



CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

Name(s) Espen G. Garner	Project Number J0312
Project Title Buzz Trap: Designing an Unmanned Aerial Vehicle to Trap Mosquitoes in Remote Locations for Scientific Testing	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to determine if I could design an unmanned aerial vehicle (UAV) to fly to a remote area, trap mosquitoes, then return them for scientific testing to help map and predict the spread of viruses.</p> <p>Methods/Materials I constructed a high powered unmanned aerial vehicle with a 3D printed mosquito trap of my own design using 123D Design software. The UAV is light weight, includes solar panels to extend the flight range and on-site collection time, and incorporates GPS for autonomous flight with a live-streaming camera for enhanced manual control and maneuverability. The trap has UV lights and produces CO2 to attract mosquitoes.</p> <p>Results Experiments revealed the trap with UV light and CO2 production was most effective in attracting mosquitoes. Calculations revealed that the addition of solar panels to the UAV would significantly increase the flight range by allowing the battery to recharge during collection, effectively doubling the range of the drone. Testing in a natural mosquito habitat confirmed the efficacy of the trap in catching mosquitoes and returning them for testing.</p> <p>Conclusions/Discussion My conclusion is that a carefully designed unmanned aerial vehicle with a UV light and CO2 collection trap can be flown to gather mosquitoes in remote locations, then, through the use of attached solar panels, it can recharge in order to power a return flight back to the research lab for testing.</p>	
Summary Statement I designed and tested a self-constructed unmanned aerial vehicle with a 3D printed mosquito trap to be used for mosquito collection and sampling in remote locations to help map and predict the spread of viruses.	
Help Received I designed and built the drone myself, with help troubleshooting problems from Mr. Darren Jones. Ms. Ashley Ricart allowed me to use the 3D printer at school to print my self-designed trap. I received background information from Mr. R. Cummings at OC Vector Control.	