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**Abstract**

# **Advantages and limitations of the Five Domains model for assessing welfare impacts associated with vertebrate pest control**

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Many pest control activities have the potential to impact negatively on the welfare of animals, and animal welfare is an important consideration in the development, implementation and evaluation of ethically defensible vertebrate pest control. Thus, reliable and accurate methods for assessing welfare impacts are required.

The Five Domains model provides a systematic method for identifying potential or actual welfare impacts associated with an event or situation in four physical or functional domains (nutrition, environment, health or functional status, behaviour) and one mental domain (overall mental or affective state). Here we evaluate the advantages and limitations of the Five Domains model for this purpose and illustrate them using specific examples from a recent assessment of the welfare impacts of poisons used to lethally control possums in New Zealand.

The model has a number of advantages which include the following: the systematic identification of a wide range of impacts associated with a variety of control tools; the production of relative rankings of tools in terms of their welfare impacts; the easy incorporation of new information into assessments; and the highlighting of additional information needed. For example, a recent analysis of sodium fluoroacetate (1080) poisoning in possums revealed the need for more information on the period from the onset of clinical signs to the point at which consciousness is lost, as well as on the level of consciousness during or after the occurrence of muscle spasms and seizures.

The model is also valuable because it clearly separates physical or functional and affective impacts, encourages more comprehensive consideration of negative affective experiences than has occurred in the past, and allows development and evaluation of targeted mitigation strategies.

Caution must be used in interpreting and applying the outputs of the model, most importantly because relative rankings or grades are fundamentally qualitative in nature. Certain domains are more useful for evaluating impacts associated with slower/longer acting tools than for faster-acting methods, and it may be easier to identify impacts in some domains than others.

Overall, we conclude that the Five Domains model advances evaluation of the animal welfare impacts of vertebrate pest control methods, provided users are cognisant of its limitations.

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