

Focus on badgers



The badger has been in Britain for at least 250,000 years. Can we find a way to celebrate rather than persecute this native species, while also tackling TB in cattle?



Cheryl Marriott

In this special four-page article, our Head of Conservation Cheryl Marriott takes a step back from the controversial debates to realise there is much more to badgers than news stories would suggest ... and there's a glimmer of hope about disengaging badgers from the tangled issue of bovine TB.

Why do badgers have a striped face?

I only learnt the answer to this recently whilst reading the New Naturalist book *Badger* by Timothy Roper, as it quickly dawned on me that I knew little about badger ecology and behaviour. Most of my work on badgers has been about them coming into conflict with human interests: badgers occupying sites destined for built development, badgers digging up lawns and of course, badgers and the transmission of bovine TB. Most of the column inches featuring badgers cover the same contentious topics, so perhaps we should rekindle our interest in the natural history of these remarkable carnivores.



DAVID LIDSTONE

Badgers have a fascinating life history. Whilst they live in distinct territorial groups, mating with members of neighbouring groups is a common occurrence.

The badger species we have in Britain is the Eurasian badger *Meles meles*. Badgers belong to the Mustelid family so are a close relative of stoats, weasels, polecats, martens, wolverines and otters. All mustelids share a long, sinuous body-shape. In the case of badgers, this means they are perfectly adapted to live in burrow systems. Eurasian badgers are probably descended from martens in south-east Asia that left the forests 20 million years ago and sought shelter in underground burrows. Today, Eurasian badgers are found in an impressive variety of

habitats, from Ireland across to Russia. A similar species, the Asian badger, is found across the remainder of the continent from eastern Russia as far west as the Pacific Ocean.

Britain and Ireland have amongst the highest badger densities in Europe, probably due to a mix of the right climatic conditions and their protected status. Interestingly, Sweden also has a high density of badgers, but no one seems to know why. Populations are thought to be generally stable across most of the range, but the geographic range seems to be shrinking from the south and extending northwards in response to climate change.

Badgers share many characteristics with other mammal species; their nocturnal habit for instance, which means they are far more reliant on their senses of smell and hearing than their vision. Burrowing is not uncommon in other mammals, and like most burrow-dwellers, badgers have short, muscular limbs, strong claws and small ears and eyes. In other ways, though, badgers are unusual amongst the mustelids. Badgers are large and fairly cumbersome in comparison to stoats, weasels and martens. Stoats and weasels need to be fast and agile in order to catch their prey all year round; this speed also allows them to escape from predators. By contrast, the main food of badgers is the earthworm, and badgers have no natural predators, so there is no need to be built for speed. When threatened, badgers will generally stand and fight rather than escape, relying on their muscular bulk and their bite. This has the added advantage that they can afford to lay down a large amount of fat to get them through the winter when food is scarce.

There has been a huge amount of research into badger setts in recent years. Their scale and complexity took everyone by surprise. Setts are extended over time by successive generations, even though they may not actually require more living space. One particular sett that was excavated by researchers was estimated to have over 150 entrances and nearly 900m of tunnels. Setts provide a safe place for sleeping and breeding, and for spending many winter hours in torpor, where the metabolic rate is slowed to conserve energy.



Focus on badgers

An understanding of badger social groups and their territorial nature is essential when trying to tackle some of the human-badger conflicts; particularly the management of bovine TB in badger populations. In Britain badgers live in groups usually containing between two and eight adults. These groups occupy distinct territories, and whilst both males and females will mate with individuals from neighbouring groups (to prevent inbreeding), dispersal from one group to another is relatively rare.

One of the reasons we are planning to vaccinate badgers on our nature reserves as a means to control bovine TB in badgers is because it doesn't disrupt badger social groups in the same way that lethal control does. If badgers are removed from a territory, the space is less well defended and becomes available to neighbouring groups. Movement of badgers and contact between individuals from different social groups increases, as does transmission of bovine TB between the remaining badgers. All the evidence suggests that badger vaccination against bovine TB could be a viable option. This is not yet reflected in the Government's TB Eradication Strategy unfortunately, although it is being reviewed, with the results announced in September. At the time of writing we are still hopeful that the Zoological

Society of London's proposals for badger vaccination research in West Cornwall will go ahead; this will provide the evidence we need to determine what effect vaccination of badgers has on TB incidence in the badger population.

Badger vaccination won't fix the problem of bovine TB on its own, but it could take badgers out of the equation.

If vaccination starts to be used instead of culling we could all then enjoy having badgers in our countryside, without them being under a cloud. There is no doubt that badgers are an adaptable species and have recovered from past persecution, but might we now be pushing them too far?

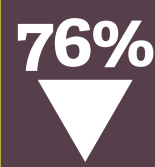
Going back to badger biology, and why they have the distinctive striped face: the theory is that they are not fast enough to run away from their enemies, but neither are they big enough to be left well alone, like bears for example. What badgers do have, though, is an impressively strong bite. Researchers believe that animals with a 'secret weapon' of some kind often have distinctive markings to advertise the fact. I will never look at the Cornwall Wildlife Trust logo in quite the same way!


Badger vaccination


the science

There is growing evidence to suggest that badger vaccination will have a beneficial effect on TB in cattle. There is a lot of misinformation circulating, so here are some of the key facts so that you can spread the word.

- Vaccination of badgers reduces the rate of new infections*** in badgers by 76%. Vaccination will not guarantee protection from infection in all individual badgers (this is also true for the human BCG vaccine against TB, which has been used successfully since the 1940s).


- Vaccinating at least one-third of adults in a badger social group reduces new infections*** in unvaccinated badger cubs by 79%. This is sometimes known as 'herd immunity'.


- Each individual badger only needs to be vaccinated once.** Vaccination is carried out once per year at each sett for four years. Repeat vaccination is to increase coverage by vaccinating new cubs and adults that might have joined the group over the year.



*measured using diagnostic tests

- The vaccination has no positive or negative effect on badgers that already have TB.** Badgers typically live for three to five years, so over a four-year period, vaccination should reduce new cases of TB in badgers whilst infected animals will gradually die off.
- Although the vaccine is live, it is safe and does not lead to shedding of BCG by vaccinated animals; neither does it disrupt badger social groups.** Radio tagging studies have also shown that vaccination does not lead to changes in badgers' ranging behaviour or 'perturbation'.
- During four years of badger vaccination across a 288km² area in Pembrokeshire, TB incidence in roadkill badgers declined year on year.** The sample size was small, but promisingly, incidence dropped from 19% in year one to 10% in year two, 6.5% in year three and 4% in year four.
- We don't know for sure, but we would expect reduced TB in the badger population to have a knock-on beneficial effect on TB in cattle.** If badger vaccination is carried out in more areas, the effects of TB in cattle can be better understood.
- An oral vaccine for badgers is currently in development.** This will make vaccinating badgers easier – as and when it is available, programmes can switch to this method.

TB incidence in roadkill badgers

YEAR ONE

19%



YEAR TWO

10%



YEAR THREE

6.5%



YEAR FOUR

4%

TOM MARSHALL



ANDY ROBERTSON



LEFT: No one should be writing off vaccination as a method for controlling TB in badgers; we do not yet know to what extent it could reduce TB incidence in cattle

RIGHT: An oral badger vaccine against TB is in development and will make the whole process much simpler



A Cornish fact

'Brogh' is the Cornish word for badger, and 'broghes' is the plural. This is a variation of one of the few Celtic words borrowed into English as 'brock'.

find out more...

An understanding of badger behaviour is vital in our efforts to control bovine TB. Badger vaccination by cage trapping does not disrupt social groups in the same way lethal control does.

about the science of badger vaccination here:
www.tbhub.co.uk/wildlife/badger-vaccination

about what the Trust is doing; please visit:
www.cornwallwildlifetrust.org.uk/living-landscapes/badgers-and-bovine-tb