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Seychelles Magpie-robins interact with nesting Hawksbill Turtles

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Abstract

Cousin Island Special Reserve is a nesting hotspot of Hawksbill Turtles *Eretmocheys imbricata*. As part of on-going long-term monitoring, emerging females are observed and nests noted and marked. It has been observed in some seasons that Seychelles Magpie-robins *Copsychus sechellarum* have fed on turtle eggs that have been dug up by nesting female turtles. These novel observations were made again during the 2023/24 breeding season. Here we bring to attention this novel interaction between two species of interest.

Introduction

The Seychelles Magpie Robin *Copsychus sechellarum* has recovered from the brink of extinction through dedicated conservation efforts (Diamond 1980, Burt et al. 2016, Millett & Parr 2001). In 1960, 12 individuals remained, restricted to one island; by 2015, the population had increased to 280 birds across five islands (Burt et al. 2016), and has continued to increase (Nature Seychelles unpubl. data). They are currently listed as Endangered, but with an increasing population (BirdLife International 2021). Seychelles Magpie-robins are highly territorial and disputes are a common occurrence (Burt et al. 2016). Territories have a dominant breeding pair with subordinates composed of previous chicks and other young Seychelles Magpie-robins. As part of ongoing monitoring, all Seychelles Magpie-robin are ringed (and colour ringed) so they can be individually identified through visual observation (López-Sepulcre et al. 2008, Burt et al. 2016).

The islands which Seychelles Magpie-robins can inhabit require total removal of mammalian predators; neither cats nor rats can be present (Burt et al. 2016). This is due to the Seychelles Magpie-robin being a ground-feeding species which forages through leaf litter; it mainly consumes invertebrates but has also been observed feeding on Seychelles Skink *Trachylepis seychellensis*, juvenile Wright's Skink *T. wrightii* and Gardiner's Burrowing Skink *Pamelaescincus gardineri* (pers. obs). They are also responsive to the movements of endemic Aldabra Giant Tortoise *Aldabrachelys gigantea*, feeding on insects disturbed by the vibration of footsteps. They also follow humans, feeding on disturbed insects. This attentive foraging behaviour would be fatal if directed towards predatory invasive species.

The islands with Seychelles Magpie-robins are cat and rat free, have strict biosecurity measures in place, and have national laws or specific rules in place that further secure them to the benefit of the native wildlife. They thus represent a high-quality habitat for other species. The Hawksbill Turtle *Eretmocheys imbricata* is one such benefactor. The nesting season is mainly from September through to March in the Seychelles; nesting females emerge during daylight hours moving up the beach into the undergrowth to search for a suitable nesting location (Diamond 1976).

Observation and discussion

The observations we report here, of Seychelles Magpie-robins being attracted to nesting Hawksbill Turtles, were made during the 2023/24 nesting season of the Seychelles Magpie-robin. Similar behaviours were also noted during previous nesting seasons. It is likely the noise of disturbed leaf litter and soil alerted the birds to the presence of a turtle, and attracted them to the location. When they see the

turtle, the behaviour of the Seychelles Magpie-robins has developed so that they will fly over and perch near the turtle, anticipating that invertebrates will be disturbed. When this happens, they land on the leaf litter and feed. This anticipation behaviour has also been expanded so that Seychelles Magpie-robins have been seen following turtles moving into the undergrowth. These observations have been made in numerous Seychelles Magpie-robin territories around the islands and with numerous individual birds throughout the years of turtle monitoring.

Seychelles Magpie-robins have also been seen feeding on turtle eggs that have been dug up accidentally by the turtles themselves (Figure 1). Observations of Seychelles Magpie-robins feeding on turtle eggs have been made opportunistically during standard turtle monitoring. Nesting turtles are monitored to record IDs of tag, count turtle clutch sizes and make morphological measurements. While waiting for the turtle to start laying, observers remain quietly behind her at a suitable distance so as to not disturb her. This also allows for observations such as Seychelles Magpie-robin behaviour around the turtles to be noted.

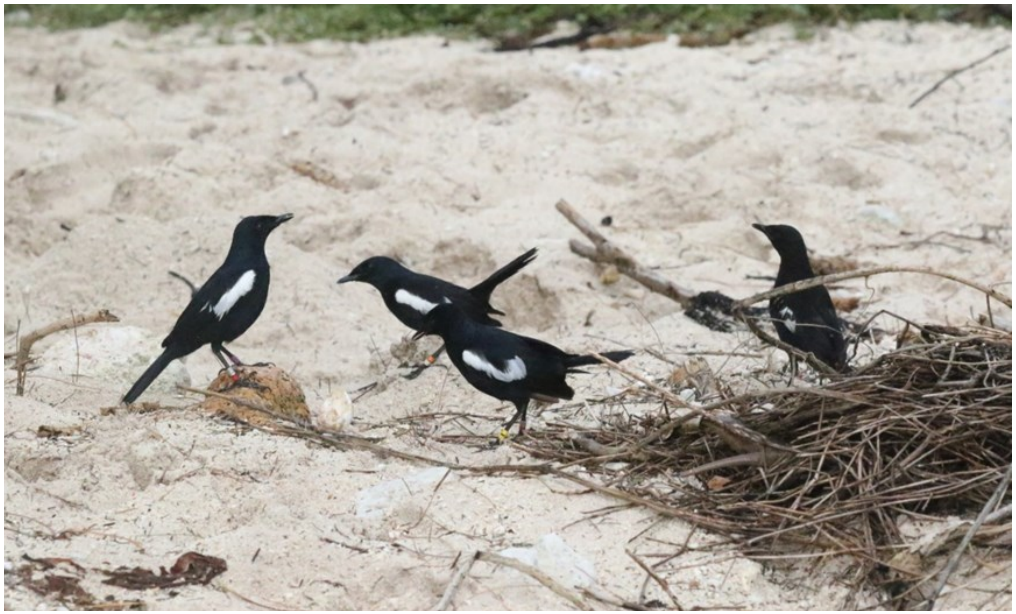

Figure 1: Three adult Seychelles Magpie-robin and one juvenile investigating a damaged Hawksbill Turtle egg at Cousin Island Special Reserve, Seychelles.

There were six recorded observations of single Seychelles Magpie-robins or a group of Seychelles Magpie-robins feeding on eggs of Hawksbill Turtle during the 2023/24 nesting season. One observation was made on the north coast, one on the southeast and, four in the west. The distribution of observations can be explained by emergence location and nest density. Nesting of turtles on Cousin Island is not evenly spread and the largest density of nests is on the west coast. This density decreases going north-west along the coast. The four observations on the west coast were all made in the area of high density and fall within one Seychelles Magpie-robin territory.in which the interactions between the birds and the turtles have developed more than in other areas. This is due to a higher density of turtle emergences resulting in more bird-turtle encounters. The birds have learnt to take advantage of the digging turtles, firstly for invertebrates and then for eggs.

Our observations show prey-switching behaviour by the Seychelles Magpie-robin, from feeding on small insects to immediately selecting turtle eggs. Most observations have shown Seychelles Magpie-robin feed mostly on ruptured eggs; however, a dominant female (colour-ringed Yellow-Yellow) was seen piercing an intact egg and feeding on the contents. Yellow-Yellow has also been observed in the area with her fledged chick which has also learnt to exploit turtle eggs as a source of food. Seychelles Magpie-robin feed on the yolk inside the egg and have not been seen feeding on late-stage embryos. The eggs are clearly perceived by the Seychelles Magpie-robin as a highly valued food source because they have been seen fighting over them. They have also been observed pursuing skinks. also attracted to the food source, when the skinks have attempted to carry a turtle egg away from the area. The Seychelles Magpie-robins themselves have also been seen carrying eggs away to feed with less disturbance (Figure 2).

Seychelles Magpie-robins display little wariness around humans. During excavations especially in the aforementioned territory dominated by Yellow-Yellow, Seychelles Magpie-robin frequently fly over and perch on nearby staff. This behaviour of investigating human

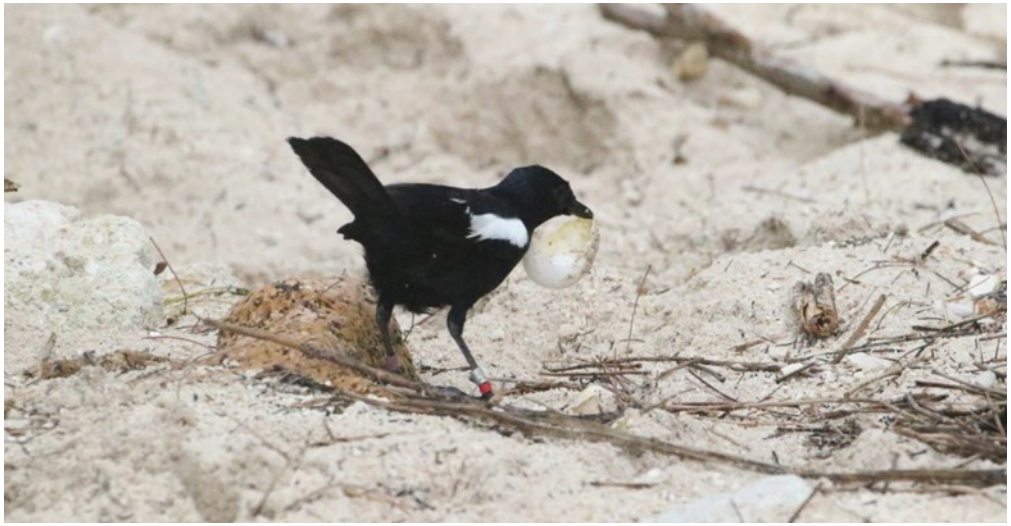

Figure 2: Seychelles Magpie-robin (colour-ringed Yellow Yellow), the dominant female carrying a ruptured Hawksbill Turtle egg at Cousin Island Special Reserve, Seychelles.

activity is not just restricted to excavations; many human activities are investigated to varying degrees depending on the individual bird. The excavation behaviour has been noted. Staff have been known to allow Seychelles Magpie-robin to take eggs that have been already analysed. Seychelles Magpie-robins have also been seen to chase after skinks or crabs which as mentioned, are also attracted to excavations. Some excavations have resulted in such high numbers of skinks and crabs being attracted; it becomes difficult for staff removing the eggs to fully prevent egg theft with skinks attempting to run off with eggs. In these cases, the more dominant Seychelles Magpie-robin have been seen to follow them and attempt to steal the food. It is possible Seychelles Magpie-robin first developed egg feeding behaviour through excavations opposed to exploiting damaged nests and the behaviour has transferred across however this cannot be proved. Seychelles Magpie-robins also naturally feed on seabird eggs so a ruptured turtle egg may in itself be enough to entice investigation leading to feeding.

Observations of Seychelles Magpie robins have demonstrated opportunistic behaviours. They have been seen interacting with large invertebrates, such as giant centipedes and praying mantises, and also seen predating on the Seychelles Skink, Gardiner's Burrowing Skink and young Wright's Skinks. Despite this, there has yet to be an observation of a magpie-robin predating on a hatchling turtle or feeding on a late-stage embryo. We have observed Seychelles Magpie-robins watching the turtle hatchlings and even following them as they head down towards the sea, yet there has never been an observed attack. It would be considered unfortunate if one endangered species preyed on another.

Birds have been observed to opportunistically feed on exposed turtle eggs in other parts of the world (Burger & Gochfeld 2014)

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