

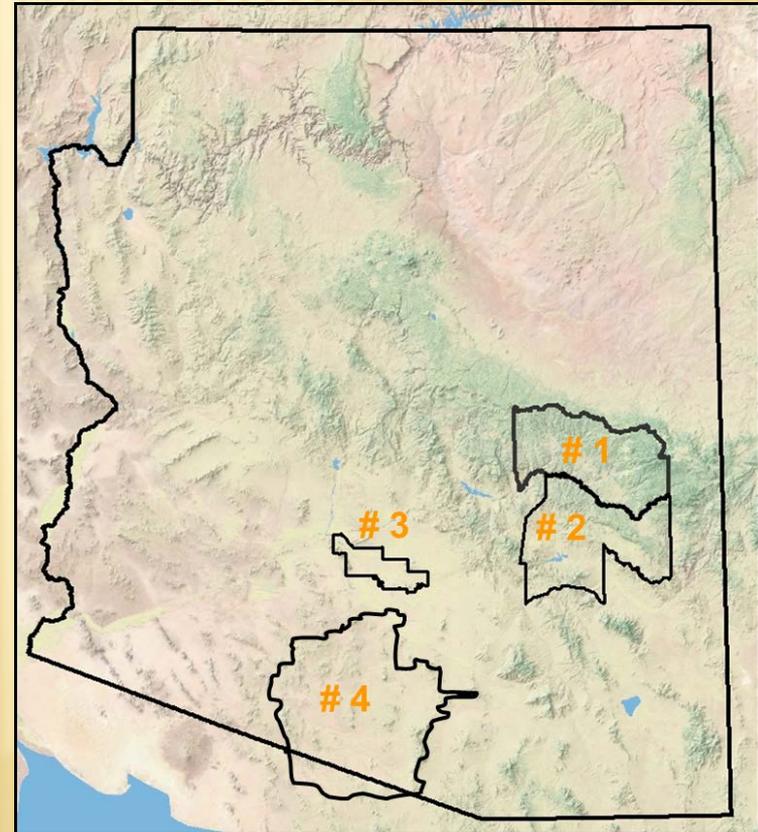
# **ROCKY MOUNTAIN SPOTTED FEVER AND THE SAN CARLOS APACHE TRIBE: RESULTS OF THE RODEO PROJECT AND BEYOND**

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EPIDEMIOLOGY PROGRAM MANAGER**



# RMSF IN ARIZONA

- From 2002-present, over 250 cases of RMSF have been reported in Arizona
- Highest incidence in the U.S.
  - + Incidence rate ~ 300 times higher than expected
- There have been 18 deaths
  - + Case fatality Rate 7%,
  - + 15 X higher



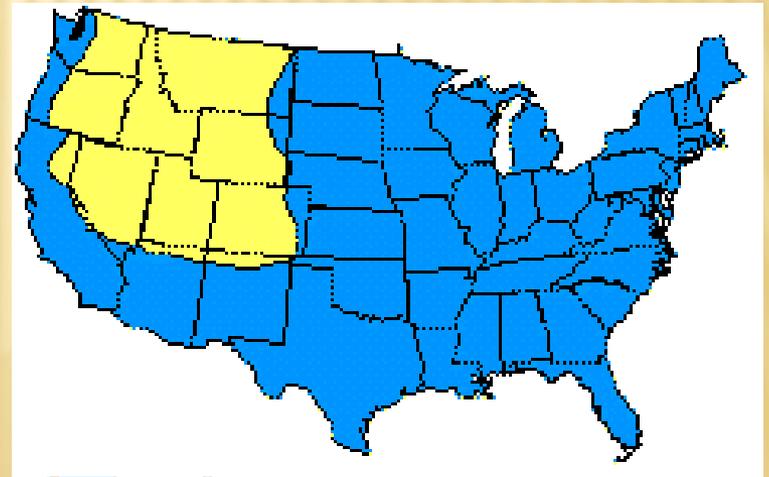
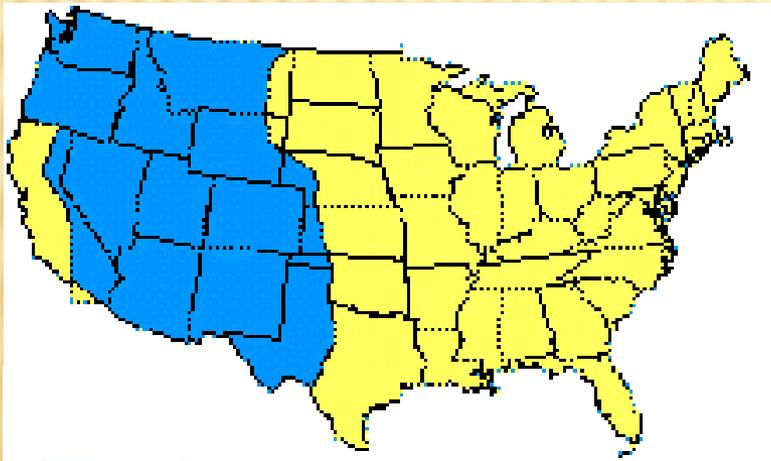
# THE PRIMARY U.S. TICK VECTORS OF RMSF



*Dermacentor variabilis*  
American dog tick



*Dermacentor andersoni*  
Rocky Mountain wood tick

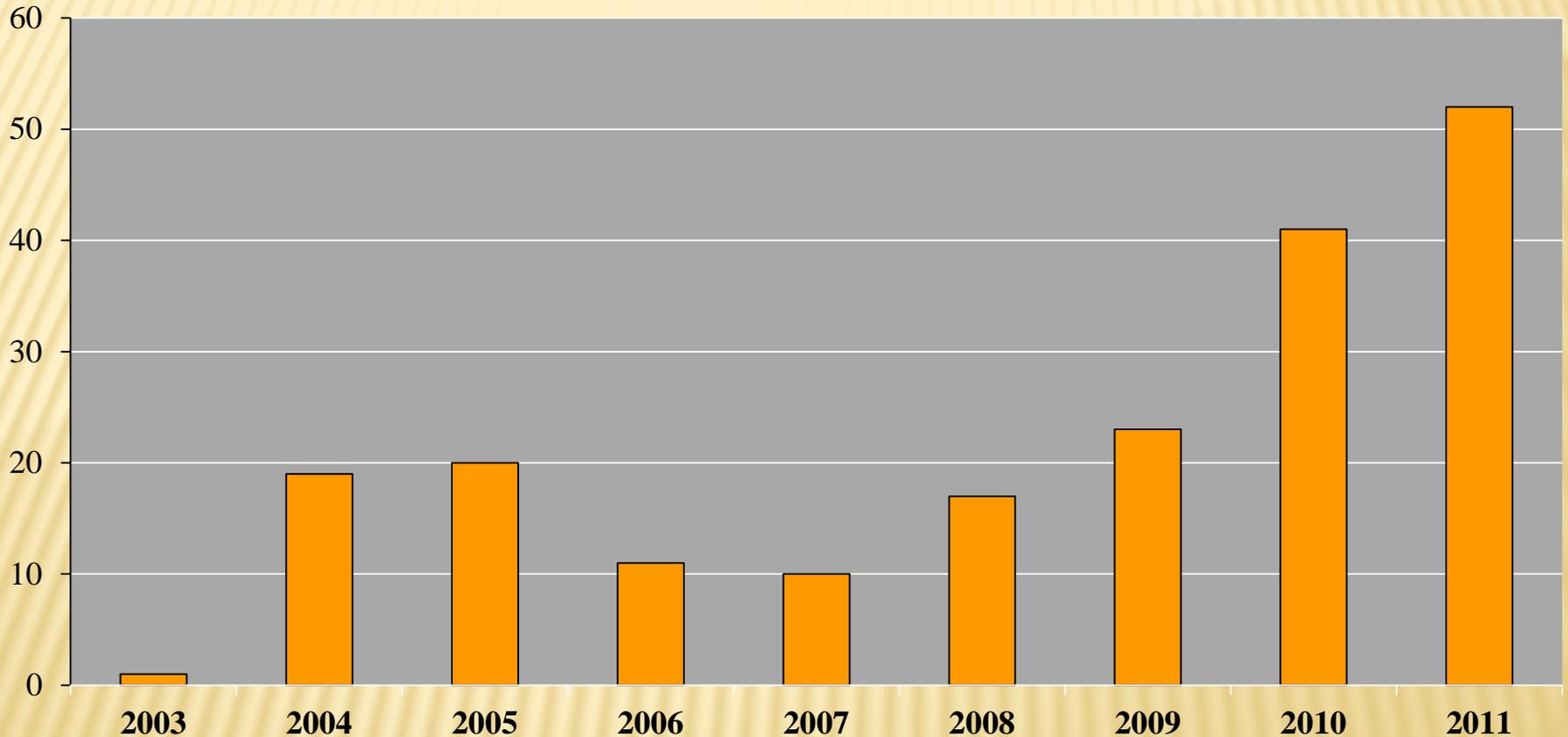


# RMSF IN EASTERN ARIZONA

- The Brown Dog Tick (*Rhipicephalus sanguineus*) was found to be the vector of the disease
- This tick is very common and can live in and around houses
- Can remain active year round

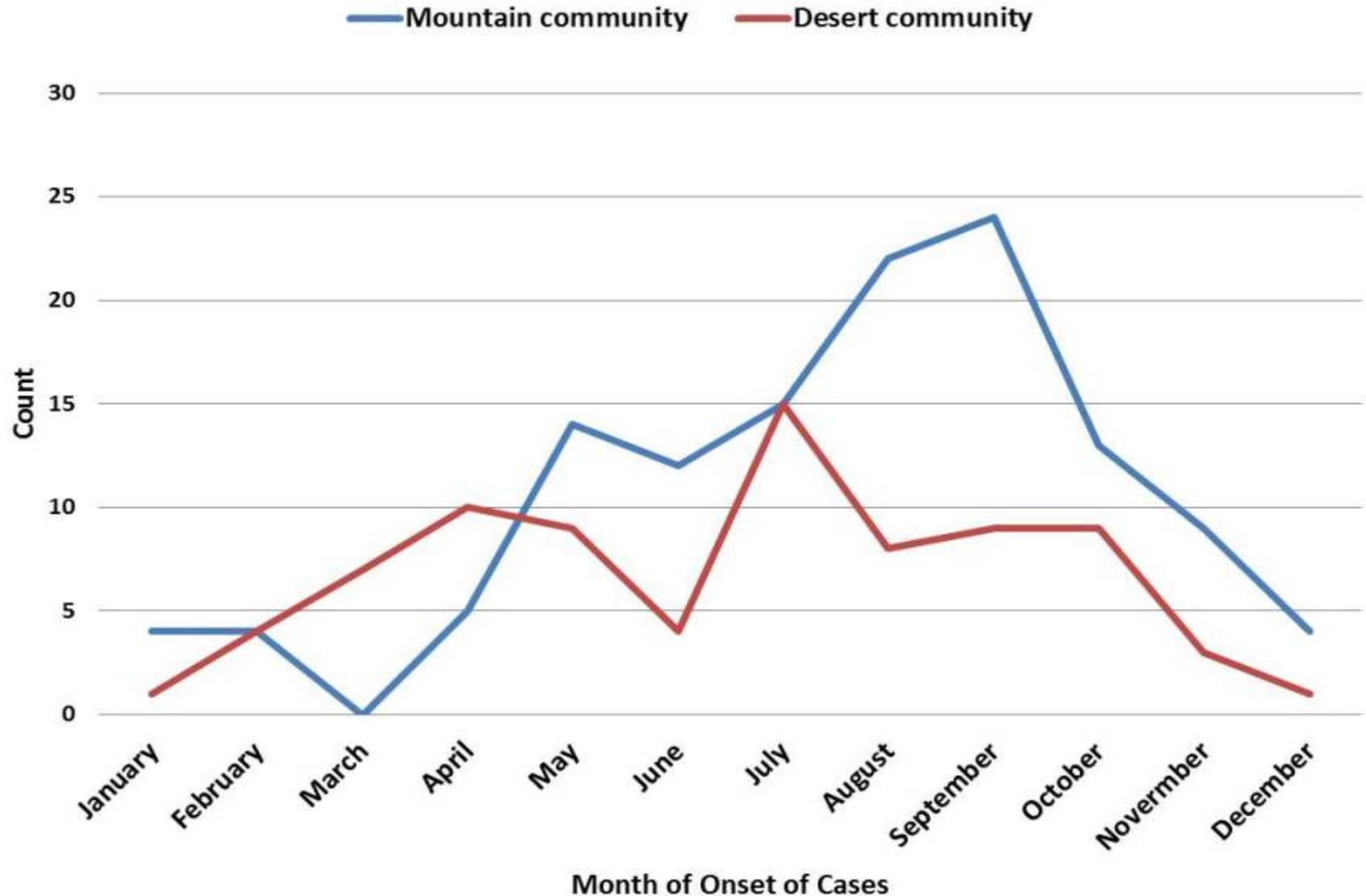


# INCREASING NUMBER OF REPORTED HUMAN CASES IN ARIZONA



***\*18 Deaths 2003-2012 (7% Case Fatality Rate)***

# SEASONALITY OF RMSF IN ARIZONA



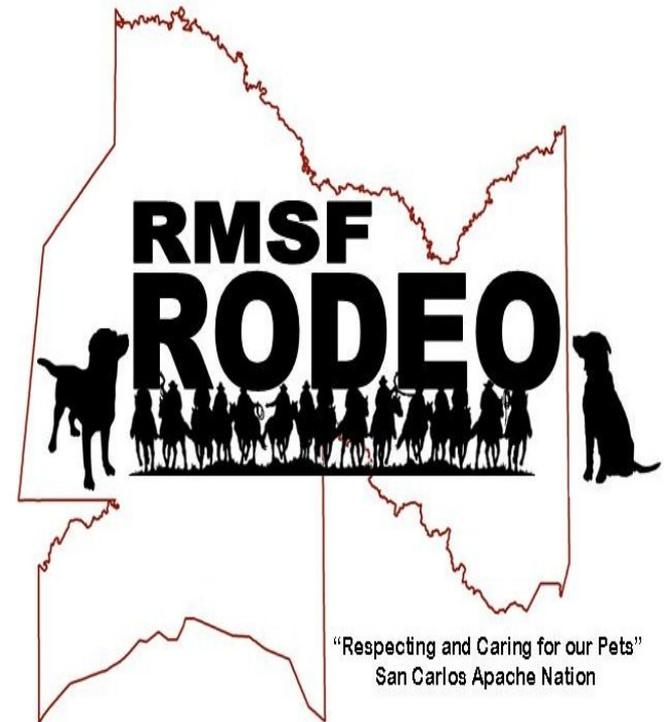
# 2012 FATALITIES

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- ❑ **March 9: Patient, aged 55 years, died from RMSF**
- ❑ **March 19: Child, aged 22 months, was transferred to tertiary care center with critical RMSF sequelae**
- ❑ **March 20: Child in the same household was transferred to tertiary care center and died on March 22**

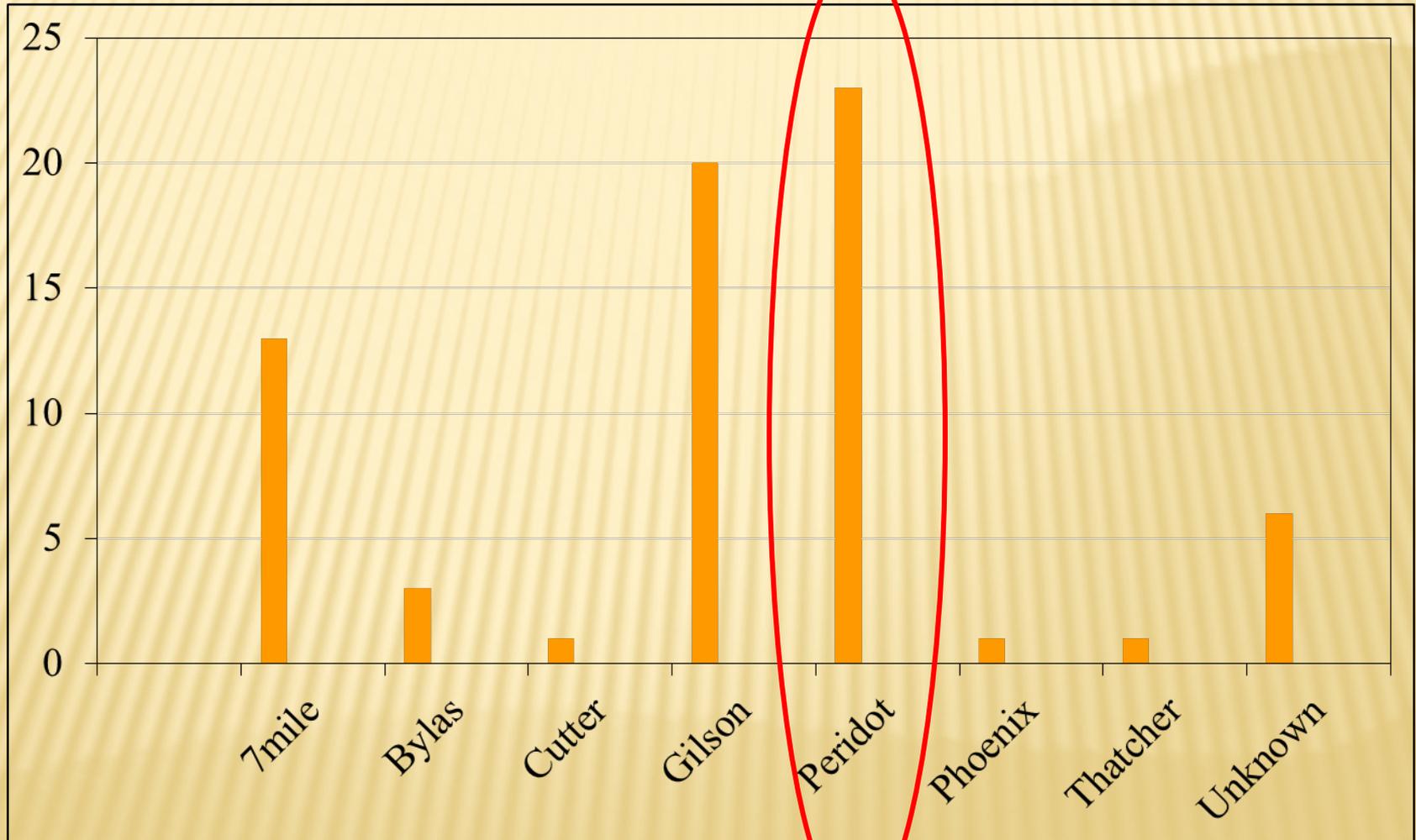
# The RMSF Rodeo Project: 2012

- Project divided into six phases:
  - Dog population count
  - Collar and register all dogs in study area
  - Spray each home 4 times
  - Tick counts in environment
  - Spay/neuter clinic
  - Knowledge, attitudes and practices survey
- Provide data for tribe to expand reservation-wide





# Selected Rodeo District: Peridot



# RMSF Rodeo Timeline, 2012



# FIELD TEAMS

- **San Carlos Community Health Representatives**
- **San Carlos Animal Control**
- **Indian Health Service**
- **Arizona Department of Health**
- **USDA**
- **CDC**



# FIELD TEAM OBJECTIVES

- 1. Visit every home**
- 2. Collar, register, tie-outs, follow up on dogs**
- 3. Educate homeowners**
- 4. Treat yards for ticks**

Eliminate Ticks!



# GOAL: Properly Timed Acaracide Treatments



# YARD TREATMENT

- Bayer Ready-To-Spray Product
- 3 Gallon Sprayers
  - Spray around the house
  - Spray dog areas
- ATVs





Fence

Wood pile

Dog House

Shade Tree

Fence

Mail box

# Tick Collars for Dogs

- Seresto®, new pre-market tick collar provided by Bayer
  - 4.5% Flumethrin, 10% imidacloprid
  - Visible marker of treatment
  - Utility in harsh environment unknown
  - Expected to last complete season (8 months)
- Applied with tribal/owner consent



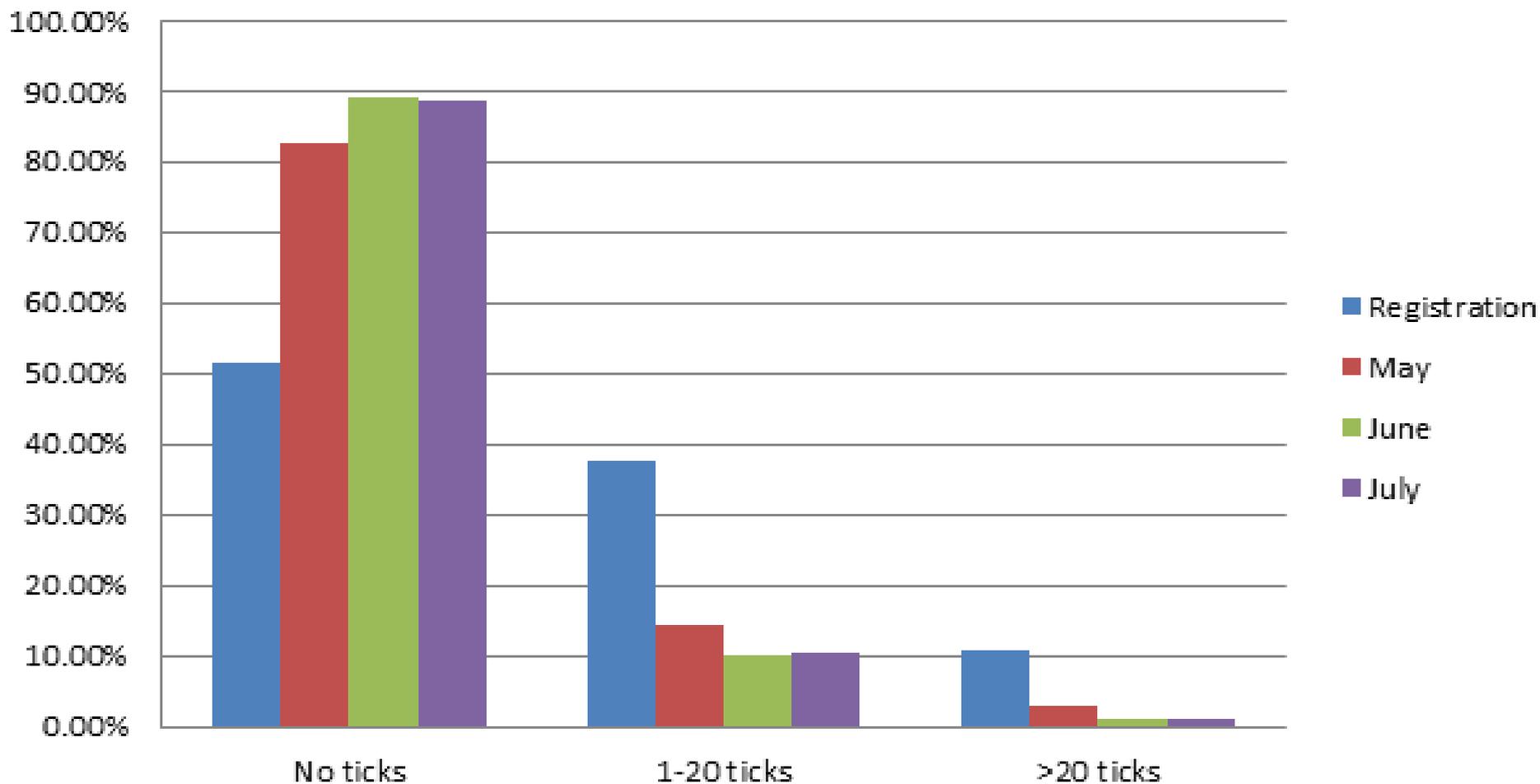
# **RMSF RODEO STATISTICS**

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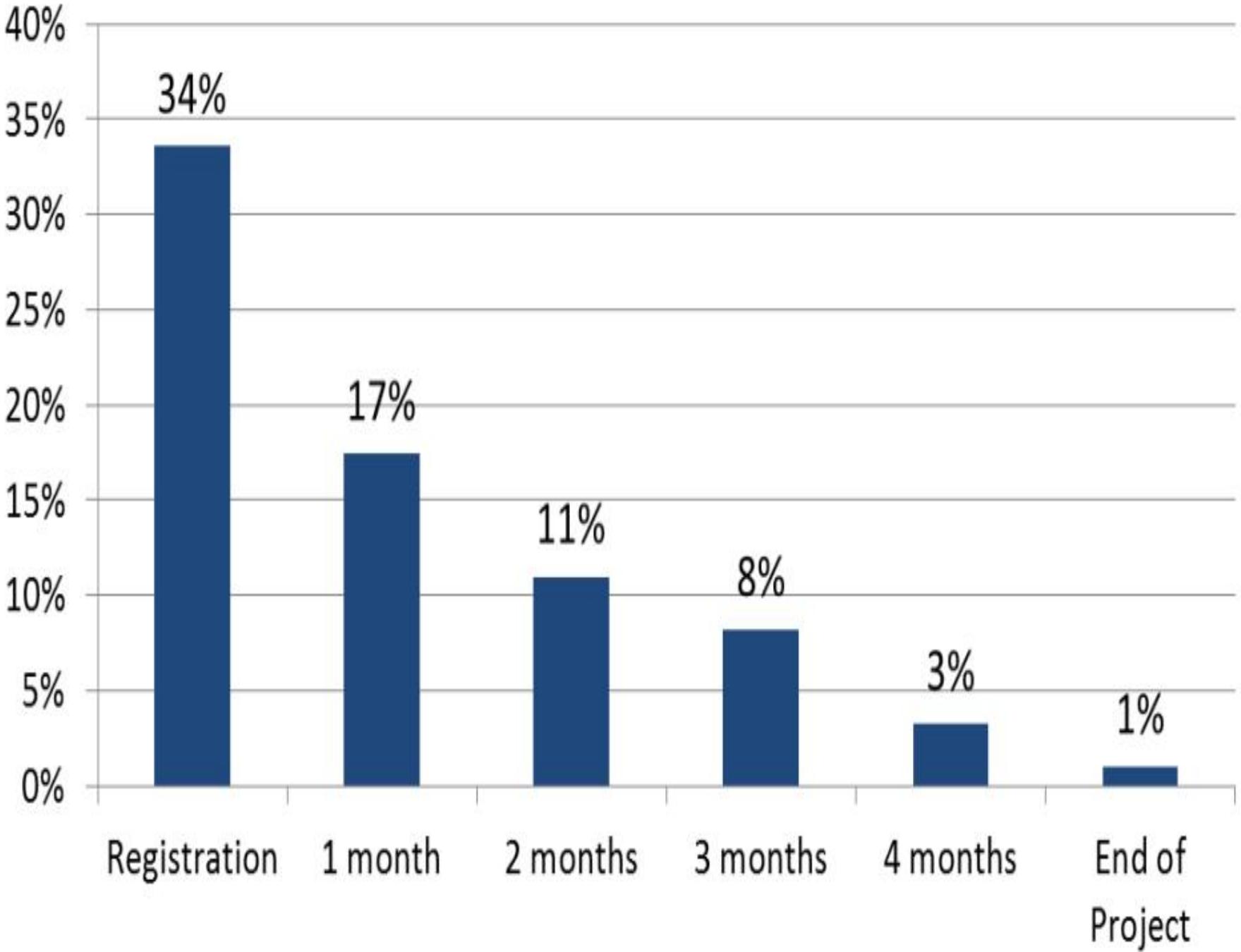
- **576/582 (99%) of homes in Peridot Heights registered/participated**
  - **Over 1000 Seresto® collars distributed**
  - **80% (95% CI: 72-88%) of enrolled households reported the grey Seresto® collar was still on all dogs at the end of the study**
  - **Tethers distributed to restrain dogs**
  - **All dogs provided tribal license and collar**
  - **Houses Treated 4 times (May-Aug)**
- **>2,800 home site visits**

# TICK COUNTS ON DOGS: MARCH – JULY 2012

## Tick-count on Dogs in RMSF Rodeo, Reported as Proportion of Dogs



Percent of Dogs with Ticks

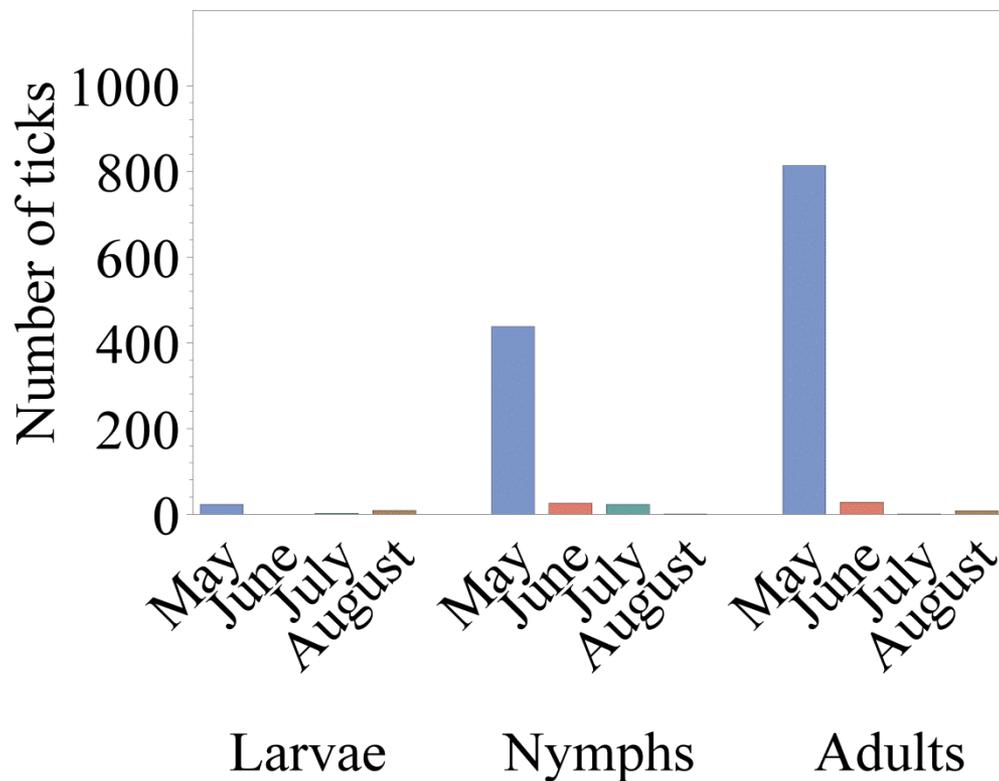


# TICKS TRAPS AT RODEO HOME SITES

- Five homes registered for the RMSF Rodeo
  - Had at least two dogs at registration
- Three traps set at each house prior to each month's treatment



Tick Count by Stage and Month



# **EVALUATION: KNOWLEDGE, ATTITUDES AND PRACTICES**

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## **■ Knowledge**

- 95% (95% CI: 94-98%) of persons had heard of RMSF**
- 42% (95% CI: 37-47%) of persons said they knew someone who had had RMSF**
- 78% (95% CI: 74-82%) of persons stated that they knew how to remove a tick**

## **■ Attitudes**

- 88% (95% CI: 85-91%) would support an animal control shelter on San Carlos**
- 80% (95% CI: 76-84%) would support a complete animal control shelter (includes euthanasia)**

# EVALUATION: COMPARING RODEO AND NON-RODEO AREAS

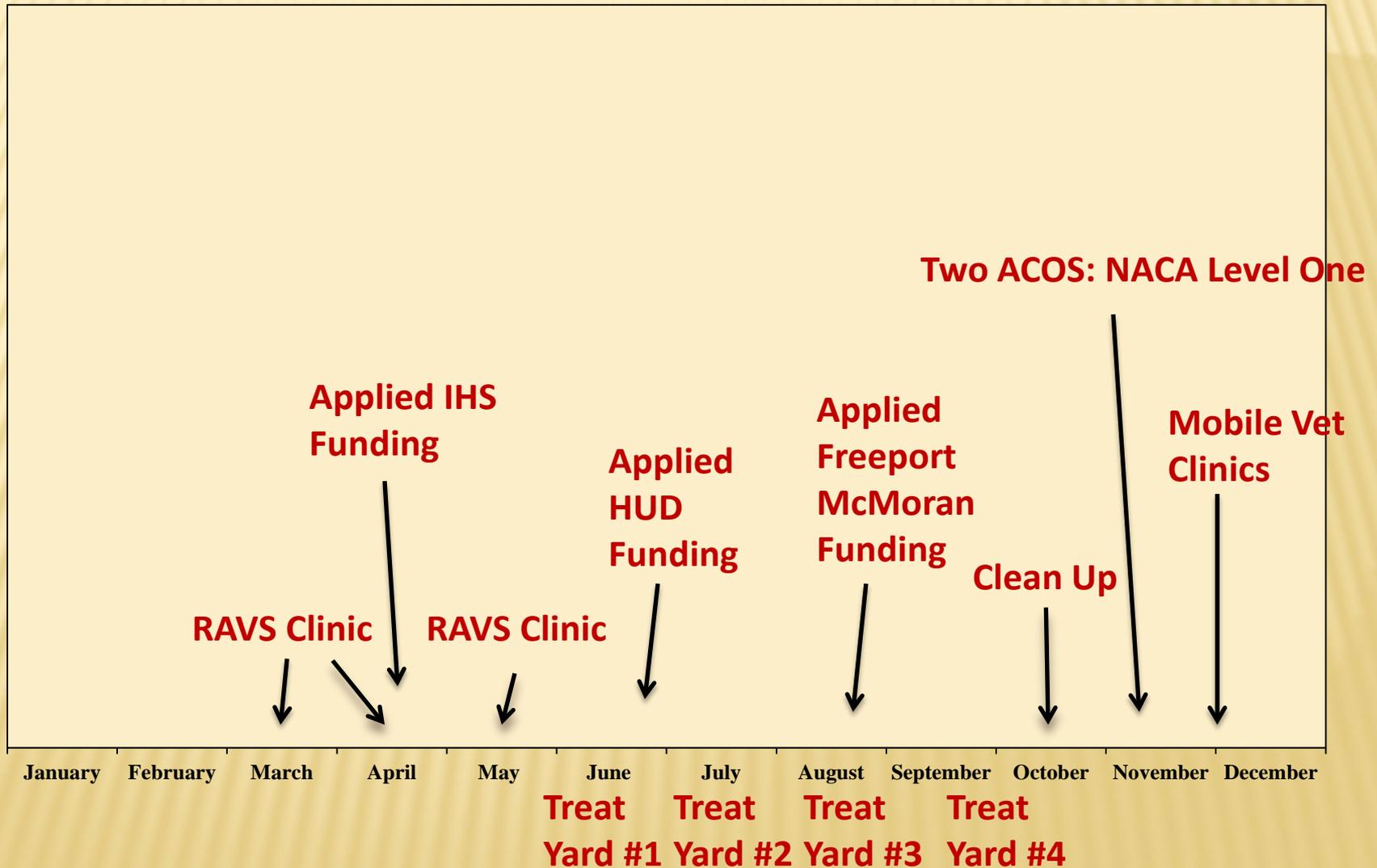
	Rodeo Area (95% CI)	Non-Rodeo Area (95% CI)
House treated for ticks in the last year	93% (89-96%)	48% (42-54%)
Currently treat dog for ticks	90% (84-96%)	70% (62-77%)
Always tie up, fence in or keep dogs inside	40% (32-46%)	28% (21-35%)
Think there should be a limit to the number of dogs a person can own	69% (63-74%)	75% (69-80%)

# EVALUATION: KAP SURVEY

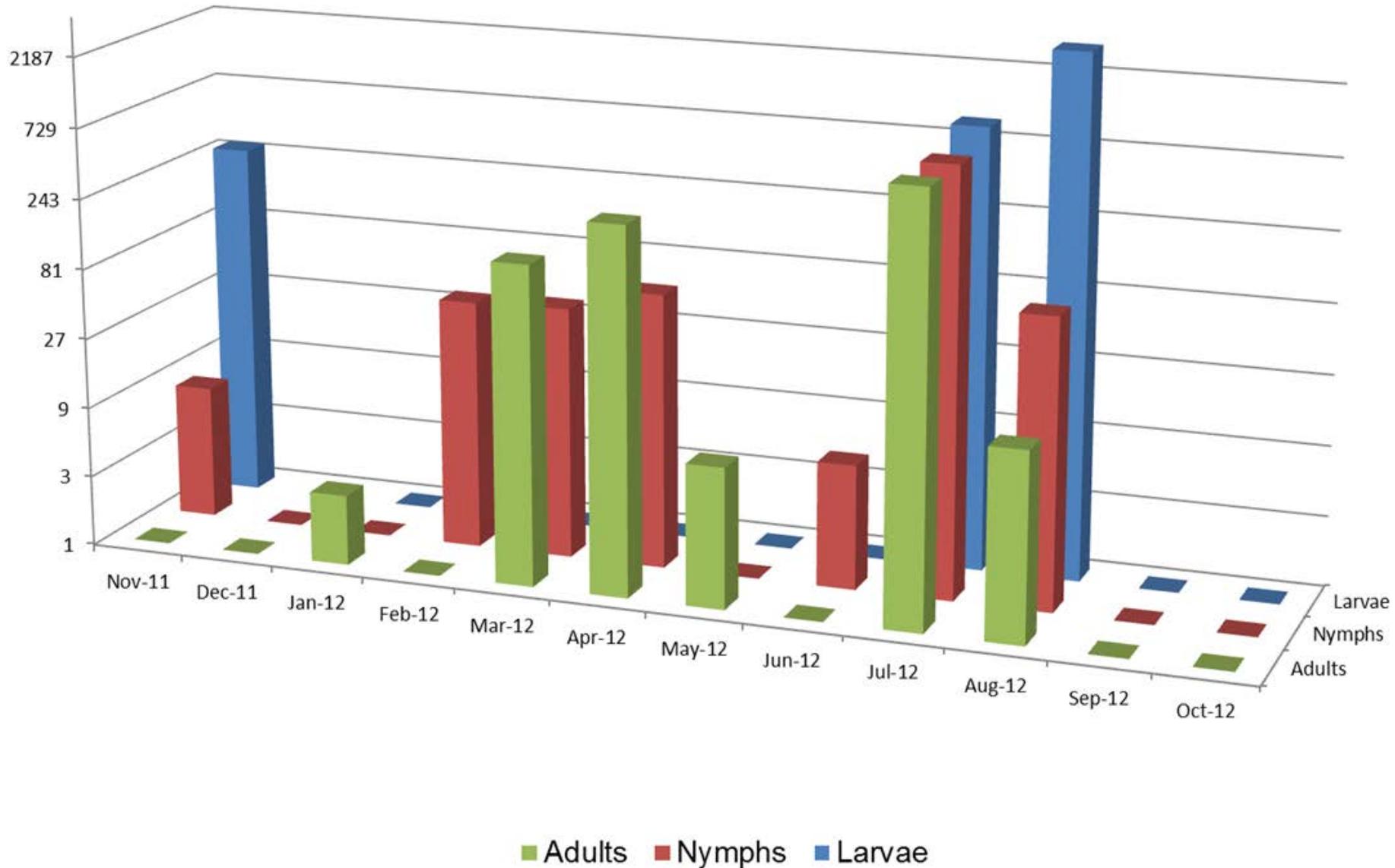
- Interview team checked nearest dog for ticks

Number of Ticks	Rodeo Area (95% CI)	Non-Rodeo Area (95% CI)
0	99% (98–100%)	37% (29–45%)
1–20	0.9% (0.0–2.5%)	32% (24–40%)
20+	0%	31% (23–39%)

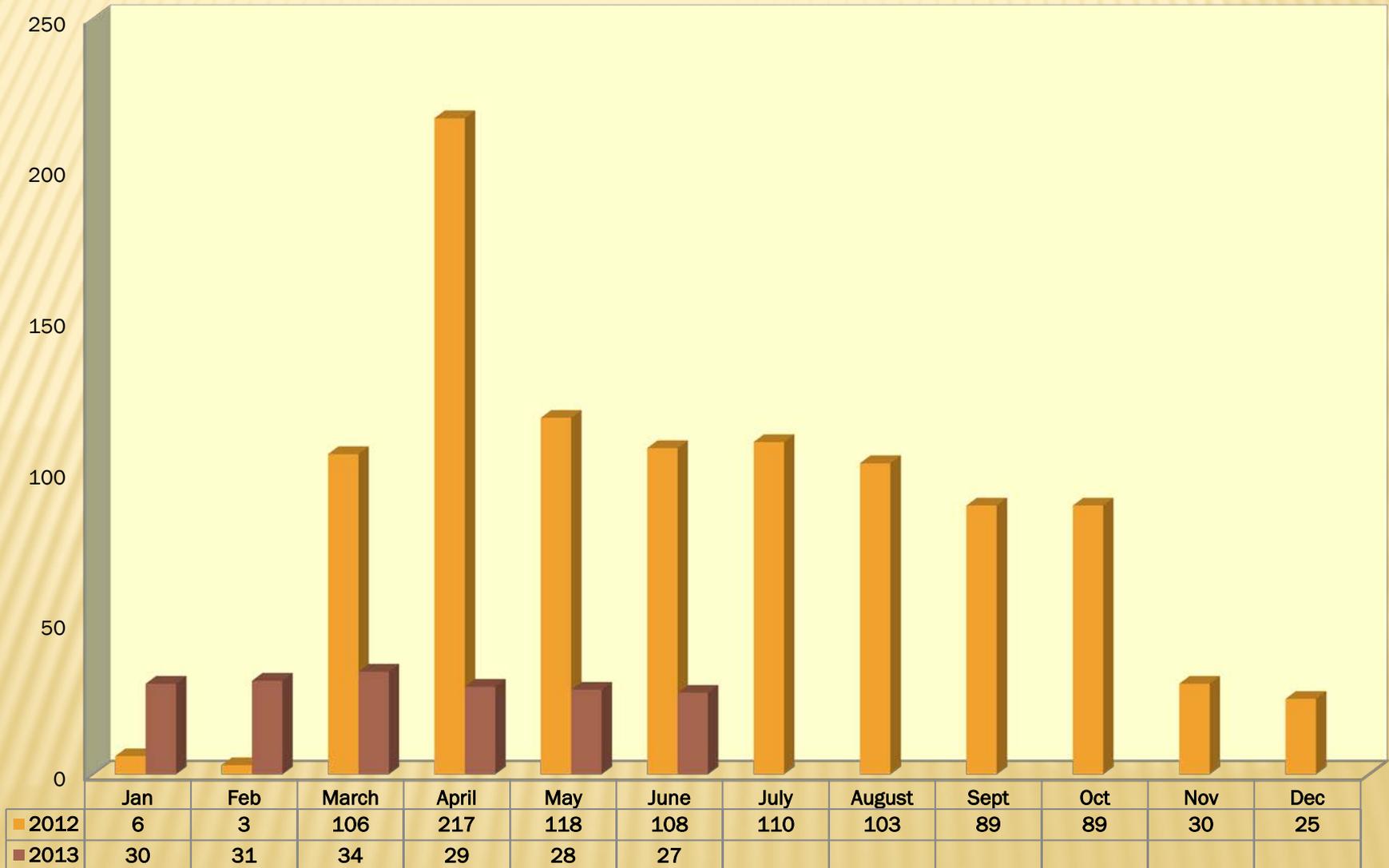
# SCAT Reservation-Wide RMSF Prevention Project, 2012



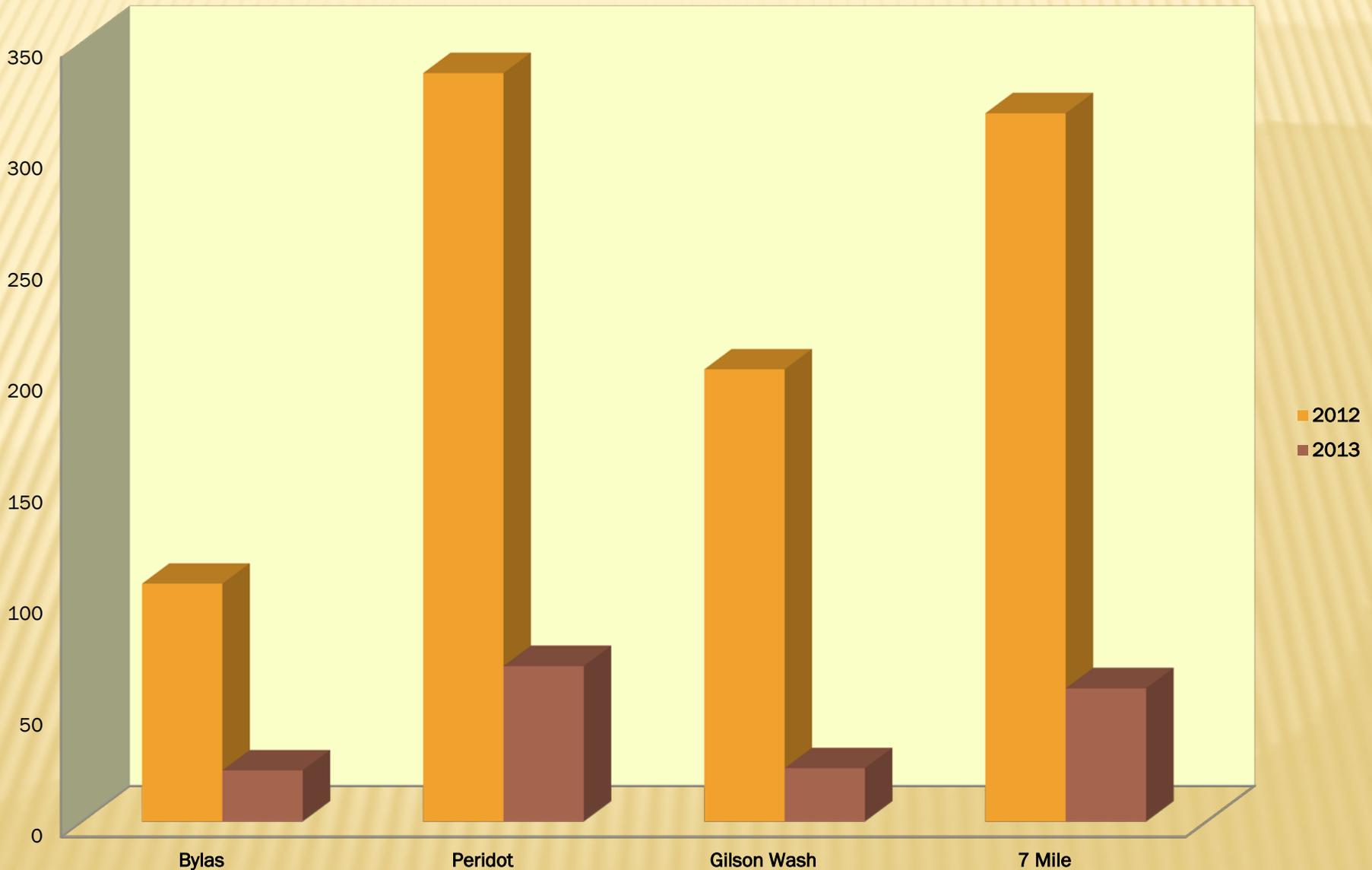
# Number of *Rh. sanguineus* ticks collected monthly in CO<sup>2</sup> traps.



# The Total Number of Suspected RMSF Cases: San Carlos 2012 and 2013



# The Total Number of Suspected RMSF Cases: All Districts San Carlos 2012 and 2013

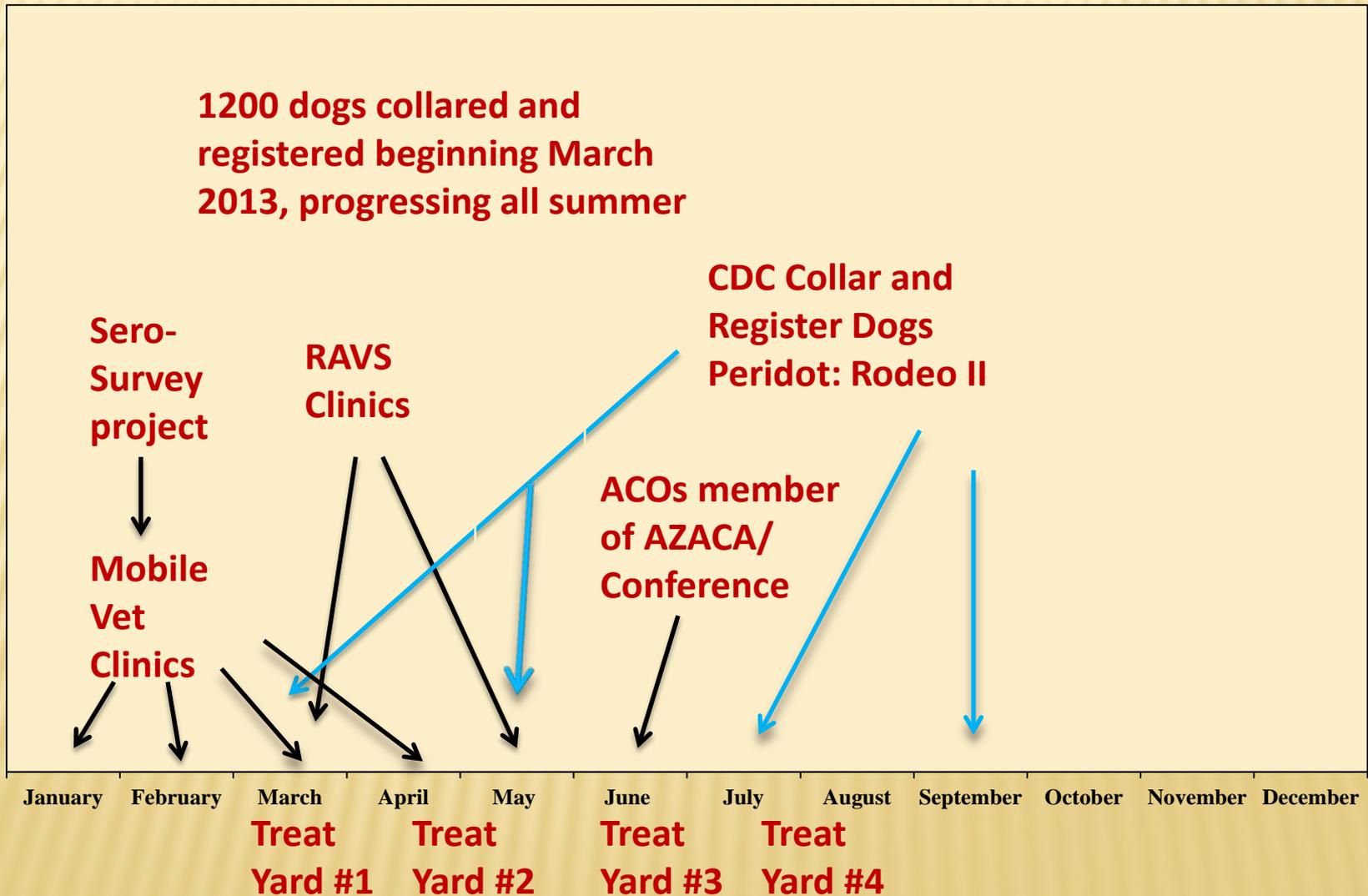


# 2012 RAVS CLINICS

- ✘ March 2012 Vaccination Clinic
  - + 386 animals vaccinated
- ✘ May 2012 Spay/Neuter/Vaccination Clinic
  - + 534 animals treated
- ✘ Dogs Spayed/Neutered: 168
- ✘ Cats Spayed/Neutered: 38
- ✘ Dogs vaccinated: 281
- ✘ Cats vaccinated: 47
- ✘ Estimated savings:
  - + ***\$158,025.00***



# SCAT Reservation-Wide RMSF Prevention Project, 2013



# ***TICK COUNTS ON DOGS SAN CARLOS, 2013***

	<b>Gilson Wash (n=20)</b>	<b>Bylas (n=20)</b>	<b>7 Mile (n=20)</b>	<b>Peridot (outside Rodeo area) (n=20)</b>
<b>With Seresto Collar</b>	<b>18(90%)</b>	<b>20(100%)</b>	<b>18(90%)</b>	<b>18(90%)</b>
<b>With Zodiac Collar</b>	<b>2(10%)</b>	<b>0</b>	<b>1(.05%)</b>	<b>0</b>
<b>No Tick Collar</b>	<b>0</b>	<b>0</b>	<b>1(.05%)</b>	<b>2(10%)</b>
<b>No Ticks</b>	<b>19(95%)</b>	<b>20(100%)</b>	<b>20(100%)</b>	<b>18(90%)</b>
<b>1 - 20 ticks</b>	<b>1(.05%)</b>	<b>0</b>	<b>0</b>	<b>2(10%)</b>
<b>20+ ticks</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

# 2013 SPAY AND NEUTER RESULTS

## × RAVS Clinics

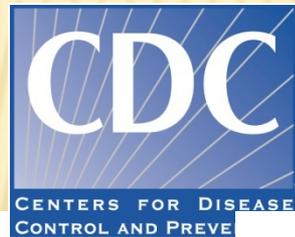
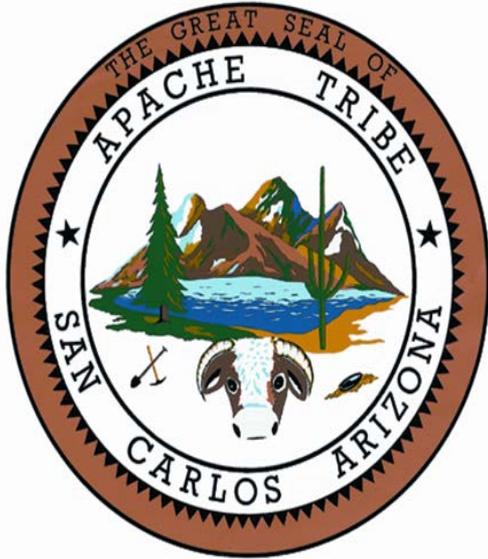
- + March 2013 Wellness Clinic
- + May Spay/Neuter

## × Mobile Vet Clinic

- + From November 2012 to present:
  - × 243 pets sterilized
  - × 283 pets vaccinated
  - × 215 Rabies vaccinated

<http://www.youtube.com/watch?v=jdnCdM98oCA>

# RMSF Prevention Campaign Partners



# **SPECIAL THANKS TO.....**

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- × The SCAT Animal Control Officers
- × SCAT Community Health Representatives
- × Jennifer McQuiston, DVM
- × Mark Miller
- × Naomi Drexler
- × Suzanne Todd, DVM
- × Joanna Regan, MD
- × Justin Gerding
- × Kenny Hicks
- × Stephen Pointkowski
- × Tim Shelhamer
- × Erica Weiss
- × Michael Allison
- × And many, many more.....

# QUESTIONS.....

