



Taking Flight: Unmanned Aircraft Vehicles (Drones) in Vector Control

California's mosquito and vector control agencies have a vested duty to protect the public from existing and emerging health threats caused by mosquitoes. For years, agencies have sought and implemented safer alternatives and best management practices that go beyond traditional methods to reduce the threat of mosquito-borne diseases. One example is the evaluation of emerging technology using small unmanned aircraft vehicles (UAVs) or drones, which are operated by a pilot on the ground using a remote transmitter.

Agencies are currently utilizing UAVs to improve their operations in a number of ways:

- UAVs are being used to visually inspect potential mosquito sources faster and more efficiently than traditional on-site inspections. One agency estimates inspections occur more than one acre per minute using a single UAV, a rate that would take a team of several technicians to achieve on the ground.
- UAVs are being used to inspect environmentally-sensitive areas while minimizing potential impacts to the local environment.
- UAVs are being used to inspect remote and difficult-to-reach mosquito sources such as wetlands and rice fields, improving employee safety by reducing the need to access such sources through rough terrain. Used to determine the presence of water in remote areas, a UAV can survey 400 acres in a single minute.
- Utilizing a specialized camera, a vector control agency was able to observe quarter-inch long mosquito larvae at a height of 45 feet. Further development of this technology may allow agencies to collect detailed larval surveillance information to help guide their operations.
- Initial evaluations of pesticide applications by UAVs have been shown to be considerably faster than ground treatment of equivalent sources and UAVs allow for treatment of areas where traditional aerial applications are not possible (e.g., under high voltage power lines).
- UAVs permit more precise pesticide applications than traditional aircraft. Where a fixed-wing aircraft may have to treat large swaths of a mosquito-producing rice field, a UAV could focus treatments on the mosquito-dense sections, saving time and materials while achieving the same results.
- UAVs have been used to aid other components of vector control programs including reading of atmospheric conditions at various altitudes to aid adult mosquito spraying. Use of UAVs for land surveying permits vector control agencies to more efficiently work with landowners to prevent accumulation of standing water.

While ongoing federal rules provide some guidance on how to safely use UAVs in commercial settings, any future legislation concerning this subject must recognize the legitimate use of UAVs to protect public health and safety and not overly restrict the ability to utilize this new technology.

Due to the ongoing challenge of West Nile virus and emerging diseases such as Zika virus, allowing flexibility on the use of drones will bring public safety benefits. The use of UAVs will make vector control activities safer and more efficient with less insecticide drift, improved safety for employees, and reduced costs. Promoting public acceptance of UAVs by demonstrating their safe, effective, and responsible use will help guide the Department of Pesticide Regulation's (DPR) governance of UAVs for both short-term and long-term benefits to public health. MVCAC supports these regulatory efforts and is working with DPR to speed up the use of drones for pesticide applications as an effective tool in helping to protect public health.