Less is more:
Mate choice and offspring viability in the burying beetle

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INTRODUCTION

- Reproduction in burying beetles requires a small vertebrate carcass, for which males may have to compete
- Burying beetles provide extensive biparental care

RESEARCH QUESTIONS

- Is female mate choice driven by direct (better father) or indirect (better competitor) benefits?
- Is male body size an indicator of direct or indirect benefits to the female?

FIGURE 1: MALES TETHERED TO MICE

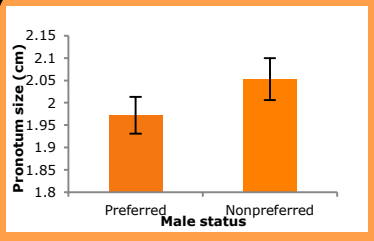
METHODS 1

- Two males were tethered to either end of a mouse using dental floss (Figure 1)
- A female was introduced and after inspecting both males she made a choice, copulating with one male
- Females, preferred and non-preferred males were all digitised and pronotum length measured as an indicator of body size
- The next day the female was blindly paired at random with either her preferred or non-preferred male
- The number of eggs laid 24 hours after pairing was counted
- N=101

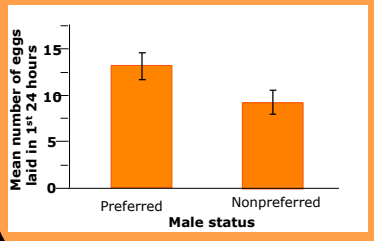
METHODS 2

- 72 hours after pairing, biparental care behaviours were observed (provisioning offspring and maintaining the carcass)
- Offspring life history traits recorded:
  - Duration of parental care period
  - Mass at end of parental care period
- N=43

RESULTS 1



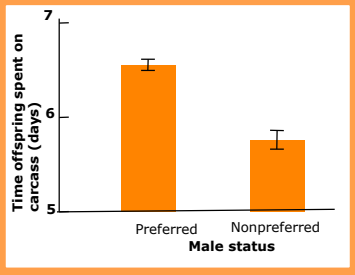
Preferred males were smaller than non-preferred males (Wilcoxon sign-rank test $z=613.5$, $P=0.027$)



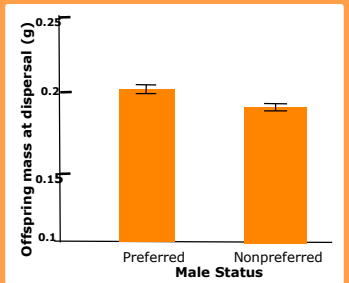
Females laid more eggs in the first 24 hours after pairing when mated to their preferred male (ANOVA $F_{1,62}=6.129$, $P=0.016$)

RESULTS 2

- If a male provided any care, preferred males were more likely to care than non-preferred males ($\chi^2 = 3.864$, $P = 0.049$).
- Preferred males spent proportionally more time attending their offspring (Wilcoxon sign-rank test $z = 2.230$, $P = 0.026$).
- Preferred males also provided proportionally more care within their biparental pair (Wilcoxon sign-rank test $z = 2.079$, $P = 0.038$).



The offspring of matings with the preferred male spent less time on the carcass and thus developed faster than the offspring of the non-preferred males (ANOVA $F_{1,380}=50.096$, $P<0.001$).



The offspring of matings with the preferred males were slightly heavier at dispersal than the offspring of the non-preferred males (ANOVA $F_{1,380}=8.439$, $P=0.004$).

CONCLUSIONS

- Females prefer smaller males
- Preferred males are better fathers
- Offspring of preferred fathers are fitter
- Female choice is therefore driven by direct benefits

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