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Factors influencing personality in Prothonotary Warbler nestlings?

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Introduction

✧Animal personality traits are a consistent expression of behaviors and can vary considerably among individuals in the same population.

✧Conditions during early development have profound effects on how individuals respond to situations later in life.

✧Stress handling tests in hand reared birds have shown that individuals with lower breathing rate (stress response) were bolder and more aggressive (Carere and Oers 2004).

✧Handling stress has not been assessed in many wild bird species, one study that has shows that high breath rate correlates with more exploratory behavior (boldness) (Fucikova et al. 2009).

✧Boldness is often correlated with post fledging survival.

Objectives

✧Determine if early developmental conditions affect nestling personality in PROWs.

✧ Assess whether nestling personality is correlated with:
- (1) egg size
- (2) parental care
- (3) Nestling body condition

Methods

✧Study Species: Prothonotary Warbler (PROW) is a Neotropical migratory songbird that breeds in bottomland forests in the southeastern U.S.

✧Nest boxes were checked regularly and reproductive data such as nest initiation date, number of eggs, and number of young fledged were collected.

✧Eggs were weighed (g) and all females and nestlings were banded and weighed (g).

✧Stress handling tests were conducted on nestlings between the ages of 6-8 days old
- ✧**Breath rate**: the number of chest movements in two 20 sec. intervals with 5 sec. between intervals..
- ✧**Docility**: counting the number of struggles during 30 seconds.

✧Parental care was determined through video observations and feeding rate was recorded as number of visits/chick/hour for both male and female parents.

✧We ran a General Linear Mixed Model with mean Breath Rate or Docility for a clutch as the response and clutch ID as a random effect. Egg mass, Parental care, and mean nestling body condition were each assessed as potential predictors.

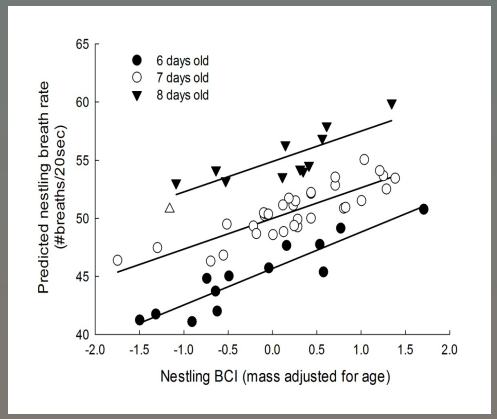
Results

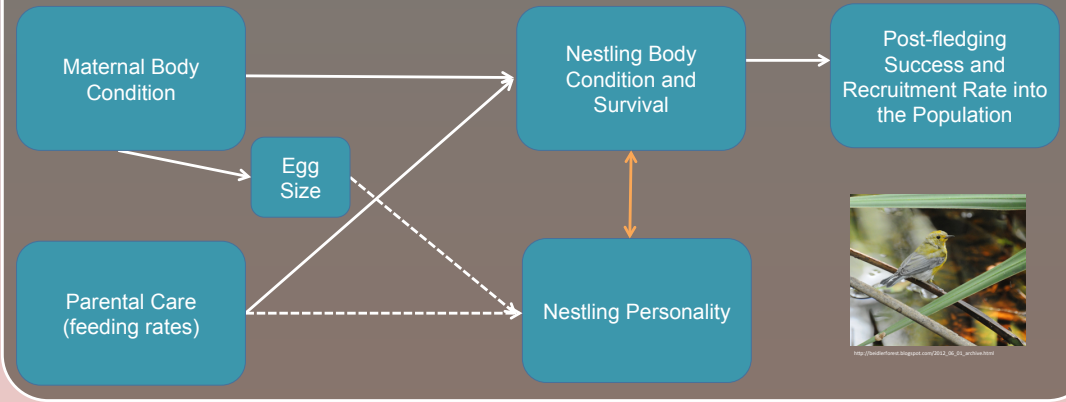
✧We collected breath rate and docility for 228 nestlings in 57 different clutches.

✧There was no relationship between egg mass and breath rate or docility.

✧There was no relationship between parental care (feeding rate) and breath rate or docility.

✧There was a significant relationship between nestling mass (adjusted for nestling age) with breath rate.





Conclusions

✧Older and larger (independent of age) PROW nestlings experience more handling stress than younger and smaller individuals.

✧Larger nestlings have higher survival probabilities (Magrath 1991, Mitchell et al 2011, Monticelli and Ramos 2012), which may not be only the result of higher body condition, but also of underlying personality differences.

✧Elevated baseline corticosteroid levels (a physiological measure of stress) have also been found to correlate with higher fledgling survival (Rivers et al. 2011).

✧Future studies assessing if breath rate is correlated with post fledging survival and/or recruitment into the breeding population are warranted.

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