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3000 sightings later, Tasmania seeks fox proof

Whether or not foxes are present in Tasmania has been the subject of public debate for more than 15 years, and despite a former state government's decision to establish a dedicated Fox Eradication Program 13 years ago, at an estimated cost to taxpayers of at least $50 million, there is still no indisputable evidence foxes exist in the state. (*The Veterinarian* March 2005; August 2009 November 2010).

Concerned by what they felt were serious deficiencies in the scientific approach and methods used to justify the controversial program - that included a baiting strategy involving 1080 poison covering more than a million hectares - an independent team of international scientists decided to replicate and assess FEP's data using qualitative and laboratory analysis. Some of their results have now been published in journals specialising in applied ecology, molecular forensics and wildlife science, and have also been the basis of a recent ABC Radio National Background Briefing program.

The team undertook five studies that focused on: The potential to generate false positives using a molecular technique developed by the University of Canberra (Invasive Animals Cooperative Research Centre);

A study of the detection patterns and dispersion of 'fox positive' scats obtained in Tasmania using molecular survey techniques that sought to test if these data had arisen from a fox population;

Analysis of the reliability of anecdotal sightings as a means to assess baiting efficacy and fox distribution and abundance;

A review of the data and analysis used to support the efficacy of buried 1080 baiting as a strategy capable of eradicating foxes in Tasmania;

A comprehensive analysis of the opportunistically acquired physical exhibits used to support the existence of a fox population in Tasmania.

Fox positive scat DNA has been central to the claims and approach of Tasmania's FEP, but one of these latest studies found 'false positives' would result from one of the published DNA tests developed for use in Tasmania to identify fox scats. The results from this research have been published in Forensic Science International: Genetics, and show that cattle, pig, rabbit, hare, and even Tasmanian devil DNA, could be mistaken for fox DNA.

Filipe Pereira, from the Interdisciplinary Centre of Marine and Environmental Research at Portugal's University of Porto, led this study and he explained how ambiguous results can occur from such a diagnostic assay.

"It produces 'positive' results when DNA from different species is present in the sample, something that should never occur in a species-specific test. This problem is aggravated when analysing scats from native predators if the DNA from several other diet species may be present. For example, a scat of a native predator that contains a mix of certain DNA can be wrongly identified as that from a fox and even confuse follow up testing of the sample," Pereira said.

The researchers' website reports that the detection and distribution of the 61 'fox positive' scats reported by FEP over 13 years most closely resemble a statistical pattern expected from false positives, or 'Type one' error.

Such data is anomalous according to Clive Marks, director of Nocturnal Wildlife Research Pty Ltd, former head of Vertebrate Pest Research in the Department of Primary Industries Victorian Institute of Animal Science and Keith Turnbull Research Institutes, and a recognised expert on fox ecology and control.

"Our analysis showed that the statistical likelihood of the 61 scats coming from a fox population was extremely remote. The patterns of their detection and distribution can be shown to be very different from that expected from a fox population based upon empirical data and past studies," he said.

The team argues that in order to train fox scat detection dogs, and conduct field experiments, the FEP imported thousands of fox scats from the mainland, and contamination from imported fox DNA from biological materials routinely handled by program staff in an ad hoc manner could also be a source of false positives.

Despite over 3000 recorded anecdotal fox sightings, none have been corroborated with physical data, and the team found sightings were not only closely associated with media reports, the changes in the timing and intensity of anecdotal sightings could be explained by 'a simple statistical relationship between media and reported 'fox events' and an index of 'media intensity'.'

Team member veterinary pathologist David Obendorf, who has worked in Tasmania since the early 1980s on a wide range of issues and research topics related to wildlife disease said,

"The difficulty this program had was using a great deal of propaganda and public relations to get across its message, but it failed to actually pass the first test, which was the onus of proof test. So what we've got is a situation where the threat has always been a real threat for Tasmania, but the presence of evidence is completely zero."

■ **ANNE LAYTON-BENNETT**

Further details of the review can be found at the project website www.tasmanianfox.com and a transcript of the Background Briefing program is available at http://tinyurl.com/vm0514fox