Identification and treatment

Mites and lice are common external parasites of avian species. They feed on blood or feathers, skin or scales of birds. Tests carried out at the University of California found that specific identification of the particular pest is critical to choosing the correct treatment and control method.

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All avian species can be affected by the same kinds of mites and numerous types of lice, including chickens and turkeys, wild birds, pigeons, pheasants, quail and chukars. They are generally regarded as pests in domestically reared birds, but heavy infestations can result in poor health and performance or even death. Treatment and control programs require the use of insecticides on the birds and may also require application of insecticide to the facility. Specific identification of the particular pest is critical to choosing the correct treatment and control method. For example, the same chemical may be used to treat both lice and mites but because the life cycle of the mite is shorter than that of the louse, the timing of insecticide application will be different.

Identification
Lice spend their entire life cycle on the bird. The life cycle is approximately 3 weeks. If separated from their host, they will die in 5 to 6 days. Lice or louse eggs can usually be found by carefully examining the skin and feathers of the bird around the vent, the underside of the wings, the head (especially around the beard and crest of chickens) and on the upper leg. Most bird lice vary in size from 1 to 6 mm and are straw-coloured. Birds may be simultaneously parasitised by more than one species of lice. Lice are generally species specific, meaning that for each species of bird there are one or more particular species of lice. This also means that bird lice will not live on humans and human lice will not live on birds. Lice may be hard to spot without persistence because they will move away when the feathers are parted to look at the skin. Lice problems tend to worsen during the autumn and winter. Mites are very small, just visible without magnification and may appear like moving specks of dirt. Mites are not species specific and will parasitise any species of bird. A variety of species infest birds and have particular feeding sites. Some species spend their entire life on the bird, while others are only found on the bird during active feeding periods. The common red mite or chicken mite (Dermanyssus gallinae) and the Northern Fowl mite (Ornithonyssus sylvarium) feed on blood and may appear red to black in colour. Feather and depluming mites, such as Knemidokoptes gallinae, the depluming mite of chickens, live on the feathers or inside the quills of the birds and cause loss or breakage of the feathers. The presence and activity of these mites can also cause birds to pull out their feathers. Another common mite is the Scaly leg mite (Knemidokoptes mutans) which feeds primarily on the scales of the legs and feet causing the skin to become thickened, irregular and crusty in appearance.

Treatment
Insecticides for treating mites and lice can be applied to birds as a powder or dust or in a liquid spray. Some products come in either form. When applying the insecticide, part the bird’s feathers so that the dust or spray reaches the skin. To treat facilities or buildings, a liquid spray or wettable powder should be used so that the insecticide can penetrate small cracks and crevices. Floors and bedding may also be treated. Always carefully follow the manufacturers directions as printed on the label. Observe all warnings and withdrawal periods.

Carbaryl dusts offer one easy and low cost method for treating lice and mites on birds. A shaker can provide easy application to the birds. One pound should treat at least 20 chickens or similar sized birds. To use the dust, part the bird’s feathers so that the dust, when sprinkled, reaches the skin. Apply the dust to the entire body the first time, then in subsequent applications; apply the dust to the vent region, under the wings, upper leg, and to the crest and beard, or wherever pests are observed. A dusting box (24” x 36” x 4”) can also be used for periodic treatment of fowl (not recommended more than once per 4 weeks). Place powder in the dusting box at a rate of 5lb (2.3kg) per 100 birds for 5% dust or 10 lb (4.5kg) per 100 birds for 10% dust. The birds will dust themselves. Organophosphates and permethrins are also available in dust form. Toxicity can occur if these products are over used. Treat all affected birds in a flock. Other approved insecticides for eliminating lice and mites from poultry include pyrethrins, pyrethroids and organophosphates.
sects is not well known, but a number of theories have been proposed. The most recent of these theories was put forward by Mewis and colleagues (1998a and 1999), following experiments with Stpophys granarius and Tenebrio molitor. They proposed the following model: Silica dust particles on the exoskeleton absorb fats (paraffins, polyphenols, waxes...wax and cement layers on the surface of the insect). As a result, the exterior epicuticle layers decrease in thickness, and so areas of the cuticle occur which have thin and/or missing waxy or lipid layers. Through these areas, body water may diffuse along a concentration gradient faster than it would through the less water-permeable thick lipid layers. Furthermore, the absorptive action of dusts may cause exposure of pore canals, with further loss of water. Consequently, the primary effect of dust is to destroy the function of the wax layer as a water barrier, leading to dehydration of the insect.

**Table 1. Examples of products approved by the EPA for control of mites and lice on poultry and in poultry facilities**

<table>
<thead>
<tr>
<th>Organophosphates:</th>
<th>Carbamates:</th>
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<tbody>
<tr>
<td>Spray: Malathion, Dimethoate</td>
<td>Spray/Dust: Carbaryl (Sevin)</td>
</tr>
<tr>
<td>Dust: Tetrachlorvinphos</td>
<td>Spray (as aerosol, mist or bomb): pyrethrin</td>
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<tr>
<td>Permethrin</td>
<td>Spray: Permethrin, (Atroban, Ectiban)</td>
</tr>
<tr>
<td>Pyrethroids:</td>
<td>Dust: Ectiban D, Livestock Dust</td>
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The life cycle is completed in less than one week. These mites are suspected of spreading the agents of fowl pox, Newcastle disease, and chlamydiosis. Heavy infestations appear as blackened feathers, often near the vent, with scabbed and cracked skin around the vent. This mite appears as moving red to orange specks. Feathers may have white or off-white egg sacs in bundles on the fluff surrounding the shaft. Egg sacs and mites are commonly found under the wings, next to the soft feathers of the body, in the feathers above and below the vent, in the beard and crest (on breasts that have them), and on feathers that are high on the legs. If this pest is present, all birds in the flock should be treated twice on a 5-7 day interval. Resistance to carbaryl insecticides has been...
reported in some regions. The scaly leg mite (Knemidocoptes mutans) is a microscopic mite that cannot be seen with the naked eye. The mite's entire life cycle is spent burrowing in the unfeathered, scaled skin of the feet and shanks or occasionally the cere and beak. Often the first indication of parasitism is a brittle and flaky or powdery appearance to the bird's legs. This may progress to the formation of lumpy, crusty, proliferative masses. Most often, older birds are affected and contract the mites through contact with other birds and the surroundings. Affected birds should be isolated or culled and the affected house cleaned and sprayed with insecticide, especially the roosts. If the infestation is not treated, the bird will gradually become crippled. Scaly leg mites can be treated by direct application of an oil-based product such as vaseline, a 50:50 kerosene (no substitute) and cooking oil mix or Blue Ribbon. The treatment must be applied to the entire affected area daily for at least 2 weeks or until normal appearance of the legs and feet returns. After letting the treatment soften the dead scales, gentle scraping or rubbing will help remove the dead scales and mites.

Common lice
A number of different lice species affect domestic and wild birds including Menopon allinae, the shaft louse, and Goniocotes gallinae, the fluff louse of chickens; Columbicola columbae, the slender pigeon louse and Trinoton anserinum, the goose body louse. Lice are generally species-specific for avian hosts and will live only several days if separated from their host. If in close contact, however, lice may move to other birds that are not their normal host. They can be found on both the skin and feathers in the same locations as mentioned for mites. Lice are straw coloured and range in size from 1 to 10 mm. Most lice are in the 1 to 6 mm ranges. Eggs are attached in clusters (nits) in the same locations as mentioned for mites. The life cycle for the chicken louse is approximately 3 weeks. Lice tend to increase during the autumn and winter. Lice can carry disease-causing agents within a flock. Lice are especially harmful to young birds due to disruption of sleep. Parasitism with lice frequently accompanies poor health due to other causes. Birds should be examined for lice at least twice per month. Treatment, if required, should be performed on 7 to 10 day intervals. Only the mature and immature forms are susceptible to insecticides (eggs are not killed) therefore a second treatment is necessary to control the lice that will hatch after the initial treatment. Egg laden feathers should be removed from the premises.

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