

# Interactions between nest predation and fragmentation in tropical Pacific Island birds

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## 1 Background

Invasive rat species have led to bird population declines and extinctions. The negative effects of rats are often strongest on islands. Yet we have little understanding of the spatial factors that affect nest depredation rates on tropical island ecosystems.



## 2 Methods

- Artificial cup nests and nest cameras were used to identify species and depredation rates (N = 324).

Variables measured:

- (1) nest-vicinity scale
- Nest height

Proportion of:

- Low ground cover < 15cm
- High ground cover > 15cm



- (2) Landscape scale

- Matrix consistency and distance from Forest edge

Matrix

Edge

A. Mixed plantations (coconut, taro, banana)



B. OR Cleared site, no plantation present



C. Edge forest < 2km from edge



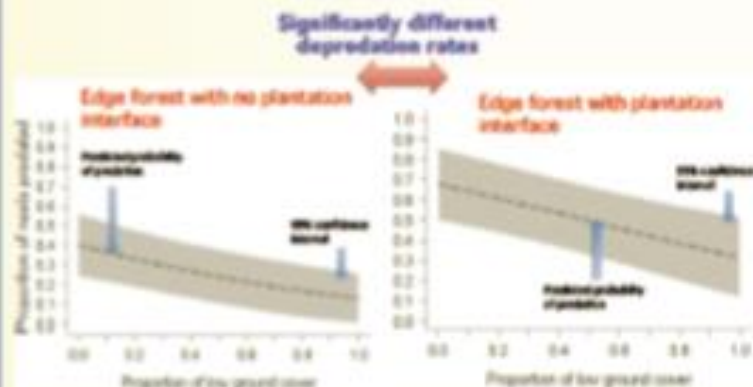
D. Interior forest > 2km from edge

## 3 Results

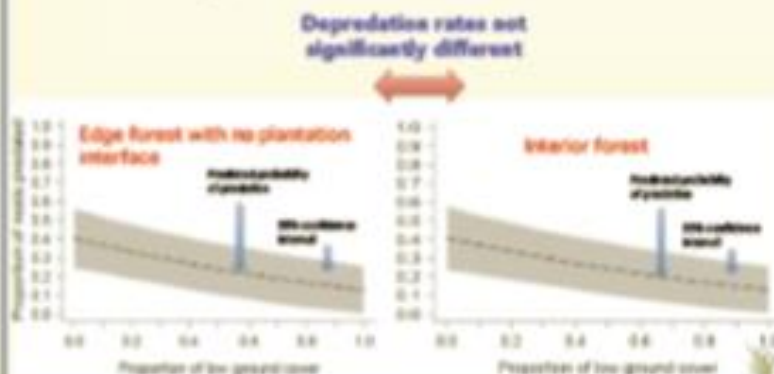
What features influence nest depredation rates by black rats?

The optimal model predicting nest depredation included:

- The proportion of low ground cover
- The position within the landscape



Is the rate of nest predation in interior Samoan forest significantly lower than at edge sites?



- Bird species that nest high in the canopy were not significantly more likely of having their nests preyed on by black rats as those species that nest low in the canopy.

## 4 Conservation implications

- Retaining large forest patches of interior forest does not insure low depredation rates of birds' nests.
- An proportion of forest edge near plantations results in a larger proportion of black rats depredating cup nesting forest birds
- Control of black rat populations are likely to be critical for maintaining populations of predator-sensitive bird species in Samoa.