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## CHAPTER 4

# CHEWING AND SUCKING LICE

### LEARNING OBJECTIVES

After you finish studying this chapter, you should be able to:

- Tell what sucking and chewing lice feed on.
  - Describe the general appearance of lice.
  - Explain the general life cycle of lice.
  - Know what types of lice are associated with various agricultural animals.
- Know where lice typically infest on an agricultural animal's body.
  - Understand how to control lice and prevent the spread of lice on agricultural animals.

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### CHEWING AND SUCKING LOUSE COMPARISONS

Lice (singular: louse) are insects belonging to either the **sucking louse** order (**Anoplura**) or the **chewing or biting louse** order (**Mallophaga**). All lice are obligatory (dependent on) ectoparasites of birds and mammals. There are about 460 species of sucking lice and 3,000 species of chewing lice. Sucking lice feed solely on blood and have mouthparts designed for sucking. Their mouthparts penetrate the skin and actually fit into a blood vessel, from which the blood meal is drawn. Sucking lice only occur on mammals.

Biting lice have mouthparts designed for chewing, not sucking, and they feed on feathers, hair and skin scales. They live on mammals and birds. An infestation of lice is called **pediculosis**.

Lice are highly host-specific—that is, a particular species of louse is generally associated with only one kind of animal host. Often, a species of louse is restricted to one part of the body of one kind of animal host. Lice do not survive long if they are removed from their host, so they live on the host all the time. They are transferred from host to host by direct contact. Table 4.1 lists the hosts and the common chewing lice associated with them. Table 4.2 lists the hosts and the common sucking lice associated with them.

Infestations of lice are associated with overcrowding and poor sanitation in the animal's environment. Infestations are seen mostly in the

winter, primarily because long winter hair coats are desirable homes for lice. Populations are limited by summer heat.

Lice are wingless insects that are flat from top to bottom. They are usually tiny to minute in size (from 1 to 5 mm in length), though they can be seen with the naked eye. Figure 4.1a shows a typical chewing louse and Figure 4.1b shows a typical sucking louse. The head of a sucking louse is much narrower than that of a chewing louse.

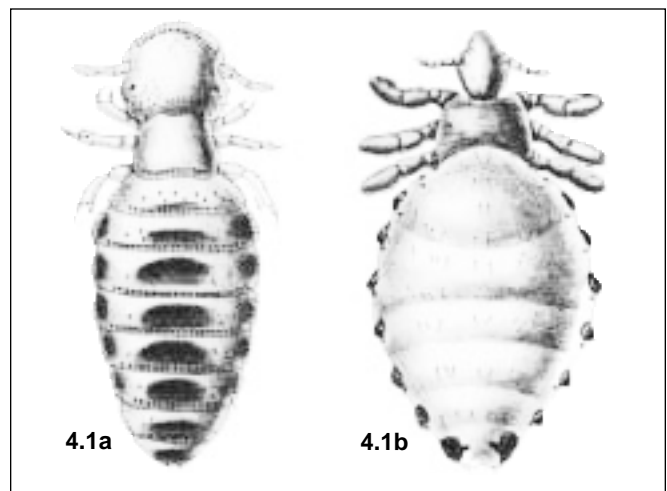


Figure 4.1a shows a typical chewing louse; Figure 4.1b is a typical sucking louse. The head of a sucking louse is much narrower than that of a chewing louse. As a general rule, the *head of a sucking louse is narrower than the thorax* (middle body part), whereas the *head of a chewing louse is wider than the thorax*. The legs often have claws to grasp hairs or feathers.

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**than the thorax.** The legs often have claws to grasp hairs or feathers.

**Table 4.1 The common chewing (biting) lice affecting animals in the U.S.**

| <b>Animal Host</b> | <b>Common Name</b>                | <b>Louse Species</b>               |
|--------------------|-----------------------------------|------------------------------------|
| <b>Cat</b>         | Cat biting louse                  | <i>Felicola substrata</i>          |
| <b>Dog</b>         | Dog biting louse                  | <i>Trichodectes canis</i>          |
|                    | Dog biting louse                  | <i>Heterodoxus spiniger</i>        |
| <b>Horse</b>       | Horse biting louse                | <i>Bovicola equi</i>               |
| <b>Cattle</b>      | Cattle biting louse,<br>Red louse | <i>Bovicola bovis</i>              |
| <b>Sheep</b>       | Sheep biting louse                | <i>Bovicola equi</i>               |
|                    | Goat biting louse                 | <i>Bovicola caprae</i>             |
| <b>Goat</b>        | Goat biting louse                 | <i>Bovicola caprae</i>             |
|                    | Angora goat biting louse          | <i>Bovicola limbatus</i>           |
| <b>Chicken</b>     | Wing louse                        | <i>Lipeurus caponis</i>            |
|                    | Chicken head louse*               | <i>Cuclotogaster heterographus</i> |
|                    | Chicken body louse**              | <i>Menacanthus stramineus</i>      |
|                    | Shaft louse                       | <i>Menopon gallinae</i>            |
|                    | Fluff louse                       | <i>Goniocotes gallinae</i>         |
|                    | Large chicken louse               | <i>Goniocotes gigas</i>            |
| <b>Turkey</b>      | Chicken body louse**              | <i>Menacanthus stramineus</i>      |
|                    | Large turkey louse                | <i>Chelopistes meleagridis</i>     |

\* The chicken head louse also infests penned pheasants.

\*\* The chicken body louse also infests a variety of other domesticated fowl (guinea and pea fowl, quail, pheasants, ducks, geese)

**Table 4.2 The common sucking lice affecting animals in the U.S.**

| Animal Host | Common Name              | Louse Species                      |
|-------------|--------------------------|------------------------------------|
| Dog         | Dog sucking louse        | <i>Linognathus setsus</i>          |
| Horse       | Horse sucking louse      | <i>Haematopinus asini</i>          |
| Cattle      | Shortnosed cattle louse  | <i>Haematopinus eurysternus</i>    |
|             | Cattle tail louse        | <i>Haematopinus quadripertusus</i> |
|             | Longnosed cattle louse   | <i>Linognathus vituli</i>          |
|             | Little blue cattle louse | <i>Solenoptes capillatus</i>       |
| Sheep       | Face and body louse      | <i>Linognathus ovillus</i>         |
|             | Sheep foot louse         | <i>Linognathus pedalis</i>         |
| Goat        | Face and body louse      | <i>Linognathus stenopsis</i>       |
| Swine       | Hog louse                | <i>Haematopinus suis</i>           |

## LIFE CYCLE OF LICE

The eggs of lice are called **nits** and are cemented to hairs or feathers on an animal host. The eggs hatch and larval lice, called **nymphs**, emerge. Nymphs blood-feed. Nymphs continue to feed and molt three times before maturing into an adult male or female louse. The adult lice mate and the females lay eggs onto host hairs or feathers. The entire life cycle takes up to 30 days or more depending upon temperature. All life stages of lice occur on the host.

## EFFECTS OF LICE ON ANIMAL HEALTH

A single animal may be infested with thousands of lice. Their feeding activity results in hair or feather loss, blood loss, skin irritation and secondary infection. Lousy animals may be weak and susceptible to other infestations or diseases. Infested animals will scratch frequently, worsen-

ing the condition. However, grooming by the host animal may remove lice and help lessen the effects of lice activity. Also, an animal's immune system may affect lice and reduce their numbers. Some animals may be infested with lice and show no ill effects. For example, one study showed that 50% of the individuals in a herd of beef cattle were infested with lice but only 2% were severely infested and showed pathological signs.

## Cattle Lice

Ranged, pastured and confined cattle can be infested with lice. Five different species of lice may infest cattle including both chewing lice (one species) and sucking lice (four species). However, only some of these are common enough to have an important effect on animal health and well-being. Another, cattle tail louse, is tropical and occurs in Florida and the gulf coast states, so it will not be considered here.

The only species of chewing louse that occurs on cattle is the **cattle biting louse** or the **red louse** (see Figure 4.2) probably the most important type of louse on cattle. Like the other species of lice on cattle, populations of the cattle biting louse build up in the fall and peak during the winter months when animals are crowded together. It occurs on both beef and dairy cattle. Lice typically infest the base of the tail, back line and shoulders, but infestations spread to other parts of the body as louse numbers increase. They feed on shed skin scales.

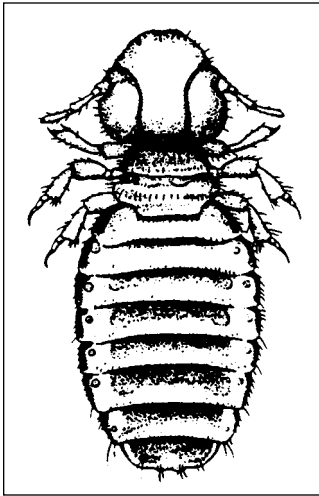


Figure 4.2 Cattle biting louse or the red louse.



Figure 4.3 Longnosed cattle louse.

The important sucking lice on dairy cattle are the **longnosed cattle louse** (see Figure 4.3) and the **little blue cattle louse** (see Figure 4.4). The **shortnosed cattle louse** (Figure 4.5) occurs mainly on beef cattle but may also occur on dairy cattle. These lice typically occur on the head (base of the horns) and neck, dewlap, back and shoulders, base of the tail and rump.

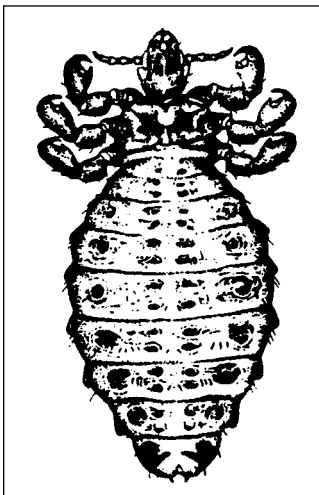


Figure 4.4 Little blue cattle louse.

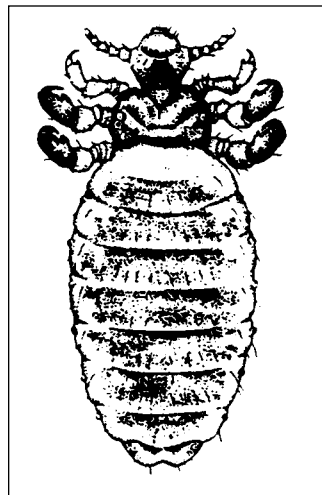


Figure 4.5 Shortnosed cattle louse.

Animals with biting louse infestations may look shaggy, discolored and ragged. They will spend noticeable time licking and rubbing themselves. Usually calves, yearlings and old animals are those that become infested, but cattle of all ages can harbor lice. Transfer of lice from cow to calf provides a mechanism for louse infestation of young animals. Lice must often be controlled or prevented on cattle.

Experts believe that the effects of lice on cattle are greatly underestimated; the USDA estimates that losses in production and costs of control in the beef industry due to lice exceed \$126 million annually. Whether lice cause reductions in milk production in dairy cows is not known. However, there are no good economic thresholds that guide pest control decisions. Some authorities recommend louse control if a moderate infestation of 3-10 lice per square inch of skin is detected. Following these guidelines, an infestation of greater than 10 lice per square inch is a severe infestation. Some authorities recommend control if three lice per square inch are found. Detecting lice on cattle requires direct inspection by two-hand parting of hair and examining hair and skin for presence of lice and nits. If exact species identification is desired, lice can be mounted on glass slides in oil and examined with a microscope.

## Hog Lice

One species of sucking louse occurs on swine, the **hog louse** (Figure 4.6). No biting lice occur on swine. The hog louse usually infests its host behind the ears and between the legs. In heavy infestations, the lice will spread to other areas of the body. All ages of hogs can be infested. The hog louse can carry the virus that causes swine pox.

Hog lice bloodfeed in groups while clinging to host hairs. Lice feeding causes a deterioration of skin because the animals are irritated and scratch and rub heavily at infested sites. Infested animals may become weakened and, consequently, more susceptible to other diseases. Detecting lice on hogs requires direct examination of affected areas.

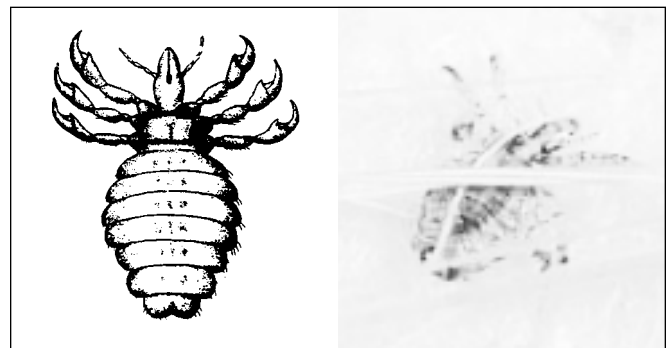


Figure 4.6 Hog louse.

## Sheep and Goat Lice

Sheep harbor two species of sucking louse and one species of biting louse. Louse infestations on sheep are heaviest in winter. Sheep that are heavily louse infested may yield less fleece and fleece of lower quality than noninfested sheep.

The most common louse on sheep is the **sheep biting louse** (Figure 4.7) These lice eat skin scales and irritate the host. Sheep scratch and rub infested areas causing wool loss and fleece damage. The **face and body louse** is often called the **face louse** or **sucking body louse** (see Figure 4.8). It occurs on all parts of the sheep except the limbs. Limited infestations are found mainly around the face wool.

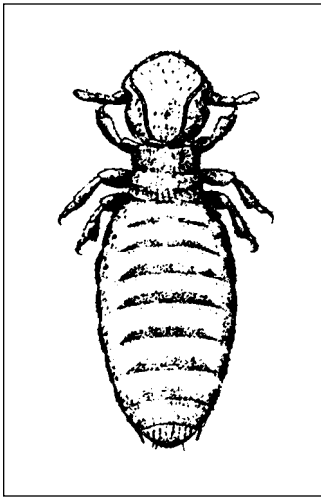


Figure 4.7. Sheep biting louse.

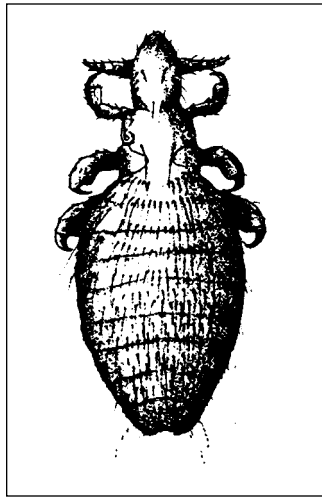


Figure 4.8. Face and body louse or the sucking body louse.

Low level infestations of **sheep foot louse** usually occur on their feet. These lice may spread upward to the legs, scrotum and belly. This louse is more common on rams. It does not cause much injury to sheep.

Goats carry two species of chewing lice and one species of sucking louse. The **goat biting louse** (Figure 4.9) feeds on the skin, but burrows into hair follicles causing itching, inflammation, hair loss and poor hair coat quality. The **face and body louse**, a sucking louse on goats (Figure 4.10) occurs mainly on the neck, underline and around the udder. Another biting louse, the **Angora goat biting louse** occurs on Angora goats. It feeds similarly to the goat biting louse, is similar in appearance and causes damage to the hair coat.

Detection of lice on goats and sheep requires direct examination. Wool and hair deterioration are signs of infestations.

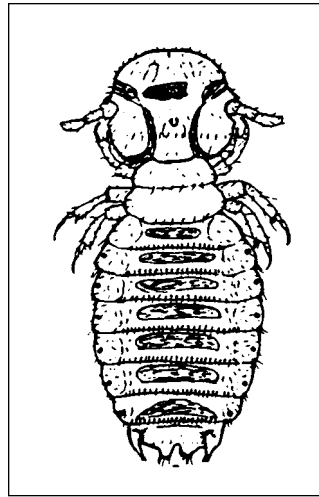


Figure 4.9. Goat biting louse.

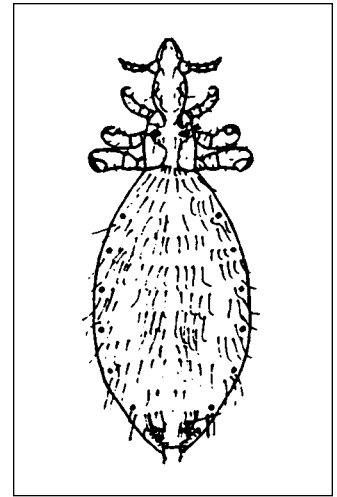


Figure 4.10. Face and body louse of goats.

## Poultry Lice

Chickens and other fowl harbor only chewing lice. Although many species of lice infest poultry (at least six on chickens and two on turkeys), the major species of concern is the **chicken body louse** (Figure 4.11). Body lice on chickens are found close to where the feathers meet the skin. The nits (eggs) are white clusters on the feather shafts. The lice are yellowish-white and can be seen on feathers and skin. They feed on skin scales.

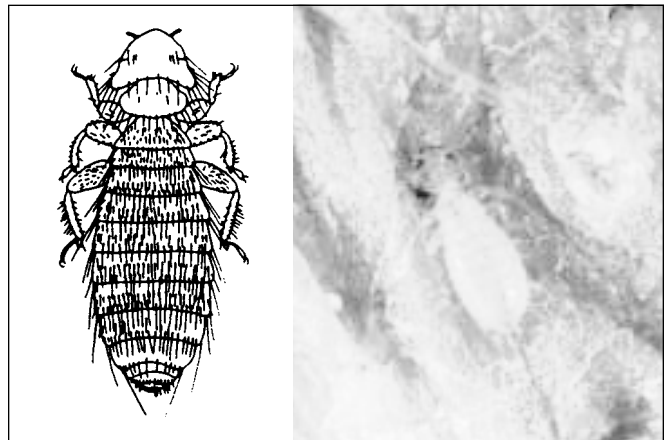


Figure 4.11. Chicken body louse.

Turkeys may also be infested with chicken body louse. Another louse pest of turkeys is the **large turkey louse**.

In contrast with cattle lice, poultry lice are usually more common in the summer than in the winter. Chicken body lice can heavily infest hens in caged layer houses. Some authorities estimate that louse infestations cause as much as 46% decrease in egg production. Lice can be found on poultry by direct examination of skin and feather shafts.

## Lice of Companion Animals and Horses

Dogs, cats and horses may occasionally be infested with lice. There are no sucking lice specific to dogs and cats, but each may be infested with chewing lice. Horses may harbor one species of sucking louse and one species of chewing louse. Both are most likely to infest horses in winter when the hair is long. The **horse biting louse** feeds on skin debris as do other biting lice. The **horse sucking louse** is similar in appearance and biology to other sucking lice. To prevent lice from moving among horses in an infested herd, disinfect saddle blankets, curry combs, brushes and tack. Because horses do not tolerate pressure sprays well, apply insecticides with a wet sponge.

## MANAGING LICE ON CATTLE AND OTHER LIVESTOCK

Preventing lice infestations involves isolating or culling chronic louse carriers so that lice will not be transferred to non-infested animals. Check animals and treat for lice before adding them to a herd or flock.

When lice reach unacceptable numbers on individual cattle as determined by thresholds, behavioral changes or by being spread to other members of a herd, then lice must be controlled. Some recommendations suggest pest control treatments if three lice per square inch are found. An infestation of greater than 10 lice per square inch is considered severe. Louse control on animals involves use of insecticides. Some insecticides cannot be used on calves under 3 months or on lactating cows. Other insecticides have treatment intervals related to slaughter times to prevent insecticide residuals in the meat. Read all label directions and precautions before applying products to animals.

Cattle often have both louse and grub (fly maggots, see Chapter 6 – Flies) infestations at the same time. **Early** fall applications of some insecticides provide both lice and grub control. These applications may be pour-ons, coarse sprays, spot-ons, dips or injections. Once fly grubs enter a cow's body and begin developing (approximately November 1 to February 1), systemic insecticides can not be used for louse or grub control. This is because if grubs are killed when inside the

animals body they decompose, releasing toxins. These grub toxins cause a toxic reaction in cattle and possibly death. Only surface applied insecticides that are non-systemic should be used for louse control during winter periods. It is during the winter that cattle louse numbers often peak and grubs may be developing internally. Therefore, pest managers must select their management tactics carefully.

Check treated animals for lice at two-week intervals after application, and retreat if lice are found. Retreatment is often necessary because many insecticides do not kill lice eggs or nits. Eggs that survive an insecticide treatment may hatch and reinfest the animal.

Lice control measures on hogs are similar to methods used for mange control (see Chapter 3). The lice life cycle must be completely broken on each animal. Follow all precautions when handling and treating baby pigs since they are very susceptible to insecticide toxicity. Therefore, the least risky louse management for swine is to control them on the sow. If the sow does not have lice, the suckling pigs will not be infested from contact with their mother.

Certain insecticides are not labeled for use on lactating or gestating sows or young pigs. If lice are present, treat newly weaned pigs and finishing pigs. Treat boars for lice before breeding. The intervals before slaughter vary from 0 to 30 days depending on the insecticide used. Apply insecticides as coarse sprays, pour-ons, dips, dusts or injections. As with cattle, monitor swine for lice at two-week intervals after application and retreat if newly hatched lice appear.

Louse control on sheep and goats is accomplished with sprays, dips or pour-ons of registered insecticides. Lambs under three months should not be treated with some insecticides. Follow all label directions carefully. Additionally, treatment-slaughter intervals of 15-30 days apply in certain cases.

Louse control on poultry requires pressurized spray applications of wettable powder or emulsifiable concentrate insecticides to the bodies of birds. Dusts or other appropriate insecticide formulations must be applied to the nest boxes and litter at the same time the birds are being treated. Treating one and not the other will not result in an effective louse control program.

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## Chapter 4 – Review Questions

**Write the answers to the following questions and then check your answers with those in the back of this manual.**

1. What do sucking lice eat? How do they obtain it?
2. Lice can survive for extended periods of time between hosts. (True or False)
3. Describe the physical difference between sucking and chewing lice.
4. List two ways lice infestations can be influenced or reduced on animals.
5. Why is it important to control lice on both adult animals prior to mating?
6. To prevent reinfestations from surviving eggs, the of the \_\_\_\_\_ lice must be completely broken on each host animal.
7. The cattle biting lice:
  - a. populations typically build up in the spring and summer.
  - b. only occurs on beef cattle.
  - c. typically infest the base of the tail, back line and shoulders first.
  - d. feed on blood.