

The Frequency of Use of a Cue Reflects Female Indecision in Mate Choice

L.M. Cendes¹, J. Keagy¹, J-F. Savard², G. Borgia^{1,2}

1. Behavior, Ecology, Evolution, and Systematics Program, University of Maryland 2. Department of Biology, University of Maryland, College Park, MD 20742, USA

Abstract

Females with dissimilar histories with prospective mates may utilize components of male sexual displays differently^{1,2}. Male satin bowerbirds (*Ptilonorhynchus violaceus*) paint their bowers, which is then tasted by mate seeking females during multiple visits to bowers³⁻⁵. Tasting females nip at the painted bower wall, allowing us to quantify female use of this cue. Our initial work showed that tasting was most common by females early in their sequence of visits to male bowers.

This suggested the hypothesis that tasting indicates a female's unsureness about her choice of a mate. We categorized female search strategies that represented different levels of unsureness in seeking a mate and examined their tasting profiles. We classed females returning to their previous year's mate as most sure, and females that mate with multiple males as less sure. As predicted, the multiple mating females taste more. In addition, female searching is positively related to tasting. These results suggest that females taste males' bowers more when they are less decided about prospective mates. Also, when females are more sure of their eventual mate, there is a decrease in tasting earlier in mate selection.

Methods

Behavioral monitoring

1. Data collection occurred in 2003 and 2004 in Wallaby Creek, NSW, Australia.
2. Bowerbirds are uniquely banded before the mating season.
3. Hi8 video cameras recorded all breeding season behaviors⁶ at 37 bowers in 2003 and 34 bowers 2004.

Female visits, tasting and mate choice sureness

1. Female visits at bowers were recorded as 'non-courtship' when no male was present (n=262), 'courtship' (n=538), or 'copulation' when a courtship ended with mating (n=213).
2. Female tastes during visits were scored as 'yes' or 'no'.
3. Three exclusive categories of decreasing female mate choice sureness were defined.

- **Faithful females**- mated with the same male in 2003 and 2004 (n=12).
- **Novel mate females**- mated with one male in 2004 who was not their mate in 2003 (n=48).
- **Multiple mate females**- mated with more than one male in 2004 (n=15).



Tasting female (left) and painting male (right) satin bowerbirds. Paint is masticated hoop pine applied to bower walls.

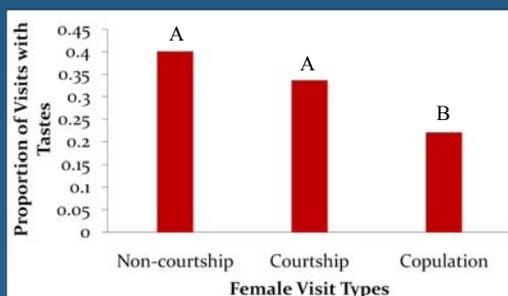


Figure 1. The proportion of all visits with tastes to total observations during breeding season. Letters indicate significant differences ($p < 0.05$).

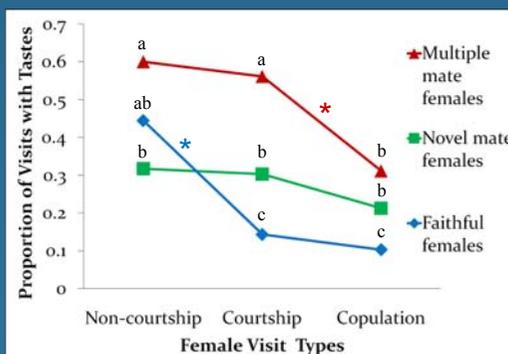


Figure 2. Tasting profiles for categories of female mate choice sureness (see Methods) across the mate search. Letters indicate significant differences ($p < 0.05$) between profiles among visit types. Asterisks (*) highlight significant decreases ($p < 0.05$) in the proportion of visits with tastes within a profile.

Results

1. Females taste significantly more than expected during non-courtships and courtships and less during copulations ($\chi^2 = 6.74$, $df = 2$, $p < 0.03$). See Fig. 1.

2. Faithful females taste more during non-courtships than during courtships and copulations ($\chi^2 = 12.36$, $df = 1$, $p < 0.0004$), whereas multiple mate females taste more during non-courtships and courtships than during copulations ($\chi^2 = 6.00$, $df = 1$, $p < 0.01$). Novel mate females' tasting does not differ across visit types ($\chi^2 = 2.92$, $df = 2$, $p < 0.23$). Faithful females taste less than the other types of females in courtships ($\chi^2 = 28.93$, $df = 1$, $p < 0.0001$) and copulations ($\chi^2 = 11.05$, $df = 1$, $p < 0.0009$). See Fig. 2.

3. Females taste proportionally more often when they 1) sample more males ($r_s = 0.30$, $p < 0.01$, $n = 75$), or 2) appear more times at bowers ($r_s = 0.28$, $p < 0.02$, $n = 75$).

Discussion and Conclusions

1. Female bowerbirds taste more often at the beginning of their mate search when they are less sure about their prospective mate.
2. Three unique tasting profiles are observed across female sureness categories. The most certain females taste less than other females during courtships and copulations. These females also decrease their levels of tasting earlier than less sure females.

3. As mate searching increases, females taste more often.

4. These results suggest that tasting is used to help females resolve their mate choice. This is the first study to quantify female attentiveness to a cue and relate it to their decisiveness in mate

References

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