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The effect of predator presence on the behaviour of sheep in pain

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Abstract

In the veterinary and ecology literature two claims regarding predator-prey interactions are frequently made. Firstly, that vertebrate predators typically capture disadvantaged individuals, including the young, weak, sick, aged and injured, from prey populations in higher than expected proportions. Secondly, as a consequence of this, prey animals when injured or diseased, are said to attempt to behave in a normal manner, similar to that of a healthy conspecific, so as not to draw the attention of a predator.

This thesis investigates whether the presence of a predator modifies the behaviour of sheep and lambs that are in pain.

There are two parts to this thesis. Part one examines the behaviour of lambs following castration. Part two examines the behaviour of adult sheep in response to a mechanical pressure device.

The aim of part one was to monitor the restlessness behaviour of lambs following castration in the presence of four stimuli (a goat, a dog, a cardboard box, and a tape recorder playing the sound of a dog barking), and the effect that the lambs’ dam has on this behaviour. Three hundred and eighty four lambs were observed in this study, half of these lambs were castrated and the other half were left as controls.

Castrated lambs exhibited more restlessness behaviour than control lambs (p<0.0001). However, restlessness behaviour was not different between lambs exposed to one of the four stimuli. The presence of the lambs’ dam significantly reduced the restlessness behaviours of both castrated (p<0.0003) and control lambs (p<0.0019).

The aim of part two was to determine the threshold response of 16 adult Romney ewes in response to a painful mechanical pressure device in the presence of four stimuli (a dog, a goat, a tape recording of a drum beat and a tape recording of a dog barking).
The response threshold was higher in sheep exposed to the dog than to the goat (p<0.05).

The significant difference between the behaviour of castrated and control lambs suggests that castration is a painful procedure. Moreover, lambs may rely on their mother to cue them on how to behave, as lambs significantly reduced the amount of restlessness behaviour they exhibited when their ewe was present (castrated lambs p<0.0003; control lambs p<0.0019). Adult sheep find dogs aversive, and their pain thresholds were higher in their presence than when a goat was present. This suggests that sheep are able to alter their behaviour in the presence of a potential threat.

These results justify further research into the behaviour of prey animals in the presence of a predator. Two key avenues for future research include; determining how prey animals view humans, and further investigating the mother-young relationship and the affect the presence of a predator has on this.
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I dedicate this thesis to my husband Bevan, and Jess, because with their unfailing optimism, understanding, companionship and support, I feel I can achieve everything and anything.

The use of all animals and procedures in the experiments described in this thesis were approved by the Massey University Animal Ethics Committee. Reference Numbers 03/122 and 03/11 (Appendix 7.3). In addition, it is intended that Chapters 3 and 4 of this thesis will be published as two papers in scientific journals. The authors of these papers will be Suzanne Young, Kevin Stafford and Ed Minot.
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