Endangered swift parrots favor sons despite female shortage

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Swift parrot nesting. Credit: The Australian National University

New research from The Australian National University (ANU) shows female swift parrots can determine the sex of their offspring, and they are favoring boys over girls as they face diminished survival prospects in the wild.

Instead of producing extra daughters to make up for a shortage of adult

females they make sure their sons hatch first so they get more food and become more competitive in a tight mating market.

Adult female swift parrots in Tasmania are in short supply because they get eaten by an introduced predator—the sugar glider—while incubating their eggs. About half of all females are killed each year by sugar gliders.

The female parrots did not evolve with sugar gliders and sit passively when attacked instead of fighting back.

According to lead author of the study Professor Rob Heinsohn, swift parrot numbers are crashing, and the sex-specific nature of the predation is creating a shortage of females.

"The research demonstrates that, alongside the carnage, introduced predators lead to unexpected and complicated outcomes for species that did not evolve to cope with them," Professor Heinsohn said.

"Although favoring sons sounds counter-intuitive, it makes evolutionary sense. From an individual female's point of view, there's no point in producing more females if they are only going to be eaten. It's far better to have sons early in the egg hatching sequence as the older chicks get more of the food and leave the nest fat and healthy. That gives them an advantage when they compete for a mate."

The researchers tested their predictions with the sex of 500 nestlings over six years of field studies in Tasmania.

"We were astounded to find that sons were gifted the 'silver spoon' of hatching first in the brood, especially in years when predation on adult females from sugar gliders was very high," said Professor Heinsohn.

"This means that mothers only favored sons when they could predict that

females would be scarce in the future.

"Our study shows that species can respond very quickly to new evolutionary pressures such as an introduced predator, in this case evolving an adaptive response within 150 years since sugar gliders were introduced. One normally thinks of evolution taking much longer."

However female swift parrots are behaving in ways that boost their own reproduction relative to others and not in ways that help the whole population. "Sadly from a conservation perspective what the population really needs is more females," Professor Heinsohn said.

The study has been published in *Proceedings of Royal Society B*.

More information: R. Heinsohn et al. Can an introduced predator select for adaptive sex allocation?, *Proceedings of the Royal Society B: Biological Sciences* (2021). DOI: 10.1098/rspb.2021.0093

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