



IT'S FLY TIME! RECOGNISING AND MONITORING FLYSTRIKE

KEY POINTS

- Australian sheep blowflies (*Lucilia cuprina*) initiate most flystrike, but other species can cause additional and sometimes more severe damage.
- Aim to detect flystrike as early as possible to prevent severe infections.
- Monitor all mobs of sheep for signs of flystrike during high-risk periods, but especially weaners.
- Be aware of and monitor for weather conditions which may result in increased flystrike risk.
- Monitoring for flystrike in sheep should be included in a broader plan which also considers prevention and treatment activities.

WHAT DO AUSTRALIAN SHEEP BLOWFLIES LOOK LIKE AND WHAT IS THEIR LIFECYCLE?

The Australian sheep blowfly (*Lucilia cuprina*) is responsible for initiating 90% of flystrike in Australia. The adult Australian sheep blowfly is about 9 mm long (body length) and metallic green/bronze in colour with reddish eyes.



An adult female (left) and male (right) Australian sheep blowfly

Source: J Larsen, L Tyrell and N Andersen, The Mackinnon Project, University of Melbourne, from *Early Season Treatment and the Control of Breech Strike in Unmulesed Sheep – a National R&D Technical Update* (2010), AWI



Various stages of Australian sheep blowfly larval development

Source: S De Cat and J Larsen, The Mackinnon Project, University of Melbourne, from *Managing Breech Flystrike* (2019), AWI

After the Australian sheep blowfly has initiated a strike, other species of fly may attack the animal and can cause additional damage which is sometimes more severe.

Warm, moist, humid and calm conditions can lead to damp, smelly wool which is sought after by egg-bearing female flies as an ideal environment for the larvae which will hatch from their small white eggs.

After hatching, larvae need a feed rich in protein to commence their lifecycle. This can be sourced from wounds, existing strikes, weeping skin, carcasses and protein-rich manure.

Larvae (creamy coloured maggots) hatch within 12-24 hours of the eggs being laid, grow by feeding on the sheep through wounds, existing strike and wet (e.g. wet due to urine and dags) or weeping skin.

The maggots drop off the sheep after about three days and burrow into the ground to pupate. The pupa become barrel-shaped as the outside shell hardens and darkens from yellow to red-brown. When conditions are favourable, the young flies emerge about one week later.

Fly wave describes the situation where fly numbers suddenly increase in response to a combination of favourable conditions, typically an abundance of food and warm, wet weather. This can lead to flystrike moving through susceptible mobs of sheep at a very rapid pace.

HOW DO I KNOW IF AUSTRALIAN SHEEP BLOWFLIES ARE AROUND?

The most obvious sign will be fly struck sheep but there are other indicators to consider.

Consecutive warm, wet days provide ideal conditions for female flies to lay eggs on sheep and are a good indicator that strike may occur. Adult flies do not normally travel further than 3 km and sheep camps and watering points can act as epicentres for infection. Check these areas regularly for blowflies and struck sheep.

Fly traps are a useful tool to monitor fly activity in northern areas of New South Wales and Queensland. If any Australian sheep blowflies are caught in traps, this should be taken as a warning that flies are about and, given favourable conditions, flystrike will occur. In southern regions, they can be useful for determining when flies are emerging from overwintering and the fly season is about to commence.

WHAT ARE THE SIGNS OF FLYSTRIKE?

The aim of all monitoring activities should be to detect and address flystrike as soon as possible.

COVERT FLYSTRIKE

Small areas of flystrike that cannot be detected easily are quite common and are known as covert flystrikes. They are difficult to detect unless you are looking closely at sheep, such as when handling them for crutching, shearing or marking.

Covert flystrike can last for some weeks before advancing into more obvious flystrike during warm, moist conditions or they can resolve without the need for treatment.



Covert flystrike can be difficult to detect unless handling sheep

Source: FlyBoss

EARLY DETECTABLE FLYSTRIKE

Early signs of flystrike which should be noted in a monitoring program include patches of wool that appear discoloured from chewing or rubbing. Early detectable flystrike does not usually have a large strike wound but the discolouration becomes progressively darker with more exudate (weeping).



Example of early detectable strike Source: AWI

Sheep also usually behave differently as they will be uncomfortable and irritated. They may twitch their tail, bite or scratch at the affected area if they can reach it, especially with breech strike. They may also stomp their feet, duck their heads and arch their backs but will generally stay with the mob.

As soon as an early detectable flystrike is confirmed, implement treatment activities and take steps to prevent further flystrike from occurring. Further details on the prevention and treatment of flystrike can be found in AWI's It's Fly Time! Preventing and treating flystrike factsheet available from www.wool.com/flystrikeresources/

Identifying why the strike occurred will help you work out whether it is an anomaly (only one sheep is affected), in which case dramatic intervention may not be warranted, or if it is an indicator that an outbreak is imminent. Consider if the strike occurred due to a management error (e.g. poor or delayed crutching, chemical application error, failure to implement preventative action soon enough in a normal season) or due to a 'fly wave'.

If you think an outbreak or fly wave might happen, increase monitoring and take action such as crutching or chemical preventions as soon as possible. If shearers cannot be arranged, consider alternative options, such as additional jetting which may provide interim protection until shearing or crutching can be arranged. Read more about prevention in It's Fly Time! Preventing and treating flystrike.

ADVANCED FLYSTRIKE

The signs of advanced strike are more obvious because the wounds are larger and the toxins released by maggots can cause 'whole of body' effects for the sheep including fever and potentially sepsis or septic shock.



Example of advanced strike Source: AWI

Wounds from advanced strike are large, wet and dark, and maggots will be moving outwards to consume healthy tissue. Affected areas will be swollen and inflamed due to the toxins released by the maggots.

Sheep will be suffering significant pain and inflammation, as well as fever and other whole of body effects.

Sheep won't be able to keep up with the mob when grazing and are often found on their own. They will become increasingly impacted by the flystrike, stop eating and drinking, will lie down and not want to get up.

Strike from secondary blowfly species can be smaller but more serious as the maggots invade deeper tissue not usually directly impacted by the Australian sheep blowfly, causing extensive pain, tissue damage and illness.

Without treatment, sheep will generally die quickly, anywhere from hours to three or so days. If sheep with advanced flystrike are found, treat animals immediately and increase the frequency of monitoring as it is likely that more flystrike will occur in the following days or weeks. Read more about treatment in It's Fly Time! Preventing and treating flystrike.

When monitoring for flystrike, the aim is to detect strike as early as possible to minimise pain, inflammation and suffering and before the toxins produced by the maggot affect the entire sheep.

WHAT WEATHER CONDITIONS FAVOUR FLIES?

Blowfly eggs hatch when the temperature is above 15°C with blowfly activity increasing above 17°C and peaking between 26°C to 36°C. The longer the temperature remains above 17°C, the greater the chance of egg laying and dispersal.

Consistent, regular rainfall that keeps the skin of the sheep moist for more than two days increases the risk of flystrike (particularly body strike). Such conditions also cause odours from fleece rot, dags and urine stain to be more prevalent and allow skin folds to remain moist, attracting female flies to lay eggs. Frequent, small falls

of rain are more conducive to flystrike than occasional heavy falls because there is less opportunity for the skin to dry out.

Fly activity is reduced when wind speeds are greater than 9 km/h and stops when wind speed is greater than 30 km/h.

This combination of weather conditions usually coincides with spring and autumn, but flystrike can occur throughout the year if climatic conditions favour fly reproduction.

Aim to carry out prevention strategies before temperature and rainfall increase and monitor sheep carefully when favourable flystrike conditions occur. Read more about prevention in It's Fly Time! Preventing and treating flystrike.

High risk regions are predominantly in southern Australia, particularly in southern Western Australia, South Australia, Victoria and New South Wales.

READ THE OTHER IT'S FLY TIME! FACTSHEET

Access It's Fly Time! *Preventing and treating flystrike* from www.wool.com/flystrikeresources/

FURTHER INFORMATION

Managing breech flystrike (AWI) www.wool.com/globalassets/wool/sheep/research-publications/welfare/non-invasive-management-practices/gd2428-2019-managing-flystrike-manual_11.pdf

Sheep blowflies Primefact 485 (NSW Department of Primary Industries) www.dpi.nsw.gov.au/data/assets/pdf_file/0005/289643/Sheep-blowflies.pdf

Managing flystrike in sheep (WA Department of Primary Industries and Regional Development) www.agric.wa.gov.au/livestock-parasites/managing-flystrike-sheep FlyBoss *Monitoring for flystrike* www.flyboss.com.au/sheep-goats/management/monitoring-for-flystrike.php

The biology and ecology of the Australian sheep blowfly (Wiedemann) – an update (KG Wardaugh, proceedings from the FLICS Conference) www.licebosstools.org.au/FLICS/PDFs/Chapter_2/Wardaugh_Lucilia_biology_and_ecology.pdf

Factors affecting the incidence of flystrike in sheep – a description and analysis of data from three separate areas in eastern Australia (KG Wardaugh, RJ Mahon and D Bedo, Proceedings from the FLICS Conference) www.licebosstools.org.au/FLICS/PDFs/Chapter_2/Wardaugh_etal_Factors_affecting_incidence_flystrike.pdf