# Kangaroo Island ants 'play dead' to avoid predators

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Polyrhachis femorata ants feigning death. Credit: S. 'Topa' Petit

They're well known for their industrious work, but now a species of ant on Kangaroo Island is also showing that it is skilled at "playing dead," a behavior that University of South Australia researchers believe is a recorded world first.

Accidentally discovered as researchers were checking pygmy-possum and bat nest boxes on Kangaroo Island, a colony of Polyrhachis femorata ants appeared to be dead… until one moved.

Researchers believe the ants were "playing dead" as a defensive strategy to avoid potential danger.

This is the first time that a whole colony of ants has been recorded feigning death, and the first record of the Polyrhachis femorata ant species for South Australia. The study is published in the *Australian Journal of Zoology*.

Wildlife ecologist, UniSA's Associate Professor S. "Topa" Petit, says she was surprised to discover a colony of what appeared to be dead ants in one of the nest boxes.

"The mimicry was perfect," Assoc. Professor Petit says. "When we opened the box, we saw all these dead ants…and then one moved slightly.

"This sort of defensive immobility is known among only a few ant species—in individuals or specific casts—but we don't know of other instances when it's been observed for entire colonies.

"In some of the boxes containing colonies of Polyrhachis femorata, some individuals took a while to stop moving, and others didn't stop. The triggers for the behavior are difficult to understand."

Petit says that nest boxes may present an opportunity to study the ants' death-feigning behaviors, which are of great interest to many behavioral ecologists investigating a diversity of animal species.

The discovery was made during the Kangaroo Island Nest Box Project, where 901 box cavities have been monitored across 13 diverse properties as part of wildlife recovery efforts following the devastating 2020 bushfires.

Co-researcher at the Kangaroo Island Research Station, Peter Hammond, says that he used to call the Nest Box Project "Friends of the Invertebrates," because invertebrates were often the only occupants of the bat and pygmy-possum nest boxes.

"We are learning a lot about invertebrates as well as targeted vertebrates," Hammond says.

"Most of our several hundred boxes are on burnt ground, but we also have some on unburnt properties as controls because our aim is to determine the value of nest boxes in bushfire recovery.

"Polyrhachis femorata is strongly associated with the critically endangered Narrow-Leaf Mallee community, where it colonized several boxes very quickly. However, we also have records for two other properties further west, indicating that the ants will use other habitats.

"We believe that the Polyrhachis femorata species was strongly affected by the bushfires."

Petit says there is a lot to discover about this species. "Polyrhachis femorata is a beautiful arboreal ant that tends to be quite shy, but little else is known about its ecology or behavior.

"We have a relatively unknown world of ants under our feet and in the trees. Ants provide crucial ecosystem services and are a vital part of functional ecosystems on Kangaroo Island and elsewhere.

"It is very exciting that such an endearing species as Polyrhachis femorata is living on Kangaroo Island and we look forward to finding out more about its ecology. We have no doubt that other ants with similar death-feigning behaviors will be discovered in Australia, but it is thrilling to be among the pioneers."

**More information:** Sophie Petit et al, Polyrhachis femorata (Hymenoptera: Formicidae) habitat and colony defensive immobility strategy, *Australian Journal of Zoology* (2023). DOI: 10.1071/ZO22042

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