

Order Phthiraptera

These are Lice. Insects of this order are highly host specific – permanent ectoparasite. They occur in variable size and color – All are flattened dorsoventrally. They are wingless insects with bodies divided into: (a) Head which has parts the antennae (b) Thorax which has 3 pairs of legs and noticeable lack of wing (c) Abdomen the portion that bears supportive organs. Most are blind but a few spp have primitive eyes (merely photo sensitive spots). Legs terminate in Claws. Lice of mammals have only one claw on each leg, those of birds have two.

Suborders Anoplura (Sucking lice) seen only on mammals

 Mallophaga (Biting lice) Mammals + birds

GENERAL LIFE CYCLE

Anoplurans and mallophaga have very similar life cycle. During a life span of about a month the female lays 200-3000 opeculate eggs (NITS). Usually whitish and are glued to the hair or feathers where they may be seen with naked eyes. The lice that hatch from these eggs are tiny replicas of the adults, they moult several times (3 ecdyses) but undergo minor changes in appearance. After 3 moults the fully grown adult is ready. The whole cycle takes about 2-3 weeks.

The anoplurans with their piercing mouthparts feed on blood while mallophagans equipped for biting and chewing, have a wide range of diet. Those on mammals ingest the outer layers of the hair shafts, dermal scale and scabs but unlike mammalian species, they can digest keratin, so that they also eat feathers and their down.

Some genera are capable of rapid population growth by changing to asexual reproduction by **parthenogenesis** e.g. *Damalina*.

ANOPLURA

Sucking louse, usually large (up to 5mm) with small, pointed heads and terminal mouthparts. Generally slow moving, have powerful legs each with a single claw. Pincerlike tarsal claws for clinging to the hairs of their hosts.

MALLOPHAGA

Smaller (up to 3mm) than anoplurans, their head is relatively much larger, occupying the width of the body and is rounded anteriorly with the mouthparts ventral. Claws are small with genera on mammals having one on each leg, and those on birds, two. They ingest a variety of epidermal materials. Because, their hosts are insectivorous and very fastidious, bird lice are in constant danger of being eaten by their host instead of vice versa. They may cause their hosts considerable irritation when present in large numbers, especially in situations in which it is difficult for animals to groom themselves.

Anoplurans

1. Hematopinus

- Short – nosed louse
- Largest louse of domestic mammals (up to .5cm) in Length.
- Yellow to grayish brown with a dark stripe on each side

All tarsal Claws are of equal size lateral margins of the abdomen are heavily sclerotized.

Spp	Host
<i>H(a)ematopinus suis</i>	Pig
<i>H. eurysternus</i>	} Cattle
<i>H. quadripertusus</i>	
<i>H. tuberculatus</i>	
<i>H. asini</i>	horses

Site : Neck, poll, brisket, tail.(General distribution in heavy infestation)

2. Linognathus

- Long nosed louse
- bluish – black with dark blue eggs. (egg exceptional because they are less easy to see on hair).
- 1st pair of tarsal Claws is smaller than the 2nd and 3rd pairs.
- Lateral margins of the abdomen are not heavily sclerotized.

Spp	Host
<i>Linognathus vitulli</i>	cattle
<i>L. ovillus</i>	} Sheep
<i>L. pedalis</i>	
<i>L. africanus</i>	
<i>L. stenopsis</i>	} Goat.
<i>L. africanus</i>	

L. setosus

Dogs and foxes.

Mallophagans

1. Damalinea

Reddish- brown in color

<i>Damalinea</i>	<i>bovis</i>	Cattle
<i>D.</i>	<i>equi</i>	Horse
<i>D.</i>	<i>ovis</i>	Sheep
<i>D.</i>	<i>caprae</i>	} Goat
<i>D.</i>	<i>limbata</i>	
<i>D.</i>	<i>Holokartikos crassipes</i>	

2. Felicola

- Distinctive among mallophagans because of its pointed head (if. Anoplurans)
- True biting louse with ventral mouth part.

Felicola subrostratus Cat.

3. Trichodetes

- Canine chewing louse
- Short, broad and yellowish
- Important as a vector of the Dipylidium. caninum
- Trichodectes canis Dog.

PEDICULUS

They have segmented eyes abdomen has paratergal plates

Known as Human head louse

Pediculus humanus capitis

- Stays mainly on the human head especially around the ears and nape of the neck. Rarely infest Dog. Eggs attached firmly to the hairs and hatch to in a week. Infestation spreads rapidly because of the ease with which hairs are shed and wafted about.

Pediculus humanism humanus

(Human body louse)

- Do not cling to hair instead to fibers and deposit its eggs in the seams of clothing. Commoner during wars and natural disasters when people can't change cloth for extended period. Transmit epidemic typhus caused by *Rickettsia prowazekii*

PTHIRUS Human crab louse

Pthirus pubis

Site: pubic and perianal region Armpits, mustache, beard, Eye brows and eyelashes (Young Children)

Effect

Intense pruritus, papular dermatitis with skin discoloration once feeding they display a marked disinclination to move and tend to remain fixed at a point for days while their faeces accumulate around them. Life cycle requires about a month.

BITING LICE OF BIRDS

Menopon gallinae (shaft louse of poultry)

- Pale yellow in color Male is about 1.71mm and Female around 2.04mm long. The thoracic and abdominal segments each have one dorsal row of bristles. It moves about rapidly. Lay eggs in cluster on feathers.

Hosts: fowl, Ducks and pigeons.

M. phaestomum in peacock.

Holomenopon leucoxanthum

Host: Ducks

Causes "wet feather"

- Soiled and tattered plumage that they preen continuously. If large body areas are affected plumage no longer repel water and birds become chilled and may die from Pneumonia.

Menacanthus stramineus

Yellow " body louse" of poultry. Seen in parts of body with dense feathering E. g breast, thighs, and around the anus.) .Host: fowl, turkey, peacock.

Cuclotogaster heterographus.

Head louse' of poultry

Site: skin and feathers the head and neck

Host: fowl and patridges. It is a dangerous parasite of chicks.

Lipeurus caponis

"Wing louse" of poultry slender elongate louse seen on the under-side of the large wing feathers and moves about very little.

Host: Fowl and pheasants.

Gonniocotes gallinae

Fluff louse" fluff seen at the base of the feathers

Hosts: Fowls, pheasants the pigeons.

EFFECT OF LICE ON THEIR HOSTS.

Louse infection =Pediculosis

Cattle

Mild chronic dermatitis intense irritation (biting lice) leading to rubbing against posts, wire and other objects accompanied with loss of hair. Extensive hide damage but with lesser effect on the health of the animal.

Sucking lice cause anaemia and weigt loss.

In heavy infestation there are puritus, rubbing and licking of body surface.

Note: Heavy louse infestation may itself be merely a symptom of some other underling conditions .E. g malnutrition / chronic disease since debilitated animals do not groom themselves thus, the lice are left undisturbed.

TREATMENT AND CONTROL

Organophosphorus insecticides applied as pour-ons. Repeat after two weeks . Synthetic pyrethroids (such as cypermethrin) as pour-on / sport on. Parental avemectins.

Sheep and Goat

Anaemia, Irritation, Restlessness – Pruritus, Interrupted grazing, Loss of condition.

In response to irritation affected sheep rub against posts and wires thereby causing damage to fleece and there is the loss of wool. On bite, there is a serum exudates from the damaged skin on which the lice also feed. In heavy infestation the amount of exudates is great enough to cause matting of the wool. Reduction in value of wool clip (Most important effect of ovine pediculosis). Fleece and skin damage by rubbing and soiled by louse faeces is an attractant to blowflies thus the animal is at risk of STRIKE

TREATMENT AND CONTROL

Insecticide containing Organophosphate repeat at 2 weeks. Synthetic pyrethroid, pour-on cypermethrin and spot on deltamethrin which act by diffusion over the body surface in the sebum and give protection over 8-14 weeks.

DOG AND CAT

Mainly due to neglect and underfeeding. Some dogs are prone to infestation. E.g. breed with long ear. Long hair breed of cats too which can't groom thoroughly can harbour reservoir populations deep in the fur. May sometimes be associated with selenium deficiency. Intense pruritus. Provokes self-inflicted injury by scratching with loss of hair and skin excoriation. Pups may die from anaemia and debility. Restlessness, continuous scratching. Debility in severe infestation.

TREATMENT AND CONTROL

Powder, washes / shampoos of synthetic pyrethroid, organophosphate or carbamate insecticides. Pyrethrum and Benzyl benzoate are effective. Aerosols / trigger sprays. Repeat treatment at interval of 14 days to kill newly hatched lice. Dog and cat collar impregnated with a carbamate / pyrethroid insecticide / diazinon are often used.

BIRD

Severe anaemia, Severe irritation resulting in inflamed skin covered by scabs especially at the vent, head and throat in young birds. Restlessness, debility. Inhibition of the preen gland resulting in the feather not being water proof again because of lack of preen secretion. Soaked body because of broken feather resulting in pneumonia because of chilling. Pruritus. Heavy pediculosis is seen in diseased and debilitated birds. Restlessness. Affected birds cease feeding, may injure themselves by scratching and feather plucking. Loss of body weight, debility and perhaps death. Reduced egg production.

TREATMENT AND CONTROL

Dusting (Delousing)

Equines

Spread is usually by contact and via contaminated grooming equipment, blankets, rugs and saddlery. Intense irritation leading to rubbing, scratching with matting and loss of hair and excoriation sometimes. Restlessness, loss of condition. In heavy *Haematopinus* infestation there may also be anaemia

TREATMENT AND CONTROL

Pyrethroid mainly. Grooming equipment should be scalded. Blankets and rugs thoroughly washed. Saddlery thoroughly clean. Ideally let each house have individual grooming equipment and do not interchange saddlery. Essence of control is regular and thorough grooming.

Pigs

Mild irritation. Restlessness. unthriftiness

Anaemia is hardly ever seen. Skin damage because of Scratching

Vector of *Eperythrozoon suis*

TREATMENT AND CONTROL

Application of insecticide as powder / wash E.g organochloride. Parental ivermectin

Organophosphate as pour-on as a single Rx

Herd prophylaxis

Rx gilts and sows before farrowing to prevent spread of infection to their piglets.

Boars to be treated 2ce annually.