



Evolution of the Application of Vectobac WDG in the Florida Keys

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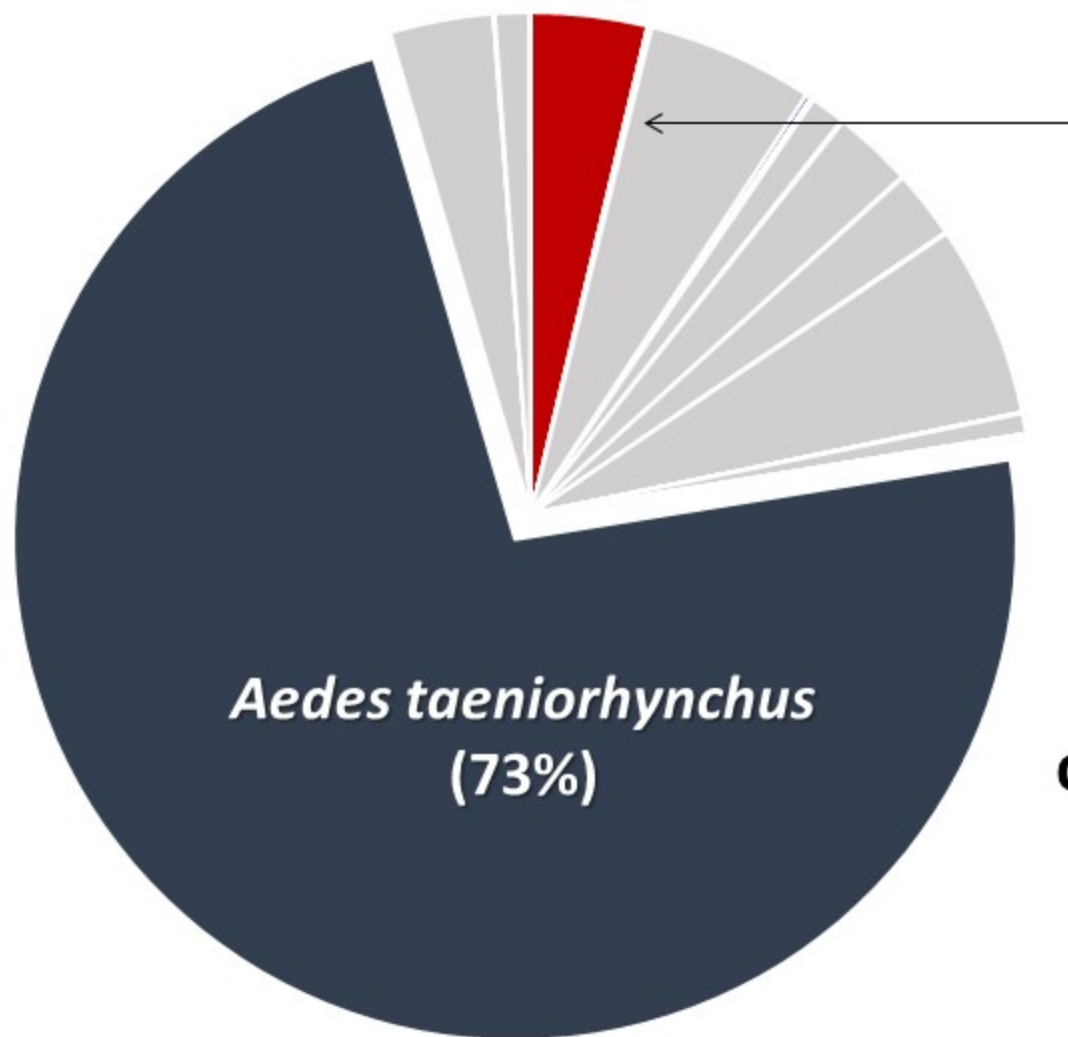


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Mosquitoes of the Florida Keys

(Total females collected, 2015; n = 665,842 mosquitoes)



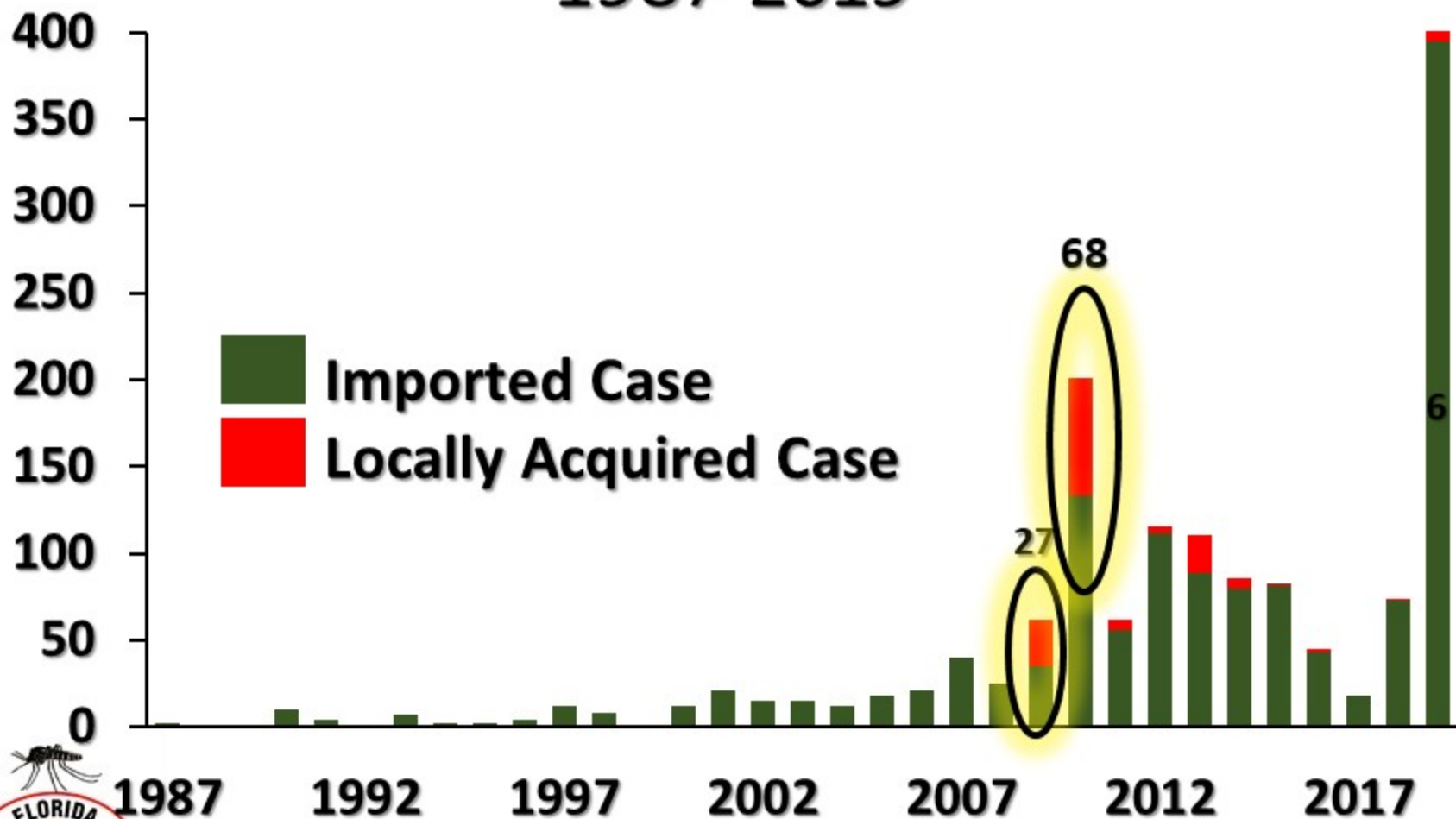
Aedes aegypti
(3.8%)



>10% of
annual
mosquito
control budget



Dengue Cases in Florida 1987-2019



Dengue Outbreak Control Techniques

- **Control**

- **Control of Larvae**

- Repeated sweeps of high interest areas

- ✓ Eliminate larvae

- ✗ Residents did not like weekly visits



- **Control of adults**

- ✓ Handheld fogging

- ✗ Aerial/truck adulticiding



Major Hurdles of Control

- **Number of property denials**
- **Still continuous breeding**
 - **No noticeable change in people**
 - **Not enough man power to cover everything**
- **Few non-editorial pieces in newspaper**
- **No interest from local officials**
- **No interest in town hall meetings**



Added additional personnel...

Still taking at least a month to get to each location...

How can we treat everything at once?



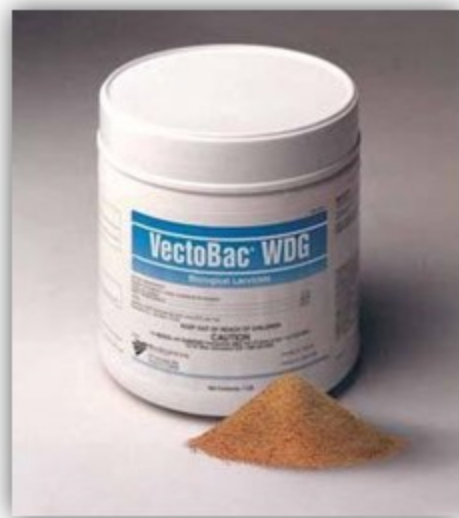
Aerial Application of Vectobac WDG

- Liquid *Bti* over residential areas
- Application via helicopter



Aerial Application of VectoBac WDG

- **Rapid coverage of large areas**
- **Treat cryptic containers?**
- **Target specific**
- **Visible efficacy**
- **Non-intrusive for residents?**
- **Previously used in forestry**



2010 Operational Applications

Good theory, but does it translate?

- **August**
 - Initial Cup Trials
 - 86% – 91% Mortality after 24 hours
- **September**
 - “Real-life” Scenarios
 - Found larvae in field and checked after treatment
 - Tarps, birdbath, 5 gallon buckets, flower pots, vase, tires
 - 70% – 79% Mortality after 24 hours



Procured Equipment for Operations

- Isolair spray system
- Micronair spray heads



Mix Truck Set-Up



Working with WDG in the Air

- **Hidden Cups (2011)**
 - 70% control of larvae
- **Container Indices (2012)**
 - 58% control, day after treatment
- **Adult Control (2013)**
 - 50% control of adults
- **Large/Small Container Study (2014)**
 - No Significant Difference



Current Set Up

- 200 ft lane separation
- 100 ft altitude
- Pitch of 40
- 80 mph
- 8 oz/acre
- 1 lb VectoBac WDG/1 gal water



Current Aerial Operations

- **Aerial WDG missions rain dependent**
 - Look for about an inch of rain
- **High vector numbers**



Current *Aedes aegypti* Control Measures

- **Door-to-Door Work**

- Added more inspectors
- Source reduction: focus on larger containers
- Direct application of larvicides
- Handheld ULV applications of adulticide
- Education of home and business owners

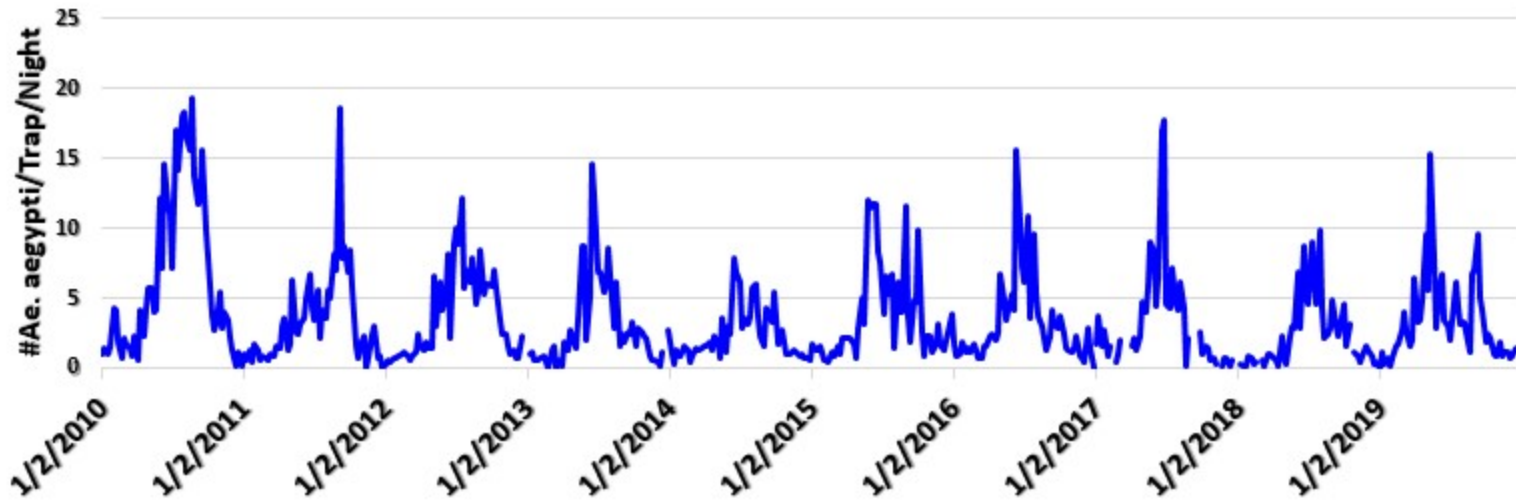
- **Aerial Work**

- Combination of larviciding and adulticiding

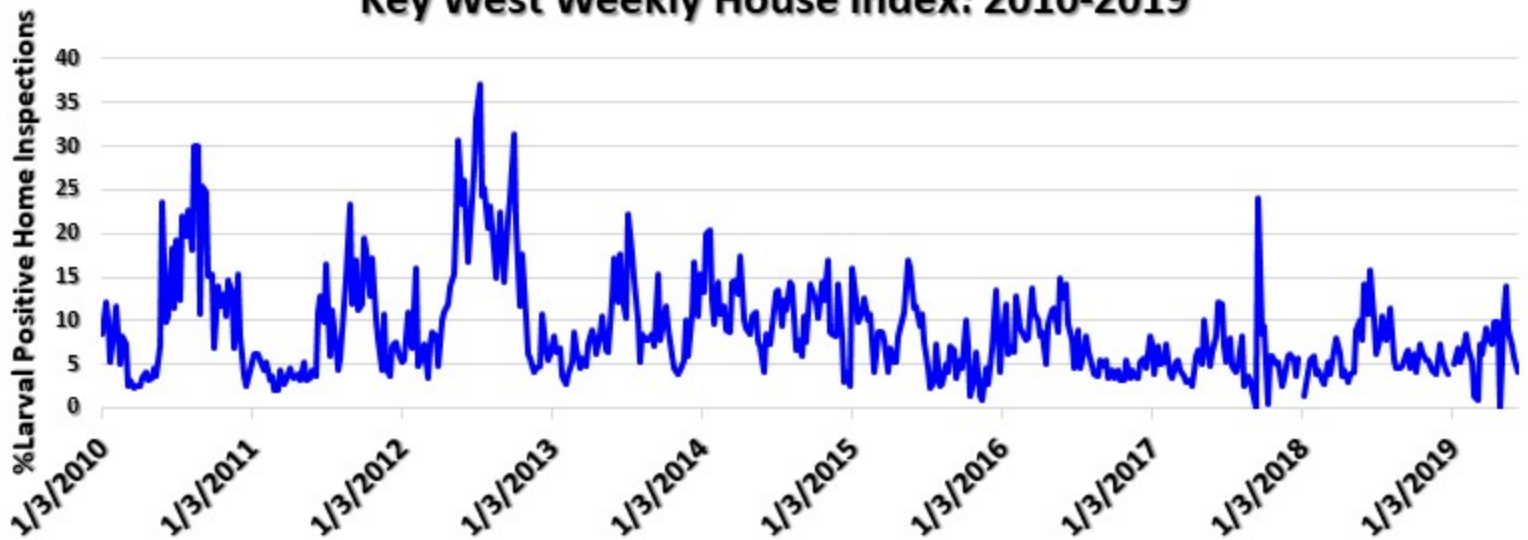
- Treat ~15,000 acres/year with WDG
- Average 1 aerial adulticide mission over Key West/year



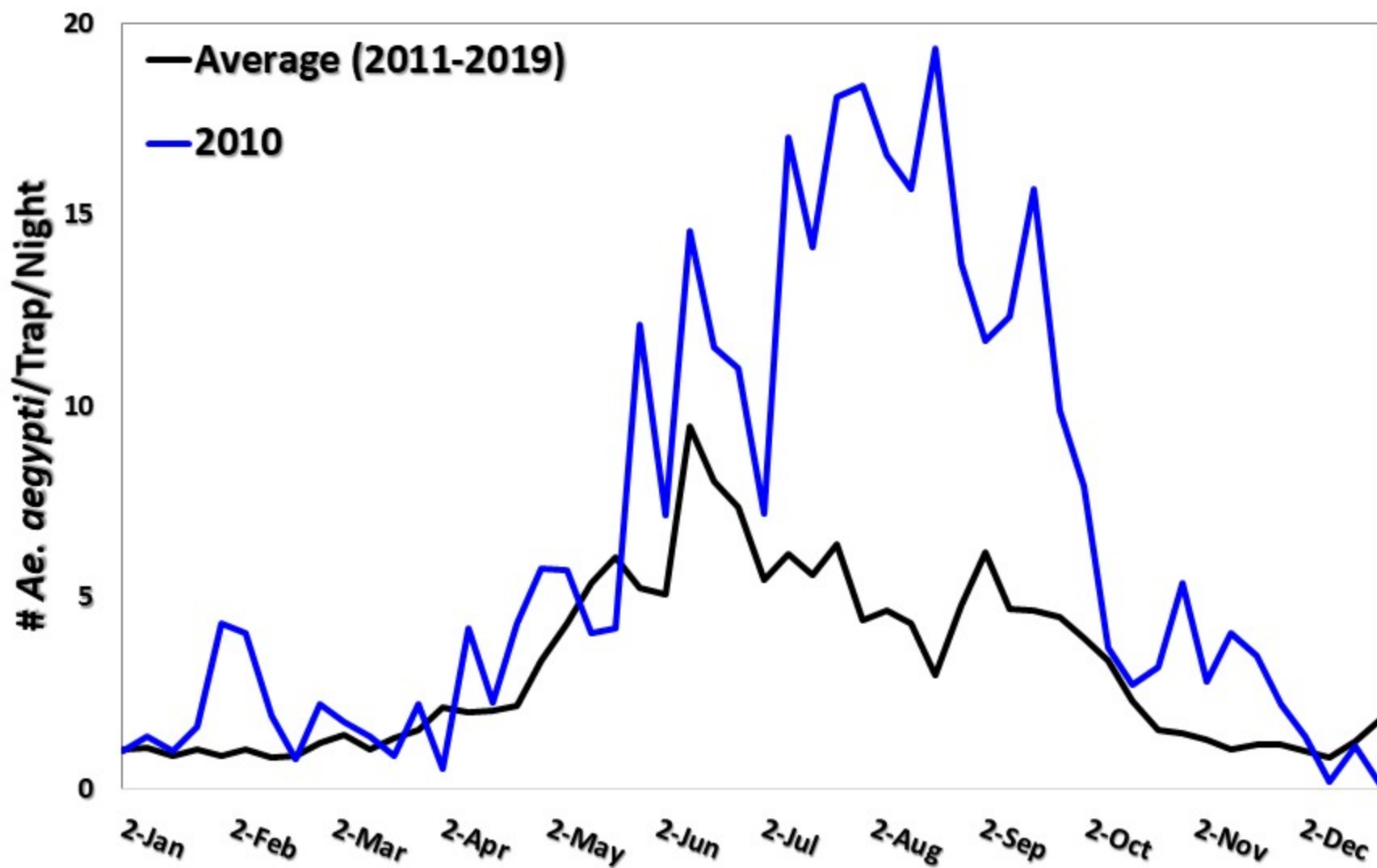
Key West *Ae. aegypti* Catch Rate: 2010-2019



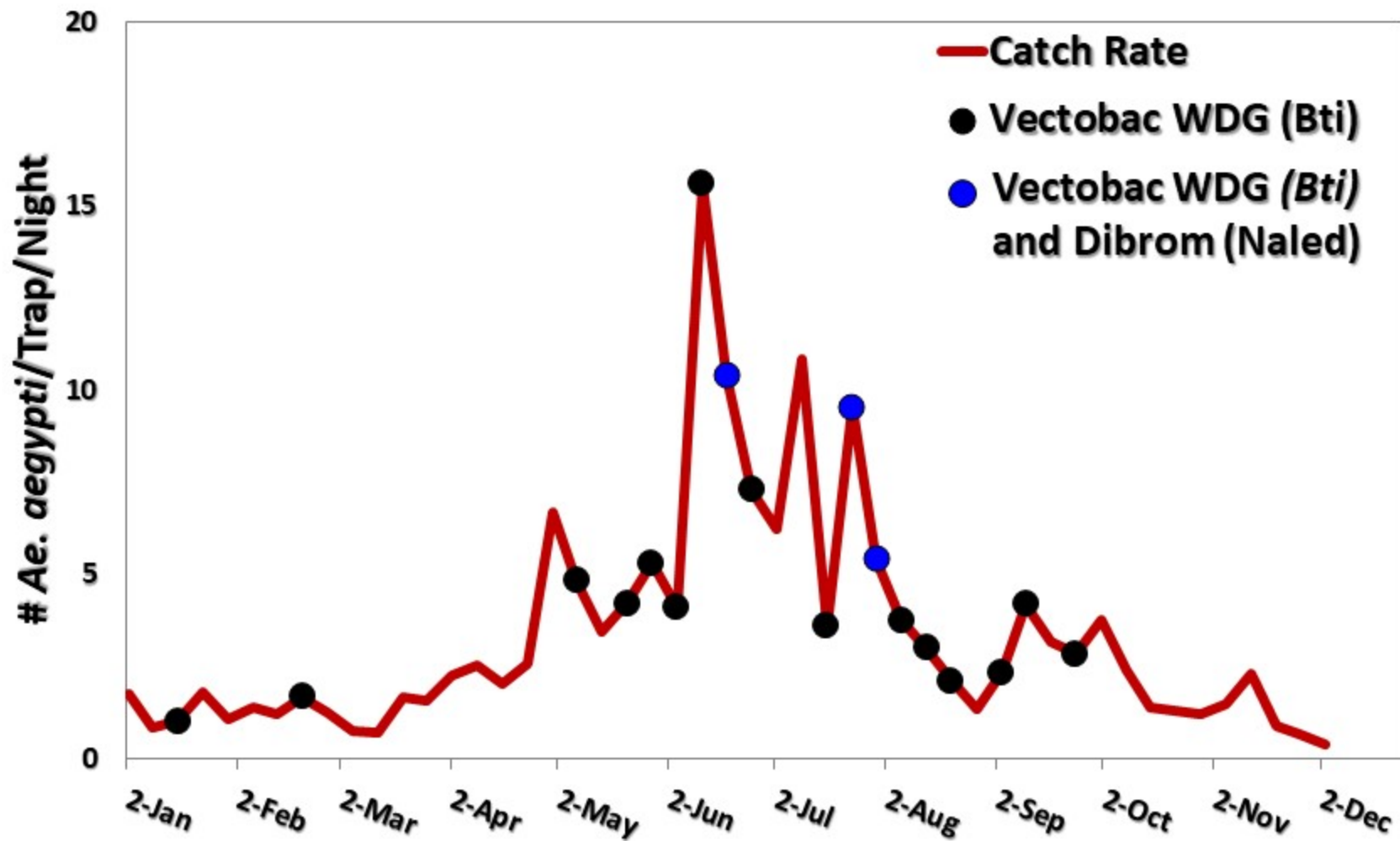
Key West Weekly House Index: 2010-2019



Key West *Aedes aegypti* Catch Rate



Aerial Operations vs. Catch Rate



Additional Uses

- Treatment for invasive species (i.e. *Aedes albopictus*)
- Ground treatments
 - Disease response
 - Areas with high vector populations
 - Backpack: areas with high number of breeding sites



Acknowledgments

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