**Comments to Author:**

The research described in this paper is very interesting and appealing. Unfortunately, as all reviewers articulate, the work seems immature and requires further development, particularly in regard to the experimental results. I encourage the authors to take into account the helpful comments of the reviewers to improve the research contribution of the work.

**Comments on Video Attachment:**

The video is interesting in showing the novelty of the approach.

**Reviewer 1 of ICRA 2017 submission 2026 (Review 19601)**

**Comments to the author:**

This paper describes a novel system for surveying mosquito populations using a UAV equipped with an electric bug zapper. There is an interesting collection of simulation results along with description of the hardware implementation and a small number of hardware results.

The theoretical contribution is a comparison of techniques for coverage in which the goal is to optimally cover an unknown and non-uniform distribution over the workspace. Coverage algorithms generally attempt to cover the entire workspace as efficiently as possible, but since the UAV may not have sufficient power to do this, the authors suggest ways to cover a portion of the environment in such a way that it covers the most useful portion (here, with the most mosquitos). Unfortunately, the authors tested only one data set, and even here, the uncertainty across the different techniques was quite large. As such, it is not clear if there is really not much practical difference among them or if the choice of path is dependent on the environment. Also, it would appear that the robot covers a 1 meter wide swath (based on 12 m/s \* 15 min / 100 m square) but this is not explicit - and in fact the robot will have to turn instantaneously for this to be sufficient for complete coverage.

Since the hardware testing used only the boustrophedon, it cannot offer additional insight into the different path options. In fact, I was hoping for a bit more in the way of analysis - what should we have expected from these experiments, and what do the results tell us?

In general, I felt that the different parts of the paper did not hang together particularly well. That is, the hardware experiments did not discuss why the plain boustrophedon path was chosen, after all the simulation data previously presented. The electronics section IV-D also did not seem to add much to the paper - what are we intended to learn from this circuit diagram? How critical is this design to the overall success of the project?

Also, when deriving the optimal angle for the screen, it seems that you should take into account the movement of the UAV which would cause a screen to trail behind and presumably at a greater angle than it would have at rest.

Overall, this is definitely interesting research, but could perhaps be a bit more mature before publication.

**Comments on the Video Attachment:**

Much of the video showed images from the figures, or a path of the UAV using GPS (which is not really part of this research). Showing the UAV with screen flying around was useful to get an idea of the speed and scale of the system.

**Reviewer 3 of ICRA 2017 submission 2026 (Review 19889)**

**Comments to the author:**

This paper presents an unmanned aerial system for the destructive survey of mosquitos in the wild. The main contribution of the paper is the presented hardware system, which consists of a custom UAV with a custom electrified screen. The results of two flight trials at different altitudes are presented. The authors also present a software simulation including a heuristic mosquito model and compare the efficacy of four basic coverage planners.

I feel that the presented software simulation and the associated results lack sufficient novelty and significance to be considered a contribution to the field. The simulation appears to be quite basic, as are the four tested coverage planners (boustrophedon, random bounce, boustrophedon with spiral, random bounce with spiral). The performance changes between the spiral and non-spiral paths when the available flight time restricted coverage completion warrants further discussion and can potentially lead to more compelling adaptive planning algorithms. I am also curious to know why the swath width changes between the two boustrophedon paths (right column Fig. 5). This does not seem to provide a fair comparison, nor is the calculation of the new width ever described.

As the main contribution of the paper, the hardware design section is quite light on the UAV and electric screen build details, with readers referred to an external website for a description of the latter. The analysis of the screen location seems sound; however a more thorough analysis of the system in a wider variety of realistic scenarios would have been beneficial in understanding the limitations of a fixed screen position. For example, using a higher fidelity attraction/repulsion model to estimate mosquito motion, and varying the level of stochasticity in the mosquito swarm motion. Since the UAV can travel an order of magnitude faster than the mosquitoes, is capture inevitable for mosquitoes in some volume of space ahead of the screen?

The presented results of the hardware flight trials do not provide substantial insight into the efficacy of the system. Firstly the overall goal of the experiment is unclear: is it to survey the region for mosquitoes in order to build a heat map of mosquito locations, or is it to intercept as many mosquitoes as possible, or something else entirely? If it was the first, then no effort was made to compare against existing methods for modelling environmental phenomena from point observations. If the goal was the second, the authors do not provide any scale to the results and do not compare against any conventional techniques (static traps, etc.) The results provided: 5 kills in 11 minutes in flight 1 and 51 kills in 4 minutes in flight 2, are isolated data points without context.

Although the overall application of surveying mosquito populations is compelling, I believe that the work presented in this paper is too preliminary in its technical and theoretical contributions to warrant publication.

Minor comments:

- Section II.B mentions that traditional electrified screens have a large bycatch of no-pest insects, however the authors do not show in their results that their proposed system does not suffer from the same problem.

- In Section III, please provide a citation for your claim that mosquitoes prefer vegetative areas.

- In Section IV.A the UAV is stated to have a span of 177cm, however this does not support the scale shown in Fig. 1, which suggests that the UAV is much smaller.

- Fig. 11 is not that useful.

- Figs 2, 12 do not stand up to B&W printing (the red flight path is washed out)

- Fig. 13 does not show the system operating during either of the presented fight trials and also does not add anything to the paper.

**Comments on the Video Attachment:**

The video is poorly edited and does not help to explain the work that was conducted. Include captions or a voice over to explain what is happening and restructure the whole thing such that it is not simply a collage of your available videos and figures.

**Reviewer 4 of ICRA 2017 submission 2026 (Review 19891)**

**Comments to the author:**

This paper presents an unmanned aerial vehicle (UAV)-based system for conducting mosquito surveys. The paper evaluates a number of motion-planning solutions for such a system. Further, the paper describes the design of the mosquito capturing system that is mounted on the UAV. Finally, the paper presents results from a series of flight trials.

The contributions of this paper are not clear to this reviewer. The reviewer sees two potential areas of contributions based on the nature of the work presented. First, there is the algorithmic contribution of planning the route of the UAV to maximise accuracy in estimating the size and distribution of the mosquito population. However, the approaches evaluated in this paper are empirically rather than theoretically motivated and there does not appear to be any novelty in either the motion planning approaches (random bounce, boustrophedon) or their analysis for this application. While the simulation results are interesting, it is not clear how the evaluation of motion planning approaches relates to the motivating problem of surveying mosquito populations – the metric evaluated in this simulation was the number of mosquitoes killed rather than an evaluation of how well the population distribution or numbers were estimated. To this end, this reviewer recommends the authors review the algorithmic approaches used for informative path planning, in particular in the Bayesian target search problem (where a robot searches for a potentially unknown number of targets in the environment) and the problem of monitoring a time-dependent geo-spatial process (for example, salinity in the ocean, or a wind field) with a robot.

The second potential area of contribution is in the development of a system for performing mosquito surveys. While the paper presents some design aspects such as the mounting of the screen and detection of a mosquito “zap”, the validation and evaluation of these hardware design aspects were insufficiently rigorous to be considered a key contribution of this paper. For example, while a parametric study of the screen angle was considered, there was no experimental assessment of the accuracy of the aerodynamic models used to predict the volume that is “cleared” of mosquitoes. Further, the paper does not suggest methods for disambiguating a single mosquito strike from multiple simultaneous strikes (which one would expect to be a consideration if counting the number of mosquitoes was the problem), nor how to disambiguate mosquitoes from other insects. The review would consider addressing these aspects to be important if the core contribution was the system development of a UAV platform for mosquito surveys.

**Comments on the Video Attachment:**

The video was well constructed and communicated the essence of the paper.