

**White-tailed Deer and Cattle Fever
Ticks**
Venado cola-blanca y las garrapatas

**David Hewitt, John Goolsby, Poncho
Ortega-S., Aaron Foley, Tyler Campbell,
Nirbhay Singh, and Beto Perez de Leon**



Team Effort Trabajo en Equipo

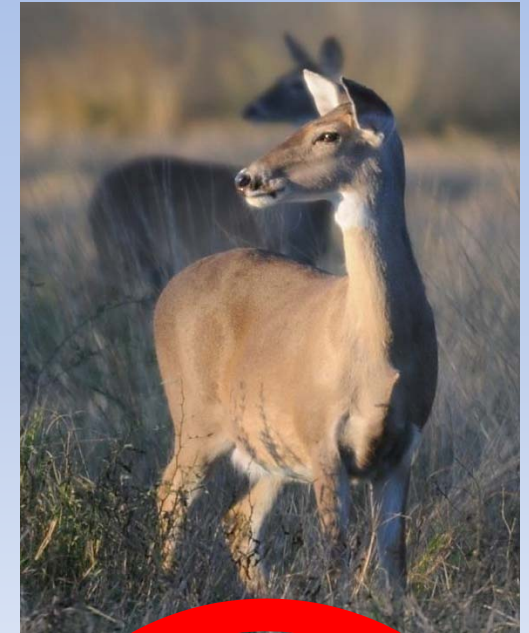


- **Texas A&M University - Kingsville** – Chase Currie, Greta Schuster, David Hewitt, and Alfonso Ortega
- **USDA-ARS Knipling-Bushland U.S. Livestock Insects Research Laboratory** – Beto Perez de Leon, Kim H. Lohmeyer, Ron Davey, Mat Pound
- **USDA-APHIS-Wildlife Services**
- **USDA-APHIS-Veterinary Services** – Ed Bowers, Teo Vela, Dan Baca, Roberta Duhaime
- **USDA-NIFA** – Agriculture and Food Research Initiative
- **Cattle Fever Tick Eradication Program Personnel**



The Potential Players

Posibles implicados



The Known Players

Sabidos implicados

Can carry cattle fever ticks

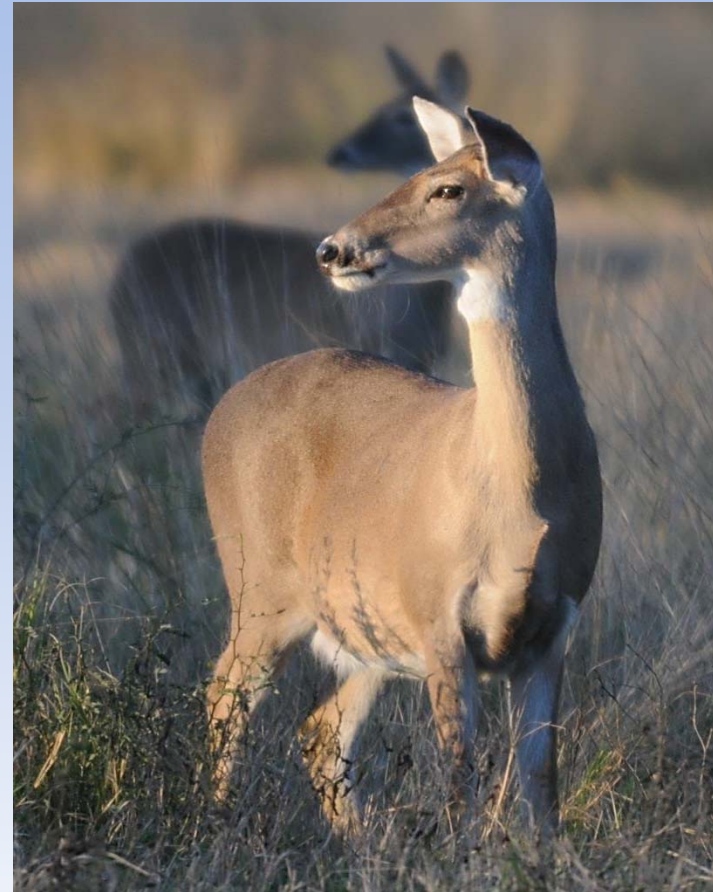
Tested positive for bovine babesia

Pueden hospedar garrapatas

Han salido positivos a babesia bovina



Nilgai
Nilgai



White-tailed deer
Venado cola-blanca

White-tailed Deer Biology

Biología del Venado Cola-Blanca

- Member of the Cervidae
- Miembro de la familia Cervidae
- Elk, moose, caribou
- Wapiti, alce, reno
- Females – 40 - 50 kg Males – 75 – 100 kg
- Hembra – 40 – 50 kg Machos – 75-100 kg



White-tailed Deer Biology

Biología del Venado Cola-Blanca

- Boreal forest to tropical jungle
- Bosque boreal (Taiga) a la selva tropical
- Prefers mix of woody vegetation and open areas
- Prefiere combinaciones de vegetación arbustiva con areas abiertas
- Native to Texas
- Nativo de Texas
- Found essentially throughout the state
- Encontrado esencialmente en todo el estado



White-tailed Deer Biology

Biología del Venado Cola-Blanca

- Annual cycle in TX
- Ciclo anual en Texas
 - Breeding Nov-Jan; Fawns May – July
 - Apareamiento en noviembre- enero; cervatillos en mayo-julio
 - Summer and winter nutritional stress, but varies with rainfall
 - Verano é invierno periodos de estrés nutricional, pero varía con precipitación
- 70% of females have twins
- 70% de las hembras paren cuates
- Moderately social – often in small herds
- Moderadamente social – comunmente en pequeños hatos

Hunting and Management Expenditures

Gastos de la Caza y el Manejo

Texas

- Hunters / Cazadores
 - > \$900 million/yr (USD)
- Supplement and bait
Suplemento y cebo
 - >\$100 million/yr
- Helicopter survey
Censos con helicopter
 - >\$3 million/yr

Challenges of Treating Wildlife

Retos de Tratamientos a la Fauna Silvestre

- Cannot gather animals
- No se pueden juntar los animales
 - Treat with bait – Not all animals treated
 - Tratar con cebo – No todos los animales reciben tratamiento



Challenges of Treating Wildlife

Retos de Tratamientos a la Fauna Silvestre

- Cannot gather animals
- No se pueden juntar los animales
- Deer and nilgai may be eaten by hunters
- Venados y nilgais podrían ser consumidos por cazadores
 - Must treat topically during hunting season
 - Tratamiento tópico durante la temporada de cacería



Study Area

- 4 study sites, 2,700 ha
 - 2 low fenced sites (standard livestock fence)
 - 2 partial high fenced sites (2.5 m fence)



Deer Capture

Captura de Venados

- 328 deer in 2010-2012
- 328 venados en 2010-2012
- Ear tags, GPS collars, tick and acaricide sampling
- Aretados, collares de GPS, muestreo de garrapatas y acaricida



Monitored with Cameras

Monitoreo con Cámaras



5/14/2010 8:50 PM



- Autumn – 12% (n=17)

Otoño

- Winter – 12% (n=17)

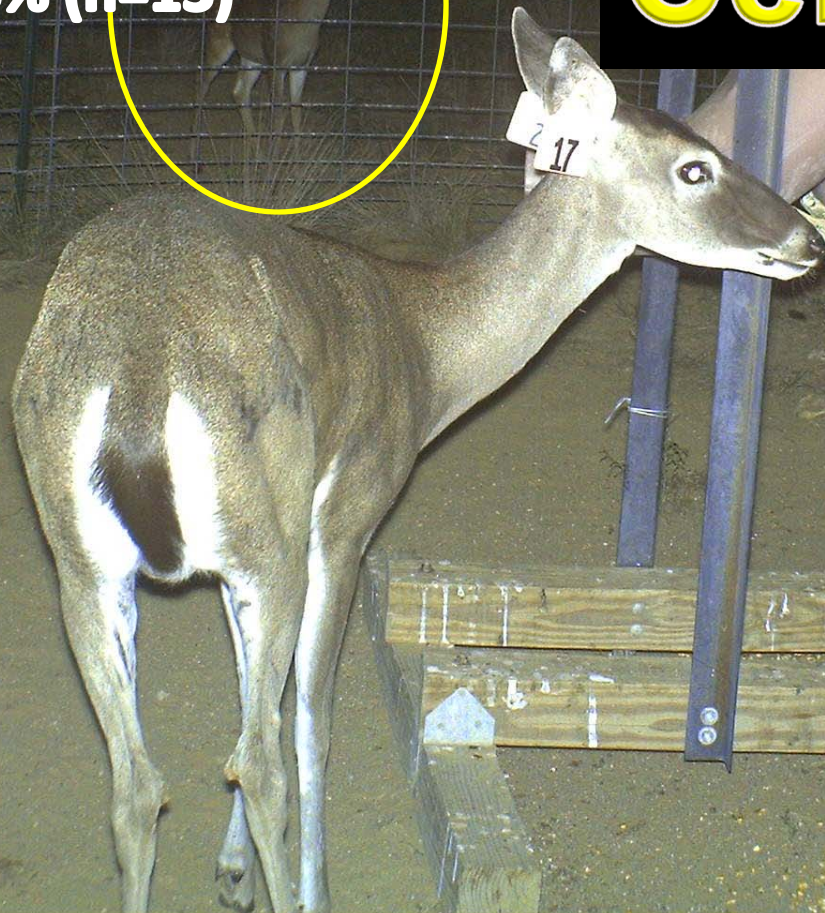
Invierno

- Spring – 23% (n=13)

Primavera

Fawns

Cervatillos



9/08/2011 10:58 PM





HOGZILLA!!

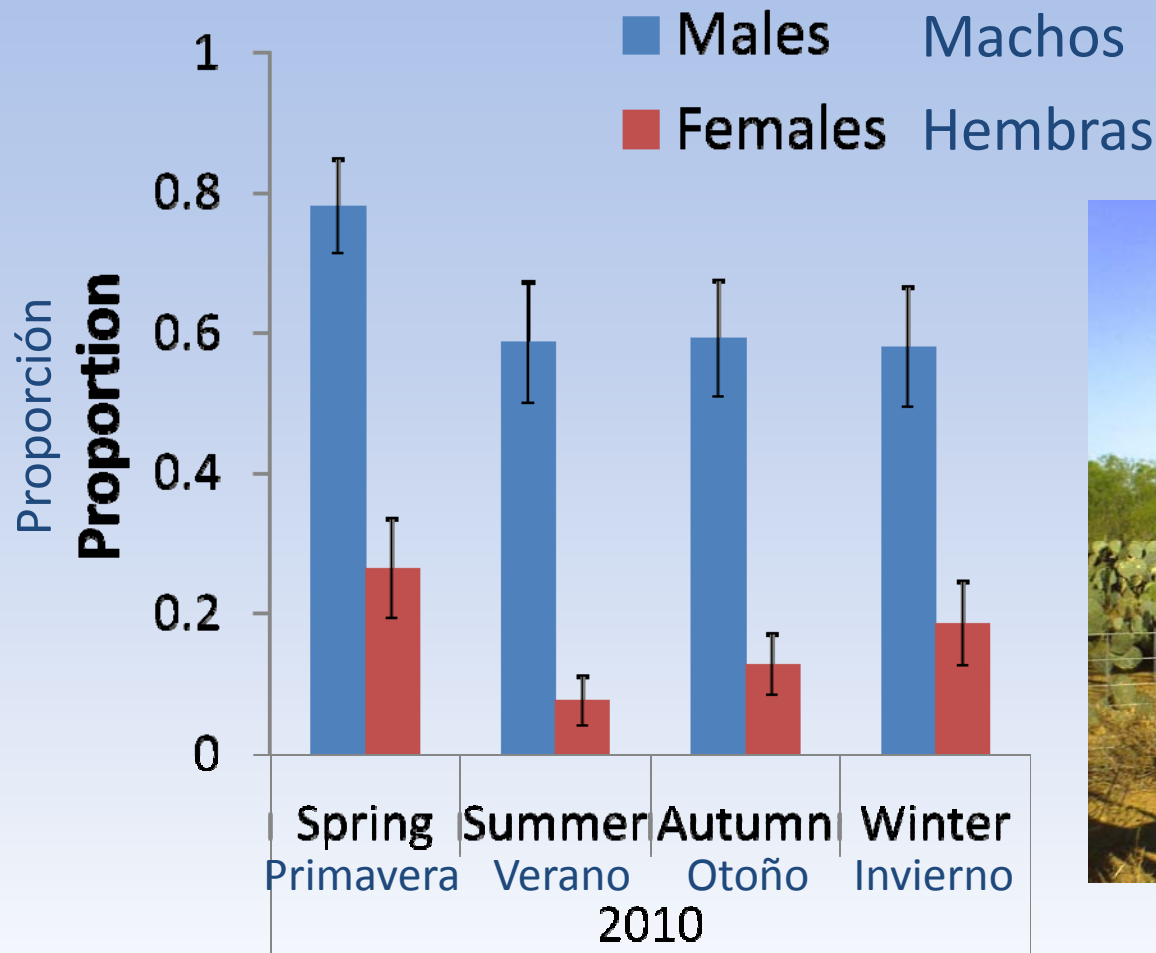


3/20/2010 8:39 PM

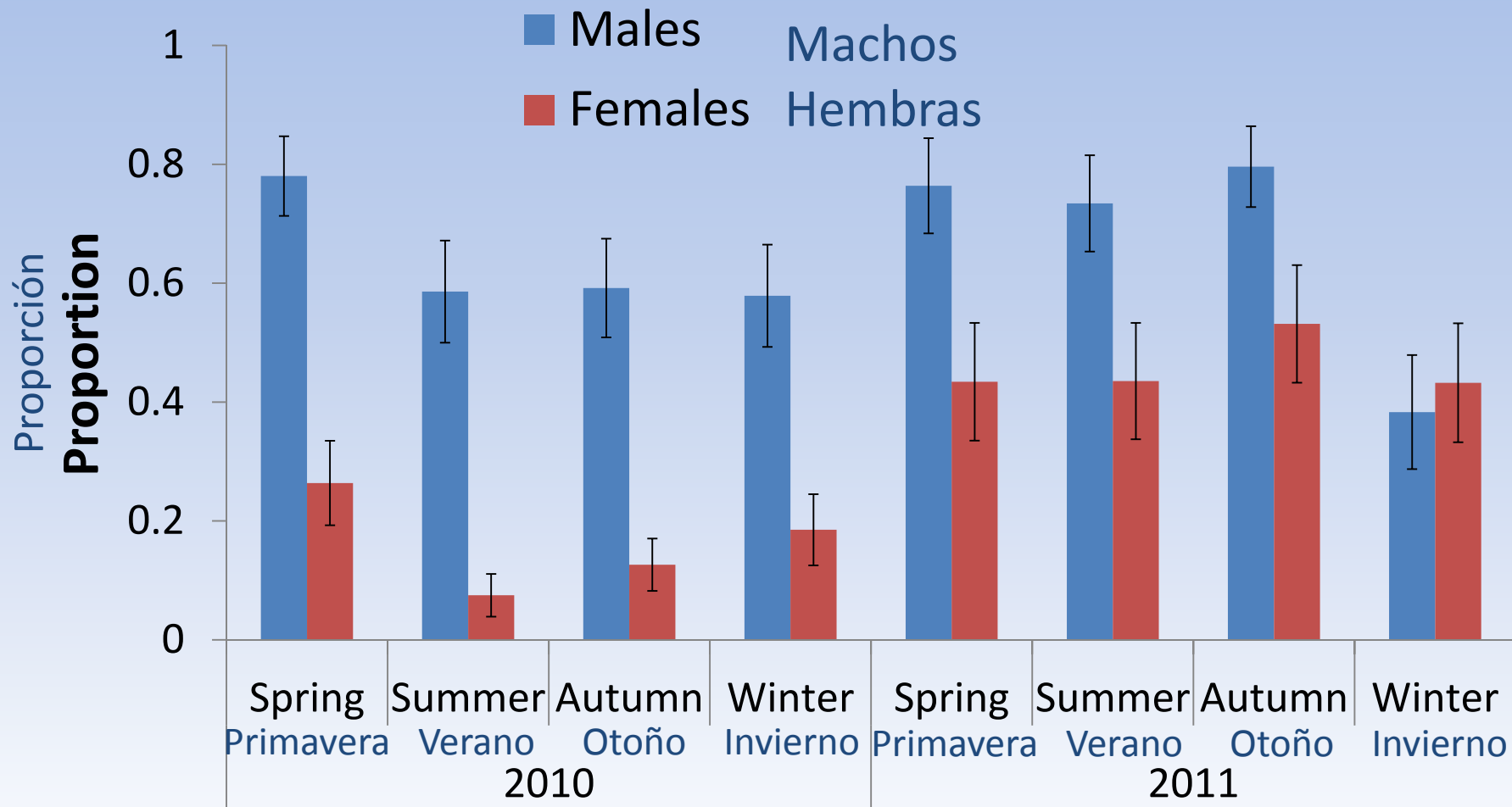


Proportion Visiting Bait Sites

Proporción Visitando Comederos

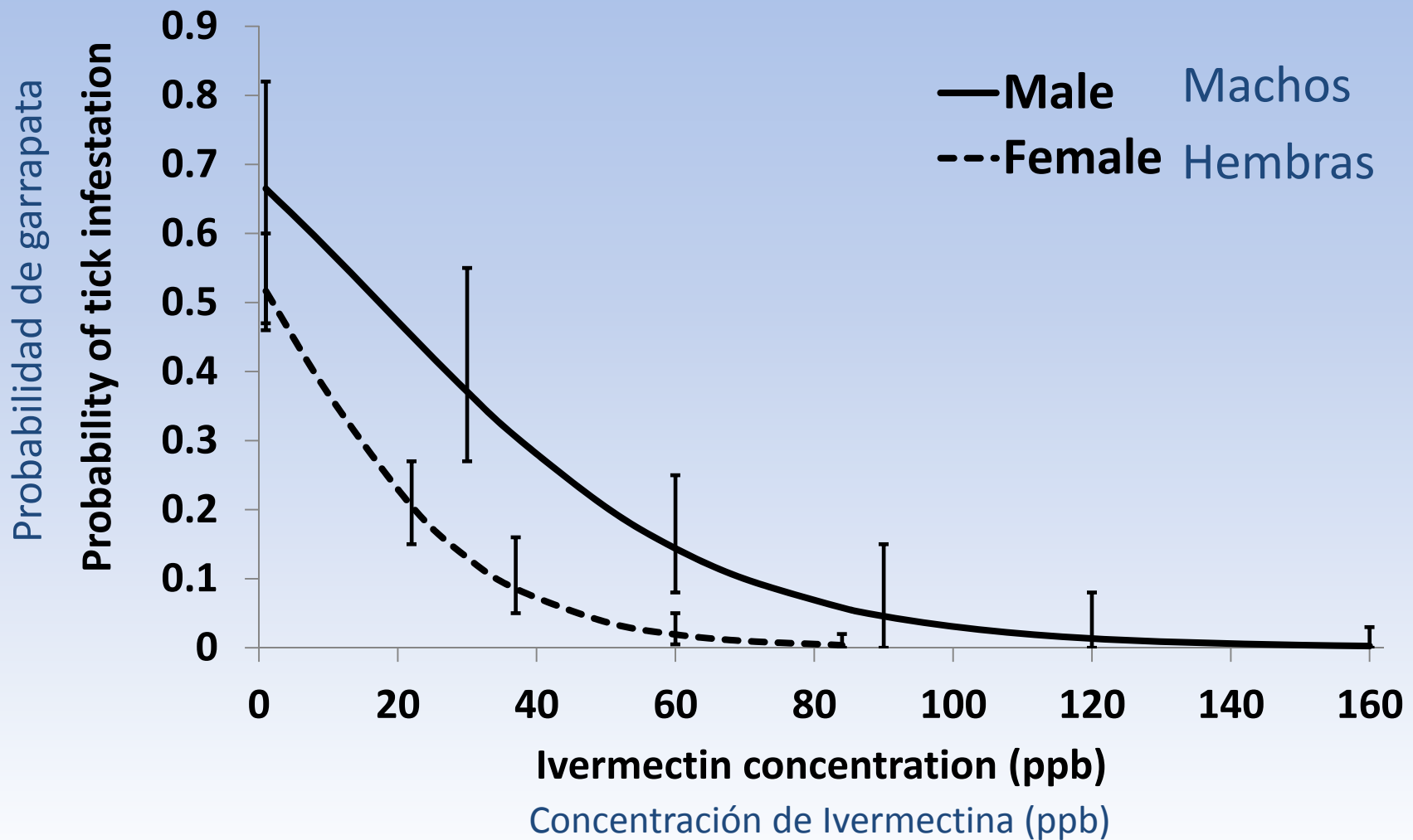


Proportion Visiting Bait Sites



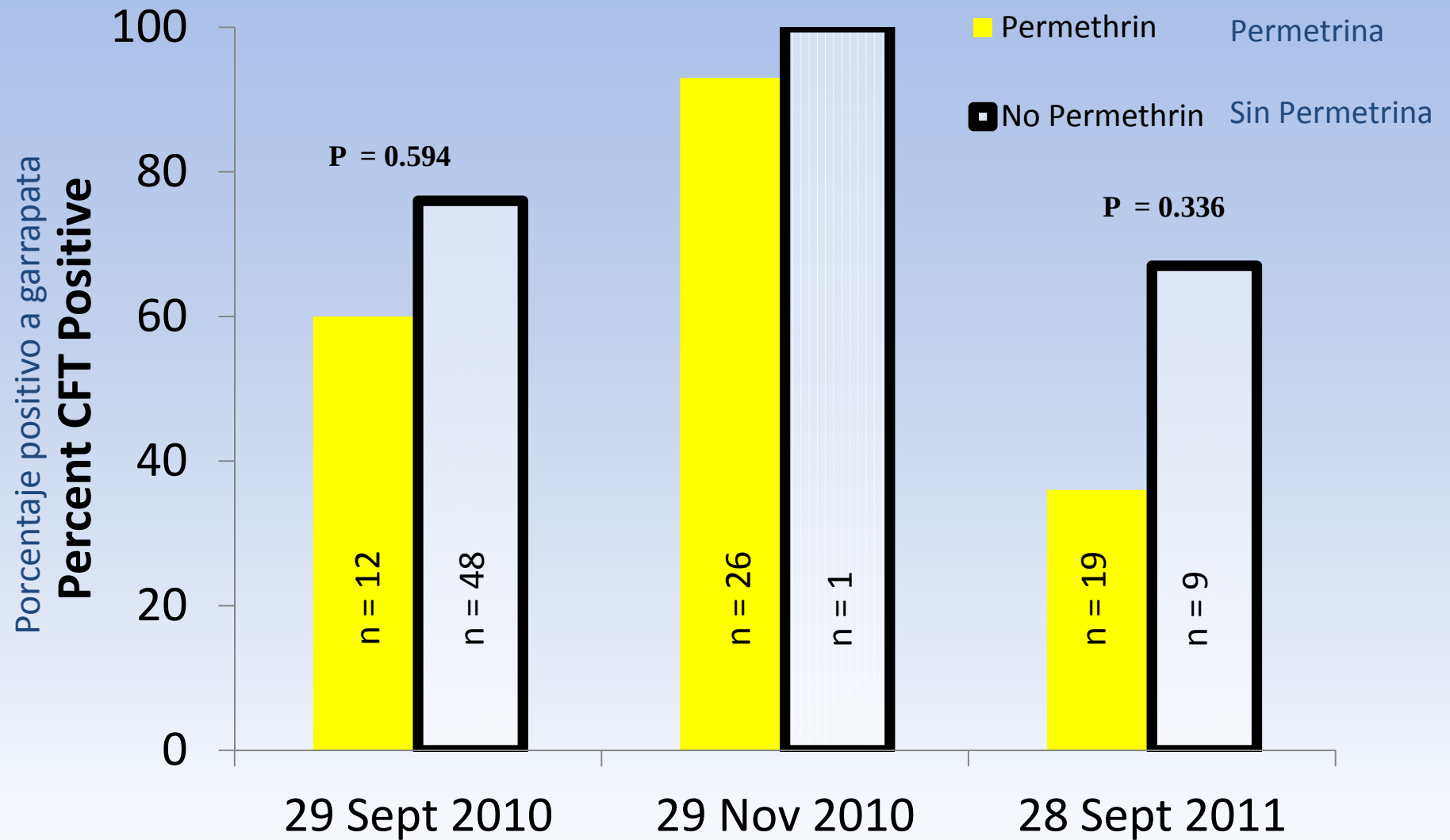
Deer – Ivermectin in serum

Venado – Ivermectina en suero



Permethrin and CFT

Permetrina y garrapata

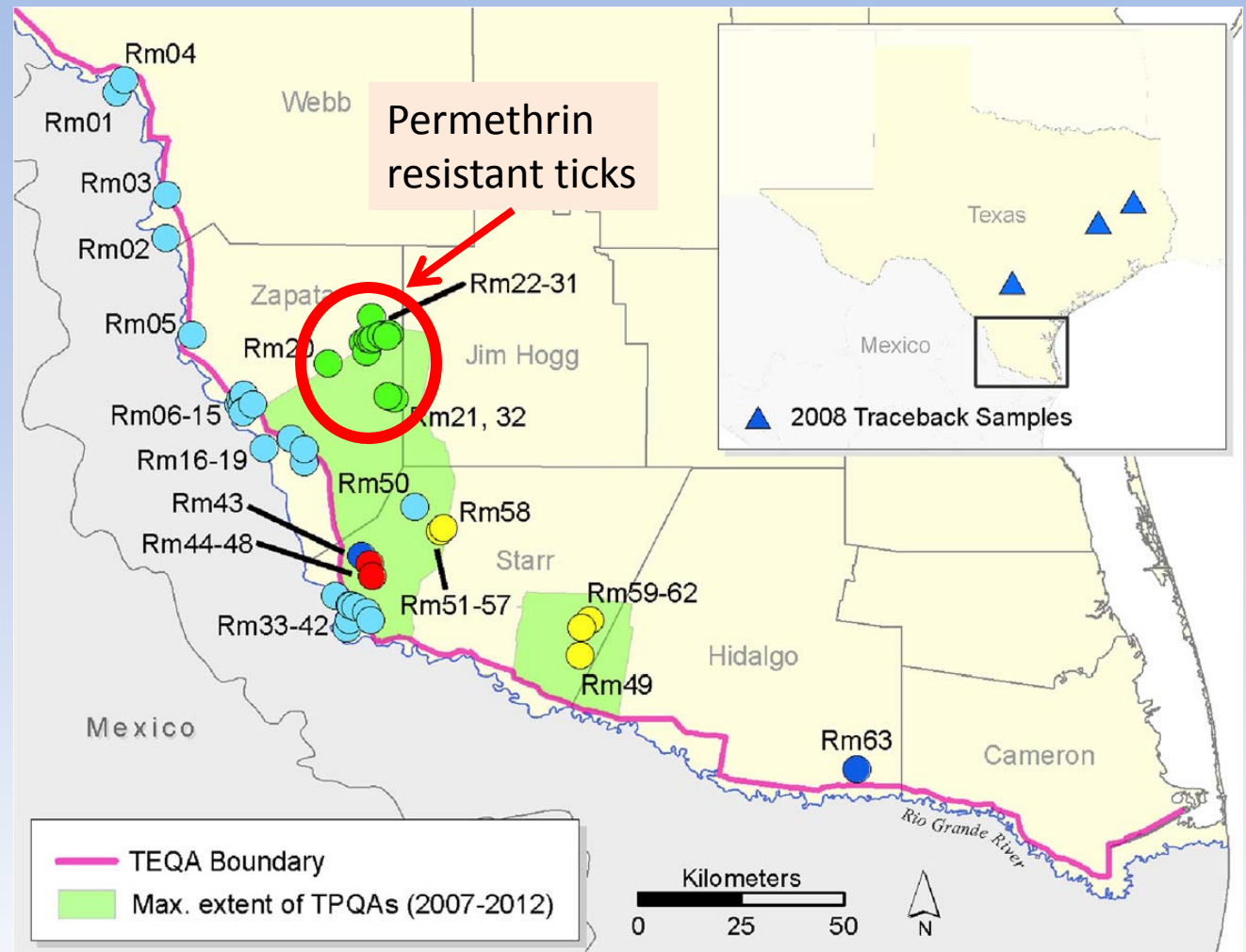


Challenges of Treating Wildlife

Retos de Tratamientos a la Fauna Silvestre

Permethrin resistance a problem in some areas

Resistencia a la permetrina es problema en algunas areas



Busch et al. Parasites and Vectors 2014 7:188

<http://www.parasitesandvectors.com/content/7/1/188>

Challenges of Treating Wildlife

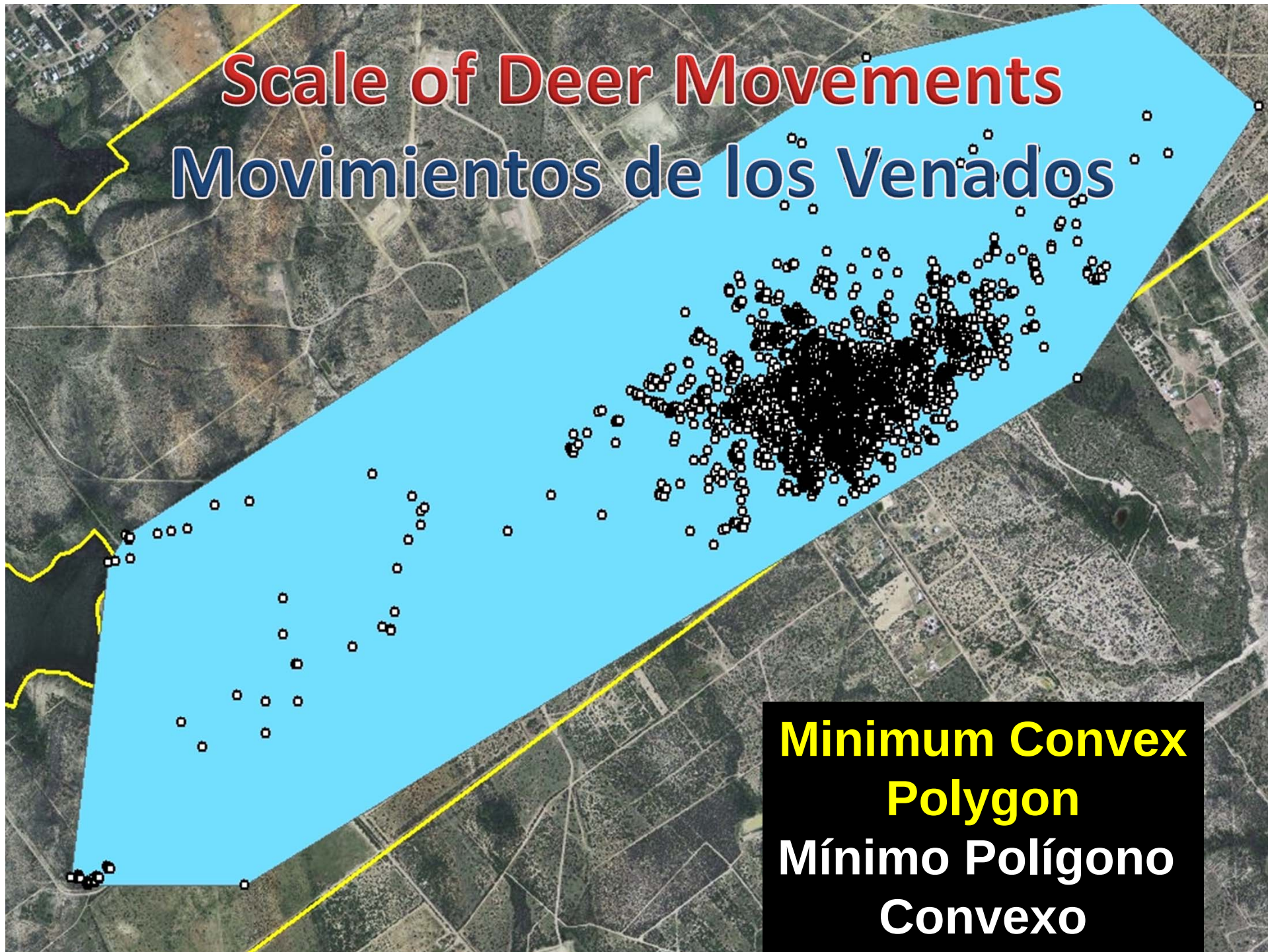
Retos de Tratamientos a la Fauna Silvestre

- Cannot gather animals
- No se pueden juntar los animales
- Deer and Nilgai are food animals
- Venado y nilgai son especies consumidas por humanos
- Difficult to restrict movement
- Dificil restringir sus movimientos
 - Home Range size large relative to most properties
 - Ámbitos hogareños extensos en relacion a la mayoría de los ranchos y propiedades



Scale of Deer Movements

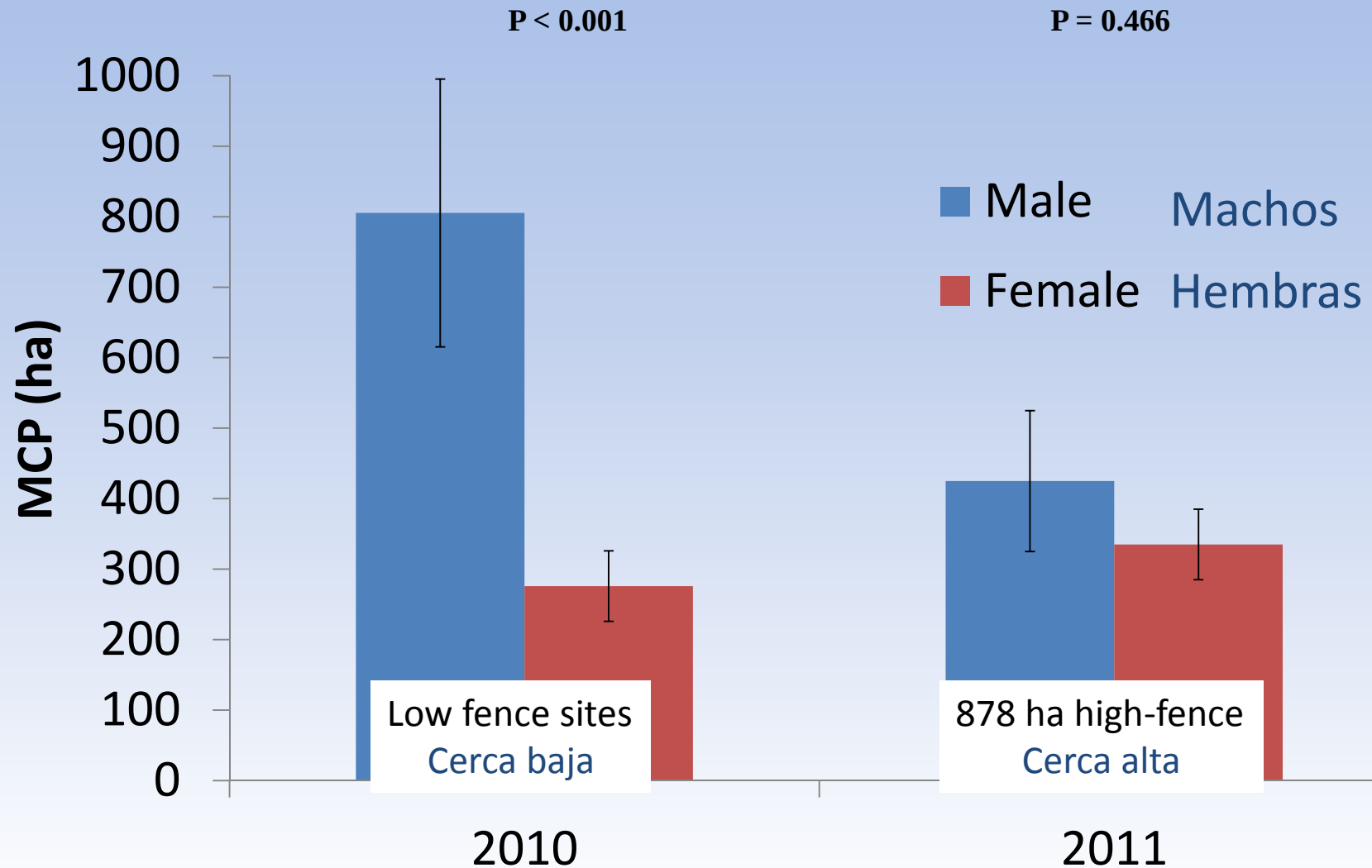
Movimientos de los Venados

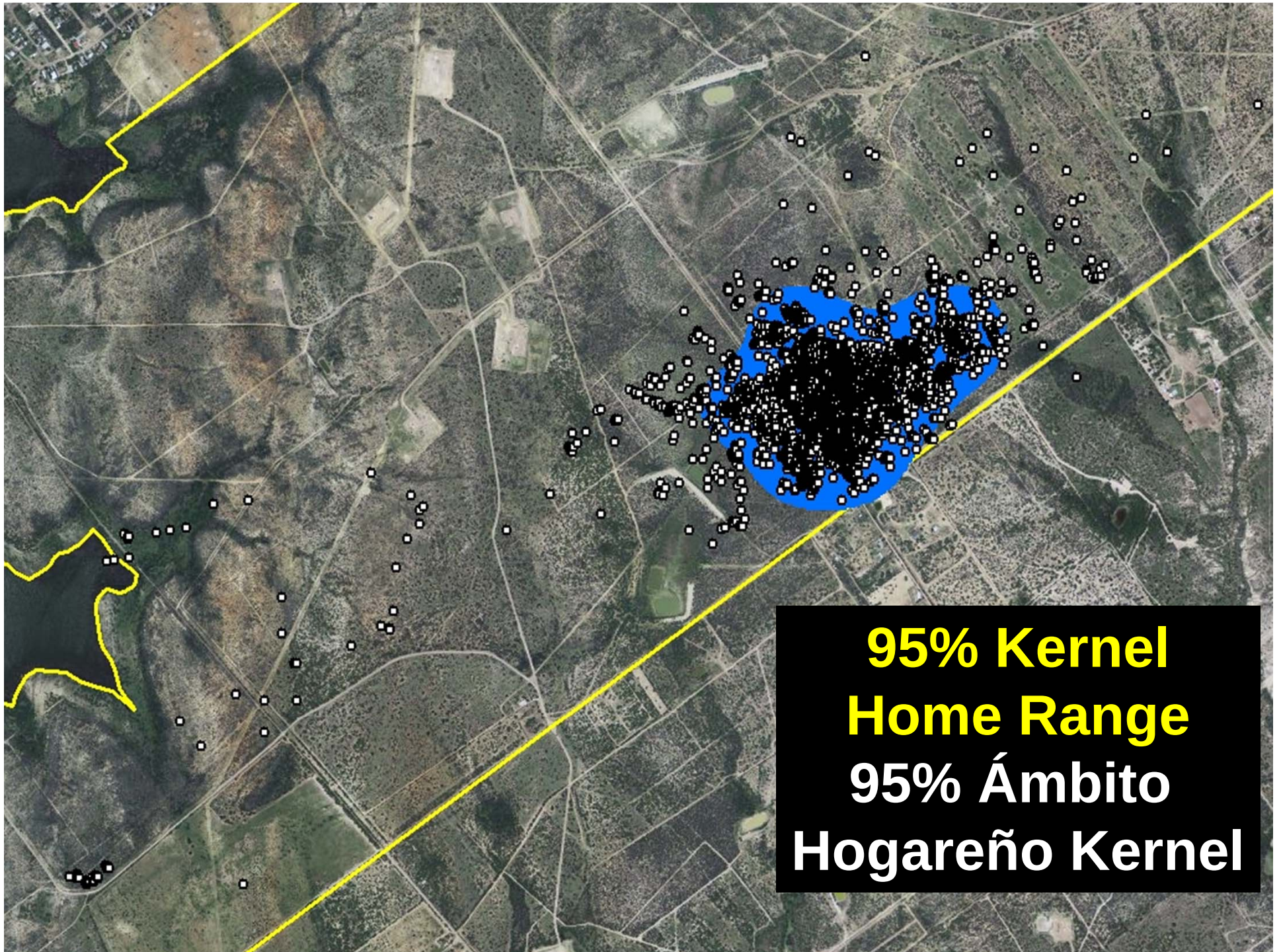


**Minimum Convex
Polygon**
**Mínimo Polígono
Convexo**

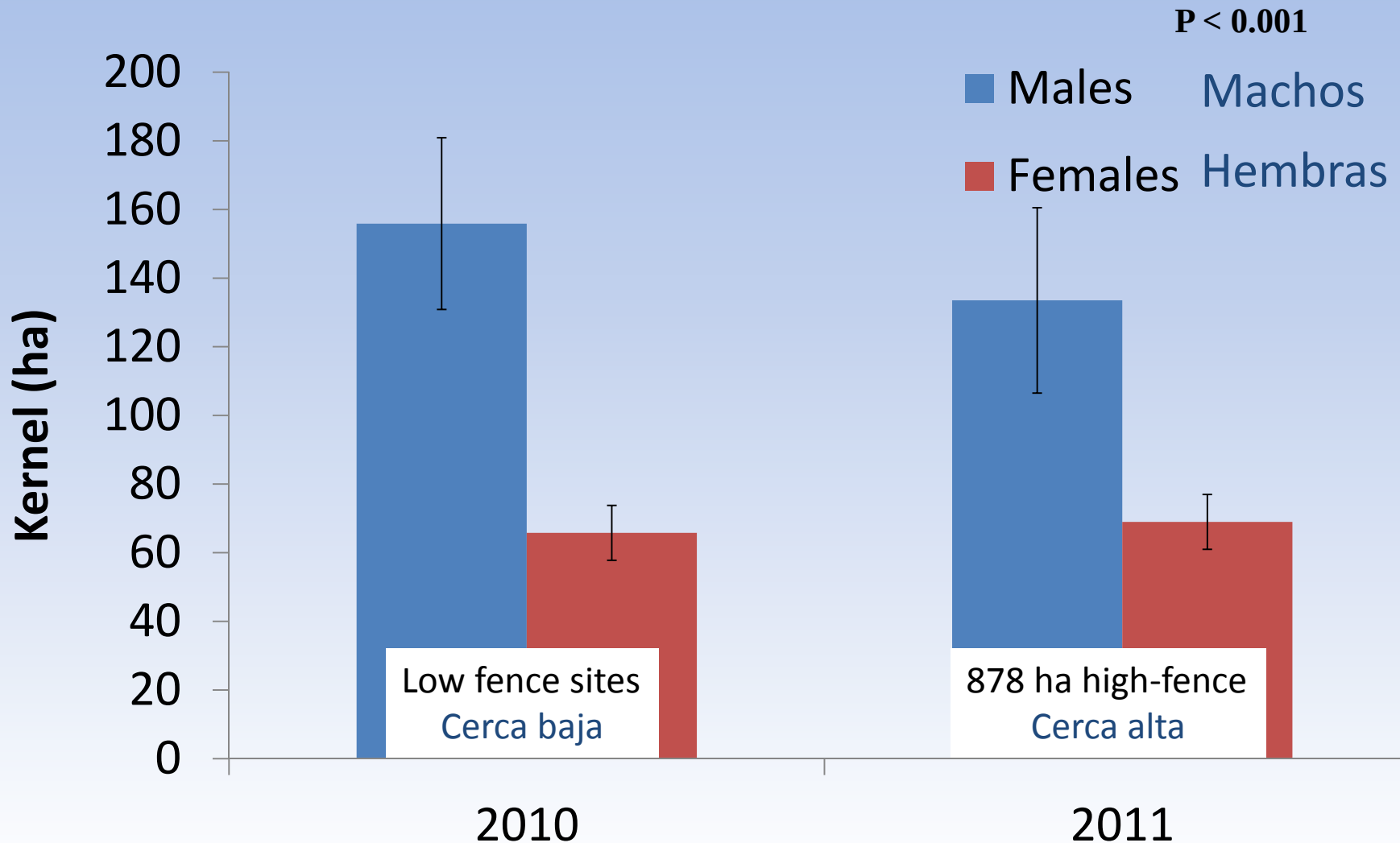
Home Range Size – MCP

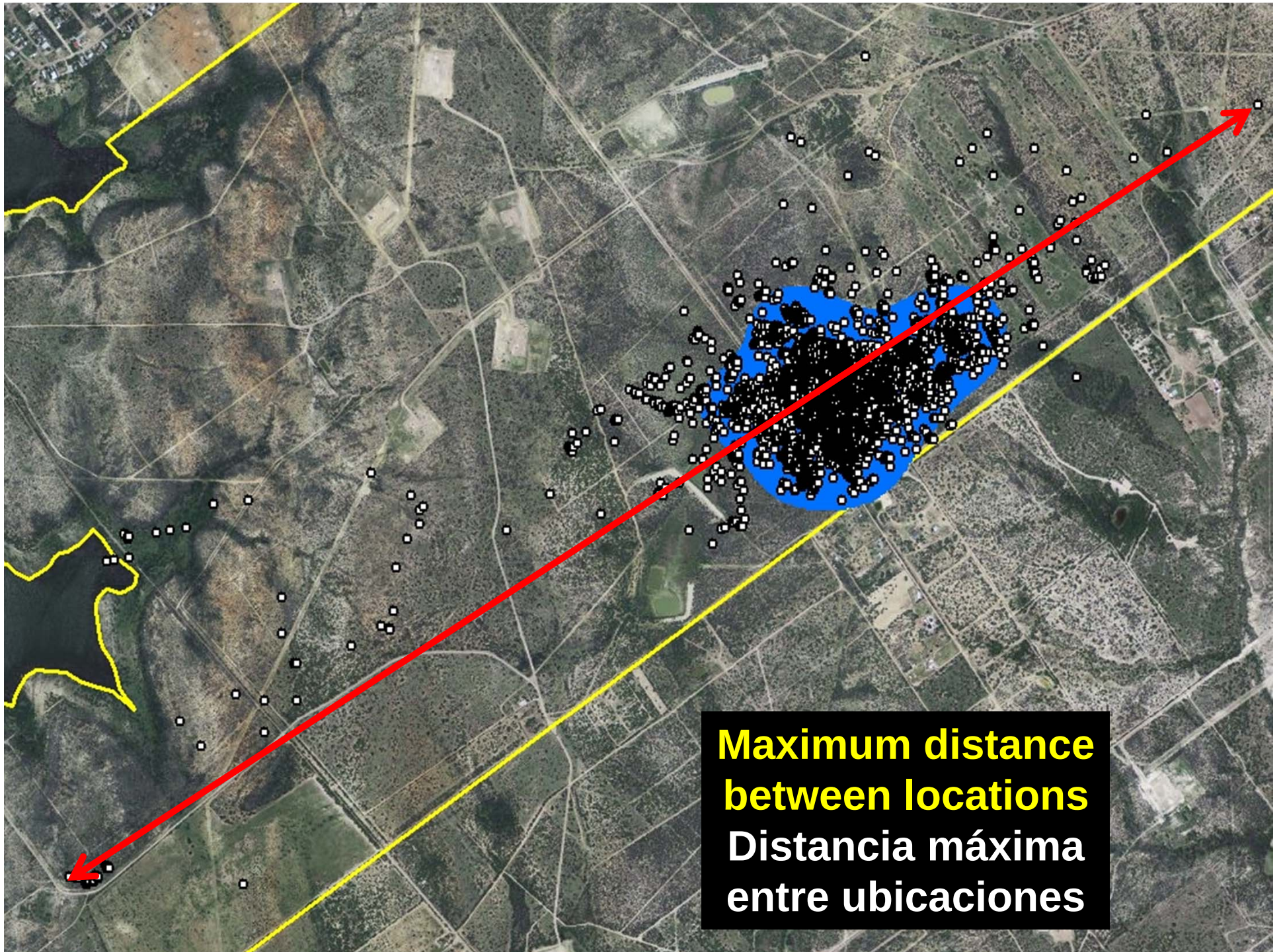
Ámbito hogareño – MPC





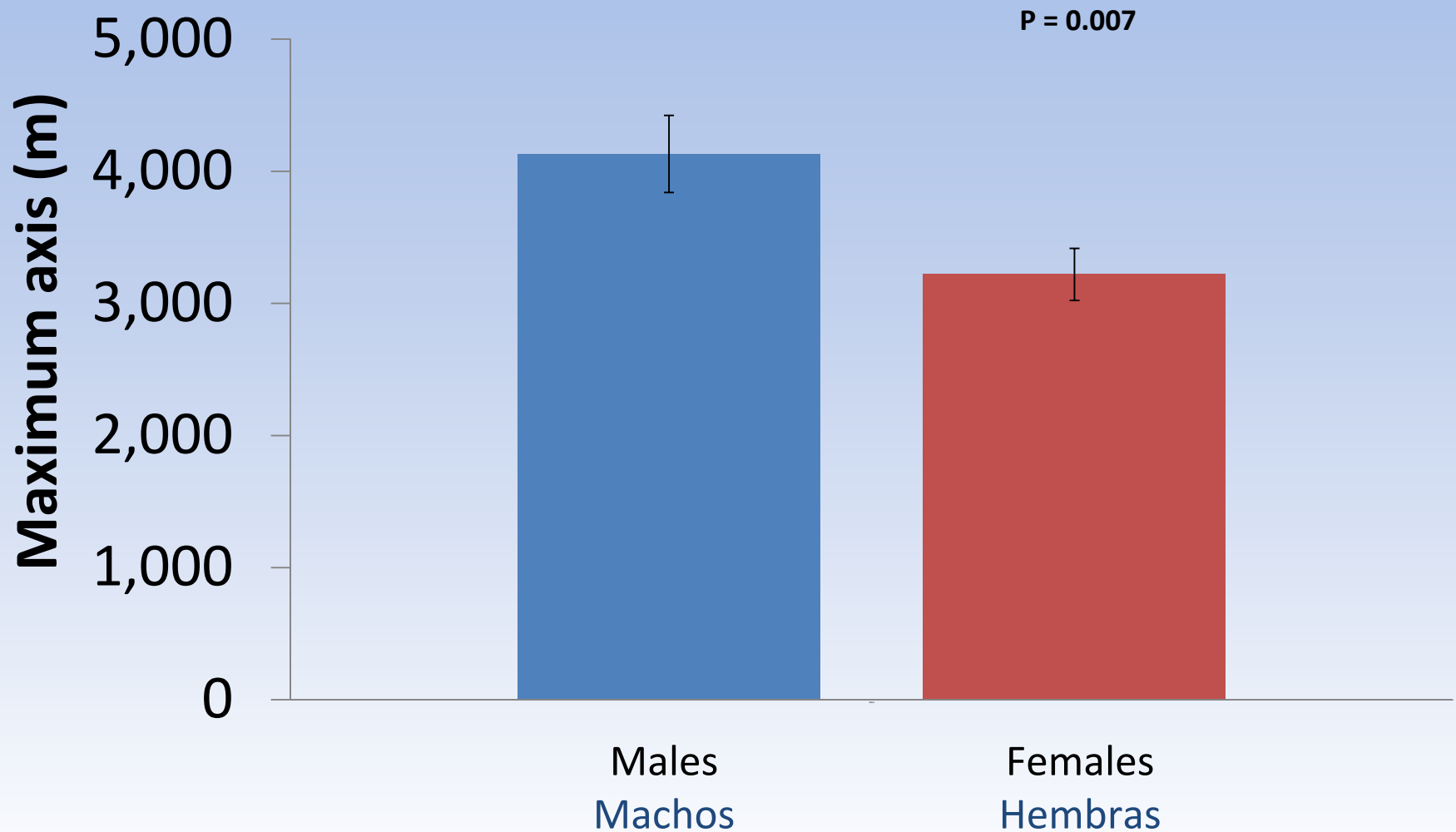
Home Range Size - Kernel





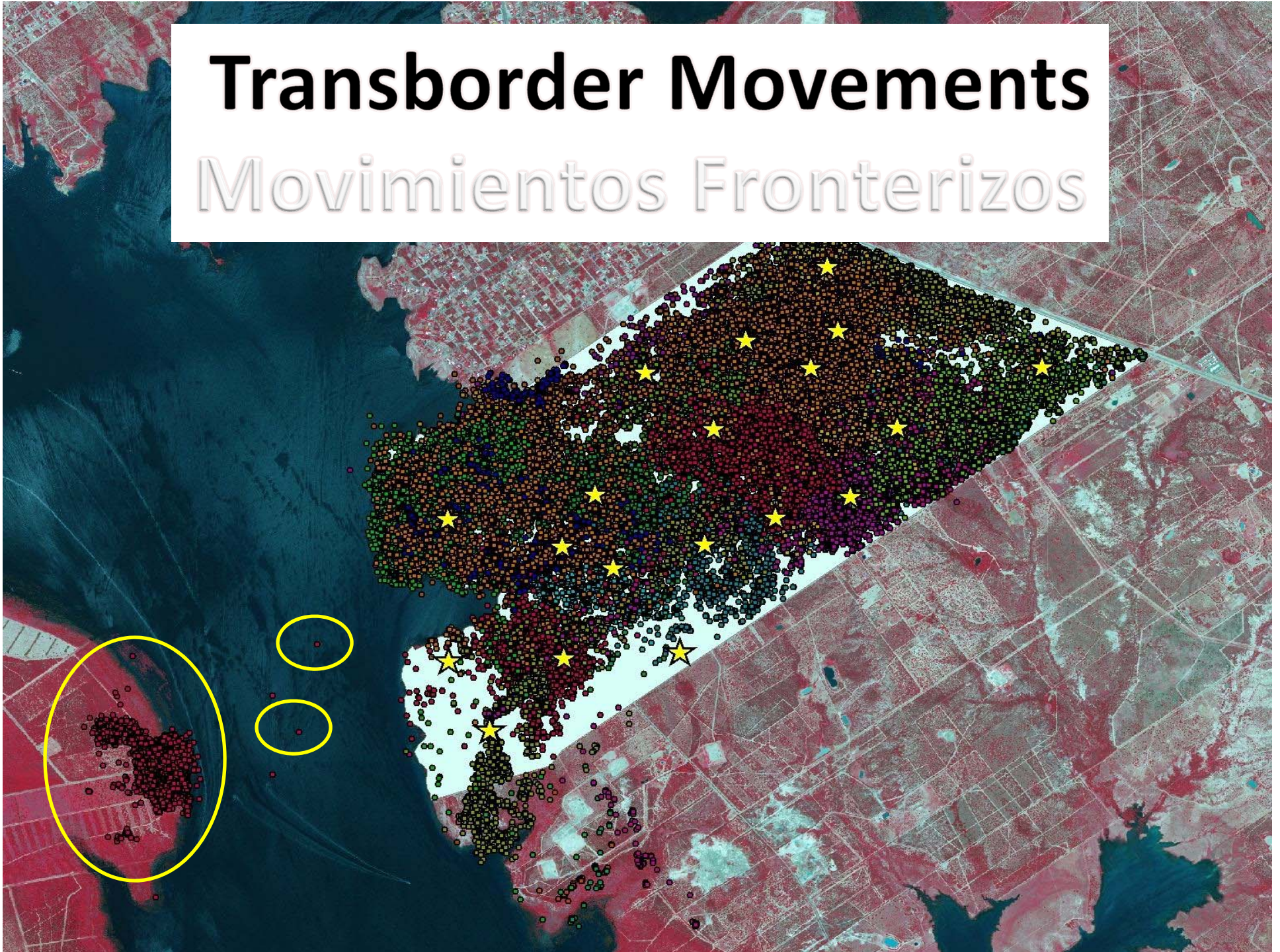
Maximum HR Axis

Eje de máximos ámbitos hogareños



Transborder Movements

Movimientos Fronterizos



**Nilgai vs. Deer
Movements**
**Movimiento de
Nilgais vs. Venado**



