

**Review by Peer 259 on manuscript:**

**Manuscript title censored**

**Revision recommendation: Major revision**

ADDED INFO

ABOUT PUBLICLY

FEATURED

REVIEW

Author of this peer review is Dr. Thomas Price,

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PEQ = 4.7 / 5

Peer reviewed by 4 Peers.

**Introduction**

This MS investigates the impact of [REDACTED] on reproductive success in [REDACTED]. They find reduced offspring production by [REDACTED] females, whereas they do not detect any obvious reduction in the number of offspring fathered by [REDACTED] males. They also find that [REDACTED] males prefer to mate with [REDACTED] females, whereas [REDACTED] females do not discriminate between [REDACTED] and [REDACTED] males. This suggests that females do not prefer [REDACTED] males because they suffer no obvious costs from mating with [REDACTED] male. Whereas males are choosy because mating with [REDACTED] females produces fewer offspring for them.

**Merits**

score: 4.8 / 5

The main finding, that [REDACTED], is interesting. The obvious prediction would have been that males should [REDACTED]. Typically in [REDACTED], the costs of mating for males are low, and males can usually mate with many females per day. Each female a male mates with, even if she is suboptimal, is expected to produce at least a few offspring for him and thereby increase his fitness. For the costs of mating with a female to outweigh the benefits for a virgin male, as seen here, is unusual. However, see the "Critique" section for a counter argument.

The lack of mate choice against [REDACTED] males by females is less surprising. Females may rarely encounter [REDACTED] males in nature and so not have been selected to discriminate. Alternatively, a virgin female, [REDACTED], is often more willing to mate than [REDACTED] females because she has been kept away from males. However, again, please see the Critique below.

In general, the MS is well written, and the experiment well designed.

## Critique

score: 4.8 / 5

The single biggest problem I have with the MS is that the authors do not mention that [REDACTED] produce giant sperm. Sperm produced by these males are over 1cm long (in a male about 3mm long). Virgin males transfer only 250 to a female in a mating (Bressac et al., 1994). As such the costs of mating are likely to be very high in males, and males may very well be more choosy than females. Males are expected to be the more choosy sex if the costs of mating are high due to expensive ejaculates or nuptial gifts, or if the populations have highly female biased sex ratios, as is seen in some butterflies.

If readers were aware that [REDACTED] has extremely costly ejaculates, then they should be far more willing to accept that males should be choosy, and females may be less so.

As a minor point, it is not clear why the authors ignored offspring from [REDACTED] (line 63). I'd like to see an explanation of why this was done.

## Discussion

score: 4.5 / 5

In my view not mentioning the giant sperm in the MS is a serious omission, and gives the MS a completely different interpretation to the one it should have. This paper simply can't be published without rewriting the introduction, discussion, and abstract to make this key fact clear.

Despite this, I don't think this criticism renders the MS invalid. It is still in my view an interesting piece of work, and generally a well-designed experiment. It demonstrates that giant sperm and presumably costly ejaculates cause males to be highly choosy in this species. It also shows that "sex-role reversal" due to high costs of mating to males impacts on the way males respond to [REDACTED], which is pretty interesting.

## References

Bressac, C., Fleury, A., & Lachaise, D. (1994) Another way of being anisogamous in *Drosophila* subgenus species: giant sperm, one-to-one gamete ratio, and high zygote provisioning. *Proceedings of the National Academy of Sciences*: 91, 10399-10402