

Using cameras to identify badger activity in farm yards

Why monitor badger activity?

Badgers can act as a wildlife reservoir for *Mycobacterium bovis*, the bacterium which causes tuberculosis (TB) in cattle. Several studies have shown that badgers will enter farm yards and buildings [1,2,3]. This may result in opportunities for disease transmission, where badgers come into close contact with cattle, or where badgers contaminate cattle feed or the farm environment. Cameras can be used to investigate whether badgers are entering farm yards and this information can be used to direct future biosecurity measures.



Which cameras should I use?

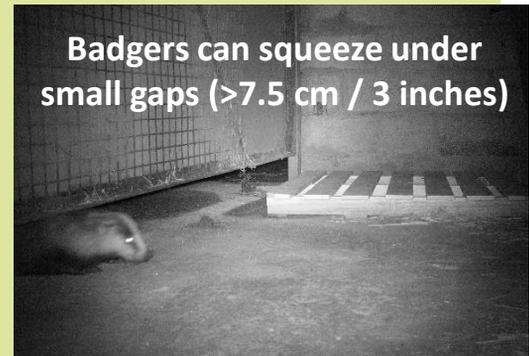
Regular CCTV cameras can record badger activity, but this often requires searching through hours of footage. It is recommended that wildlife 'trail cameras' or 'camera traps' are used instead. These cameras have infrared sensors/lights and only take photos (or in some cases video) when an animal triggers the camera. Cameras cost anywhere from £50 - 300 or more. More expensive cameras typically have higher image quality, detection range and build quality. For short term use at a single farm, cheaper cameras will probably be sufficient to determine if badgers are present.

Where to place cameras

Feed stores and cattle housing are key areas to place cameras. Generally cameras should be placed in areas where badgers and cattle could come into close contact, or areas which badgers may contaminate which cattle may then be exposed to.

- **Feed stores** – Including feed bins, under silos. Anywhere with spilled feed that badgers can access. (See the accompanying sheet listing feed sources likely to attract badgers).
- **Cattle housing** – badgers may enter cattle housing looking for food. Particularly if cattle are fed in low troughs or on the floor.
- **Silage clamps (particularly maize)** – grass silage is unlikely to be attractive to badgers
- **Hay/straw barns** – badgers may visit these areas to forage or to collect bedding
- **Narrow gaps or entrances to the yard** – if the yard is fairly secure, or if there are not suitable camera locations elsewhere, focus on potential entry points to the yard/buildings. Particular if there are signs of wildlife activity.

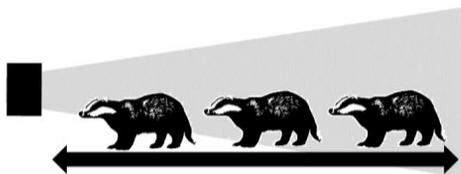
Badgers can squeeze under small gaps (>7.5 cm / 3 inches)



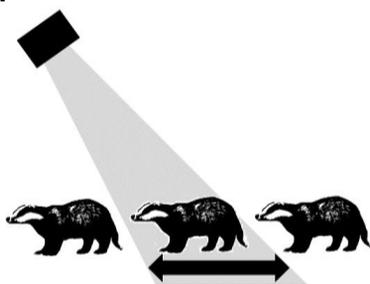
Badgers are attracted to areas with spilled feed, such as troughs, or under silos



Low position = wide field of view



High position = narrow field of view



More tips on camera placement

- Avoid placing cameras inside buildings where they can be repeatedly triggered by livestock (this will fill the camera memory with 100s of pictures). Cattle will also rub against cameras and damage them. In cattle housing **focus on points where badgers may enter/exit the buildings (eg doors or narrow gaps)**.
- Farm yards can be busy places – **avoid placing cameras where they can be damaged by gates, vehicles, or the movement of cattle**.
- **Place cameras low to the ground**. Badgers are quite short animals, ideally place your camera around 0.5m (20 inches) off the ground, looking straight out ahead to maximise the field of view. Avoid placing cameras too high as this will limit the field of view.
- **Avoid areas under water pipes or where water drains off roofing**. This may damage or trigger the camera.
- **Watch out for vegetation**. Vegetation may grow and obscure cameras and the wind may move vegetation around which will trigger the camera.
- **Camera distance**. Ideally don't place cameras too close (less than 2m, 6ft) if facing a door or feed bin, as the glare of the flash may make it difficult to see. Ideally place a camera 3-10 meters (10-30 ft) from the target area. Different cameras will have different specifications so consult the instructions.

Where can I find out more information?

More information on bovine TB, including biosecurity measures to reduce badger activity, badger field signs and other topics visit www.tbhub.co.uk. This sheet was produced as part of a Knowledge Exchange project funded by NERC. For more info email a.robertson@exeter.ac.uk or visit www.tbknowledgeexchange.co.uk/

Studies referenced

1. Tolhurst et al. (2009) Behaviour of badgers (*Meles meles*) in farm buildings : Opportunities for the transmission of *Mycobacterium bovis* to cattle ? Applied Animal Behaviour Science
2. Garnett et al. (2002) Use of cattle farm resources by badgers (*Meles meles*) and risk of bovine tuberculosis (*Mycobacterium bovis*) transmission to cattle. Proceedings of the Royal Society of London Series B: Biological Sciences
3. Robertson et al. (2016) How well do farmers know their badgers? Relating farmer knowledge to ecological survey data. Veterinary Record.