Use of Olfaction in Northern Brown Kiwi, *Apteryx mantelli*.

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Abstract

The use of olfaction for territorial marking and prey detection was studied in captive Northern brown kiwi (*Apteryx mantelli*). Kiwi responded in a way that suggests they may use faecal odour to mark territories, and this is the first time that an avian species has been suggested to do so. Responses were observed to three types of faecal odour containers introduced into enclosures - with the resident kiwi's faeces, foreign kiwi faeces or empty controls. Juveniles were attracted more to foreign kiwi odour than adult birds, but showed significantly more escape behaviour from these odours than adults. This suggests that juveniles may use these odours to assess resident birds and to avoid confrontation with territorial adults. Adult males were repelled more than other kiwi from foreign kiwi odour, but showed significantly less escape behaviour. This suggests that they may avoid confrontations but supports the suggestion that males are the more territorial sex. Entering, roosting and defecation behaviours in roost boxes with different faecal odours were also studied. Kiwi did not purposefully defecate in boxes and did not countermark faeces from a foreign bird. This suggests that kiwi do not purposefully scent mark roost boxes using faeces, and that they may scent mark them instead from gland secretions left after roosting. This may explain why kiwi move from one roost site to another almost every day in the wild. Adult female kiwi roosted significantly more often in boxes than other kiwi, and roosted most often in boxes with foreign kiwi odour. This suggests that there is a behaviour difference between the sexes with females being more willing to roost in unfamiliar roost sites, possibly as a way of finding mates. Large boxes were also dug into enclosures to test the olfactory ability of kiwi to find subterranean prey. Kiwi do not appear to use olfaction as the primary sense to find subterranean earthworms, which is in direct contradiction to popular belief and to commonly cited literature. Kiwi were largely inaccurate in finding these prey and the ability of kiwi to find prey was not affected by the concentration of earthworms in a small area or the depth of the earthworms. Kiwi may instead use auditory of vibrotactile cues as the primary sense to find prey.

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