



**I**soptera

**Iso**

**Same**

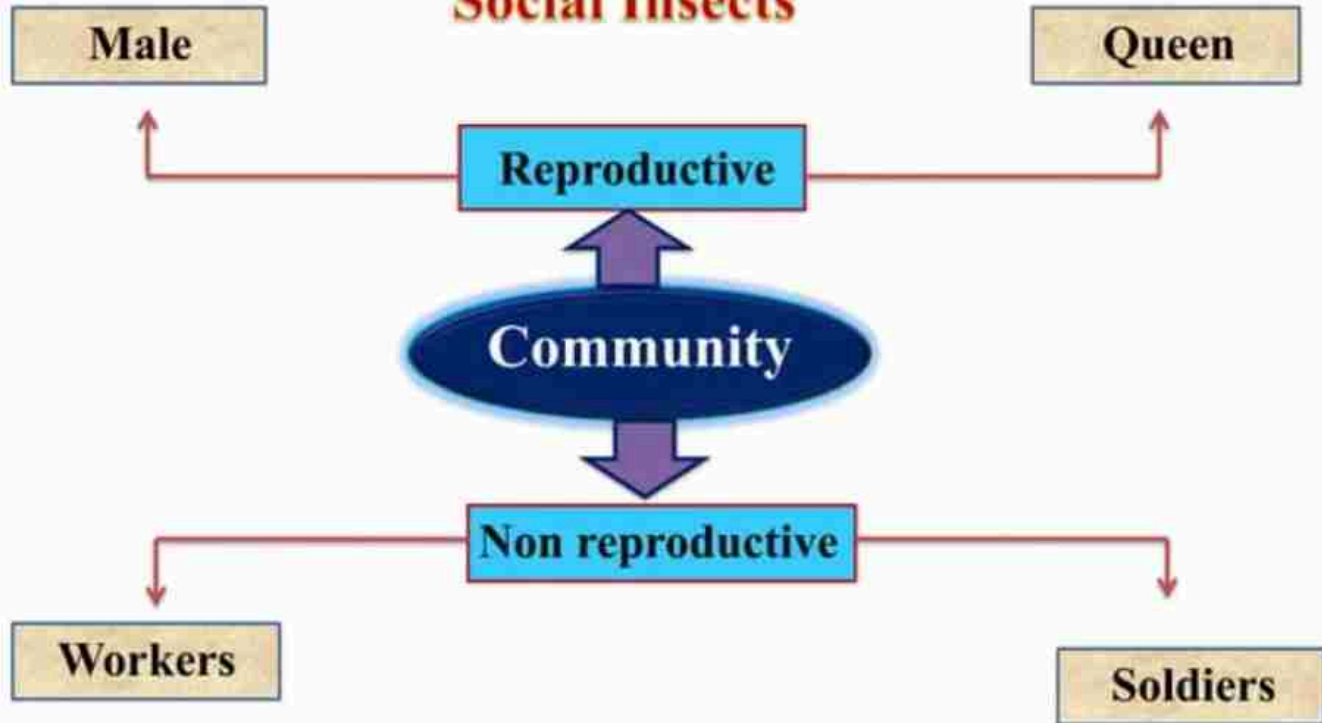
**Ptera**

**Wings**

Wings similar in shape and size

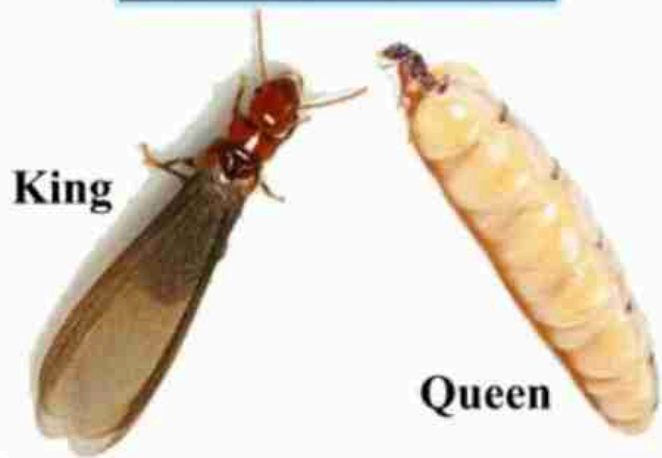


## Social Insects



## Genetically Controlled Caste

Reproductive caste



Non reproductive caste

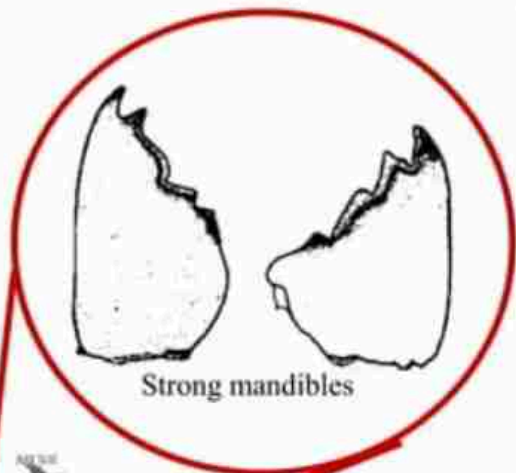


## Characters

### Head

Mouthparts are chewing

Antenna moniliform

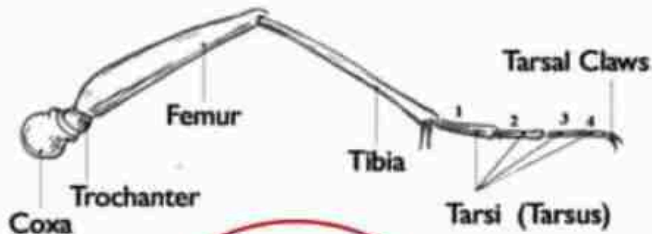


## Thorax

Wings are similar and equal in size

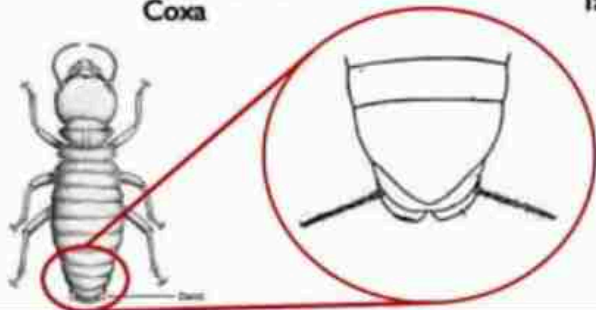


Tarsi 4-segmented



## Abdomen

Cerci short and segmented



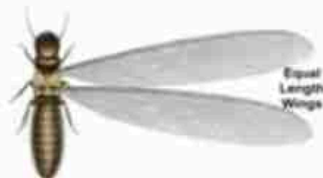
1.

# Termitidae

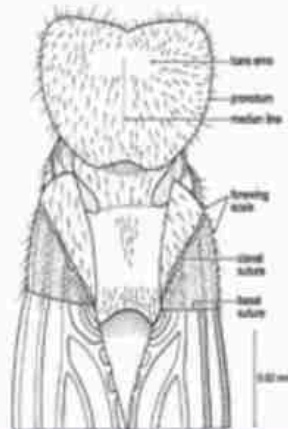
Antenna moniliform



Wings equal



Scales of forewings shorter than pronotum

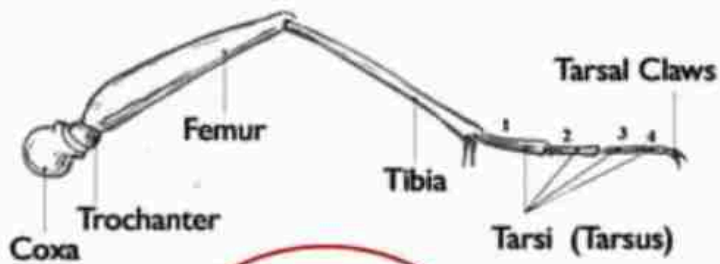


## Thorax

Wings are similar and equal in size

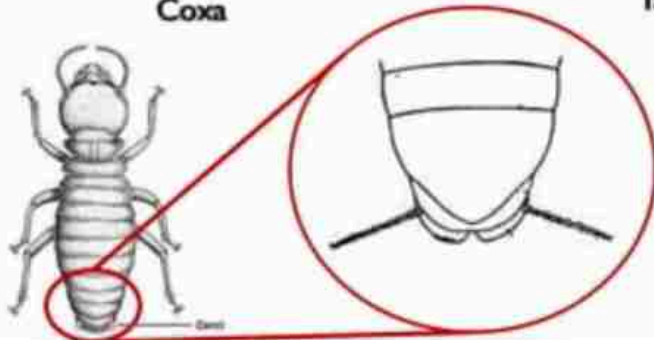


Tarsi 4-segmented



## Abdomen

Cerci short and segmented



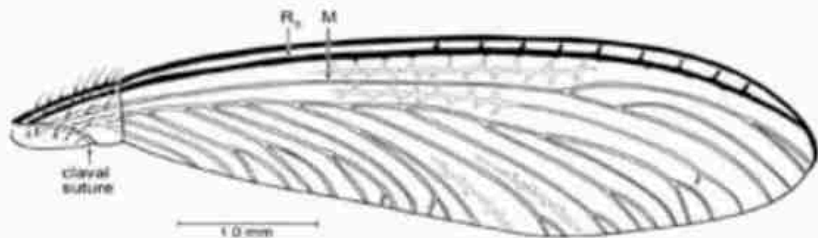


Pronotum is saddle shaped

- Radius vein behind costal margin
- Without anterior branches

Radial sector reduced or absent

Cerci one or two segmented



2.

# Rhinotermitidae

Pronotum is flat

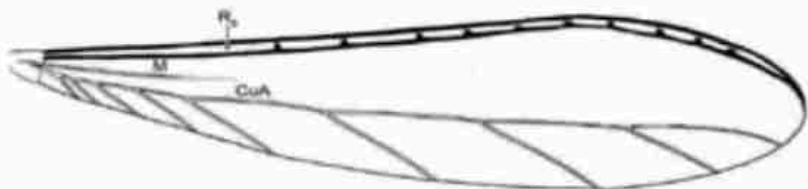
Scales of forewings larger than pronotum

Radius vein behind coastal margin

No anterior branches

Radial sector is present

Cerci is two segmented

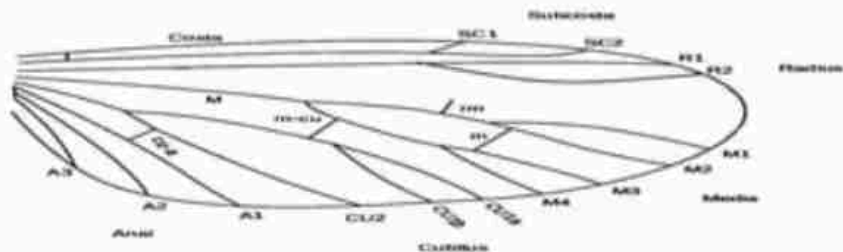
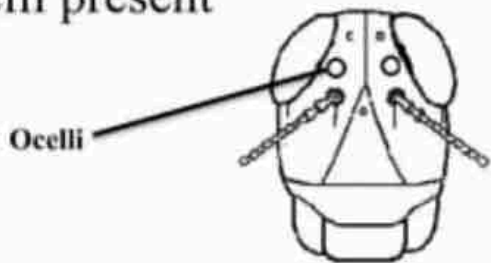


# 3.

# Kalotermitidae

Radius vein with one or two anterior branches

Ocelli present



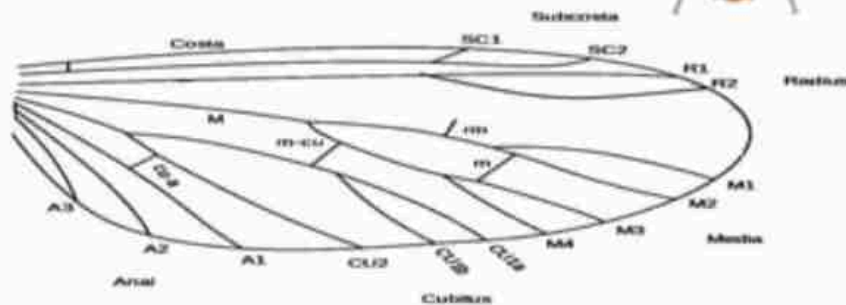
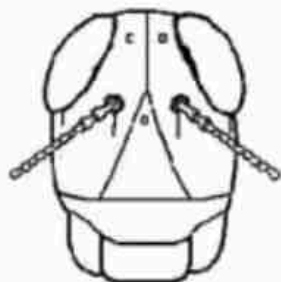
4.

# Hodotermitidae

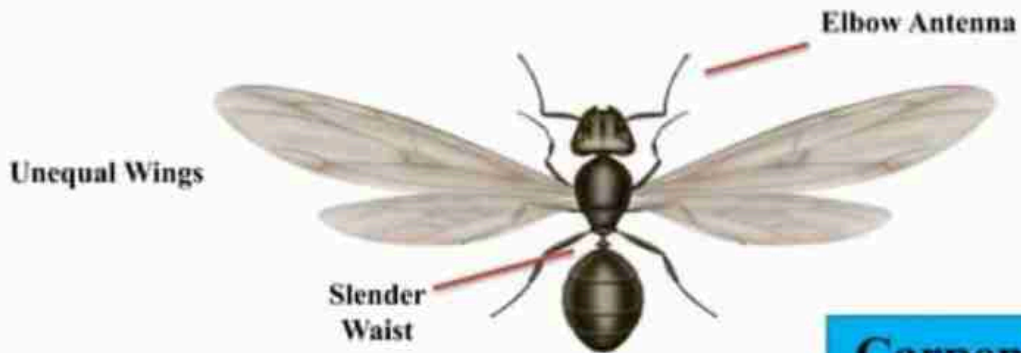
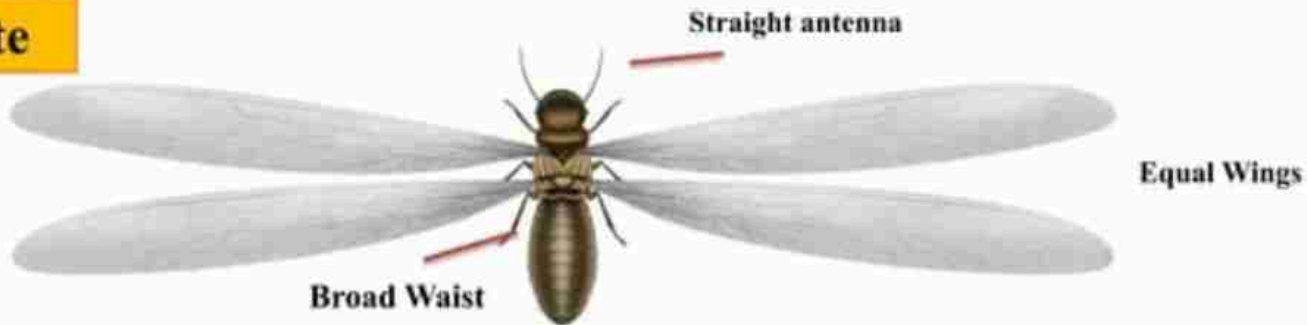


Radius vein with one or two branches

Ocelli absent



# Termite



# Carpenter Ant

# Introduction

Isoptera are small, soft-bodied, yellowish, whitish, tan or black insects that live in colonies in wood. Colonies consist of three castes: workers, soldiers and swarmers. Workers and soldiers are wingless and never leave the colony. Swarmers, or the reproductive forms, have dark bodies and four long, veined wings. The front and hind wings of termites are nearly identical in size and venation. Termites also have beadlike antennae and thick waists which distinguish them from ants.

The name Isoptera, derived from the Greek "*iso*" meaning equal and "*ptera*" meaning wings, refers to the similar size, shape, and venation of the four wings. Isoptera also called Isopterans or Termites

- ▶ **Termites are usually the most dominant organisms in tropical forest environments. Their populations typically range from 2000 to 4000 individuals per square meter but may occasionally run as high as 10,000 individuals per square meter.**



# Scientific Classification of Isoptera

Kingdom: Animalia

Phylum: Arthropoda

Superclass: Hexapoda

Class: Insecta

Subclass: Pterygota

Infraclass: Neoptera

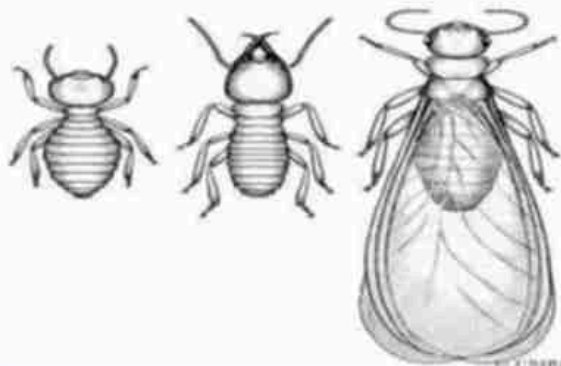
Order: **Isoptera**

# Distribution

- ▶ Extremely common in tropical and subtropical climates. Generally less abundant in temperate regions.
- ▶ Isopteran are hemimetabola(egg, nymph, adult)

# Characteristics of Isoptera(Termites)

- Pale, elongate body
- 2 pairs of membranous wings of equal length. Wings are present in reproductive castes only and shed after mating
- Mandibulate(chewing) mouthparts
- Antennae about the same length as the head



# Physical Features

## Immatures (Workers & Soldiers)

Body pale in color, somewhat ant-like in appearance but with a broader junction between thorax and abdomen Compound eyes small or absent

- Head large and cylindrical or small and round
- Antennae beaded
- Mouthparts chewing; sometimes with large mandibles



Soldiers



Workers



Adults

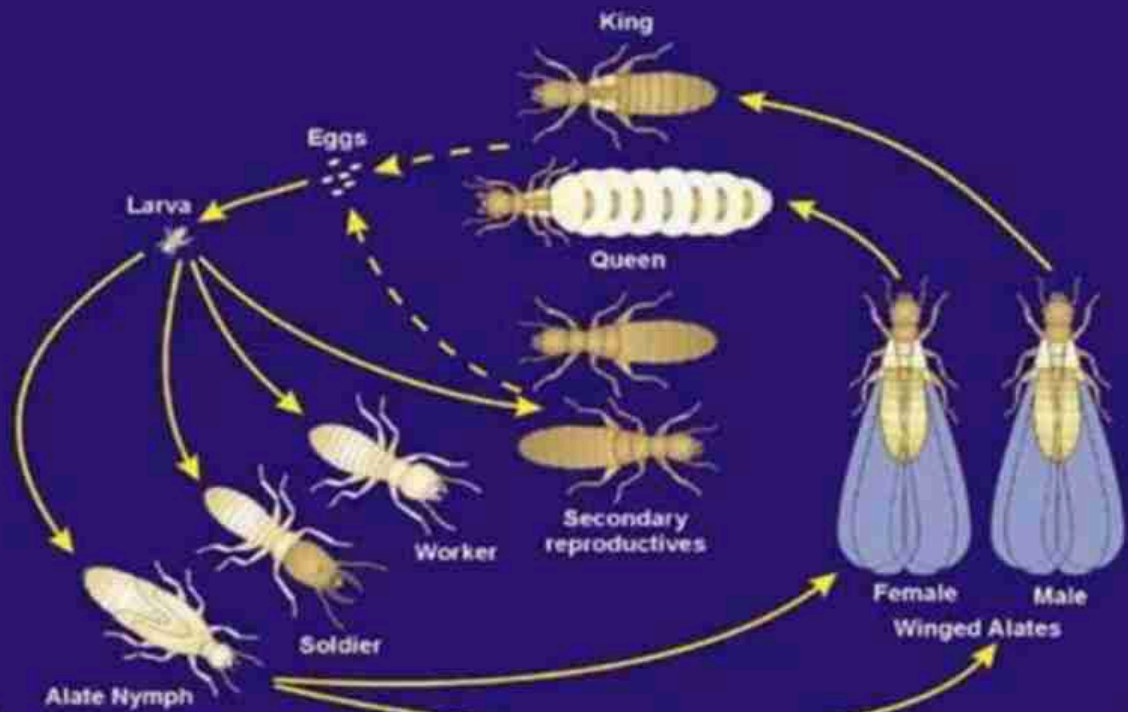
## **Adult**

- **Body may be darkly pigmented Head well-developed, with chewing mouthparts and beaded antennae**
- **Compound eyes present**
- **Two pairs of membranous wings, all similar in shape and size; wings are shed after mating**

# Feeding

- ▶ Termites feed on a wide variety of plant material, which may include wood, bark, leaves, grasses, fungi, humus or the droppings of herbivores. Some species forage on the surface at night collecting grasses which they take back to be stored in the nest.

# Life Cycle





# Families of order Isoptera

There are 7 families present worldwide with more than 2300 species.





# Important families of isoptera

▶ In 7 families of order isoptera that is only 4 families are very important which are as follows.

- ❖ **Rhinotermitidae (Subterranean termites)**
- ❖ **Kalotermitidae (Drywood and dampwood termites)**
- ❖ **Hodotermitidae (Rottenwood termites)**
- ❖ **Termitidae**

## **Family: Rhinotermitidae (Subterranean termites)**

- ▶ **These insects build nests in the soil and generally infest wood that is in contact with the ground.**
- ▶ **This family includes the most destructive species**

## Family: Kalotermitidae (Drywood and dampwood termites)

- ▶ These insects nest in the wood itself and do not require contact with the soil. Pest species include the western drywood termite (*Incisitermes minor*) and the forest tree termite (*Neotermes connexus*)

## Family: Hodotermitidae (Rottenwood termites)

Generally found inhabiting moist wood. Contact with the soil is not a requirement. This family includes the Pacific dampwood termite, *Zootermopsis angusticollis*.

## Family: Termitidae

- ▶ This is the largest family of termites worldwide, but all of the North American species are relatively minor in importance.
- ▶ Adults have three or four heavy veins along the front edge of the wing, the cerci have five or six segments and the antennae have 20 or more segments.

# Conclusion

Termites are an important part of the community of decomposers. They are abundant in tropical and subtropical environments where they help break down and recycle up to one third of the annual production of dead wood. Termites become economic pests when their appetite for wood and wood products extends to human homes, building materials, forests, and other commercial products. In the United States alone, annual losses due to termite infestations are estimated at more than 800 million dollars.