The 'Super-Ranger' badgers that may hold the key to limiting the spread of bovine TB

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'Spinner,' before a full health check and vaccination. Credit: Aoibheann Gaughran, Trinity College Dublin

Zoologists from Trinity College Dublin, working with a multi-disciplinary team of veterinarians and ecologists from the Department of

Agriculture, Food and The Marine (DAFM) and the National Parks and Wildlife Service (NPWS), have discovered a brand new 'super-ranging' behaviour in badgers, which has major implications for implementing vaccination programmes to limit the spread of bovine tuberculosis (TB). The findings come at an opportune time, after DAFM recently announced it would be rolling out a national programme to vaccinate badgers in its efforts to eradicate TB.

Badgers are a protected species and are one of Ireland's most iconic wild creatures, but they can harbour TB and inadvertently transfer it to cattle. Infected cattle must be culled, which results in the loss of millions of euro each year in the agricultural sector, and can devastate individual farmers and their families. Vaccinating badgers against TB provides an excellent option to mitigating these risks, but to do that effectively, it is imperative to understand how badgers move around in the wild and to target those most likely to spread disease.

In the research, just published in leading international journal *PLOS ONE*, the team describe an entirely new phenomenon - 'super-ranging' - where some males range between two and three times more widely than is typical for other badgers in their social groups, who live in far more rigid territories. In this study, around one in five males adopted this super-ranging behaviour.

Aoibheann Gaughran, PhD Researcher in Trinity's School of Natural Sciences and lead author on the paper said: "Normally, badgers don't venture too far beyond the boundaries of their territories, which sometimes last for decades, and are clearly marked at the borders by latrines. Badgers may actively defend these territories if others intrude."

Mucky "Jack" is released with his GPS tracking collar. Credit: Aoibheann Gaughran, Trinity College Dublin

"By using GPS satellite trackers to take a uniquely personal look at the nightly comings and goings of almost 50 badgers in the wild, we discovered that some males completely ignore the traditional territory boundaries. Instead they range far into areas that encompass the territories of other social groups as well. We are not sure why they do this, but we know they can hold these super-ranges for several years and they presumably gain access to a greater number of female badgers than if they stayed at home."

The researchers hope that by better understanding how badgers move between territories, they will be able to pinpoint where the greater risks

for TB transmission lie, which would be extremely valuable information from a disease control perspective.

Professor of Zoology at Trinity, Nicola Marples, said: "This research on badger movement should help to maximise the efficiency and effectiveness of the impending badger vaccination programme, which is great news. From both conservation and disease-control perspectives, a well-designed vaccination programme should provide a win-win situation."

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