

Three ticks of concern to NSW stockowners

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The three tick species of main concern to NSW stockowners are:

- bush tick (*Haemaphysalis longicornis*)
- paralysis tick (*Ixodes holocyclus*)
- cattle tick (*Boophilus microplus*).

All three ticks can cause serious economic damage to beef and dairy production.

They are found mainly on the coast and particularly favour the warmer climate further north.

Bush ticks, sometimes called grass ticks and bottle ticks, make up about 90% of the ticks in NSW. A heavy burden of adult bush ticks on an animal will cause a loss of blood and, in severe cases, may even kill the host.

Paralysis ticks, also called dog ticks, scrub ticks and shell-back ticks, make up about 10% of the ticks in NSW. They inject a paralysing toxin that can be fatal, particularly in small or young animals, unless veterinary attention is obtained.

Cattle ticks are very rare in NSW due to a 90-year eradication and control campaign in NSW carried out by NSW Department of Primary Industries' Cattle Tick Program and stockowners. This tick species remains, however, a major concern because it can transmit tick fever, a potentially fatal disease in cattle. Cattle tick is a notifiable disease in NSW under the *Stock Diseases Act 1923*. This means when you see a cattle tick in NSW you must report it to NSW DPI or the Rural Lands Protection Board.

Habitat, hosts and seasonal activity

Bush ticks thrive in a moist, temperate environment. Areas with thick pasture are ideal for bush ticks, providing moisture and protection from extremes in temperature. Wherever bush ticks occur in large numbers they are associated with cattle. However, they can infest most wild animals, birds, livestock (including horses, donkeys, sheep, goats, pigs and poultry) and domestic animals such as dogs and cats. Bush ticks are most active from October through to February.

Paralysis ticks favour bushland or scrubby areas, particularly where conditions are moist. But they can be picked up in open paddocks and other areas. This native tick lives mainly on bandicoots and other small marsupials but also infests cattle, horses and other livestock, and domestic animals. Paralysis ticks are most active from August through to December, but they can be found at any time of the year.

Cattle ticks favour cattle but infestations also occur on buffalo, deer, camels, horses and sheep. Cattle ticks may occasionally be seen on donkeys and goats but they are not found on marsupials or domestic pets. The period of peak activity for cattle ticks is February to June — later than for bush and paralysis ticks. This is important to consider when monitoring stock for ticks. In general terms, a tick found after February has a greater chance of being a cattle tick than a tick found before February, particularly if ticks are present in large numbers.

Life cycles

All three ticks live much longer in the pasture or bush than they do sucking blood on an animal. Eggs and larvae survive in pasture for 9 months or longer while the parasitic phase on the animal is only about 3 weeks. During the parasitic phase when they suck blood from a host, the ticks moult through three stages, each stage lasting about a week:



- pinhead sized larvae ('seed ticks')
- matchhead sized nymphs
- matchhead to pea-sized adult females.

There is an important difference, however, between the tick species in the way they moult:

- Bush and paralysis ticks attach to three hosts during their life cycle. Twice, they drop from their host, moult and re-attach to a new host. After the third attachment they drop and lay eggs. They are called 'three-host ticks'.
- Cattle ticks stay on the one host throughout the parasitic phase from larvae to nymph and adult. They are called 'one-host ticks'.

Identification

Adult ticks are the easiest stage to identify without the use of a microscope. And they are the stage most commonly found in a physical examination of livestock.

The key features to compare when trying to distinguish between adult bush, paralysis and cattle ticks are the legs, the body and the face. In particular, look for:

- red legs on the bush tick
- pale legs on a cattle tick
- a large, pointy snout with a variation in leg colour on paralysis ticks.

Effects on livestock

Paralysis ticks can cause paralysis by injecting a toxin produced in the tick's salivary glands. Larvae and nymphs can secrete small quantities of the toxin but it is the adult female that most often causes paralysis. One adult female can cause paralysis after 3–5 days on a young calf, foal, sheep, goat, dog or cat. A clear symptom is when the animal starts to lose coordination in the hind quarters.

Occasionally, large animals will die as a result of heavy infestations of paralysis ticks. Livestock introduced from tick-free areas are particularly susceptible. They face a greater risk of death than locally bred animals and can be affected by relatively low numbers of paralysis ticks. Cattle bred in ticky areas have usually developed some immunity to the toxin by the time they are adults. Native animals are mostly immune.

Cattle ticks can transmit the organism that causes tick fever, a serious blood parasite disease of cattle. Tick fever is rare in NSW due to cattle tick control measures. Typical symptoms of tick fever are as follows:

- Sudden onset of high fever up to 42°C.
- At first the membranes around the eye are bright red but over a few days turn pale or even white, as anaemia develops.
- The animal's appetite is depressed and there is a rapid loss in condition.
- The urine is often red or brown, hence tick fever is sometimes referred to as 'redwater'.
- Pregnant cows may abort.

An animal may die at any time from about 1 to 10 days after the onset of the illness. Treatment with specific drugs usually results in rapid recovery.

Horses are not affected by tick fever but suffer tick worry and loss of blood from cattle tick infestation. They may rub and bite the affected areas, causing severe skin lesions.

Bush ticks are mainly a concern when livestock are heavily infested. Unlike paralysis and cattle ticks they do not inject a toxin or transmit a disease. There is a greater risk of death when livestock are introduced from tick-free areas and become heavily infested. Cattle bred in tick infested areas, tend to develop a degree of immunity and so can carry greater numbers of bush ticks. Tick worry in horses can be extreme.

Cattle and bush ticks can kill the host through loss of blood if the infestation is heavy. Lighter infestations can cause tick worry and some blood loss which can result in a failure of livestock to thrive. Infestations affect the rearing, fattening and marketability of livestock. They also depress milk yields and cause permanent damage to hides.

Control in beef and dairy cattle

Bush and paralysis ticks are almost impossible to eradicate from a property because they are on and off the host in a week and live in pasture for many months. As well they can survive on native animals. So control is the only real option. Cattle ticks, on the other hand, are eradicated when found in NSW by stockowners and staff from NSW DPI's cattle tick program. Eradication is an option for cattle ticks because they stay on the one animal for 3 weeks during the parasitic phase and they don't attach to native animals.

In all cases, managing cattle for ticks involves:

1. reducing the tick risk;
2. possible preventative treatments;
3. monitoring your herd;
4. possible control or eradication treatments.

Reducing the tick risk. If possible, don't expose cattle, particularly susceptible animals such as young calves or stock recently introduced from tick-free areas, to known ticky country. Keep fences in good order to stop straying animals getting onto your property and check stock brought onto your property for tick infestations. Consider injecting some *Bos indicus* content into your herd as this reduces the susceptibility of cattle to all tick species.

Possible preventative treatments. If you do everything to reduce the tick risk and still consider your stock susceptible, you may plan to treat them as a preventative measure. An example would be newly born calves exposed to paralysis ticks. If this is the case, consider treating only the young calves in your herd and stopping treatments after Christmas when paralysis tick numbers start to fall.

Your planning should also take into account other pests such as buffalo fly, as some treatments will kill both ticks and buffalo fly.

Always remember: when treating stock it is important to read the label and obey export slaughter intervals (ESIs).

Monitoring your herd. Risk reduction methods and preventative treatments should not stop you from checking your cattle for ticks from spring through to autumn. By monitoring your herd you will know whether the level of infestation is too high and warrants action. The level requiring action varies between the ticks. Livestock can tolerate far greater numbers of bush ticks than they can paralysis ticks. For cattle ticks, the presence of just one tick requires action.

Most importantly, if you find cattle ticks, you must by law report them to NSW DPI and they will be eradicated.

Control or eradication treatments. Cattle tick infestations in NSW are treated much more seriously than bush or paralysis tick infestations. When cattle ticks are found on a property in NSW, the property and its neighbours are placed in quarantine. NSW DPI regulatory officers administer the quarantine to make sure the infestation is eradicated and does not spread. These officers, from the Cattle Tick Program:

- supervise the treatment programs;
- carry out the livestock inspections;
- provide permits for the restricted livestock movements from quarantined properties.

Stockowners are required to muster and treat their herds, maintain their fences and comply with movement restrictions.

Eradication of cattle ticks is possible because of their life cycle (they are a one-host tick) and the fact that they don't attach to native animals or domestic pets.

If bush or paralysis ticks are found it is up to the stockowner to decide what level of infestation their herd can tolerate before treatment is warranted. Again, you should take into account the susceptibility of your stock and the economic cost versus the benefit. As well, think about the life cycle and seasonal incidence of the ticks. As an example, a small number of paralysis ticks pose a threat if you have young calves in spring. On the other hand, a moderate number of bush ticks could be tolerated, especially by an adult herd later in the tick season. Remember, it is highly unlikely that you will be able to eradicate the population of bush and paralysis ticks from your property because they are three-host ticks, they spend more than 9 months living on the ground, and they can attach to native animals. You should not aim for a nil population through chemical treatment.

What to do if you find a tick

If you are unsure of the type of tick, take it without delay to the nearest Cattle Tick Control Office or any other office of NSW DPI or your Rural Lands Protection Board.

If you think it is a cattle tick you must report the finding to NSW DPI or your Rural Lands Protection Board.

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ISSN 1832-6668

JOB NUMBER 6171

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