

Peer Review

Review of: "Partial Sex-Role Reversal of the Pink Bollworm Moth (*Pectinophora gossypiella*)"

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This manuscript reports on a study examining female and male mate choice in the pink bollworm moth.

Line numbers are not included in the manuscript, so I will do my best to describe the target of my comments.

The word “selectivity” is used throughout the manuscript. This word is not defined, but I assume it is meant to replace “choosiness” and its variations. Please use choosiness or preference, as these have very specific definitions and are terms the field agrees upon.

“Male choosiness is expected in months.” That seems like a long time.

Use “advertise” rather than “disclose”.

I’m not convinced that moths shifting the timing of mate calling represents an alternative mating strategy.

“We” and “our” are used throughout the manuscript, but the manuscript is single-authored.

State the name of the university in which the Department of Entomology resides.

Your hypothesis seems to be testing the hypothesis that moths mate assortatively, yet this phenomenon is not mentioned anywhere in the manuscript. At the very least, the female and male mate preferences discovered here could provide a mechanism to explain assortative mating observed in the species.

Define “large” and “small” females earlier in the Methods section.

Please provide some justification for the experimental approach used. I understand rearing the sexes separately, etc., but I do not understand why mate choice was tested in groups and why the time to 50% mating was used as a response variable, etc. Why not randomly pair individuals in a 2 x 2 factorial design

and measure the time to copulation? This approach would make data analysis easier and interpretation more intuitive.

I do not understand “other moths to continue sensing their presence.”

The first sentence of Experiment 2: Female choosiness sounds like you are trying to identify whether females mate assortatively.

Your explanation of Experiment 2: Female choosiness sounds like you are saying that male mate preferences are completely socially determined. If a male is exposed to larger females only, then he will prefer large females, and if he is exposed to small females, then he will prefer small females. I think you’ll need to better justify how your design “minimises male choosiness”.

“...if a male approached a calling female...” Please explain how you know that a female is calling.

“...failed to mate for more than 5 minutes...” Why is this deemed unsuccessful?

“Acceptance was defined...” Acceptance of what?

Please provide a more detailed explanation of the statistical analyses. What tests were used, how was bootstrapping performed, and what software was used? Later in the Results, you mention that you used 1000 bootstraps. Say that in the Methods.

Your experimental design seems to be a 2x2 factorial design, so I’m curious as to why multiple t-tests were used and not an ANOVA (with appropriate tests of assumptions). If you use multiple t-tests, then you should control for multiple tests.

Figures. What do the different colours represent? I do not see a legend explaining what they represent. If their only role is aesthetics, then make the bars a single colour (preferably black) because colour is just uninformative ink and a distraction.

“Males delayed mating with smaller...” I do not understand the “delayed” part here. Can you explain what you mean by delayed?

“...lacked a preference for female size...” It’s not clear to me how you know that males lack a preference for female size.

“...larger males the opportunity...” Perhaps large females have a size threshold for mate choice, and most of the males that you presented did not exceed this threshold. Did you measure the body size of adult males and females? I think you would get a more precise interpretation of the results if you had this information.

Please explain what you mean by “indirect mate choice”.

“Intra-male competition,” I think you mean intra-sexual competition, as a male cannot compete within himself unless moths can have existential crises.

Declarations

Potential competing interests: No potential competing interests to declare.