

## Adult Mosquito Control

Adult mosquito control is the final line of defense against these insects. This mobile stage is much harder to control because of wind currents, females seeking a blood meal and plant cover that may block spray penetration. Male mosquitoes typically remain closer to their emergence habitat than females. Female mosquitoes may travel some distance from their water sources. They take advantage of wind currents to move the greatest distances. Dispersal studies done with *Culex tarsalis*, an important WNV vector, indicate that 1-3 miles is common and up to 15 miles have been documented. In our area, evening currents often move towards the canyons from the valley. This provides mosquitoes with a good transportation flyway from marshes and lakes in the west into more highly populated communities serving the desired blood meals.

Utah County uses two methods to control adult mosquitoes. The most common method is a fleet of trucks with Ultra Low Volume (ULV) spray machines mounted in the bed. These trucks are assigned areas throughout the valley. Each ULV sprayer is calibrated yearly to make sure the aerosol droplet size is between 8-30 microns in diameter as required by insecticide label.



When a service request is received, it is mapped and responded to by a Vector Control Inspector. Spraying can only be effective when the air is cool and wind speeds are less than 10 mph. These conditions are best synchronized with peak mosquito activity in evening hours between 9:00 PM-1:00 AM. When trapping data indicates an increasing threat of WNV, spray trucks will be out each night targeting pre-designated routes. The spray drift may cover 100-300 feet swath with favorable wind and temperature conditions. Sprays change through the years, but most mosquito insecticides contain the active ingredient, permethrin, originally extracted from chrysanthemum flowers. We are currently using **Aqua reslin** and **Kontrol 4-4**, but there several similar synthetic products are available. They are labeled safe for use in residential, industrial, parks, playgrounds, roadsides, athletic fields, golf courses, etc when applied properly.

A second control method is spraying by airplane. This is a last resort in areas near lake margins where ULV trucks can't navigate and WNV vector mosquitoes are an extreme threat. These conditions are most often reached in late June through early August. Trapping is conducted in



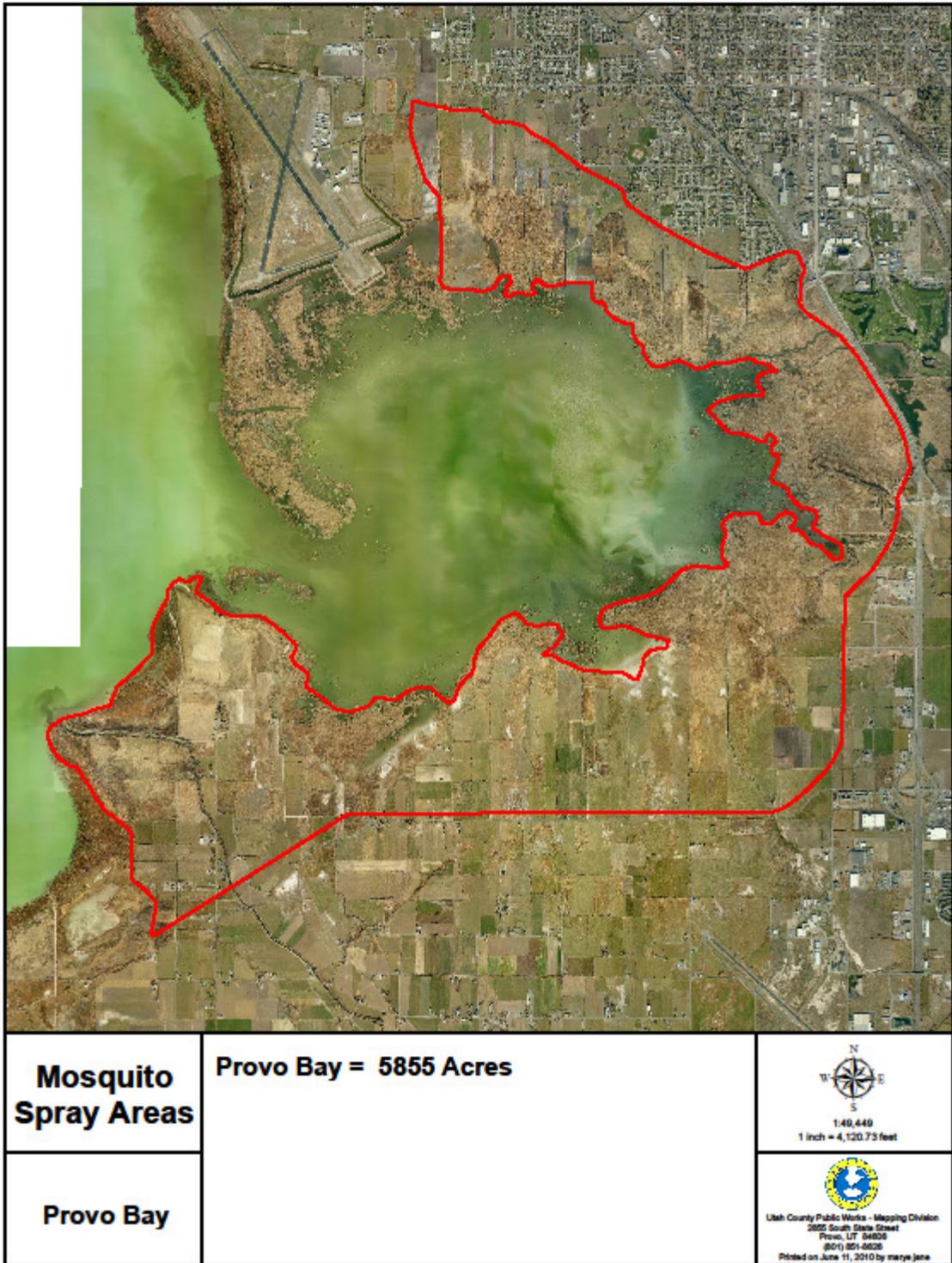
these larger areas to monitor mosquito populations and species. When vector mosquitoes reach a predetermined number threshold, or WNV has been detected in our lab or the UPHL lab in SLC, the threat to human health has increased. The decision to air spray is made by mosquito abatement personnel and the health department director who immediately inform the public information officer (PIO) to alert the public of the pending emergency action.

Thirty gallon drums of pesticide, **Dibrom**, are loaded into planes equipped with night flying capabilities. A drum will treat over 5,000 acres at .5-.75 oz/acre of pesticide. Spraying begins at dusk until near midnight if necessary. This timing is based on the biology of the WNV vector mosquito.

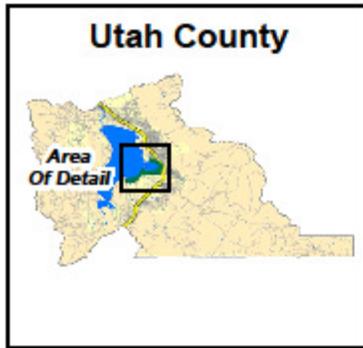


The past two years a total of 70,000-90,000 acres have been sprayed annually targeting "hot spots" for mosquito production bordering heavy centers of population. Weekly spraying is scheduled to reduce the disease threat during 6-8 peak mosquito weeks. This is a costly but effective mosquito control method that is used as a last resort to abate mosquitos. See airspray map on following page.

A shape file of the area to be sprayed is emailed to the pilots. This is downloaded into the aviation computer. Adjustments are made for plane altitude, wind direction and speed.

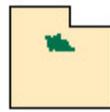


Following the application for mosquito control a map is emailed back showing the completed work with path of the plane and when nozzles were on/off, meteorological conditions and chemical delivered. See example on following page.



# Utah County, Utah

Aerial Adulticide Application Date:  
August 19, 2010



Flight Line

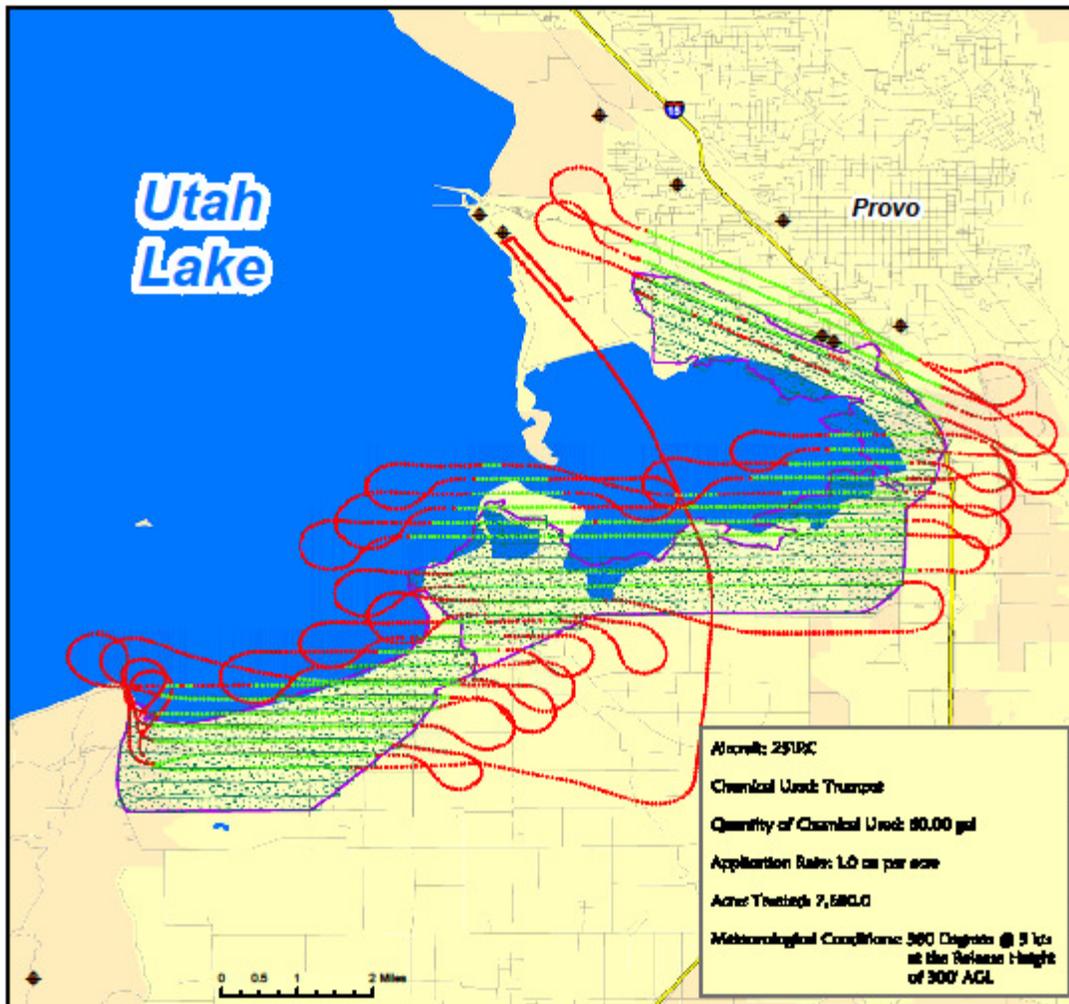
Sprayer Off

Sprayer On

Towers

Spray Offset

Treatment Area



Aircraft: 2519C  
 Chemical Used: Tranzap  
 Quantity of Chemical Used: 80.00 gal  
 Application Rate: 1.0 oz per acre  
 Acres Treated: 7,680.0  
 Meteorological Conditions: 900 Degrees @ 5 kts  
 at the Release Height  
 of 300 AGL

Vector Disease Control, Inc.  
 1320 Brookwood Dr., Suite M  
 Little Rock, AR 72202

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This has been an effective tool for Utah County to suppress mosquito emergence in large areas inaccessible from the ground. Notice the impact of aerial attack from the following graph depicting the four years with the dark red being the 2010 season. The eight planes on the horizontal axis indicate when spraying occurred this past year. We appeared to avoid a large

mosquito hatch in late June/early July and keep the traditional end of July hatch to about half of what emerged in 2007 & 2008.

