

# Rolling dice reveals level of illegal badger killing

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A little-used method for estimating how many people are involved in sensitive or illegal activities can provide critical information to environmental policy makers involved in the proposed badger culling scheme in England, according to new research.

"Innovative techniques for estimating [illegal activities](#) in a human-wildlife-management conflict", a paper written by a research team from Bangor University, the University of Kent and Kingston University, has revealed - for the first time - the estimated rate of illegal badger killing.

Using a method known as the randomised response technique (RRT), the research, published today in *PLOS ONE*, has shown over 10% of [livestock farmers](#) in Wales have illegally killed badgers in the 12 months preceding the study.

Previous research does not sufficiently consider whether illegal badger killing contributes to the spread of bTB to livestock.

The team suggest that it would be interesting to model how such a rate of illegal badger killing could be contributing, or not, to the spread of [bovine tuberculosis](#) (bTB) particularly as badger movements are effected when [social groups](#) are disrupted.

Dr Paul Cross, from Bangor University's School of Environment, Natural Resources & Geography explains: 'The proportion of farmers estimated to have killed badgers should be considered by policymakers

and in the wider debate'.

'Intensive [badger culling](#) is one approach being considered by policy makers, in an attempt to control the spread of [tuberculosis](#) in cattle. However, studies investigating the effects of badger culling on TB outbreaks in cattle have not factored in the prevalence of illegal badger killing, and its potential to spread disease'.

Dr Freya St John, from the University of Kent's Durrell Institute of Conservation and Ecology (DICE), said: 'Attempting to resolve the issues regarding [badgers](#) as carriers of bovine TB requires cross-disciplinary scientific research, a departure from deep-rooted positions, and the political will to implement evidence-based management. We believe that this study makes an important contribution to that debate'.

RRT requires respondents to roll two dice before answering sensitive questions such as 'have you killed a badger in the last 12 months'. The result of the dice roll is never revealed to researchers, it is the respondents' secret. Crucially there are instructions associated with the dice roll, for example, if the sum of the dice equals five through to ten, answer truthfully; if they sum 2 – 4 answer 'yes'; and if they sum 11 or 12 answer 'no'. The role of 'forced' answers adds noise to the data so that a 'yes' answer doesn't necessarily mean that a respondent committed an illegal act.

**More information:** To view the full research paper, visit: [dx.plos.org/10.1371/journal.pone.0053681](https://doi.org/10.1371/journal.pone.0053681)

Provided by Bangor University

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