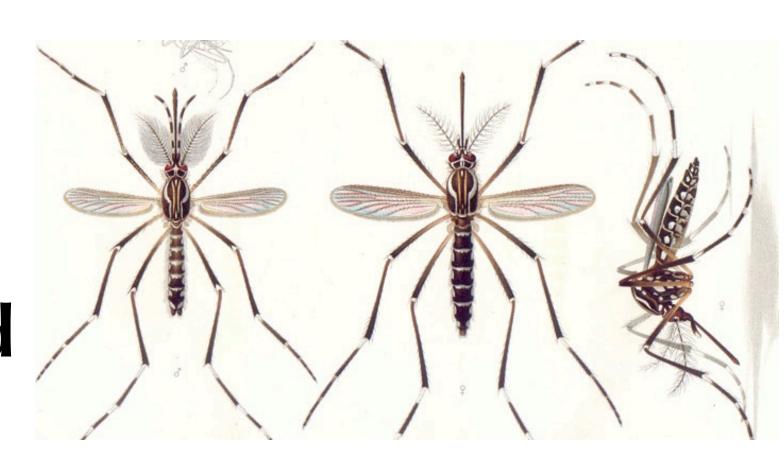




Surveillance of *Aedes aegypti* in an Unmonitored Area in Central Arizona

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Conclusions

Hypothesis was supported: 2 pools of *A*.

aegypti eggs confirms the presence of the

Findings suggest the vector is

transmission of diseases is low

Recommendations are made

Storm water catchments with

insufficient drainage (including

Irrigation infrastructure that is

Refuse piles that create opportunities

for rain or irrigation water to collect

inadequately maintained

uncommon in the area and that risk of

Further monitoring and management

vector in the Community

should take place

Sites of particular concern:

livestock troughs)

Introduction

The primary vector responsible for the transmittal of dengue (DENV), chikungunya (CHIKV), and zika (ZIKV) viruses to humans, is expanding its range around the globe, including AZ. Vaccines are unavailable & disease prevention is limited to vector control. AZ health officials have begun mosquito surveillance initiatives around the state, but not in all regions. The Gila River Indian Community is one area not currently included in the state's monitoring efforts.

Focal Species: Aedes aegypti

Rational: The potential negative health & economic consequences of an outbreak are significant in the Community & over half of the 12,000 residents are among those at highest risk for being affected by such viruses. The goal of this study was to survey a previously unmonitored area & provide preliminary data for future efforts.

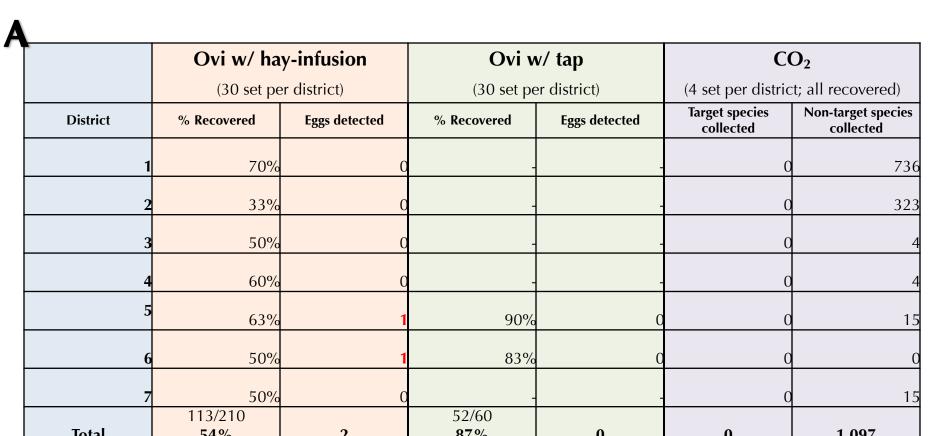
Objectives:

- Estimate the number of breeding events
- Estimate the number of reproductively active adults
- Determine the distribution of breeding sites
- Identify risk factors
- Make management recommendations



Figure 1: Female *Aedes aegypti* mosquito (yellow fever mosquito). CDC.

Results



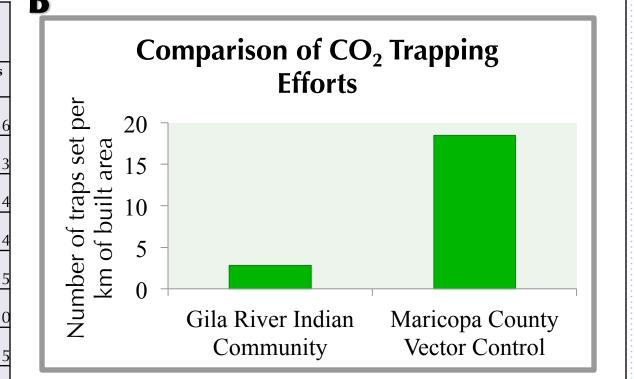


Figure 3**A:** Two pools of *A. aegypti* eggs were detected in oviposition traps with hay-infusion; both were set near livestock troughs. No *A. aegypti* eggs were detected in oviposition traps with tap water. No adult *A. aegypti* were collected from CO₂ traps. **B:** Trapping efforts for adult mosquitoes were low here (2.81 traps/km) compared to efforts in Maricopa (18.5 traps/km) and insufficient to detect the presence of *A. aegypti* adults.

Density of Confirmed Aedes Aegypti Pools Near Gila River Indian Community

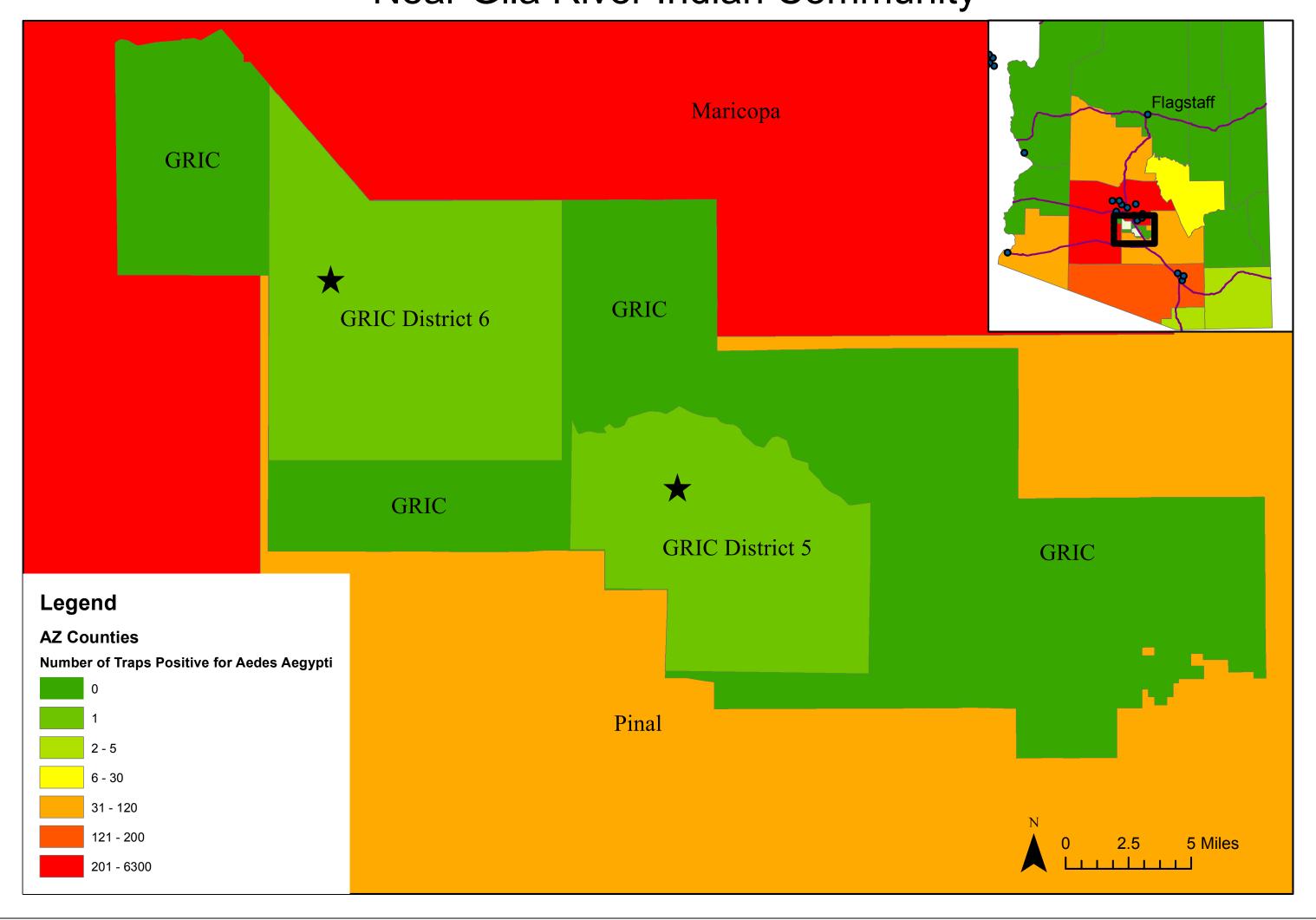


Figure 4: Density map of confirmed *Aedes aegypti* pools in the Gila River Indian Community and surrounding counties. Black stars represent the relative location of the two confirmed pools detected in this study

Recommendations

Surveillance

 Initiate a regular surveillance protocol and paradigm that is replicated annually during peak breeding season (June/July)

Public education

• Increase meetings among Community programs to promote safe practice and risk reduction and to encourage the exchange of knowledge about emerging threats, best practices, and sources of funding

Risk management

- Treat livestock troughs with larvicides
- Clear preventable clutter
- Empty and clean birdbaths, fountains, plant pots, etc. at least once a week
- Eliminate refuse piles
- Report/repair/maintain faulty irrigation, leaky pipes, broken sprinklers, etc.
- Add *Gambusia* (mosquito-eating fish) to personal ponds or pools

Materials and Methods

Protocols provided & used by the Arizona Department of Health Services and Maricopa County Vector Control were followed.



Oviposition Traps (n=270)

- Set in Jul & Oct 2015
- Dark cupr filled w/hay-infused water
 (n=210) or tap
 water (n=60); lined
 with seed
 germination paper
- Left 4-5 daysDetects presence of









Fig. 2: Targeted trapping sites included refuse piles; livestock troughs; stands of *Arundo donax* (a common cultivated plant in the Community); irrigation infrastructure; storm water catchments

Comparison of Trapping Efforts

Total traps set per km² of surveyed built area (i.e. areas with significant human activity) - traps were not set in areas uninhabited by humans; Compared to surveillance work by Maricopa County Vector Control

CO₂ Traps (n=28)

- Set in July 2015
 Filled with dry ice (CO₂)
- Left 24 hours
- Upon collection, nets were removed and stored at -80° C for preservation
- Detects presence of adult mosquitoes





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