Product Design Specifications
Mosquito Trap
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Function
   This project is designed to apply a variety of electronic technologies to current light trap models to improve their utility and ease of use and their potential to generate valuable, timely data for public health. In particular, we plan to integrate a variety of sensors to collect data on the local environment and on the trapped mosquitoes, and provide a means to remotely monitor and operate the device.

Client Requirements
- The mosquito trap should be durable and rugged
- Withstand weather and exposure
- Reliably capture and count an accurate and valid sample of mosquitoes of interest
- Mechanically limit the number of other insects counted and captured
- Must not diminish length of trap operation
- Relatively simple to operate
- Could be designed as add-on unit to current traps (rather than an entirely new trap)

Design Requirements
1. Physical and Operational Characteristics
    a. *Accuracy and Reliability:* The device must produce meaningful mosquito population data, so it should accurately and reliably measure the quantity of mosquitoes entering the trap.
    b. *Life in Service:* Must last at least overnight, preferably the device should last considerably longer to minimize human effort.
    c. *Shelf-life:* The shelf-life should be nearly indefinite so that it can be used over many seasons, although certain components may need to be recharged/replaced (e.g. batteries, CO_2 cartridges, etc.)
    d. *Operating Environment:* The device will be used in an outdoor environment; it should be able to withstand rain, wind, dirt, dust, and other common outdoor conditions. It will have minor protection from the environment from the current trap design which has a circular "roof".
    e. *Safety:* The device must be not put the user in any danger. Potential sources for danger include: electrical components, mechanical aspects, and pressurized gases.
    f. *Ergonomics:* The device must be designed to allow the user to easily set up the trap for data collection and access the mosquitoes collected
    g. *Size:* The device should be small enough to facilitate easy transport to a mosquito collection site, but is otherwise unlimited.
    h. *Weight:* The device should be light enough to facilitate easy transport to mosquito collection site, but is otherwise unlimited.

2. Production Characteristics
    a. *Quantity:* One prototype should be constructed.
    b. *Target Production Cost:* Up to $1000 for development, but the final design should cost significantly less The device will potentially save much time in setting up and

collecting data, so it can be more costly than other models.

3. Miscellaneous
    a. *Standards and Specifications:* The device must produce meaningful data as compared other mosquito traps.
    b. *Customer:* The primary customers are our clients; their main concern is to produce a mosquito trap that requires less human effort to operate, while maintaining a valid collection of data.
    c. *Competition:* There are many mosquito traps available, but few, if any, are capable of real-time data acquisition and remote operation.
    d. *Priorities:* Due to a wide variety of potential improvements, the following priorities have been established to guide the process:
        1) Establishing a method of sensing or counting mosquitoes
        2) Integrating this method with a means of remote control and access of data
        3) Integrating a means of differentiating mosquitoes from other insects or, ideally, speciating the mosquitoes.
        4) Improving upon other aspects of the trap, such as mosquito attractants, power sources, a variety of environmental sensors, a means of killing mosquitoes upon entry, or many more.