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Farmnote

Nasal bots in sheep

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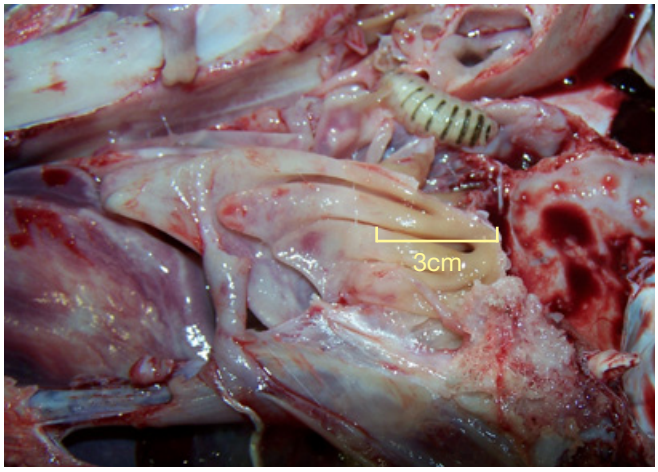
Nasal bots are the maggots or larvae of the sheep nasal bot fly, Oestrus ovis. This pest possibly originated from Africa, but is now present throughout the world wherever there are sheep and goats. Nasal bots were accidentally introduced into Australia in sheep in the early 1900s. They were first recorded in Western Australia in 1919. They may be less common in areas where the macrocyclic lactone (ML) anthelmintics, such as ivermectin, have been frequently used.

Nasal bots are normally found in sheep and goats but the bot flies occasionally target humans, dogs and cats. In these species bots may be found in the throat or eye - where they can cause severe irritation - or in the nasal passages where they can cause breathing difficulty. Bots don't develop to maturity in species other than sheep and goats.



Nasal bot (larvae of nasal bot fly) in a sheep's head. Photo courtesy C Barrett

Life cycle of the nasal bot fly

Fly activity is seasonal and generally peaks in spring and late summer when temperatures exceed 20 degrees C, however the pattern of fly activity varies between regions.

The female fly has a life span of approximately two days in summer and four weeks in cold weather.

During its life one fly may produce up to ~500 larvae. In cold climates, such as Russia or Siberia, the flies have only 1–2 generations each year, but in hotter places, such as much of Australia, there may be 5–6 generations of flies each year.

The sheep nasal bot fly deposits larvae, not eggs, on its host, unlike the related bot fly of horses (Gasterophilus species), which attaches eggs to horse hair. Once larvae have been deposited at the sheep's nostrils, they move and grow within the nasal cavity and the frontal and possibly maxillary sinuses. They develop through three stages, or instars. When mature, and about 3 cm long, the larvae return down the nasal passages to be sneezed out and pupate in soil. The rate of development of larvae within the sheep's head is highly variable. From deposition at the sheep's nostrils to emergence, could take as long as 10 months or as short as 6 weeks.

In a single sheep there could be as many as 75 larvae at various stages of development, but it is rare that a sheep has more than 20 larvae. Probably no more than 20% of larvae in a sheep's head reach maturity.

Expelled bots take one to five days in soil to form pupae. Flies emerge from these pupae in ~ 3–4 weeks in summer and ~ 4–9 weeks in winter. The duration of each stage of the nasal bot fly's life cycle is highly variable, mainly dependent on temperature.

Effects of nasal bots on sheep

Sheep exhibit distinctive behaviour when bot flies are active, during the warmest parts of the day in warm-to-hot periods of the year. When the flies are attempting to deposit their larvae just inside sheep's nostrils the sheep show typical disturbed behaviour. They snort and stamp their front feet, run in short bursts with their noses almost on the ground, and bury their noses into the fleeces of other sheep or into the soil. Sheep may congregate in shaded places where the flies are less active.

The signs shown by affected sheep vary, possibly depending on the number and stage of development of the larvae. Sheep may show no signs at all, or may have a watery or thick discharge from one or both nostrils, sometimes containing flecks of blood. Sheep may have difficulty in breathing, and may sneeze or cough.

The economic impact of nasal bots is debatable. In Australia they are generally not believed to be of economic importance. In some other countries nasal bots are believed to cause production loss due to reduced body and fleece growth. They have also been suspected of suppressing normal immunity, predisposing to secondary bacterial infections including chronic sinusitis and necrosis of bone, and Pasteurella pneumonia. Nasal bots do not affect the ability of rams to find, by smell, ewes in oestrus.

Diagnosis

There is no commercially available test, of sheep's blood or nasal discharge, which will identify infected sheep.

The peculiar behaviour of sheep when the bot flies are active is very good evidence that some sheep in the flock are, or are likely to become infected. The flies themselves are a little smaller than the common blow fly but are rarely seen. A nasal discharge, with or without coughing and sneezing, would arouse suspicion but it is not diagnostic for nasal bot infestation.

Sometimes a diagnosis is made incidentally when, while shearing or drenching a sheep, a bot is expelled from the sheep's nostrils onto the handler. Similarly, expelled bots are sometimes found in water or feed troughs. Bots may be more common in horned breeds and sometimes when sheep are dehorned bots may emerge from the horn core.

The signs in sheep might resemble some other diseases that affect sheep behaviour, or even an exotic disease. Possible alternative diagnoses should always be considered and excluded before making a diagnosis of nasal bot infestation. If in doubt, seek veterinary advice.

Goats rarely show any signs of infestation.

Treatment with an effective product can be used as an indirect method of diagnosis. If, following treatment, the signs disappear, it is reasonable to make a retrospective diagnosis of nasal bot infestation.

Treatment

Treatment with an anthelminthic solely for nasal bots is not recommended unless it is believed the health of animals is being affected by these parasites. The current treatment for nasal bots is usually an ML worm drench, such as ivermectin or abamectin, or a different drench, closantel. These compounds are effective and safe, when given at label dose rates.

Control or eradication?

The administration of one or two drenches containing ivermectin or abamectin to the whole flock in late summer or autumn might give some control of these pests but it is not recommended; it would be contrary to current recommended worm control practices and could contribute to the already high level of worm resistance to these chemicals.

Eradication of nasal bots would be very difficult because of the non-synchronous nature of development of larvae in sheep and in soil to pupae and then flies.

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