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The Effect of Light on the Behaviour of Captive  
Brown Kiwi *Apteryx mantelli*;  
Implications for Captive Management

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A thesis presented in partial fulfilment of the  
requirements for the degree of  
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## **Abstract**

The impact of light intensity and spectrum on the behaviour of captive brown kiwi *Apteryx mantelli* was examined through behavioural observation. This topic was chosen as most animals have a significant response to light and there are currently no guidelines for the light regimes of nocturnal houses or brooder rooms that house brown kiwi. In the first experiment the amount of time that a kiwi spent in enclosure areas illuminated by four different colours was observed. The behaviour of the kiwi was not affected by colour but significantly more time was spent in enclosure areas that were darker and close to the edge of the enclosure. A second experiment investigated the amount of time that eight captive display kiwi spent in areas of their enclosure based on illumination intensity; again more time was spent in darker and peripheral areas as well as in areas of moderate to high structural coverage though these factors were interacting and did not singularly explain where time was spent in the enclosure. Finally the effect of early brooder light exposure on the later outdoor emergence times of nine neonatal brown kiwi was observed. Chicks that were housed for their first month of life in brooders diurnally lit by 150-200 lux emerged sooner after sunset once they were later housed in outdoor pens; this is compared with chicks housed in brooders brighter than 300 lux. Overall, light intensity and structure appeared to be the most significant environmental factors though much individual variation was found. Based on my results nocturnal houses that are no brighter than five lux and have at least 50% structurally covered and peripheral areas are most likely to be preferred by kiwi. Brooder boxes may need to be dimmed if a long-term behavioural effect is occurring from current brooder light regimes. These results support the widely held belief that kiwi do not rely on vision for information about their surroundings but may have good perception of light intensity as a result of having high rod photoreceptor density. It is more likely that kiwi rely on highly developed tactile and olfactory senses than vision. Results may be applicable to nocturnal mammals that also show high predator avoidance behaviour and/or do not rely on vision, such as some primates and rodents.

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