

# Nest cavity competition may threaten an endangered Tasmanian songbird

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A) This image shows Forty-spotted Pardalotes in aerial combat on Bruny Island, Tasmania, Australia. (B) Striated Pardalote defending a recently usurped Forty-spotted Pardalote nest cavity. (C) Forty-spotted Pardalote eggs punctured and removed from a cavity by Striated Pardalotes. Credit: A. Schulte, M. Brown, E. Edworthy.

The Forty-spotted Pardalote (*Pardalotus quadragintus*), an endangered

Tasmanian songbird, has been experiencing unexplained declines in its remaining habitat, and a new study in *The Condor: Ornithological Applications* describes how competition with a related species for nest cavities may be putting extra pressure on these vulnerable birds. Amanda Edworthy of Australian National University spent two years monitoring nests of Forty-spotted Pardalotes and Striated Pardalotes at three sites around Tasmania, documenting that about 10% of Forty-spotted Pardalote nests were ultimately taken over by their bigger, more aggressive cousins.

During the breeding seasons of 2013-2014 and 2014-2015, Edworthy searched for nests of both pardalote species in Tasmania's dry coastal forests, monitoring them every four days and using climbing gear to observe nests high in trees. She also used freeze-dried pardalote specimens as dummies to test how the birds responded to intruders, placing them in lifelike positions outside nests and recording the birds' reactions. While she didn't see a single instance of Forty-spotted Pardalotes taking over a Striated Pardalote nest site, Striated Pardalotes usurped about 10% of the Forty-spotted Pardalotes nesting attempts she monitored, with these takeovers occurring most frequently at sites with greater Striated Pardalote population density. Forty-spotted Pardalotes responded less aggressively to Striated Pardalote dummies than to dummies of their own species, likely due to caution in the face of a threatening competitor, while Striated-spotted Pardalotes displayed similar amounts of aggression to dummies of both species.

Accessing pardalote nests required determination and comfort with heights. "I learned to climb trees just for this project," says Edworthy. "Tasmania's gum trees are some of the tallest flowering plants in the world, and I had nests ranging from eye level to 30 meters above the ground, with most of them well above ladder height. My field assistants and I would either hike or bike all the gear out to each nest every four days or so, and haul ourselves up into the canopy. We got some great

views of Tasmanian coastline and forest canopies from the tops of trees, though when the wind came up, it was a bit frightening to see the trunk of the tree moving below me and to feel how elastic trees are in the wind. Climbing let us consistently access nests of Forty-spotted Pardalotes for the first time—previous studies were done from the ground or with ladders."

Striated Pardalotes are native to Tasmania, so removing them isn't an option, but there are other strategies that could help level the playing field. Adding nest boxes in Forty-spotted Pardalote habitat could help reduce competition for tree cavities, but because this can also increase population densities of Striated Pardalotes, it has to be done carefully. Nest boxes could be optimized for Forty-spotted Pardalotes by using smaller entrance diameters and considering their preferences for nest height and location.

"It is a global imperative that any research undertaken on threatened species focuses on aiding conservation efforts," according to Dr. Sally Bryant, chair of the Tasmanian Land Conservancy's Forty-spotted Pardalote Recovery Program. "Edworthy's work achieves this by showing not only how the endangered Forty-spotted Pardalote is outcompeted and usurped for nest sites by the more dominant Striated Pardalote, but how this can be alleviated through the provision of nest boxes and probably improved even further with refinement of [nest](#) box design and review of their placement in the forest landscape."

**More information:** "Competition and aggression for nest cavities between Striated Pardalotes and endangered Forty-spotted Pardalotes" will be available November 4, 2015 at [www.aoucospubs.org/toc/cond/118/1](http://www.aoucospubs.org/toc/cond/118/1)

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