

Phthiraptera

Common name: (Parasite lice)

Metamorphosis: Incomplete (Paurometabolous)

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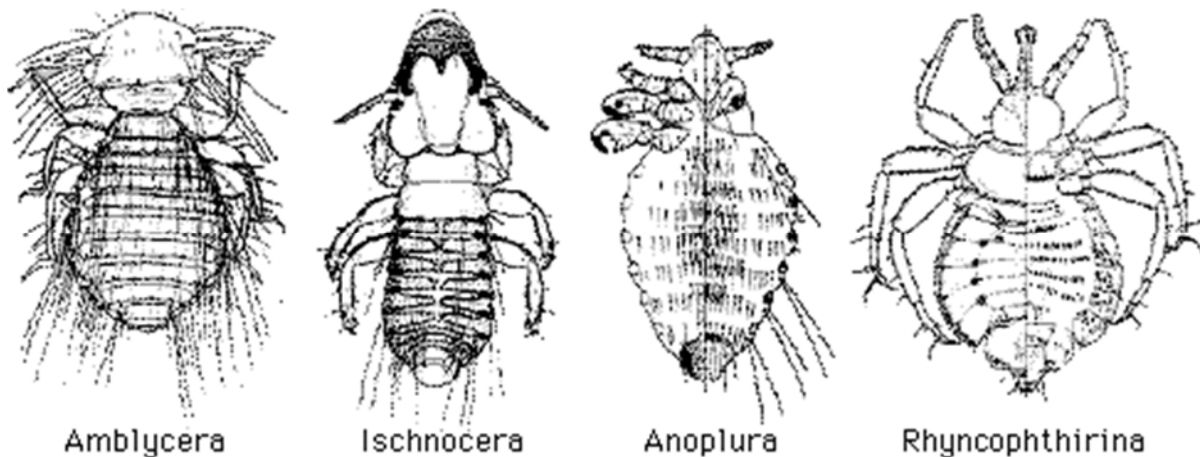
Distribution: Worldwide

Number of families: Eight

Phthiraptera are ectoparasitic, wingless insects found on mammal or bird hosts, and spend all their lives in the microhabitat provided by the blood, skin, fur, hairs or feathers. Lice are classified into four suborders: **1- Rhynchophthirina** (a small group, only 2 species, found only on elephants and warthogs, their mouthparts are elongated to form a drill-like structure that allows the louse to penetrate the thick skin of their hosts), **2- Amblycera** and **3- Ischnocera** (the chewing or biting lice, formerly called Mallophaga), and **4- Anoplura** (sucking lice). They are obligate ectoparasites lacking any free-living stage and occurring on all orders of birds and most orders of mammals.

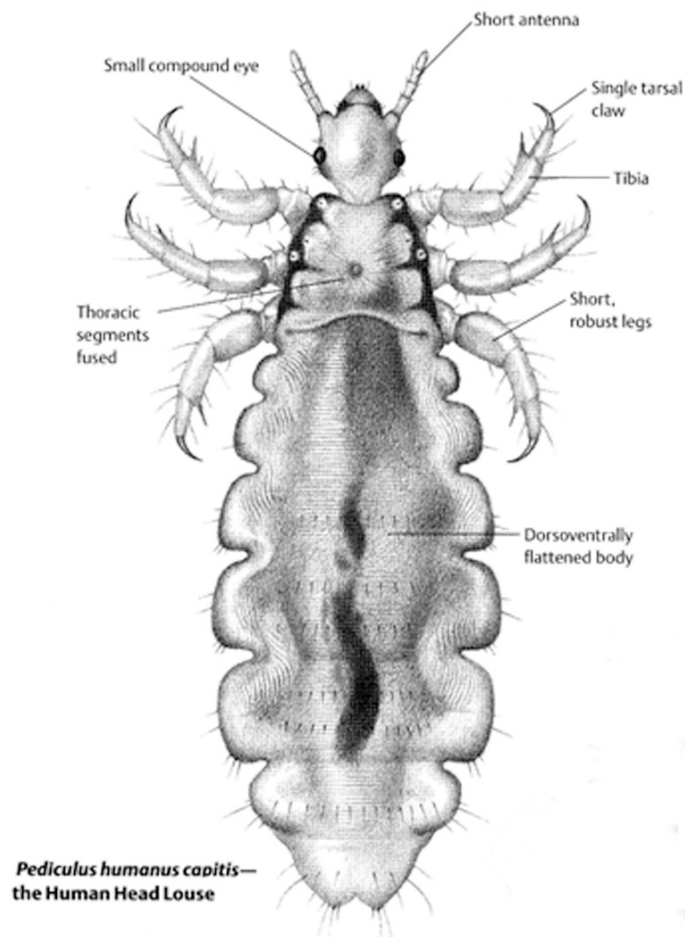
Mouthparts are mandibulate in the chewing lice (**Rhynchophthirina, Amblycera, and Ischnocera**), and beak-like for piercing and sucking in sucking lice (**Anoplura**).

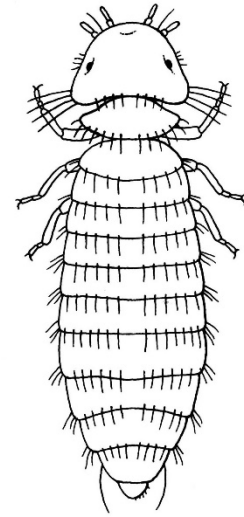
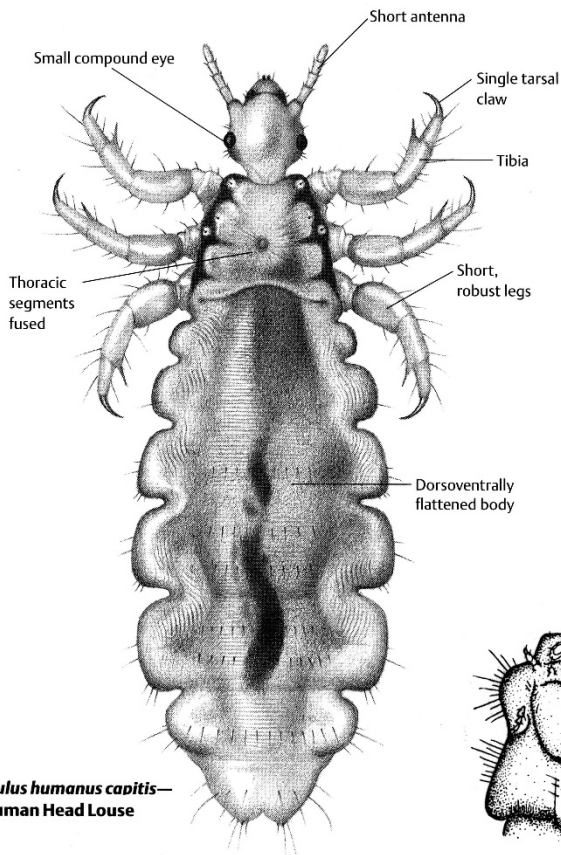
The chewing lice feed on **bird feathers** and **mammal skin**, with a few amblycerans feeding on **blood**. The sucking lice feed solely on mammal **blood**. As with most parasitic insects, some Phthiraptera are involved in disease transmission. *Pediculus humanus corporis*, the human body louse, is one **vector of typhus**. It is notable that the subspecies *P. humanus capitis* (the human head louse) and *Phthirus pubis* (the pubic louse) are insignificant typhus vectors, although often co-occurring with the body louse.



Diagnostic characters:

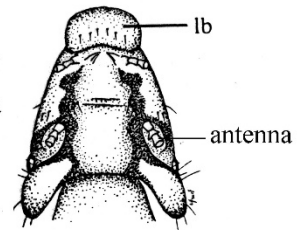
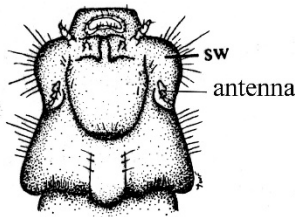
1. *Apterous, dorsoventrally flattened ectoparasites on mammals and/or birds.*
2. *Mouthparts are mandibulate in **Amblycera**, **Ischnocera** and **Rhynchophthirina**, and beak-like for piercing and sucking in **Anoplura**, which also lack maxillary palps.*
3. *The eyes are either very small or totally absent; ocelli absent.*
4. *The antennae are short (**3-5 segments**) and stout.*
5. *The thoracic segments are variably fused.*
6. *The legs are well developed and stout with 1- or 2- segmented tarsi, ending in 1 or 2 strong claws used in grasping host hair or fur.*
7. *Abdomen has 5-8 distinct segments, without cerci.*
8. *The nymphs resemble smaller, less pigmented adults, and all stages live on the host.*
9. *Development is hemimetabolous (paurometabolous).*



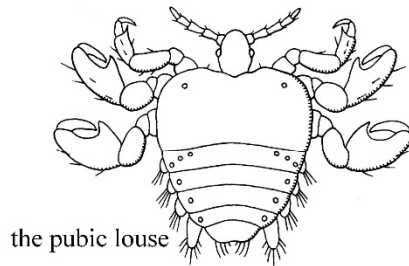


A typical biting louse of the suborder Amblycera.

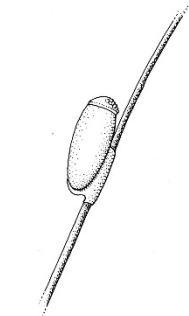
***Pediculus humanus capitis*—the Human Head Louse**



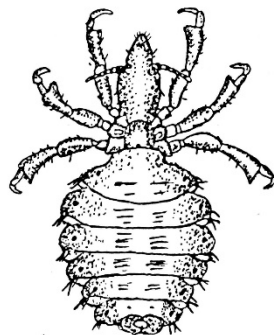
Modifications to the leg of the Head Louse to enable it to grip human hair.



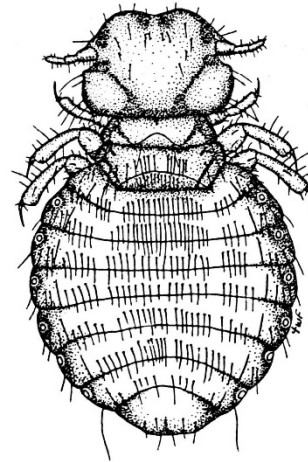
the pubic louse



The eggs or 'nits' of the Head Louse are glued firmly to the shaft of human hair.



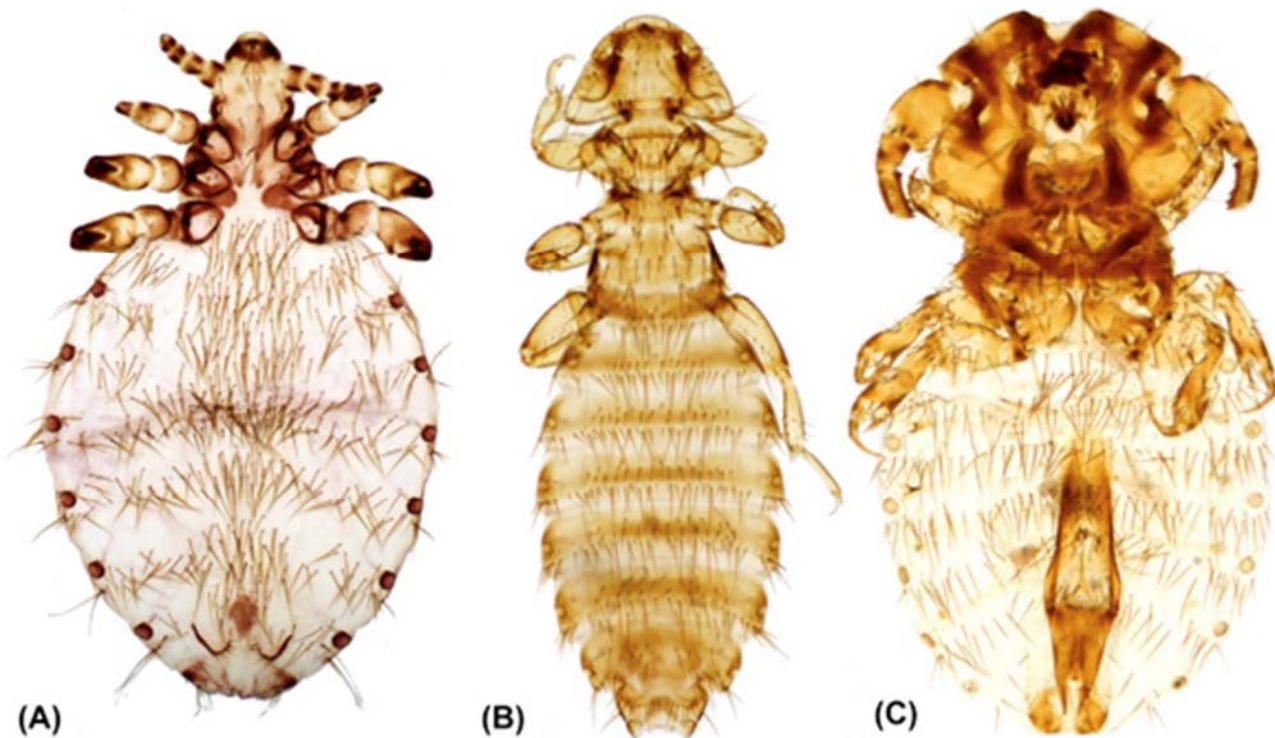
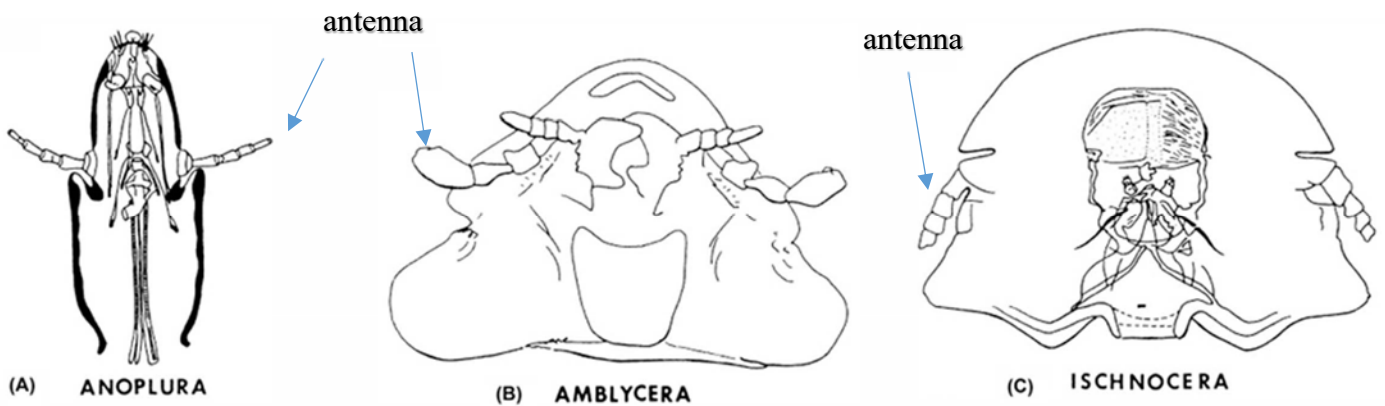
***Haematopinus* sp.**



***Trichodectes canis*
(Dog chewing louse)**

Key to studied suborders

- Mandibles apparently absent; mouth parts composed of long stylets retractable into a cavity in the head (**sucking lice**)..... **Anoplura (A)**
- Mandibles sclerotized, toothed, and functional, situated on ventral side of the head; mouth parts not styliform (**chewing/biting lice**) 2
- Antennae 4-segmented arising from ventral portion of the head and usually situated in grooves or in cavities **Amblycera (B)**
- Antennae 5-segmented arising from or near lateral margin of the head and not situated in grooves **Ischnocera (C)**



A- Suborder: Anoplura
(Sucking lice)




Sucking lice are small external parasites that feed by sucking mammal blood through a tube formed by an eversible set of fine stylets. The entire life cycle is spent on the host. The eggs are glued to a hair and soon hatch into nymphs that are very similar to the adults. Horses, cattle, sheep, goats, dogs and cats are attacked by several species of lice. The loss is partly a result of irritation and partly loss of blood, with resultant poor condition of the animal and failure to gain weight normally. Sucking lice will cause sheep and goats to rub against trees or fences with heavy damage to the wool.

Diagnostic Characters:

1. *Apterous insects living as ectoparasites of mammals.*
2. *Mouth parts are piercing-sucking, retractile, with fleshy unsegmented rostrum.*
3. *Head is small, narrower than the prothorax.*
4. *Antennae are extended, filiform (and sometimes modified as claspers).*
5. *Thoracic segments completely fused, with spiracles situated dorsally.*
6. *Each 1-segmented tarsus has a single claw that fits against a thumb-like projection at the end of the tibia.*

Key to studied families

1. Eyes lacking **Haematopinidae**
- Eyes or eye tubercles present2
2. Body more elongate, not crab-like; Only one pair of spiracles on first abdominal segment**Pediculidae**
- Body broadly oval, crab-like; three pairs of spiracles forming an oblique row on each side of the first abdominal segment**Phthiriidae**

<p>Family Haematopinidae <i>Haematopinus tuberculatus</i> Ungulate lice قمل الجاموس</p>	
<p>Family Pediculidae <i>Pediculus humanus capitis</i> (Human head lice) <i>Pediculus humanus corporis</i> (Human body lice) قمل الانسان</p>	
<p>Family phthiriidae <i>Phthirus pubis</i> (Crab or pubic lice) قمل العانة</p>	

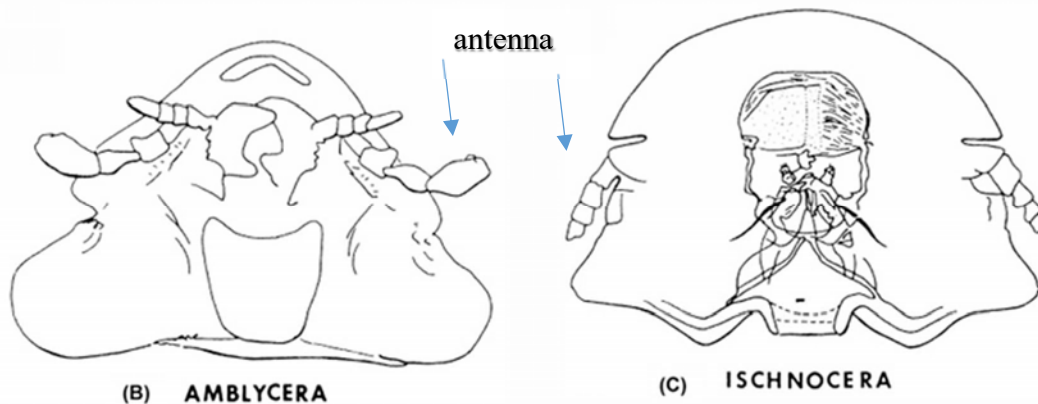
**B, C - Suborders: Amblycera and Ischnocera (Mallophaga)
(Chewing lice)**

All the chewing lice have continuous and overlapping generations throughout the year entirely on the host body. They feed on bits of skin, feather or hair, clotted blood, and surface debris. The eggs are glued to the hair or feathers of the host and this kept under incubator conditions. The eggs of various species differ in shape, some are long and simple; others are ornamented with tufts of barbs or hair.

Many species of chewing lice are important pests of domestic birds and animals. They cause a considerable irritation, loss of weight and reduction in egg laying in chickens, turkeys and other fowl. Heavily infested animals appear run-down and emaciated, and if actually not killed by the lice, are rendered easy prey for various diseases.

Diagnosis:

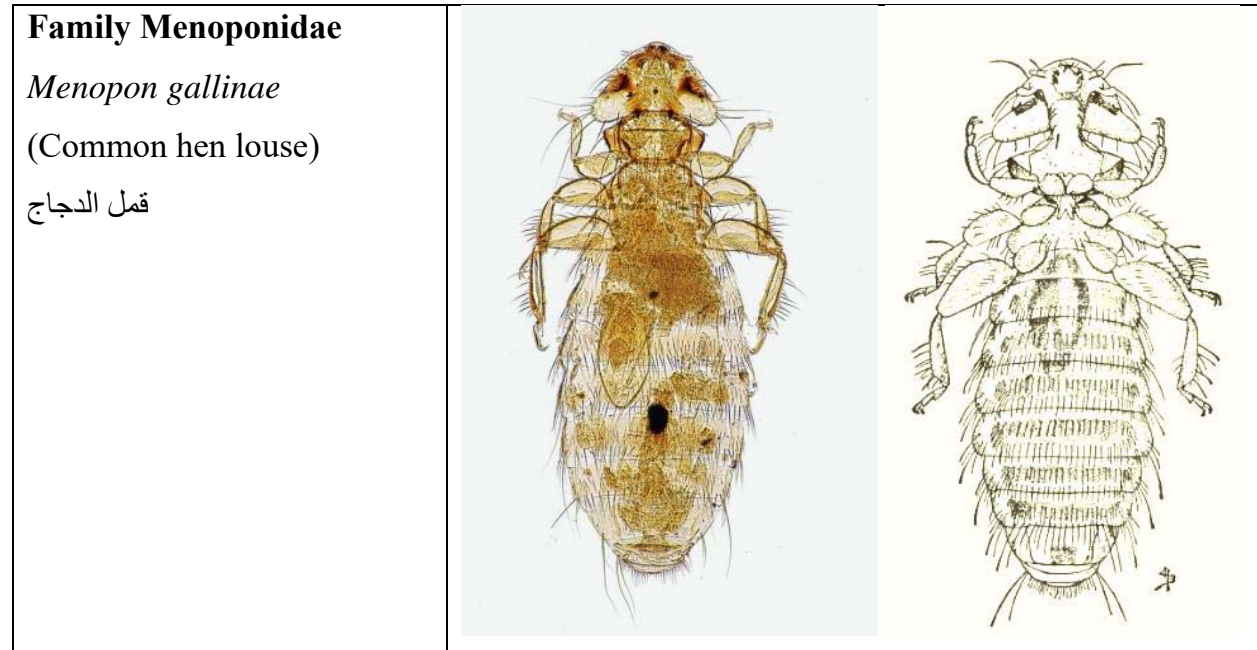
1. *Apterous insects living as ectoparasites mainly of birds, less frequently of mammals.*
 2. *Mouthparts of a modified biting type.*
 3. *The head is generally broader than the prothorax.*
 4. *Antennae are either held in grooves (Amblycera) or extended, filiform (and sometimes modified as claspers) in Ischnocera.*
 5. *Prothorax evident, free; meso- and metathorax often imperfectly separated.*
 6. *Thoracic spiracles ventral.*
 7. *Tarsi 1- or 2-segmented, terminated by a single or paired claws.*
- Antennae 4-segmented arising from ventral portion of the head and usually situated in grooves or in cavities (**Menoponidae**) **Amblycera (B)**
 - Antennae 5-segmented arising from or near lateral margin of the head and not situated in grooves **Ischnocera (A)**



Suborder Amblycera

Family Menoponidae

Entire head triangular in outline; posterior area to the eyes considerably expanded laterally; antennal groove are completely open laterally; abdomen densely covered with setae.



Suborder Ischnocera

Family Philopteridae

Head longer than wide; abdomen slender; tarsus with two claws; ectoparasites on birds.

