

# The European Badger and its significance in transmission of bovine tuberculosis

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**Kingdom:** Animalia  
**Phylum:** Chordata  
**Class:** Mammalia  
**Order:** Carnivora  
**Family:** Mustelidae  
**Subfamily:** Melinae

## *Description*



The badger's hair is black and white leading to a grey appearance from the distance. They have a black chest and forepaws with prominent black and white striped head with white tipped ears. Their head is small, with small eyes, thick short neck and a long body with a short tail.

They grow up to 30 inches from head to tail and can weigh up to 8 – 12 kilograms. Males are slightly bigger than the females. Males are called boars. Females are called sows. Badgers are fierce animals and will protect themselves and their young at all costs, and are capable of fighting off much larger animals.

## *Habitat*

Many factors affect where a badger can live including geology, altitude, inclination and orientation of slopes. Some of the ecological requirements that must be fulfilled in a badgers location include: adequate food supply available during all seasons, sufficient cover to allow unnoticed emergence from setts and a location free from disturbance.

When building their setts badgers often utilize areas of sandy soils in preference to clay as this soil is easier to dig and also drains easier.

Sometimes sandy soils can be prone to roof collapse, therefore badgers choose areas that help consolidate the material such as digging into roots of trees and hedges.

The badger lives in large underground tunnel systems called setts. There are usually 3 to 10 entrances to these setts, which are much larger than rabbit holes and oval in shape.

The setts are comprised of a huge system of tunnels and chambers. Badgers can inherit their setts, therefore these setts can be very old, in some cases centuries old.

The setts have one chamber for breeding and several sleeping chambers. At certain points the passage widens, to allow the badgers to pass each other. They keep their setts very clean compared to other animals like the fox and change or air the bedding several times a year. Airing the bedding also serves to kill the parasites in the bedding.

Badgers are very territorial. The boundaries of the territory are usually outlined by well-worn paths. They mark these paths with scenting. Like all Mustelids, badgers secrete a very odorous scent from their subcaudal glands.

### ***Behaviour and Reproduction***

Badgers are nocturnal, coming out at night to feed. They live in social groups that typically consist of about 6 badgers, called clans.

Mating may occur anytime after the sow has given birth in January to March, up until September. There is a variable period of gestation of between 2 and 9 months that follows, made possible by delayed impregnation.

After 7-8 weeks of gestation, the sow gives birth to 1-5 cubs. The cubs are about 6 inches long (15cm), weigh just 80-130 grams.

Their eyes remain closed for 2-5 weeks and they will suckle for about 3 months. The cubs first venture above ground after 8-10 weeks during the summer.

The cubs are independent after 16 weeks. Badgers don't hibernate over winter, but are less active and may spend several days below ground during periods of bad weather.

The cubs do not disperse from the sett until the following spring and many never leave (female are more inclined to stay than males).

Badgers live for 10 to 12 years.

### **The link between the European badger and bovine tuberculosis**

The alleged link between badgers and bovine TB continues to be a long-running issue. Many farmers blame the badger while, conservationists do not believe there is a link due to the absence of hard scientific evidence.

The badger initially became the suspect for the spread of bovine TB when there was an outbreak of TB in the United Kingdom. A dead badger was found on the farm, where the outbreak occurred. When tested, the badger was found to be infected with TB.

Potential obstacles to bovine tuberculosis control are the existence of the badger as a wildlife reservoir (Griffin et al, 2005).

European badgers have long been implicated in transmitting *Mycobacterium bovis*, the causative agent of bovine tuberculosis. One solution that was put forward for this problem was the culling of badgers in affected areas.

A study carried out by Woodroffe, 2006 showed that badger culling has the capacity to cause an increase or decrease in cattle TB. This was proven to be prevalent especially in landscape that allowed badgers from neighboring land to recolonize culled areas.

This study also showed that the suspension of TB control in cattle during the foot and mouth epidemic in Britain was associated with increase of tuberculosis in badgers. This would suggest that the infection is also transmitted from cattle to badgers.

Donnelly, 2006 carried out a field trial in which badgers were culled. The cattle TB incidence was reduced where widespread culling occurred but the incidence of TB increased on neighboring uncultured lands. This effect of badger culling was thought to be due to the disruption of badgers' territorial organization and their ranging behaviour.

This study carried out by Woodroffe, 2006 highlighted the difficulties with managing host – pathogen systems. Simple models predicted that reducing badger population would reduce disease transmission. But the results showed that repeated badger culling was associated with increasing *Mycobacterium bovis* infection.

The primary route of tuberculosis is direct aerosol contact. Indirect transmission via the environment is thought not to be a significant source of infection. Badgers form social groups that use communal underground setts where conditions are likely to facilitate transmission and provide one focus of environmental contamination.

Young et al, 2004 applied molecular technology (PCR) to quantify the prevalence of *Mycobacterium bovis* in the environment. Environmental samples were obtained from cattle farms located in endemic regions for molecular detection of *Mycobacterium tuberculosis* complex. Soil samples were collected from 2 - 10 badger setts per farm. *Mycobacterium* was then detected from the samples by PCR assay. Their study showed that there was an average of 43% of setts positive per contaminated farm.

Their study showed that *Mycobacterium bovis* was prevalent in large scale on endemic cattle farms in Britain.

The route of infection from badger to cattle under normal farm conditions has never been fully explained. But there are also other factors such as deer that have to be taken into account for the spread of TB. These animals are also well known carriers of the disease.

It is of major importance to recognize that the badger is not the sole or primary source of bovine TB.

With the high level of TB in the cattle population, the most serious risk of cattle infection in most areas is from direct or indirect contact with infected cattle.

Thus, eradication of the badger population would not eradicate bovine TB.

## References:

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