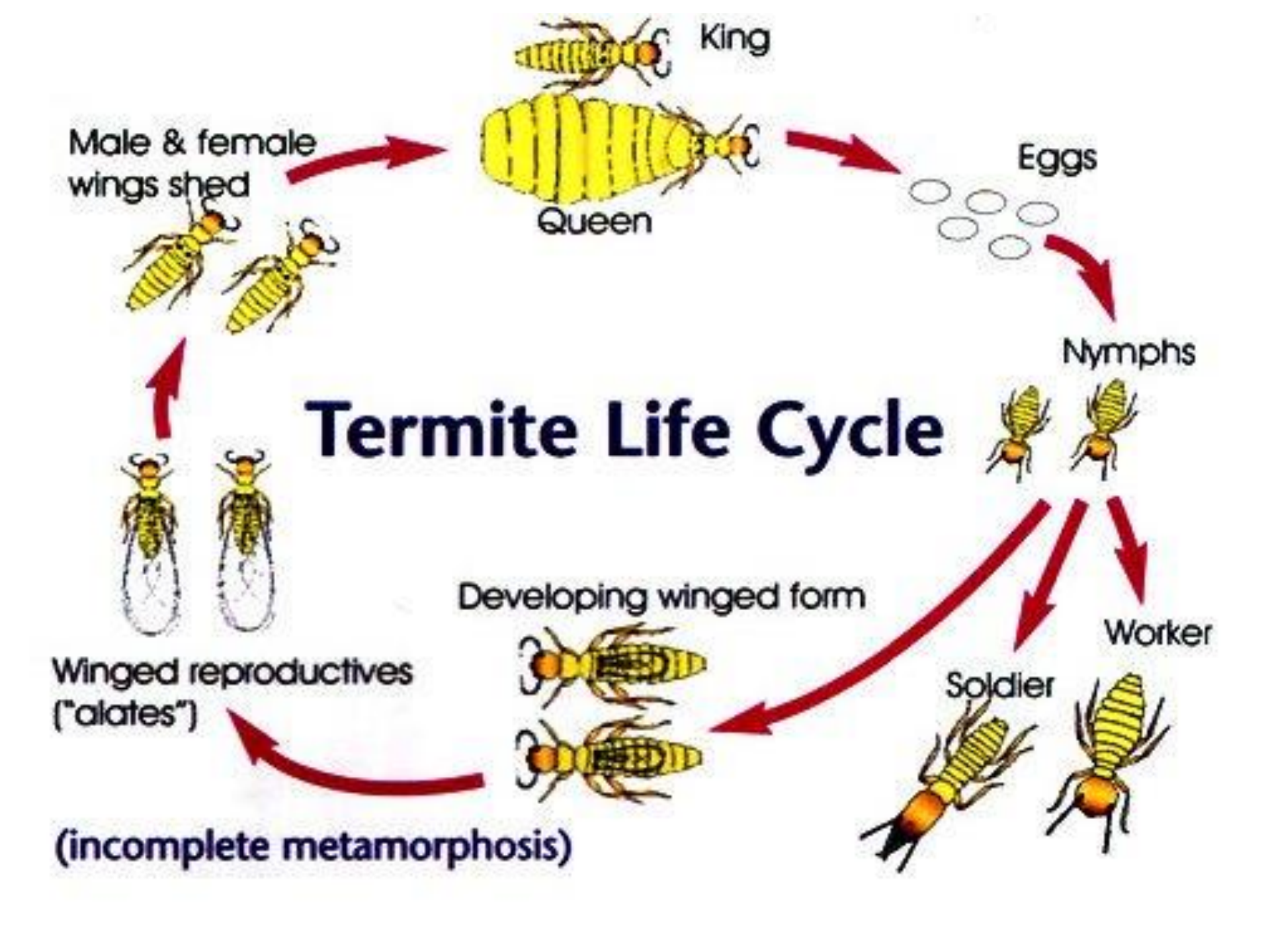
Both the wings are similar and equal in size have same venation.

Termites or **White ants**.

These insects are social and polymorphic species living in large communities composed of reproductive from together with numerous apterous form and sterile soldiers and workers

In case of reproductive casts the members are morphologically different to each other.

Termitarium is a house where all members of colony exist


King
Queen
Eggs
Nymphs
Worker
Soldier
Developing winged form
Winged reproductives
("alates")
Male & female
wings shed
Termite Life Cycle
(incomplete metamorphosis)

Characters

Head:

Antennae are long and moniliform.

Mouthparts are chewing type.

Thorax:

Wings are similar and shed after mating

Legs with tarsi almost 4 segmented.

Abdomen:

Cerci are short segmented.

Classification

Family Termitidae

(*e.g. Microtermes obesi, Odontotermis obesus*)

- R-vein behind the costal margin usually without any branches.
- Rs is absent or reduced.
- Cerci are 1or 2 segmented.

Family Rhinotermitidae

- R-vein behind the costal margin usually without any branches
- Rs is present.
- Cerci are 2-segmented.

Collection

These insects can be collected from the infested wood, timber, furniture, etc. Winged adults are attractive to light; during night after the shower of rain they make a swarm around the street light bulb. Their colony lives deep into the ground.

ZORAPTERA (purely wingless)

These insects at the time of their discovery were all wingless.

These are commonly called **zorapterans**

Characters

These are very minute insects.

Head:

Antennae are 9 segmented and moniliform.

Mouthparts are chewing type.

Thorax:

Either winged or wingless

Abdomen: Two short thick un-segmented cerci, which have small hairs

Classification

It has only one important family **Zorotypidae:** e.g. *Zorotypus sp*.

Collection
These insects can be collected from decaying organic matter, leaf litter, Under loose bark of trees etc.

PSOCOPTERA (rub wings)

The adult insects feed by rubbing or scraping the things with their mouthparts. They are commonly called **Psocids, Booklice**

Characters:

These are minute wings or wingless insects with mouthparts of chewing type. Antennae are very long and filiform.

Abdomen: Is without cerci

Classification

It has two important families

Family Psocidae:(*e.g. Psocus sp*.)

1.Tarci two segmented.

2.Hind femur is not thickened.

Family Liposcelidae:(*e,g. Liposcelis sp*)

1.Tarci three segmented.

2.Hind femur is greatly thickened.

Collection:
These can be collected from libraries, in books, from kitchen, in wheat flour etc.

Mallophaga (malo-hair; phaga-to eat)

They feed or eat the hairs of the animals and commonly called Biting lice.

Characters:

They are small insects with flattened body. They are ectoparasite of birds, rarely on mammals.

Head:

The head is broader than the prothorax

Thorax:

Prothorax is not fused with the remaining thoracic segments.

Thoracic spiracles are present on the lower side (ventral).

Wings are absent

Legs are clinging type

Abdomen:

Cerci are absent, but at the end of abdomen has two posterior prolongations, which are simple extensions of the last abdominal segment

Classification

Family Menoponidae: (e.g. chicken lice)

- Antennae lying in grooves on the side of head.
- Tarsi with 2 claws.

Family Philopteridae (on birds).

- Antennae filiform.
- Tarsi with 2 claws.

Family Trichodectidae (on mammals)

- Antennae filiform usually 3 segmented.
- Tarsi with 1 claw.

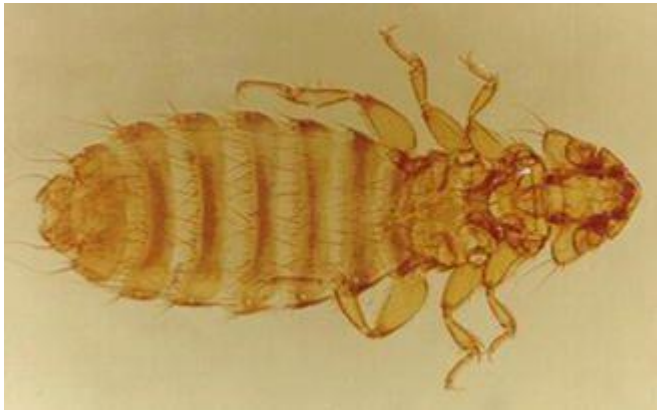
Collection:
These insects can be collected from their hosts like poultry birds, other birds and mammal's fur.

SIPHUNCULATA (a thin tube)

These insects suck the blood of mammals with the help of a sucking proboscis. They are commonly called Sucking lice.

Characters

- These are small insects with flattened bodies.
- They are ecto-parasites of mammals



Head:

- The head is narrower than the thorax

Thorax:

- All thoracic segments are fused
- Thoracic spiracles are dorsal
- Wings are absent
- Legs are clinging type

Abdomen:

- Cerci are absent
- But at the end of abdomen has two posterior prolongations, those are simple extension of the last abdominal segment

Classification

Family Pediculidae (Human lice)

- Body is elongate but not crab like

Family Haemotopinidae (sucking lice of horses, cattle, sheep and other animals)

- Body with spines or hairs
- Eyes lacking

Collection:
These insects can be collected from their hosts like the head of human being and hairs and body of animals.