

Evaluating behavioural responses of macropods to drones

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Abstract

Wildlife monitoring is a crucial component of conservation management, with reliable field surveys being important for trend analysis and population viability modelling. Unoccupied aircraft systems (UAS), also known as drones, are rapidly supplanting manned aircraft for aerial wildlife counts. Here we investigated and compared the impacts of drone presence on two large terrestrial mammals from Tasmania, Australia—Bennett’s wallaby (*Notamacropus rufogriseus*), and Forester kangaroo (*Macropus giganteus tasmaniensis*)—using a commercial quadcopter model: DJI Phantom 4 Pro. Further, a ground bird, the domestic chicken (*Gallus gallus domesticus*), was used as a model organism to further investigate behavioural responses of ‘aerial aware’ species to drones. We found that *M. giganteus tasmaniensis* and *N. rufogriseus* started to exhibit noticeable changes in behaviour, including evasion, when the drone motor sound exceeded ~50 decibels (dB) as heard from the ground (at flight altitudes of 30 – 50 m). At lower sound levels (48 dB and below, above 50 m), the animal’s response was minimal. The response of *G. gallus domesticus* to the drone was remarkably similar to that of the *Macropus* species, despite the species generally being more susceptible to, and instinctively vigilant against drone-sized aerial predators such as raptors. This study has established the baseline information required to understand the limits of drone operations, in terms of target disturbance, for macropod surveys.

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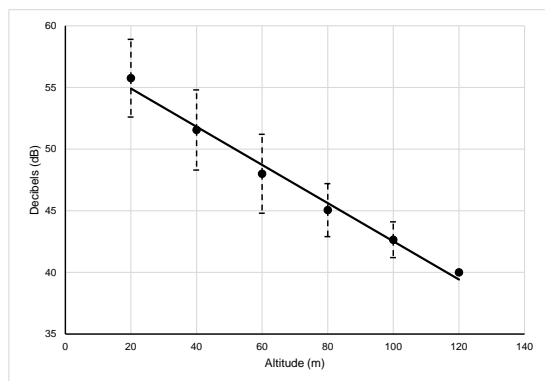
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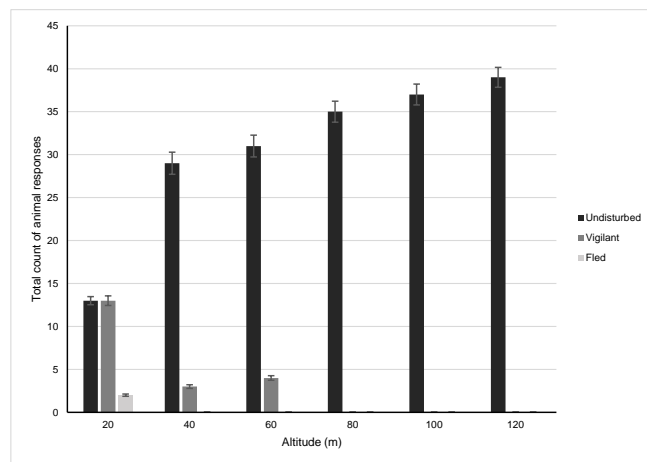
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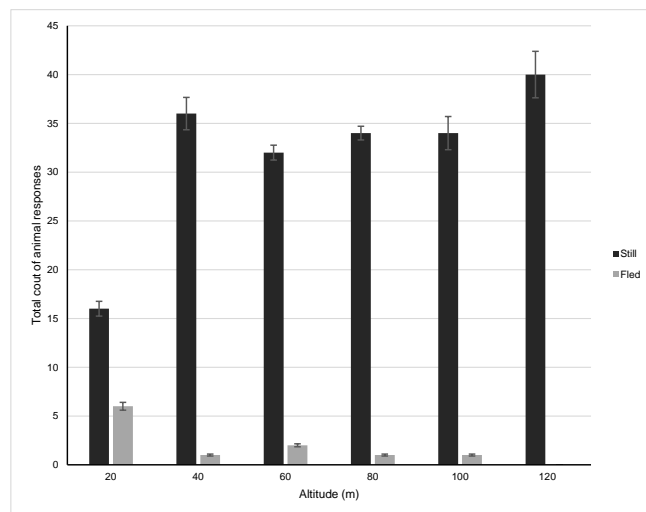






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