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SHORT NOTE

An observation of interspecific kleptoparasitism of North Island robins (*Petroica longipes*) by hihi (*Notiomystis cincta*)

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Kleptoparasitism is the opportunistic theft of food by one individual from another (Brockmann & Bernard 1979). The majority of cases of kleptoparasitism in birds have been reported in seabirds, ducks, corvids, and birds of prey (Morand-Ferron *et al.* 2007). This might be because these taxa forage in open areas that make observation easier. These species also tend to capture prey that require further processing (e.g., shellfish) or are too large to eat immediately. Large and difficult prey items may leave birds prone to theft as they are less able to ward off kleptoparasites during food handling and the extra weight of the prey may make them less manoeuvrable. An alternative hypothesis is that kleptoparasitic species have cognitive abilities that enable them to more readily identify opportunities for parasitism than their victims (Morand-Ferron *et al.* 2007). Whilst kleptoparasitism has been observed in some Passeriformes (especially Corvidae), observations of parasitic interactions between other species of passerines are rare. The rarity of kleptoparasitism in passerines may be because their diets often consist of food items that are small and quickly consumed. The relatively small size and fast movement of most passerines may also mean that observations of kleptoparasitism may be more difficult.

Previous workers have noted that the hihi or stitchbird (*Notiomystis cincta*), a medium-sized passerine endemic to New Zealand, sometimes steals food caches made by North Island robins (*Petroica longipes*; Steer & van Horik 2006). This suggests that these 2 species may have an antagonistic relationship with regards to competition for food resources and that hihi might regularly pilfer a robin's caches. Powlesland (1980) earlier noted that caches made by the closely related South Island robin (*P. australis*) may be taken by other passerine species. Here, I describe an interaction between hihi and North Island robins when the latter were being fed mealworms by hand.

I observed robins and hihi at the Karori Wildlife Sanctuary (KWS) in Wellington, New Zealand (41° 18′ S, 174° 44′ E) whilst conducting a feeding experiment on the robins. KWS is a fenced 2.5 km^2 sanctuary from which introduced mammalian predators have been excluded. Many endemic bird species have been reintroduced to the reserve, including North Island robins, for conservation, education, research, and tourism purposes.

On 25 Jan 2011, at ~1330 h, I repeatedly fed mealworms (*Tenebrio molitor*) to a male robin to accustom him to an experimental procedure. I

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dropped mealworms onto the ground ~1 m away from myself. The male readily approached and ate them on the ground. A juvenile robin then arrived and perched on a branch ~2 m away. I dropped another mealworm and the male picked it up, crushed it in his bill and flew to the juvenile robin to feed it. At the same time, a banded juvenile hihi that had been feeding in the canopy came down and alighted on another branch next to the juvenile robin. The hihi immediately hopped to the same branch as the juvenile robin and began making soft begging noises. At the same time, the adult male robin grabbed another mealworm I had dropped and fed it to the young robin. The young robin held the mealworm in its bill for a few seconds before eating it whilst the hihi stayed close. The young robin flew to another branch and the hihi followed. Twice more, I dropped mealworms and each time the adult male robin took the mealworm and fed the nestling robin. Each time, the young hihi made begging noises and moved closer to the robin when the adult robin came. The next mealworm I fed, the male again took it and fed the juvenile robin. This time, the juvenile robin held the mealworm in its bill for a few seconds, and during this interval, the hihi successfully snatched the mealworm from the robin's bill. The juvenile robin then flew to a higher branch whilst the hihi flew away with the mealworm.

This was the only time I observed this interaction between robins and hihi during the 2 month duration of the experiment (in which ~1,000 trials were conducted) although hihi often came close (within 3 m) during feeding trials. Although robins are larger and heavier than hihi (Heather & Robertson 1996), it would seem that hihi are competitively dominant to robins. This may be because hihi compete with bellbirds (*Anthornis melanura*) and tui (*Prosthemadera novaeseelandiae*) for access to some food sources (Gravatt 1971; Craig *et al.* 1981) and may have to display higher levels of aggression and risk-taking behaviour to gain access to some foods than robins. These differences in the access for favoured foods could drive differences in the competitive behaviours between robins and hihi which might make hihi bolder when it comes to approaching other species.

It was interesting to note that the juvenile hihi made soft begging sounds. It is possible that the young hihi mistook the robins as conspecifics. However, given increasing evidence that birds can recognise individuals of other species (e.g., Levey *et al.* 2009), it seems more likely that the young hihi was behaving in a submissive manner so that the adult robin would tolerate and perhaps feed it. The young robin also seemed to recognise the hihi as a threat as it tried to move away on the many occasions the hihi moved closer.

Reported instances of kleptoparasitism in the Passeriformes appear fewer than their species numerosity would suggest (Morand-Ferron *et al.* 2007). The robin in my study held mealworms in its bill for up to 5 sec before eating which may have provided opportunities for kleptoparasitism by the hihi. Robins often hold food in their bills (especially before they take the food to their caches), which may create conditions suitable for kleptoparasitism and cache theft by other individuals.

The hihi I observed was not reticent in approaching the robins, suggesting this bird had engaged in this behaviour previously despite its young age. It has also been noted previously that hihi steal food from robin's food caches (Steer & van Horik 2006). The level of interaction between robins and hihi may be quite high in areas of species sympatry. It would be interesting to study the differences in food processing and caching behaviour in robins in areas subject to high and low levels of food theft. This would allow us to ascertain whether kleptoparasitism and cache theft are common and how robins behave in these different environments. It may also enable us to better understand the conditions under which caching behaviour evolved in robins.

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