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## **Improving animal welfare standards while reducing disease exposure risk during euthanasia of trapped brushtail possums (*Trichosurus vulpecula*)**

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### **Abstract**

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*In New Zealand there is a long history of research studies working with wild free-living brushtail possums (*Trichosurus vulpecula*) where euthanasia of large numbers of animals is frequently required. The most commonly used method for euthanising trapped possums is by blunt-force trauma. If possums being euthanised are potentially infected with bovine tuberculosis (TB), however, the blunt-force trauma method is associated with risks of researcher exposure to TB infection (eg risk of being scratched, bitten or blood-spattered). Here, we trial the use of a close-range shot to the head with a high-velocity air rifle as an alternative method for the euthanasia of cage-trapped possums. Our trial revealed that the air rifle method reduced the potential disease exposure risks to researchers by minimising blood-spatter area, and by completely avoiding the likelihood of both accidents due to animal handling and animal escapes. While both methods induced immediate unconsciousness leading to death, the air rifle method was quicker (ie shorter conscious handling and total time) and arguably had better animal welfare performance by significantly reducing the time to unconsciousness. Thus, we conclude that the air rifle method is suitably humane for possum euthanasia and should be considered when dealing with potentially TB-infected cage-trapped possums.*

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**Keywords:** air rifle, animal welfare, blunt-force trauma, shooting, tuberculosis, wildlife capture