



# Applying low Methoprene rates by aircraft

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Mark E. Smith

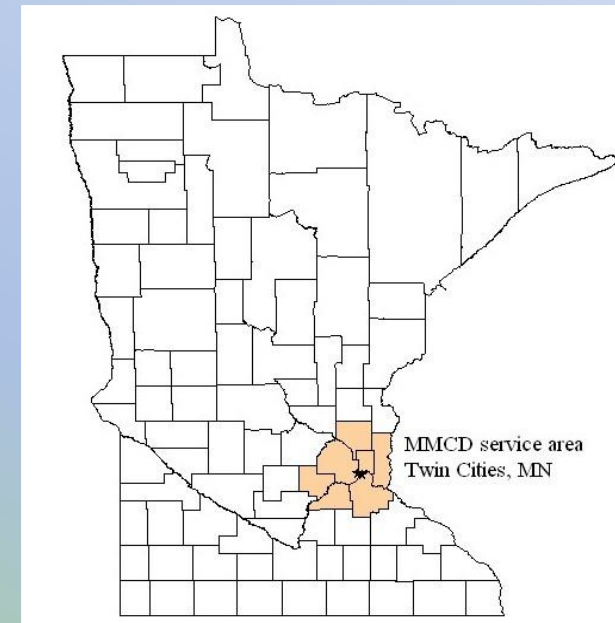
Metropolitan Mosquito Control District

St. Paul, Minnesota



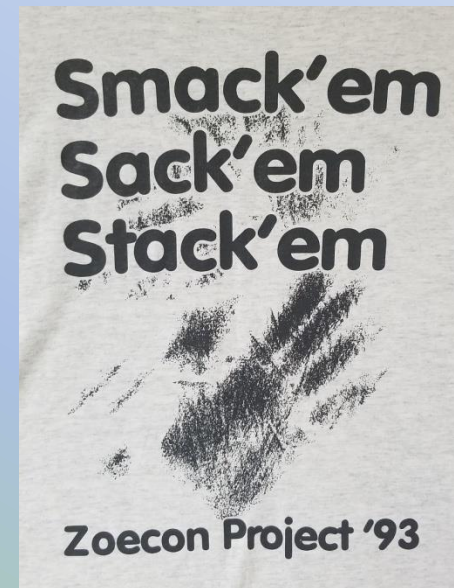
# Metropolitan Mosquito Control District

- Minneapolis/St Paul Metro Area
- Cover ~3,000 sq. mi. & 7 counties
- 182 communities & townships
- Annual Budget: ~ \$19 million
- Seven regional facilities
- 54 RFT, 210 seasonal inspectors
- Utilize 6 Jet Ranger Helicopters
- Focus on regional larval control



# History of Methoprene at MMCD

- In 1980's & 1990's, our former Director, Dr. Robert Sjogren, worked closely with the Zoecon Corporation to develop Altosid briquets, pellets, sand and other formulations
- Many use patterns and product evaluation methodologies used today were created as MMCD became an early adopter of the Altosid products





# MMCD's Seven Counties Identified Breeding Habitat

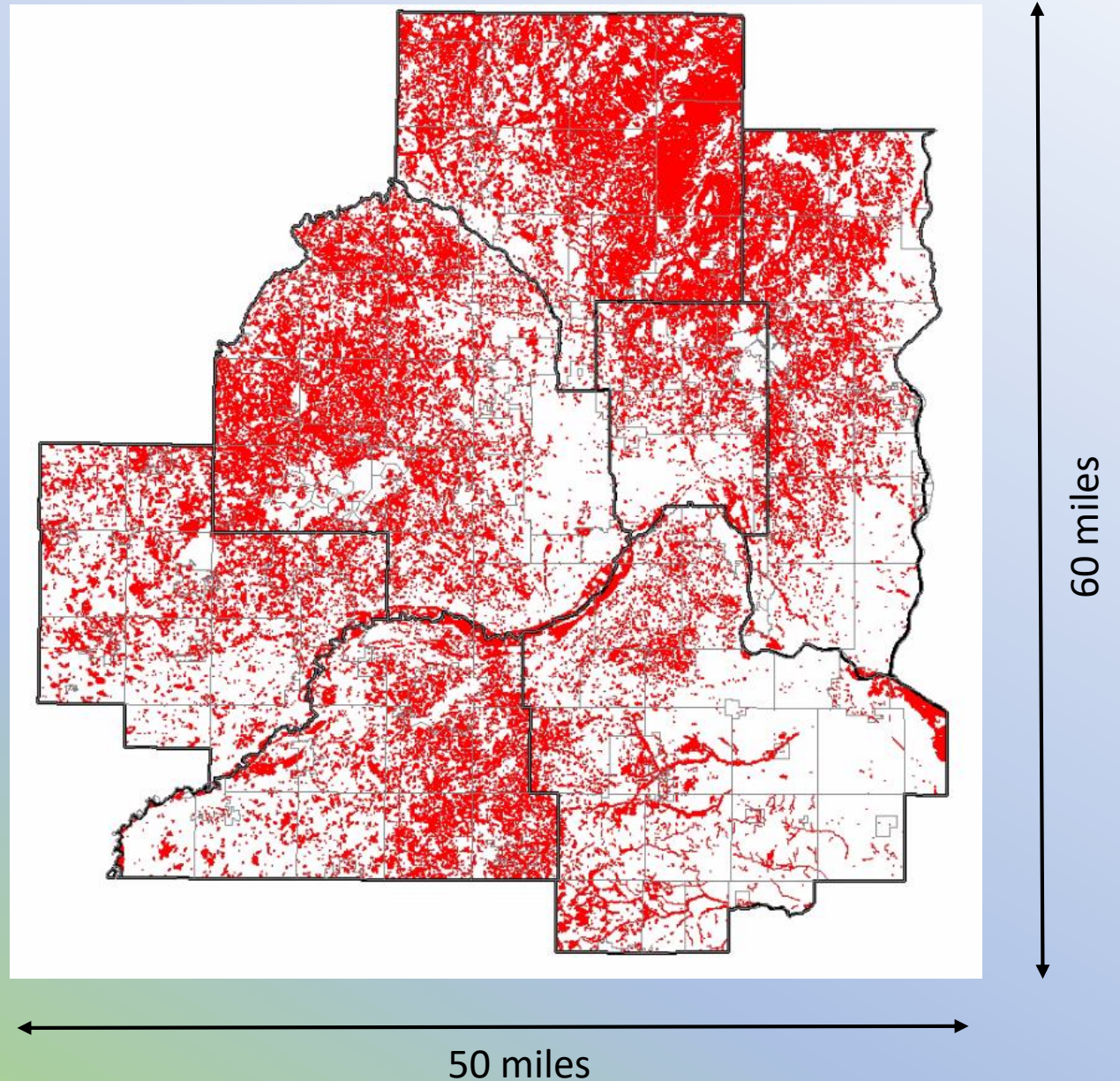
81,639 sites

Habitat is in urban, suburban and  
rural areas

Budget impact

Prioritization

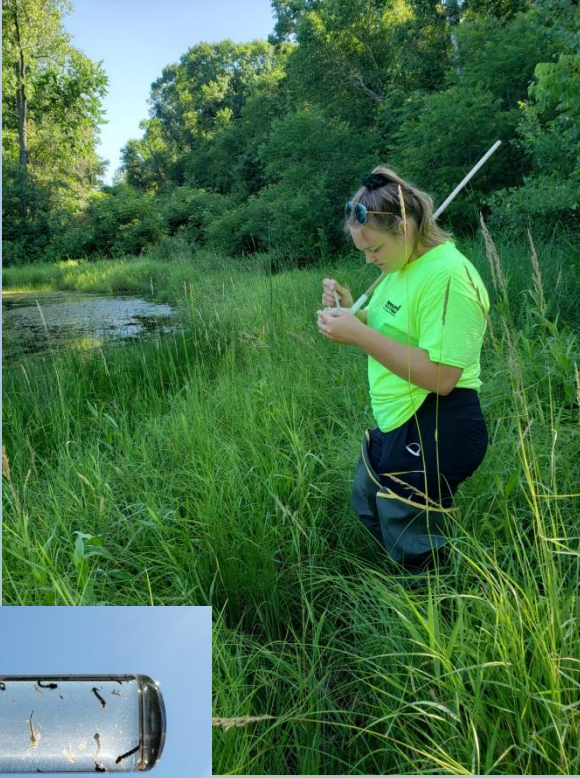
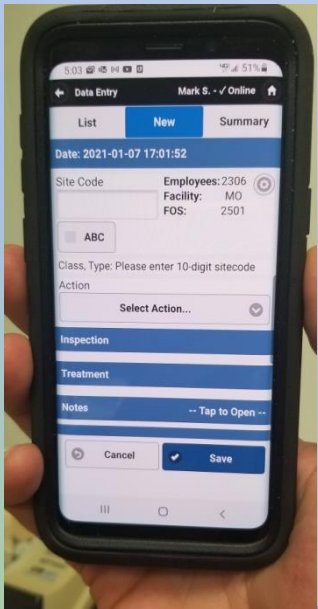
Utilize all active ingredients to  
operate in the most effective and  
efficient means possible





# Operational strategies

- Focus control on areas of high human population & treatment impact
- Treatments are based upon larval surveillance & site history
- Majority of our sites are treated by helicopter (> 2 acres)
- ~ 93% of control material budget goes towards larvicides
- Evaluate control on approximately 10% of our breeding sites





# Helicopter calibration & swath characterization

Critical for low application rates

Quality product deposition in each individual site

Product effectiveness

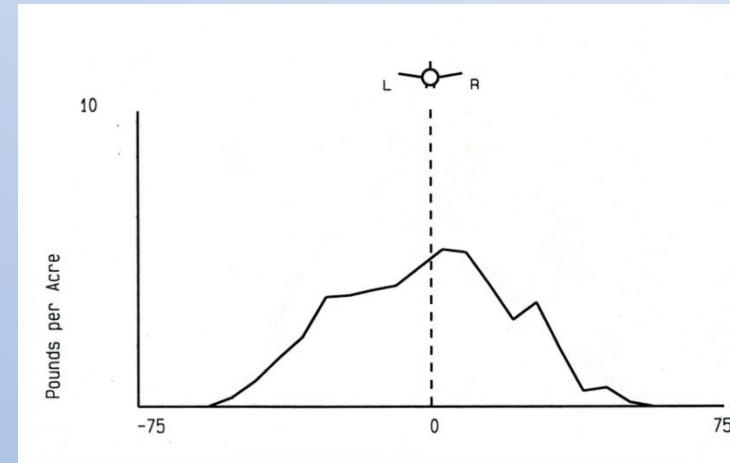
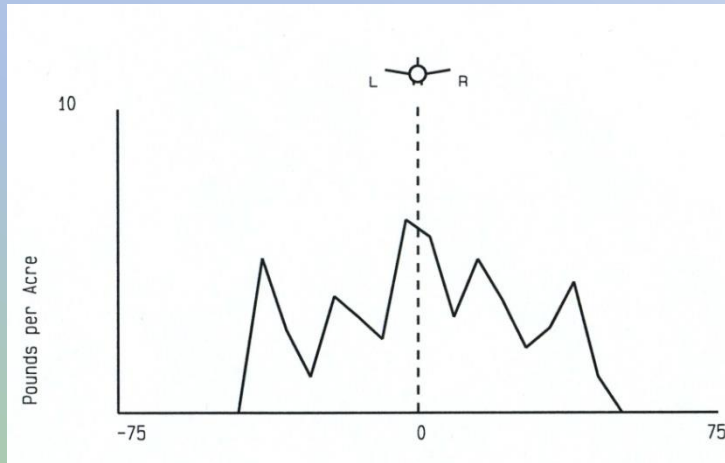
Economic aspects

Maximize regional coverage of District service area

Application efficiency

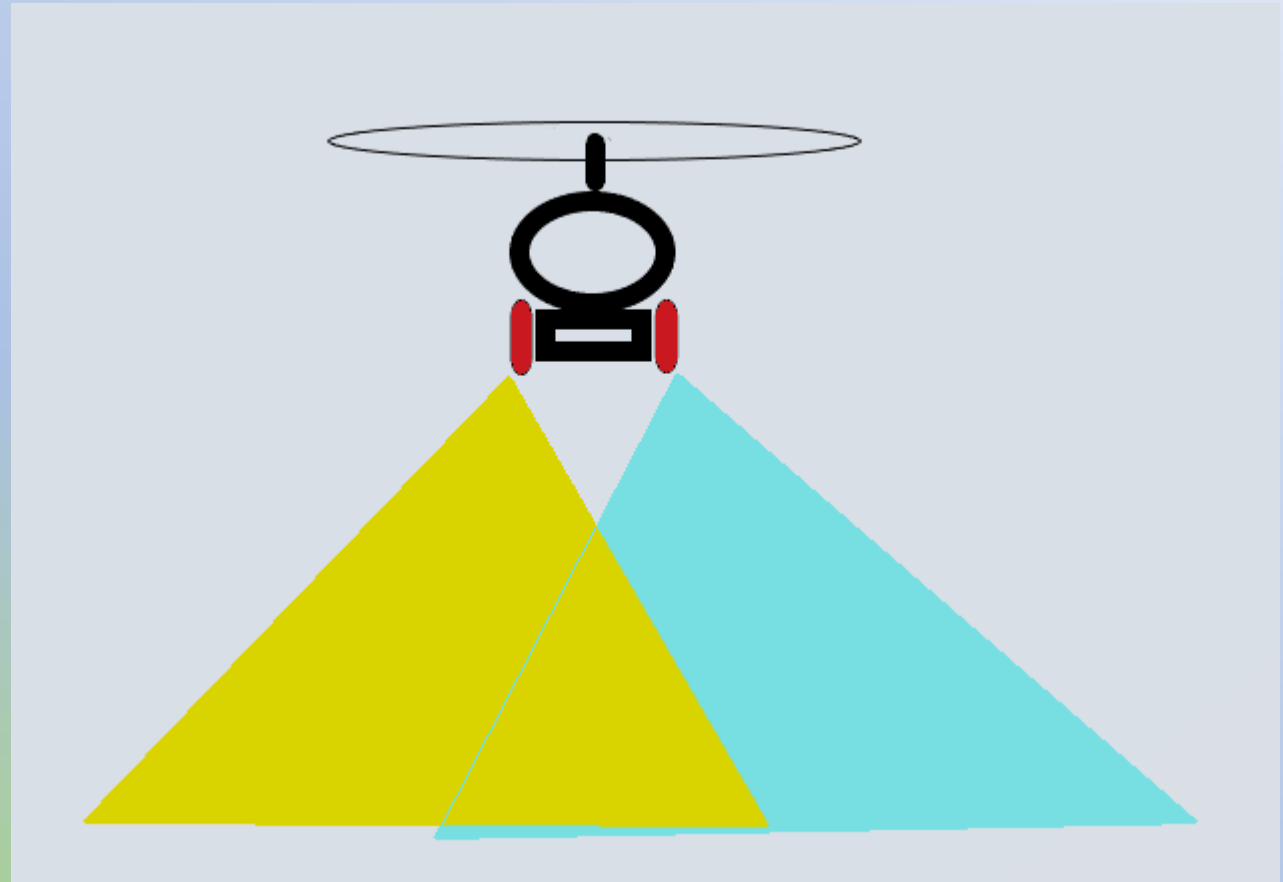


# Each control material has unique swath characteristics





Each aircraft has its unique application pattern



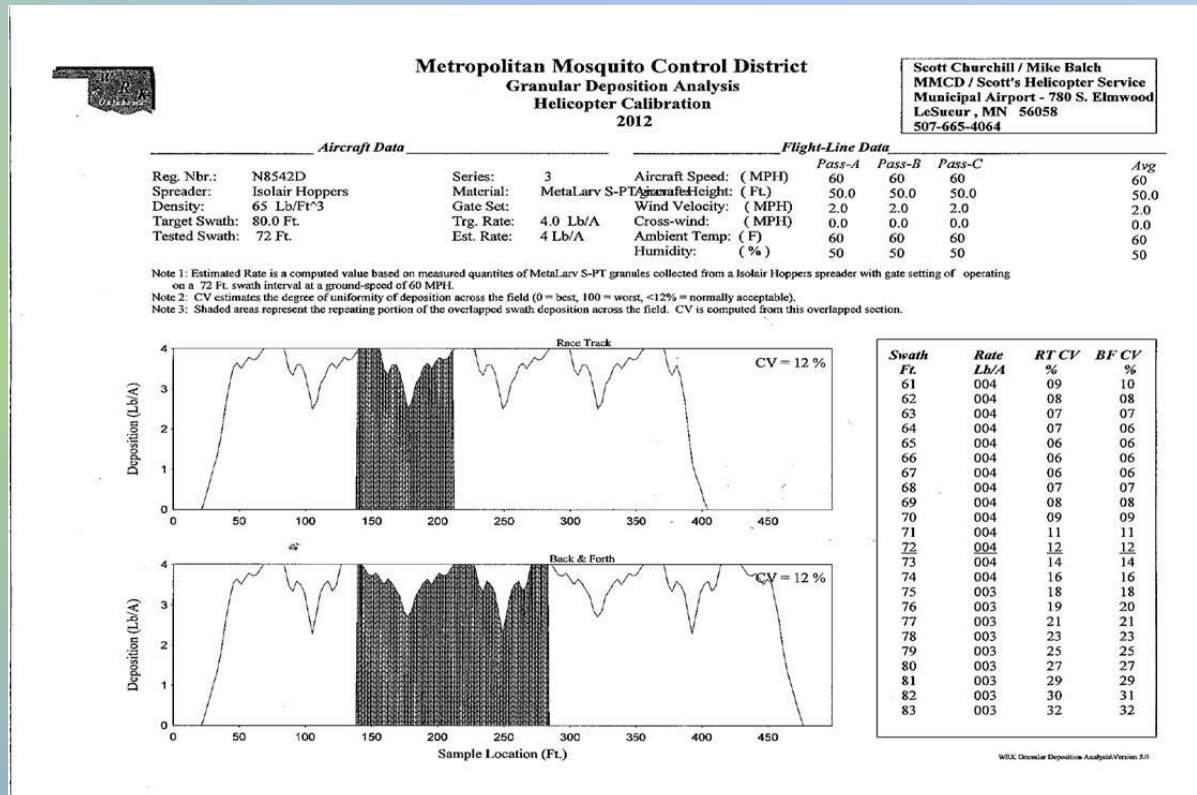
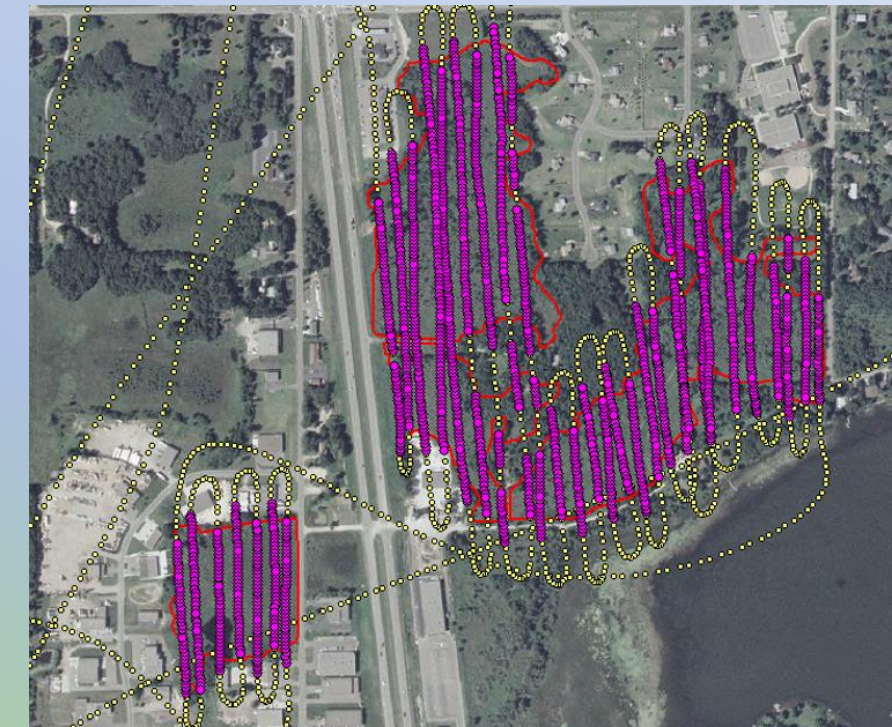
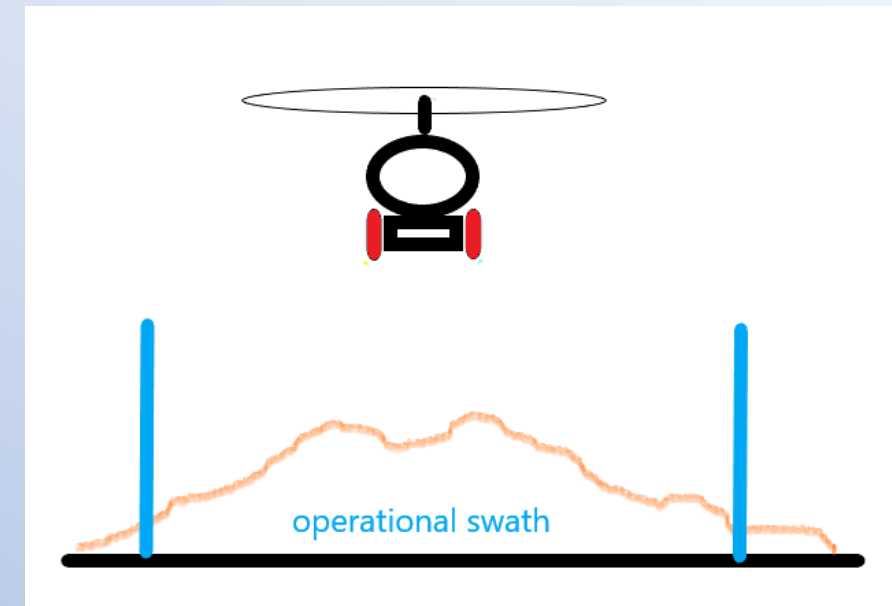


# Optimized Swath Patterns

To achieve a consistent per acre application rate, you need to determine an optimized or operational swath width.

80 ft – sand type granule

72 ft – corncob granule



# How did we determine our application rates?

- Historical data
  - product development, evaluation & QA program
  - compare w/ Altosid pellets (2.5 lbs./acre) 90% EI
  - operationally Methoprene products – 75-95% EI
- Efficacy testing
  - laboratory & field bioassays
  - emergence trapping
- Economics
  - maximize coverage of service area





# How to optimize use of pre-hatch control

- Philosophy - consider the overall mosquito control within your District
- Best utilization of all control materials – how can they work together to maximize effectiveness?
- Duration of product – risk of application not be fully utilized
- *Aedes floodwater* (rain dependent) vs *Cq. perturbans* (surveyed populations)
- Limited access sites or public relations issues
- Product rotation
- Program efficiency



# Drone applications

- Low application rates are ideal
- Payload capacity & flight time
- Determining how to best utilize this technology in our operations

