An Automated Bait Manufacturing and Aerial Delivery System for Landscape-scale Control of Invasive Brown Treesnakes on Guam

Shane R. Siers[1], Robert J. Gosnell[2]
Patrick D. Barnhart[1*,3], William C. Pitt[1*,4], John D. Eisemann[5], Larry Clark[5], Aaron B. Shiels[5]; Craig S. Clark[6], Michael C. Messaros[7]

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*[1]NWRC Hawaii, [2]WS Guam, [3]Currently: USGS Rapid Response Team, [4]Currently: Smithsonian Conservation Biology Institute, [5]NWRC Fort Collins, [6]WS Hawaii, [7]Applied Design Corp., *Formerly*

"Who is…?"

Protecting People | Protecting Agriculture | Protecting Wildlife

“Who is…?”


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The Brown Treesnake

Origin • Introduction • Spread • Biology • Ecology • Prey Shift
Social & economic impacts • Ecological impacts

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Landscape-Scale Brown Treesnake Control

Objectives

- Reduce damages
- Prevent spread to other islands
- Recover native ecosystems

Challenges

- Remote, rough terrain (520 km^2)
- Arboreal snake
- Hard to find

Advantages

- Willing to take dead food
- Low nontarget risks

Solutions

- Acetaminophen effective & humane
- Aerial application
- Canopy suspension

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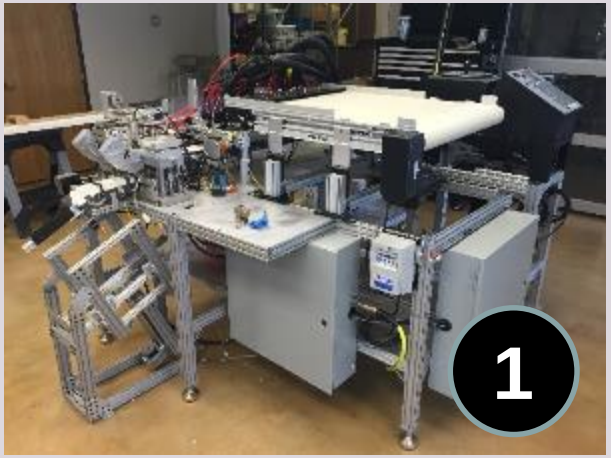
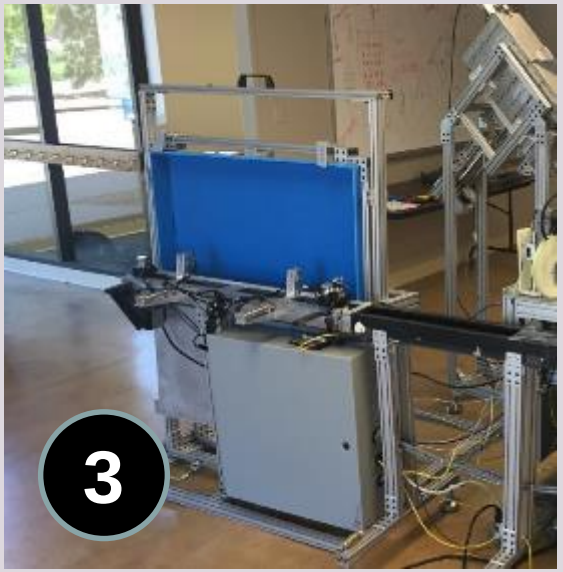
Automated Bait Manufacturing System (ABMS)





applied design

Automated Delivery System (ADS)

Performance Specs:

- 900 cartridges per carton
- 1 carton per magazine
- 4 magazines (3600 cartridges) per load
- Up to 4 cartridges per second
- @120/ha, 30 ha in 15 minutes

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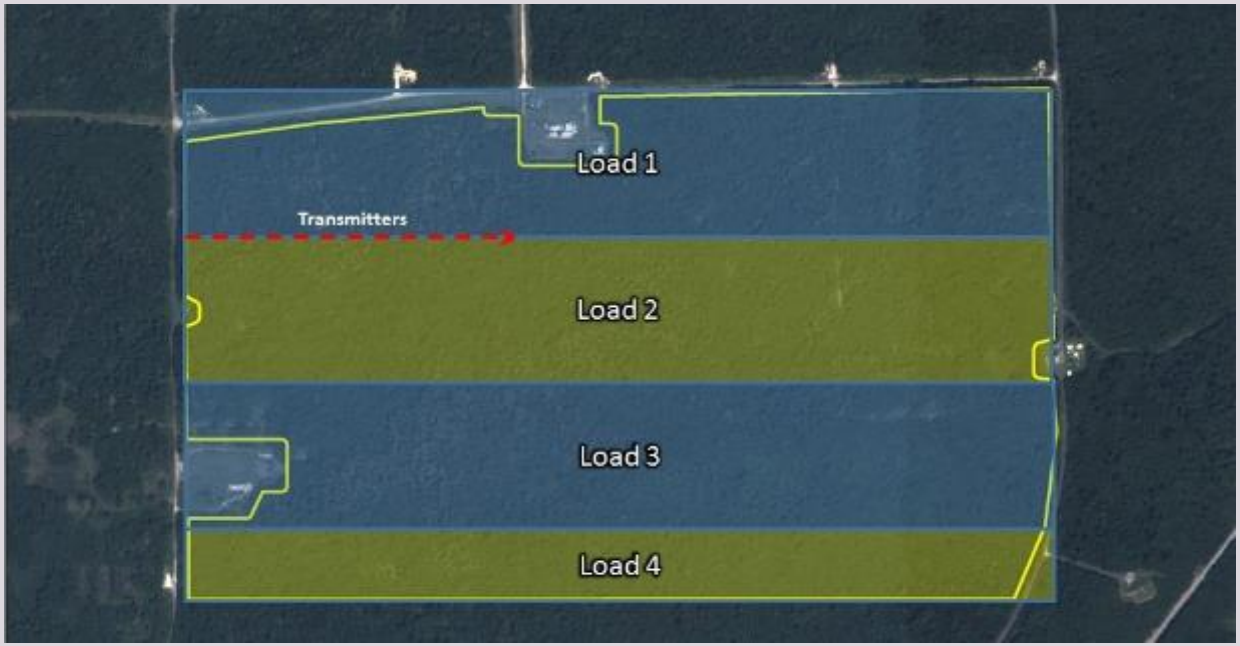
Ground Support & Magazine Loading

ADS Evaluation: Study Site



Treatment Plan

- 110-hectare treatment area
- 120 baits per hectare
- 2 applications

Objectives

- ADS performance
- Bait spacing & coverage
- Bait fate

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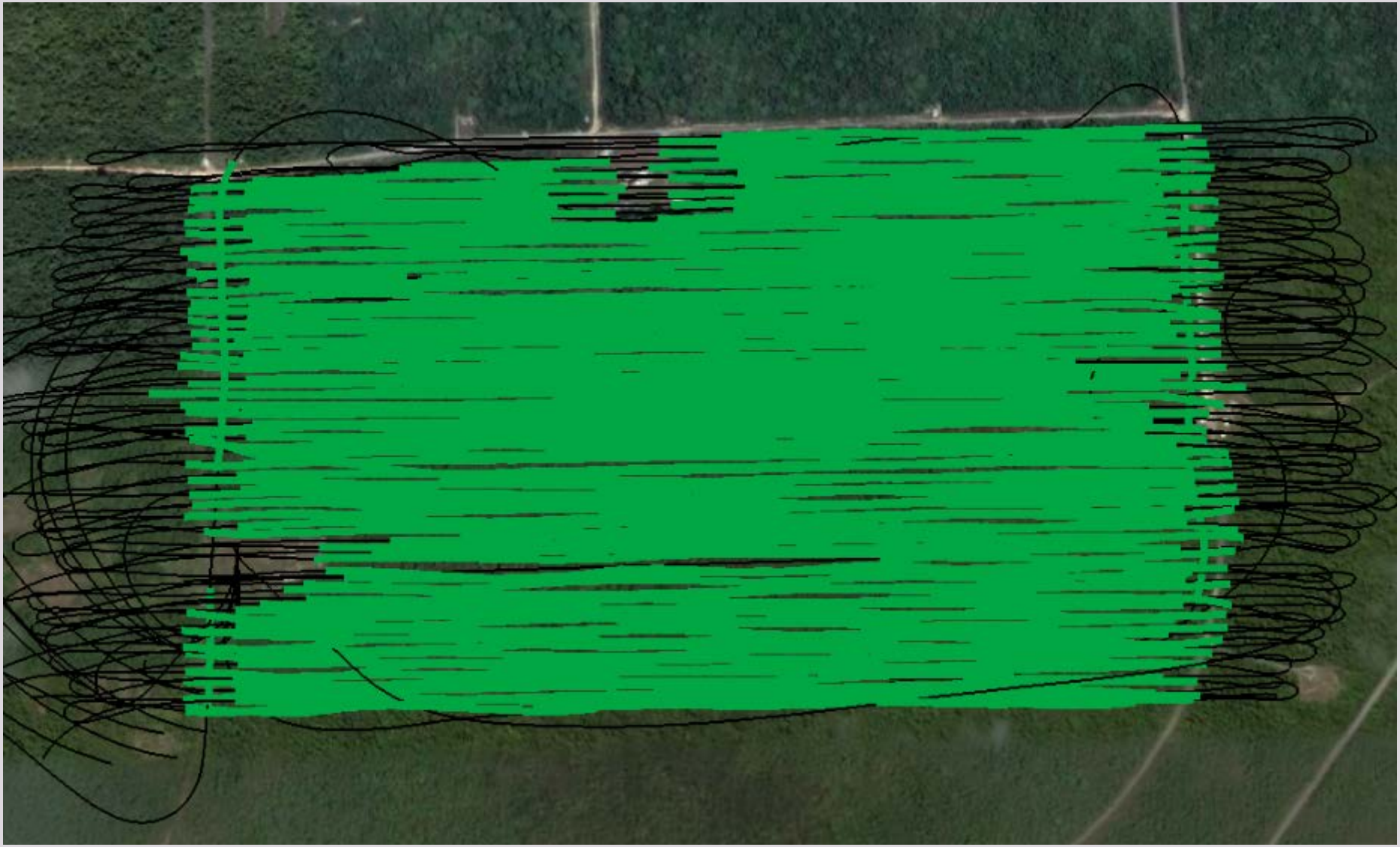
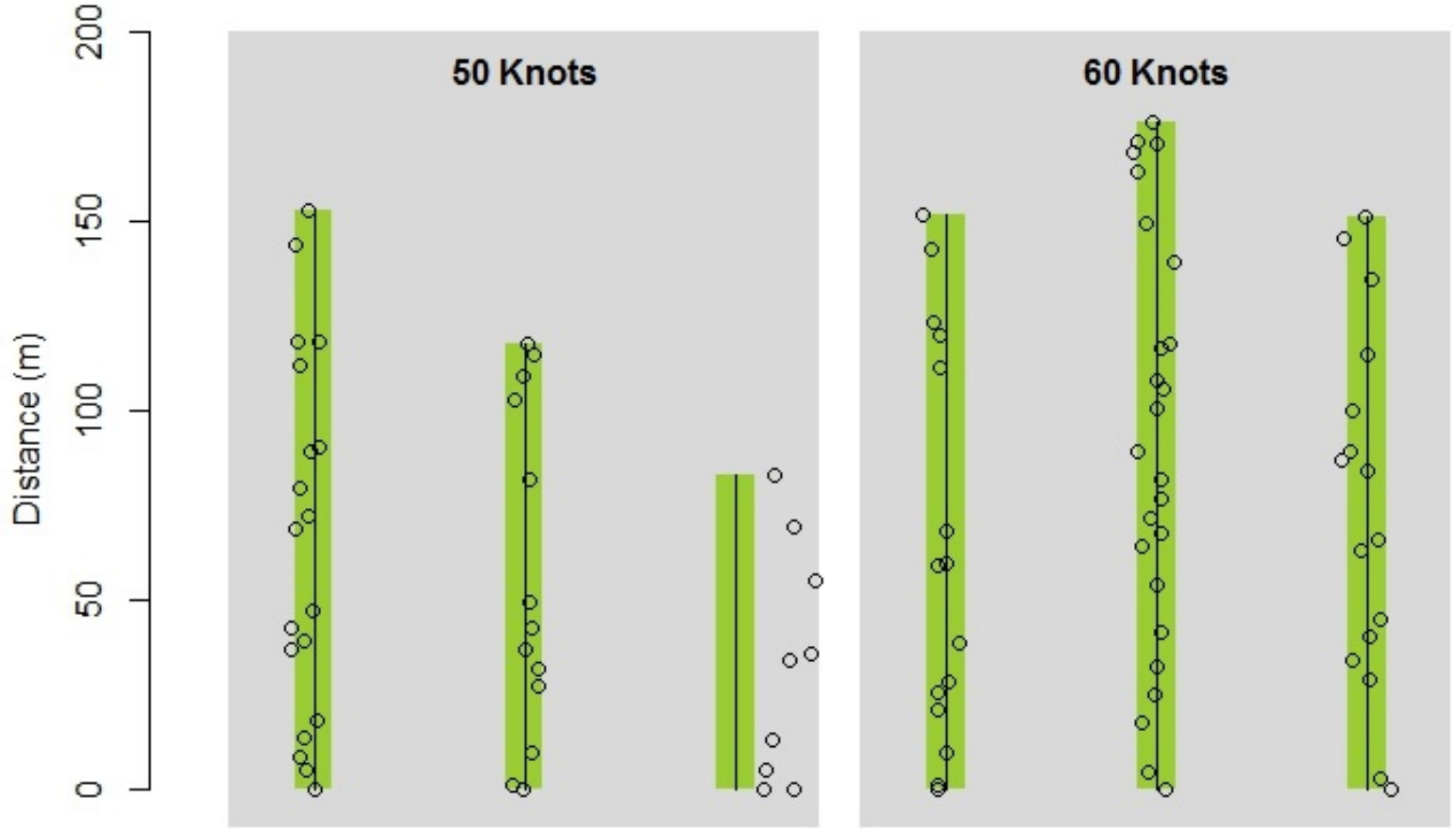
Spatial Coverage

Application Two – 2.5 hrs



Bait Spacing



Flight Heights	25 m	50 m	100 m	25 m	50 m	100 m
Spacing (m)	8.4	9.6	10.7	9.9	7.1	9.7

Overall Mean Spacing = 8.9 m

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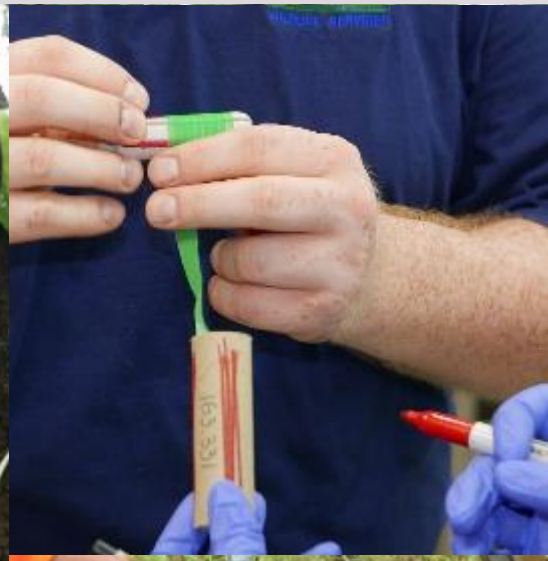
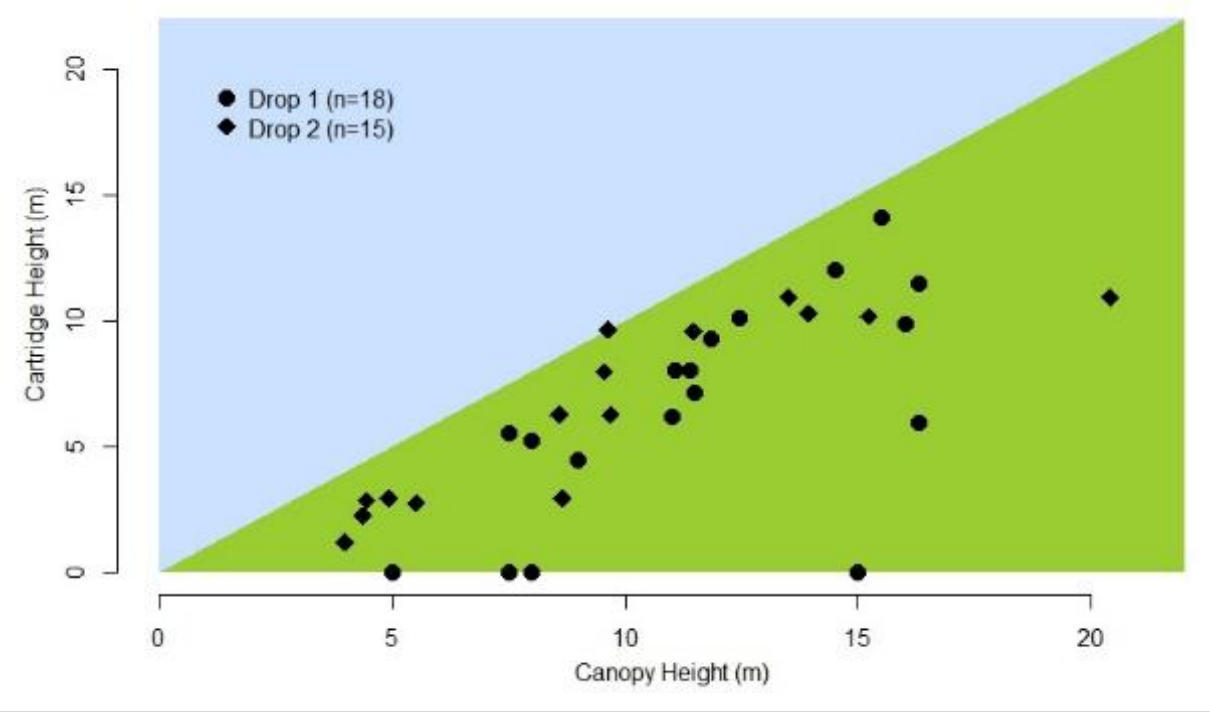
Bait Fate



Bait Fate



Radio Bait Height in Canopy (62.7%)

5.88% of transmittered baits dropped known taken by snakes

Assuming 2,750 snakes, 1,552 (56.5%) would have taken baits

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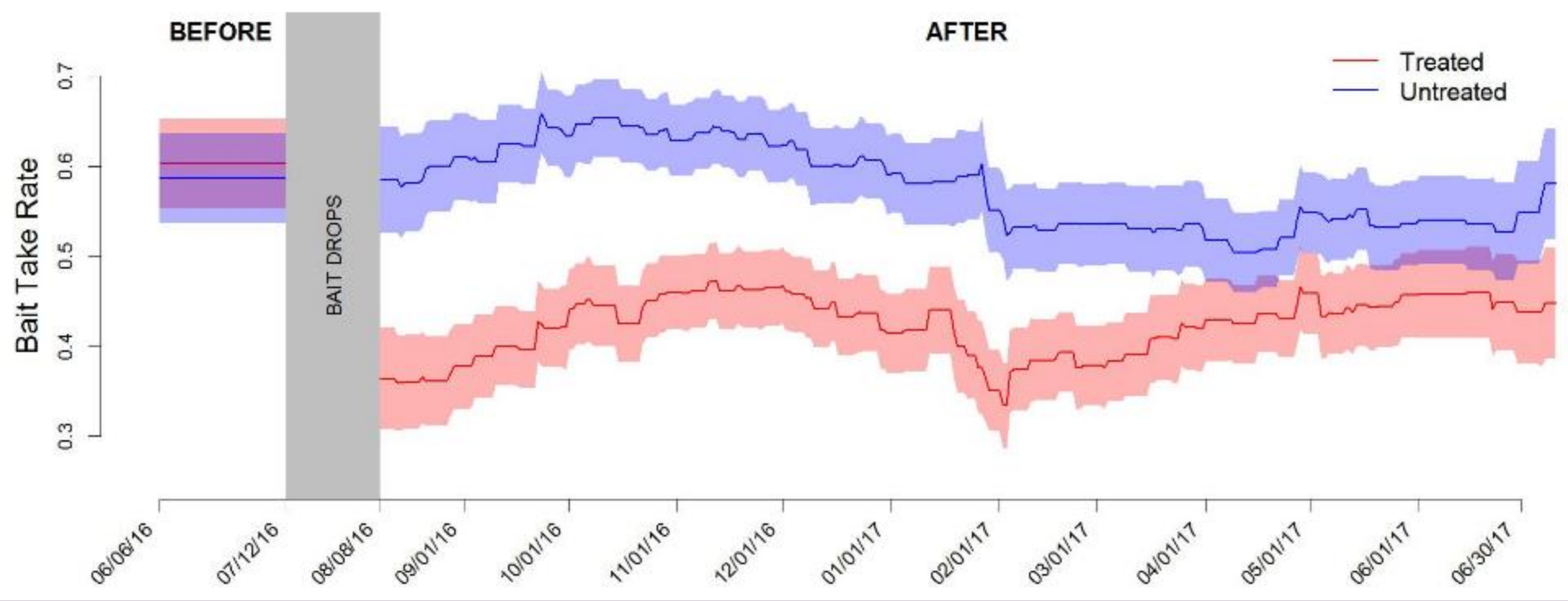
Snake Monitoring

Snake Monitoring



Treatment zone snake activity decreased by 41.2%
Difference still evident after one year

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Nontarget Monitoring

No rat outbreak

Monitor lizards only nontarget (2.5%)

Conclusions

- First tool for true landscape-scale suppression
- Reduce snake damage and risk of spread
- Don’t know how low snakes have to be for bird recovery
- **Not a “magic bullet” for eradication**
- Wildlife Services has the tool; up to land management agencies to set objectives and contract services
- No treatment without environmental review
- Possible small-scale use on DoD land as early as April 2018

ACKNOWLEDGEMENTS

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QUESTIONS?

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