

Modified Mosquitoes: Efficacy Evaluation

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Outline

California's Efficacy Data Requirements

Research Authorization (RA) Review

- Objective and Design
- Monitoring and Data Collection
- Endpoints
- Site-Specific Requirements

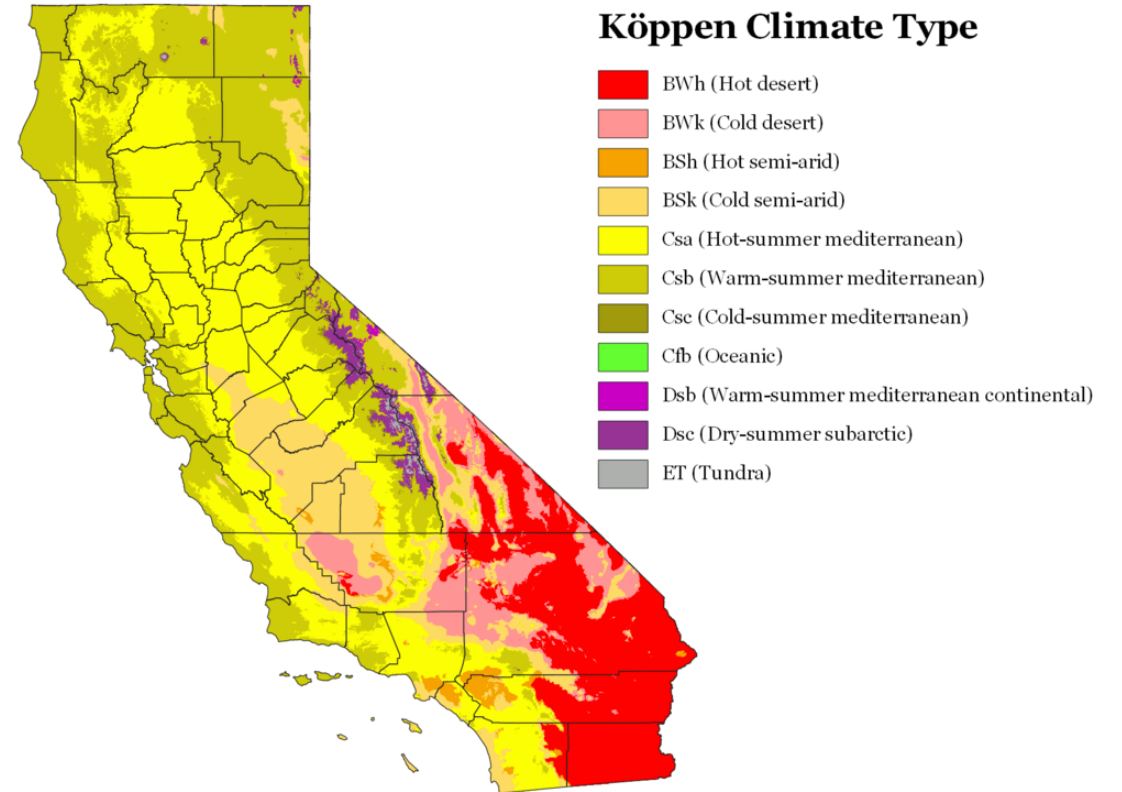
Other Considerations

California Efficacy Requirements

Pursuant to CCR Title 3 Section 6186:

- Data to support each efficacy claim
- Required for all registrations
- California or similar environmental use conditions

Köppen Climate Types of California



Data sources: 1991-2020 climate normals from PRISM Climate Group, Oregon State University, <https://prism.oregonstate.edu>; Outline map from US Census Bureau

Efficacy Data



- Conducted under conditions typical of the proposed use
- Demonstrate the mode of action
- Proper experimental design
- Demonstrate the effectiveness when used according to the proposed label directions.

Research Authorization Review: Modified Mosquito Product

- Is the **research** appropriate for collecting relevant pesticide data?
- Is unacceptable **phytotoxicity** expected?
- Are the **methods** appropriate for data collection?
- What **site-specific requirements** are needed?

Objective and Design of Field Trials

- **What is the objective of the research?**
 - Population suppression vs replacement
 - Flight distance or longevity
- **Is the design appropriate?**
 - Methods of deploying mosquitoes
 - Number and timing of mosquito release
 - Selection and length of trials



How are trials monitored and data collected?

- ❖ Egg collection
- ❖ Light traps
- ❖ Gravid female traps
- ❖ Female traps

Identification of undesired modified mosquitoes would end the project and adulticides would be used.



What are the efficacy endpoints and how are data assessed?

Efficacy endpoints

- Percent mortality
- Percent population reduction

Data assessment

- Identification and confirmation methods
- Statistical analysis
- Other parameters

Mosquito Population Dynamics

Release ratio or sex ratio

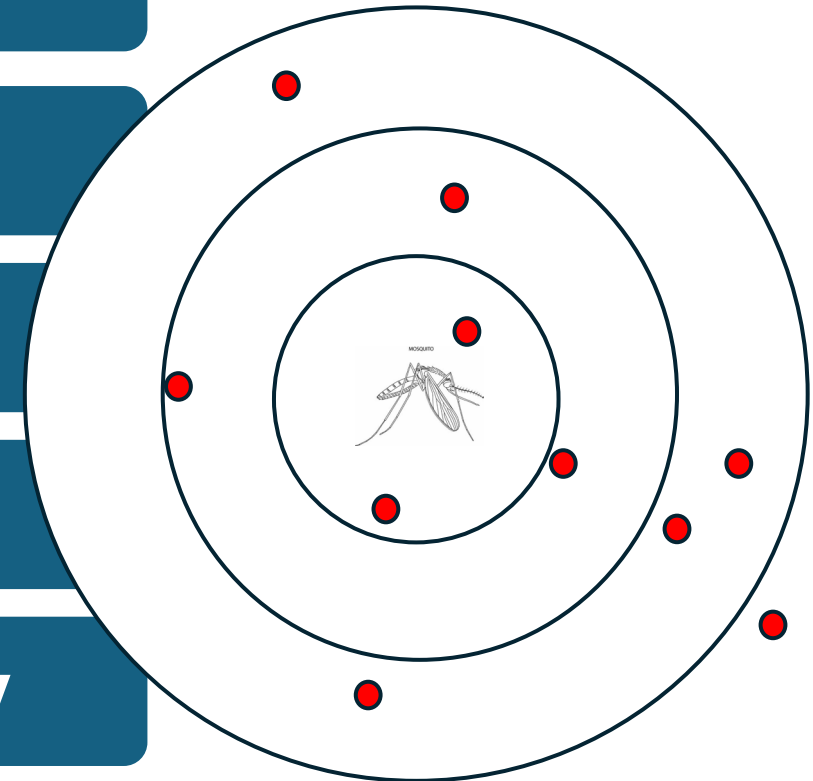
Mating fraction

Flight distance

Spread of the modified trait

Persistence and scale of residual activity

Longevity of released modified adult males





Site-Specific Requirements

- **Monitoring requirements**
 - Establishing/confirming size of affected area
 - Environmental considerations
- **Trial termination**
 - When: possible triggers
 - How: potential actions

Other Considerations: Planning Field Studies

- **Start small**
 - Conduct field trials in contained areas or facilities
- **Move to larger trials**
 - Flight distance or longevity
 - Efficacy

Remember an RA is for research; it is not a control program.



Thank you

Questions?