



Why and how birds eat nestling fecal sacs: Experimental manipulations on the Northern mockingbird (*Mimus polyglottos*)

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Introduction

Coprophagy has been documented in many species, and can occur in two ways: an individual can consume its own feces or another individual's.

Among birds, coprophagy takes place during the nestling stage; parents eat the feces of their nestlings.

Three hypotheses have been proposed:

- 1) Eating a fecal sac is cheaper than removing it.
- 2) Fecal sac consumption provides nutritional benefit.
- 3) Fecal sacs important for water conservation in parents.

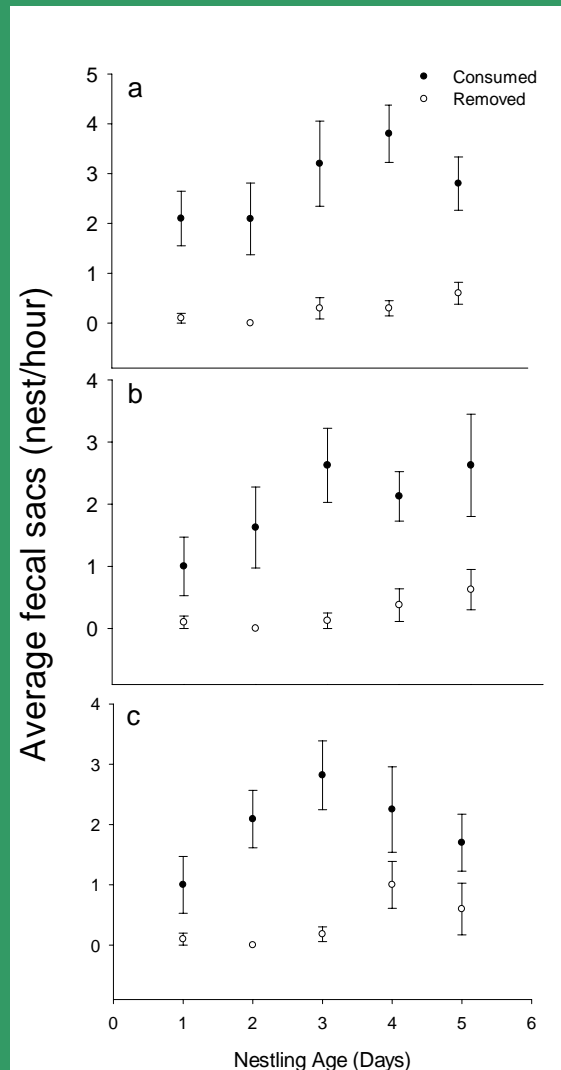
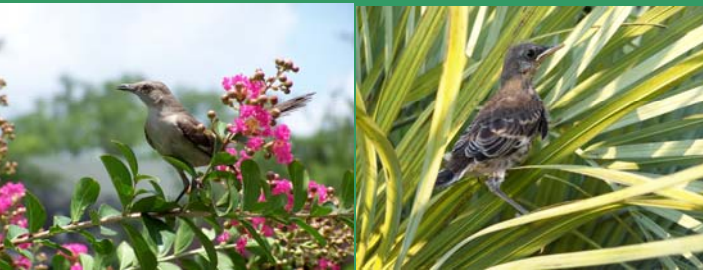
Hypotheses and Predictions

We experimentally tested the nutritional hypothesis (no. 2). We predicted that fecal sac consumption by parents would decrease when food availability is higher.

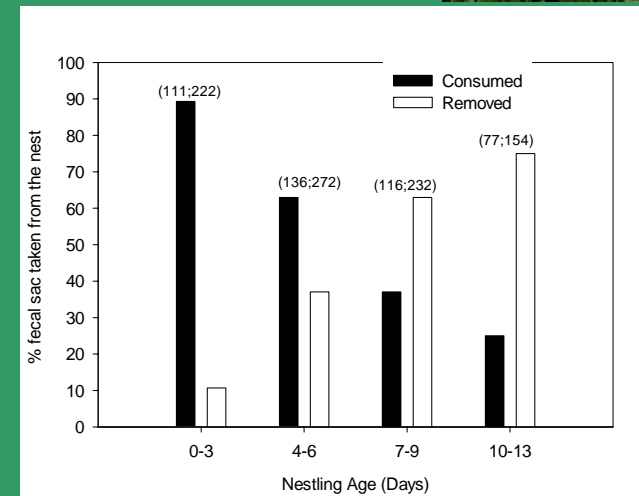
No one has suggested a mechanism for how parents decide to eat or remove a fecal sac. Parents have two options: they can either use the fecal sacs or nestlings as cues. We experimentally tested which of these two cues is used by the parents.

Methods

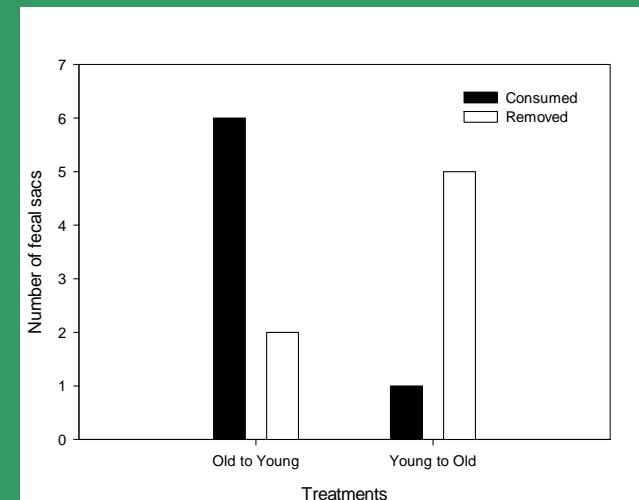
- Systematic nest searching on the UF campus.
- Increase food availability in the "food during incubation" and "food during nestling stage" groups.
- Randomly select nests for "food during incubation," "food during the nestling stage," and control groups.
- Daily two-hour observations to determine rates of fecal sac consumption and removal by parents during the first five days of the nestling stage.
- Perform fecal sac translocation experiments between old and young nests.



Fecal sac consumption and removal in relation to experimental manipulations in food availability; Control, n=10 (100 hours), Food during incubation, n= 8 (80 hours), food during nestling, n= 10 (100 hours).



Nestling fecal sac consumption and removal by Northern mockingbird parents in relation to nestling age (number of nests; hours of observation).



Fecal sac translocation experiments; Old to young (n= 8), young to old (n= 6).

Conclusions

- Fecal sac consumption decreases through time, while removal increases with time.
- Increased food availability did not change the rate of fecal sac consumption.
- Parents use nestlings as a cue for decisions about consumption or removal of fecal sacs.

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