Lines 107-108. I suggest including a map showing the exact location of where the samples come from? Not everyone is well versed in geography and West Africa is a large region with many countries.

Line 119. Out of curiosity. Why did you use thick blood smears instead of thin ones? I ask because for wild animals malaria we use think blood smears. Can you explain the pros of thick blood smear vs. thin blood smears?

Lines 127-128. I know you are citing a reference indicating that heat innacitivation works. But what steps if any did you take to ensure that gametocytes were innactivatied? That is, did you take a small blood sample and conducted some type of test on gametocytes to determine if they were active or not?

Line 132. But if you used 6 different parasite isolates, can you really say they are replicates? What do you mean by "six distinct parasite isolates"? Are they the same parasite strain or how are they distinct from each other?

Line 135. Figure 1. What is the difference between replicates in cups and those in cages? Would not the use of different containers affect the replicability of your experiments?

Also, why for replicates 3-5 the only trait measured was competence?

Finally, in the top figure (A), why there are three cilinders numbered 1,2,3? What does cilinders represent? It is confusing given that in section (B) of the figure there are only two cages. It is important to explain details of the experimental design in the figure´s legend in order to avoid confusion for the reader.

Line 143. What does it mean venous blood?

Line 167. The word "group" in the phrase "...the first three group..." must be plural "groups"

Line 177. Please define each acronym you use at first appearance. I guess that "dpbm" is "days post blood meal", but not every reader will be able to guess it. Please spell out on firts appearance.

Line 185. I am not 100% sure, but I think the right word is "thoraxes", please check the correct spelling of the plural

Lines 185-186. Did you extract salivary glands? If so, did you use one gland to do microscopy and check for the presence of sporozoites and the other gland for PCR?

Line 249. Why in this model parasite isolate was coded as fixed factor and not as a random factor? It is not clear, please explain.

My guess is that it has to do with the fact that the experimental design in figure 1 is not completely clear as I explained above. That is, the first set of experiments showing three cylinders representing I suppose 3 replicates, and the second set of experiments only one cage per treatment is shown.

Line 253. Can you please provide a rationale for giving 0 to the unfed females? What do you mean by "censoring" status? If they were unfed, they should not be included in the analysis, right?

Line 258. Why did you choose the quasipoisson structure for these analyses? Is it because you could not fit a regular Poisson?

Line 268. Please remove one of the "and" of the sentence, there are two

Lines 270-272. Why did you choose to do model selection doing stepwise removal of terms? As far as I know, stepwise removal can lead to errors because the order in which terms are removed or entered (in stepwise addition) matters.

I may be wrong, but I think a better approach to model selection would be to use an information criterion like Akaike, where you can build your different models - from a null model with no variables up to a complete model - and then select those with the best AIC.

Perhaps the stepwise removal of terms can be left for models like the quasiPoisson ones, where you cannot actually obtain an AIC because of the forcing of the model structure.

Although this is just a suggestion, I encourage you to do this as a way of comparison to see if your results do not change when using the information theoretic approach.

Line 287. Please write "...mosquitoes are..." instead of "...mosquitoes is..."

Lines 290-292. This explanation of number of successful feeding attempts is not clear. You say that the number of days spent in state F following the duration of Plasmodium incubation period was counted as the number of successful feeding attempts. However, you have three states representing F, HS, BF, and R, from which only BF can represent a feeding attempt. So, how the number of days spent in state HS or R would add to F?

Also, I strongly recommend to prepare a figure showing the model structure, so it is easier to follow your explanations of the simulations. Ideally, the flow diagram should include variables represented as circles and the parameters of the model adding or substracting to each variable whousl be representing as incoming or outcoming arrows, respectively.

I suggest bringing Fig S5 into the main text.

Questions on Apendix 4

1) Line 36. What do you mean by "blood meal were reduced centered"? You are trying to say that you standardized your data to 0 mean and 1 sd?

2) Line 57. Why the entity of your model is An. gamibae? Your work is related to An. coluzzi, even when it was formerly recognized as gambiae. Please check all the paper and supplementary info to standardize with the correct species name.

3) Line 94. Did you mean Table S3 instead of Table 1?

Finally, I would strongly recommend that in addition of including the model figure flow chart, you also bring into the main text all the details about the theoretical model from lines 52 to line 104, including Table S3. These information will help the reader to better understand your simulations. And please also consider my previous comments on this modeling part.

Lines 326-327. Why is it necessary to indicate that gametocytemia was positively correlated to parasite intensity? Is not that what you would expect given that parasite intensity is measured as the number of peripheral blood stages counted in blood smears? or what else did you include in your measure of parasite intensity?

Line 352. Please add the "-" symbol to state the +/- se of the blood meal size

Line 397. Please change "...influenced..." by "...influence...", use the present tense given that you already used the "did" auxiliar before the word

Lines 503-504. Can you please rewrite the second part of this sentence. I am not sure I understand what you are trying to say. That is, what do you mean by not separating exposed-infected vs exposed-uninfected females you would not be able to measure the cost

Line 554. Please eliminate the comma "," after the word "survival"

Lines 557-559. A better structure for this sentence would be:

"Although blood type did not influence progeny devleopment time, progreny from female fed on chicken blood was smaller than the progeny from females fed on all other vertebrates blood (Fig 6), which highlights the fitness cost of feeding on chicken blood.

Line 561. After the parenthesis add a comma and continue with the work "but" instead of "although". It will read:

"(..., Barreaux et al. 2016), but the local environmental..."

Lines 566-595. I very much appreciate this last paragraph clearly showing the limitation and alternative explanations of your study. Yet, I would ask you to include a final paragraph where you bring all your study toghether in order to provide the take home messages of your study by discussing how your study results can help you better understand the local ecology of this host-vector-parasite system and what practical suggestions can you provide for the medical practioners.

For instance, with all the interesting results you have, one can start thinking on ways to implement malaria reducing strategies by seasonally changing the type of domestic animal that is used in local villages in the area. Say, during the peak of malaria transmission in the rainy season, villagers may be encourage to utiliza more chickens than goats, or to keep goats in better protected shelters using treated nets or just nets to reduce the contact with mosquitoes. Based on your results, just that practical advice can work to reduce malaria seasonal incidence.

In other words, I would like to see a final paragraph where you link your results to the ecological reality of your study area.