

Harmonic Detection RIO Article Peer Review

Reviewer 1

Comments

I'd suggest title should be Proposal for detecting..... as it is a proposal, so being just in the proposal stage, there is no data to give.

The testing done to indicate the CRB biotype on Guam is resistant to OrNV may well have been done using OrNV produced in *Heteronychus arator* tissue culture, a different species. But the possibility has been suggested that the OrNV produced in this way may have mutated and evolved so as to adapt to infecting *Heteronychus* cells, given OrNV's very short generation time in this culture, but at the same time its ability to attack cells of the CRB *Oryctes rhinoceros* may become reduced or even cancelled as it is no longer in contact with CRB cells, the intended target. Nobody knows at this stage. Reference is: Bedford, G.O. (2018) Possibility of Evolution in Culture of the *Oryctes* Nudivirus of the Coconut Rhinoceros. Beetle *Oryctes rhinoceros* (Coleoptera: Scarabaeidae: Dynastinae). *Advances in Entomology*, 6, 27-33. <https://doi.org/10.4236/ae.2018.61004>. Also, recent publications have shown CRB biotypes on Solomon Islands, & Palau, similar to the Guam biotype, have been found to be infected with or carrying OrNV. I can give references if needed.

Could include a bit more mention (as mentioned above in response to question re citing literature pertinent) of possibility of OrNV mutating, evolving & adapting in *Heteronychus* tissue culture & this affecting its ability to infect CRB *Oryctes rhinoceros* biotypes.

Response

The title has been changed to "Proposal for detecting...." as suggested by the reviewer.

The reviewer points out that it is not known why *Oryctes rhinoceros* biotype G is apparently resistant to *Oryctes* nudivirus and suggests one of several possible reasons being investigated. However, a discussion of the reasons for this biocontrol failure are not relevant to this article.

David Hall

Comments

This is an interesting concept and generally well-written paper.

However, it is completely lacking in any quantitative data as to how many insects could be reasonably tagged (cost, time, etc) and then what percentage of these beetles could be effectively tracked. The RECCO transponder has relatively short range (not specified here) and so it seems to me that once the beetles have been released it would be necessary to carry out very extensive surveys to find them again. These surveys would thus be restricted to what field experts judge to be likely breeding sites, and so it is not clear to me what the added value would be of actually locating a tagged beetle at one of these sites.

There is also no real information on what would then be done to these sites and how many it would require to make an effective dent in the beetle population and damage.

Response

Quantitative data are lacking because this is a Research Idea article. We have just begun field trials to test the feasibility of our idea and will report data results in a subsequent Research Outcomes article.

However, we were able to update the draft to include cost and time estimates for harmonic tags and

detection range estimates as requested by the reviewer.

AUTOMATED SURVEYS "The RECCO transponder has relatively short range (not specified here) and so it seems to me that once the beetles have been released it would be necessary to carry out very extensive surveys to find them again." In the revised text, we suggest "Searches may be highly automated by mounting a HR transceiver equipped with a data logger on an aerial drone. The drone will fly programmed search paths close to the ground with the HR beam pointing downwards, thus compensating for the relative short detection range of the HR transceiver."

SANITATION METHODS "There is also no real information on what would then be done to these sites and how many it would require to make an effective dent in the beetle population and damage." A sentence listing sanitation methods and a reference providing details have been added.

Widiastuty

Comments

My comment

1. please explained the tools that used to detect the breeding site of O. rhinoceros, how work the tools
2. data not sufficient to support the tools
3. conclusions does not explained the results of the detection that has been succesfully carried out by the tool
4. reference too less

Response

1. The text describes 4 methods for detecting CRB breeding sites. Our proposed use of harmonic radar for finding CRB breeding sites is described in detail.
2. This is a Research Idea article. We have just begun field trials to test the feasibility of our idea and will report results in a subsequent Research Outcomes article.
3. Same as above item.
4. Additional references have been cited.