

# Why Do Individuals Groom?

## *Functionality of Behaviour and Its Effects on Kangaroo Rat Conservation*



Image: Mark A. Chappell

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# *Behaviour Functionality*

- Different ways in which the same behaviour manifests itself in a variety of contexts
- Seen in humans and animals

# *Stephens' Kangaroo Rats (SKR)*

- Nocturnal
- Endemic to Southern California [Lowe, 1997]
- Burrow-dwelling [Brock and Kelt, 2002]
- Primary diet is seeds
- Endangered due to habitat loss
  - Urbanization
  - Agricultural expansion





# *Translocation*

- Main method of conservation for Stephens' kangaroo rats
  
- Success rates between 10-25%
  - Stress is main factor

# *Grooming*

- Sandbathing
- General Grooming Behaviours
- Used to: [Wolff, Watson and Thomas, 2002]
  - strengthen social bonds,
  - show reproductive receptivity,
  - display dominance
  - establish territories



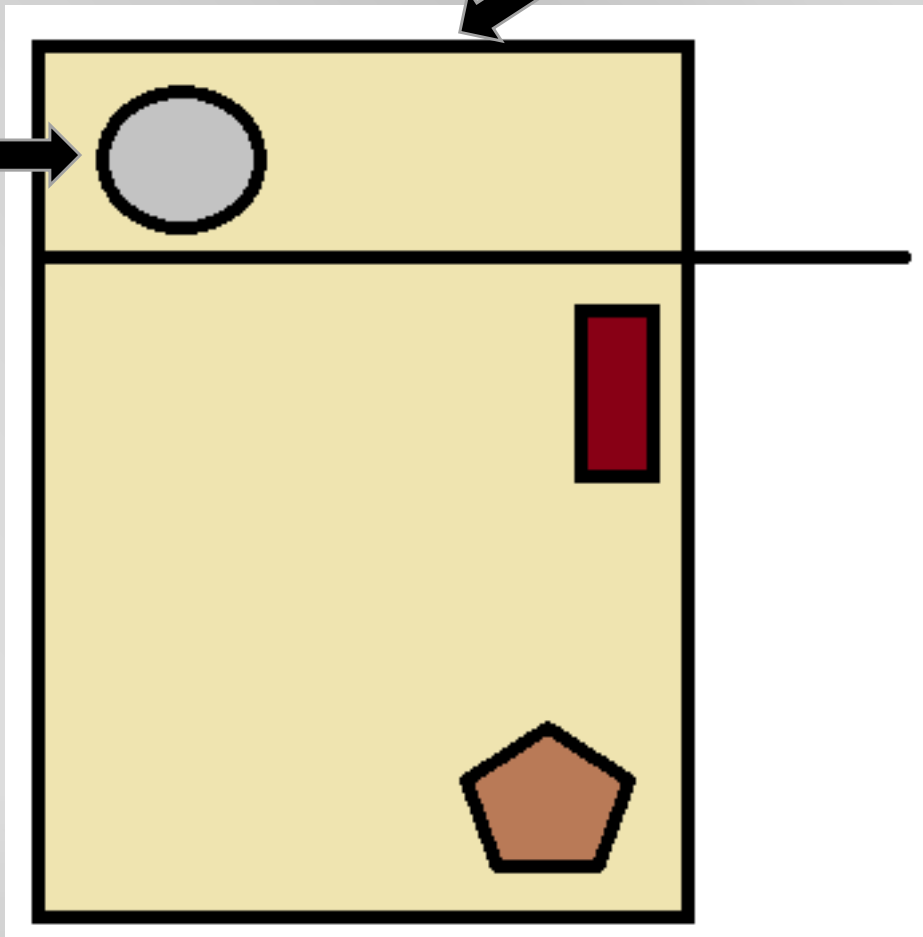


# *The Methods*

- 2 populations:
  - fallow agricultural land and parking lot
- 2 treatments
  - Predator stimulus: fox urine rock
  - Conspecific stimulus: mirror
- Each trial
  - 5 minute acclimation
  - 5 minute active

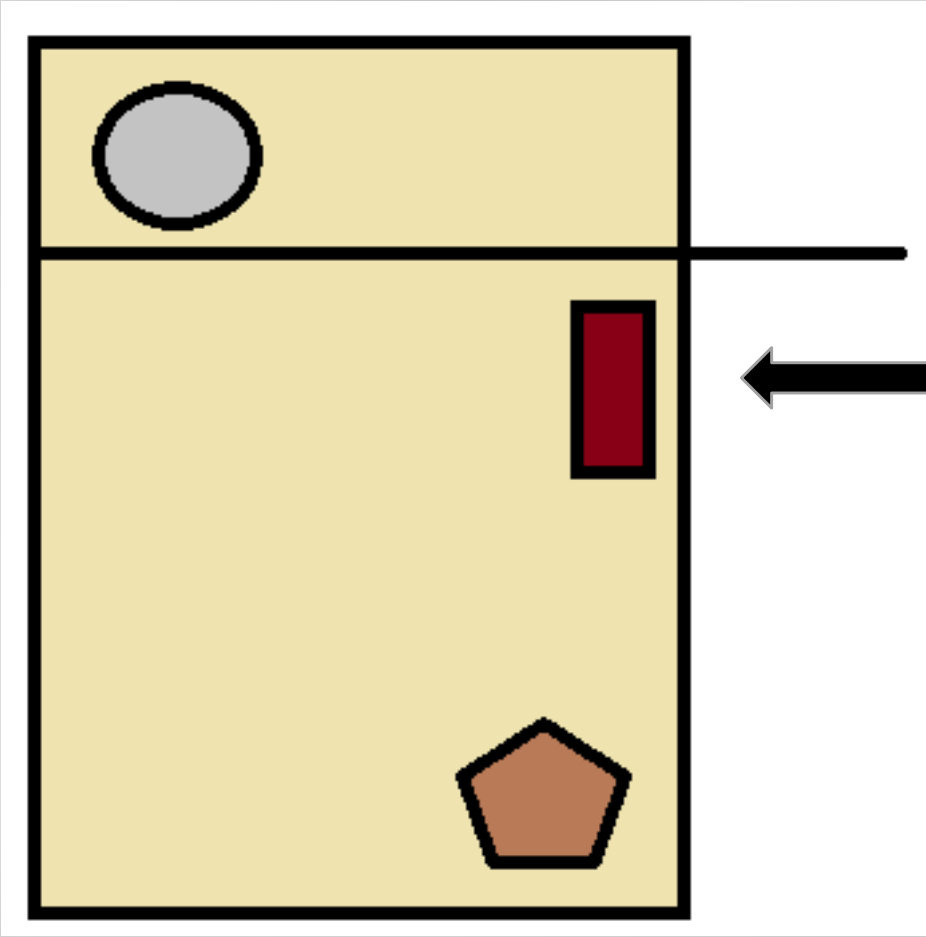


**Predator  
Stimulus**



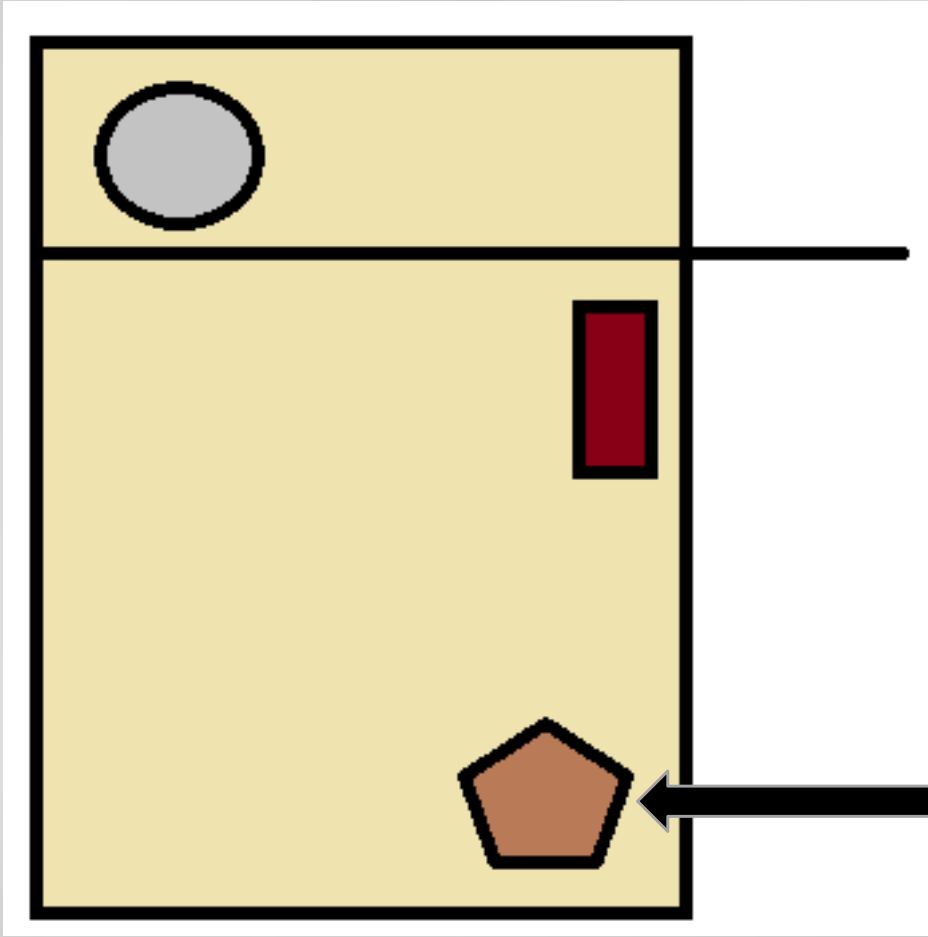
**Conspecific  
Stimulus**



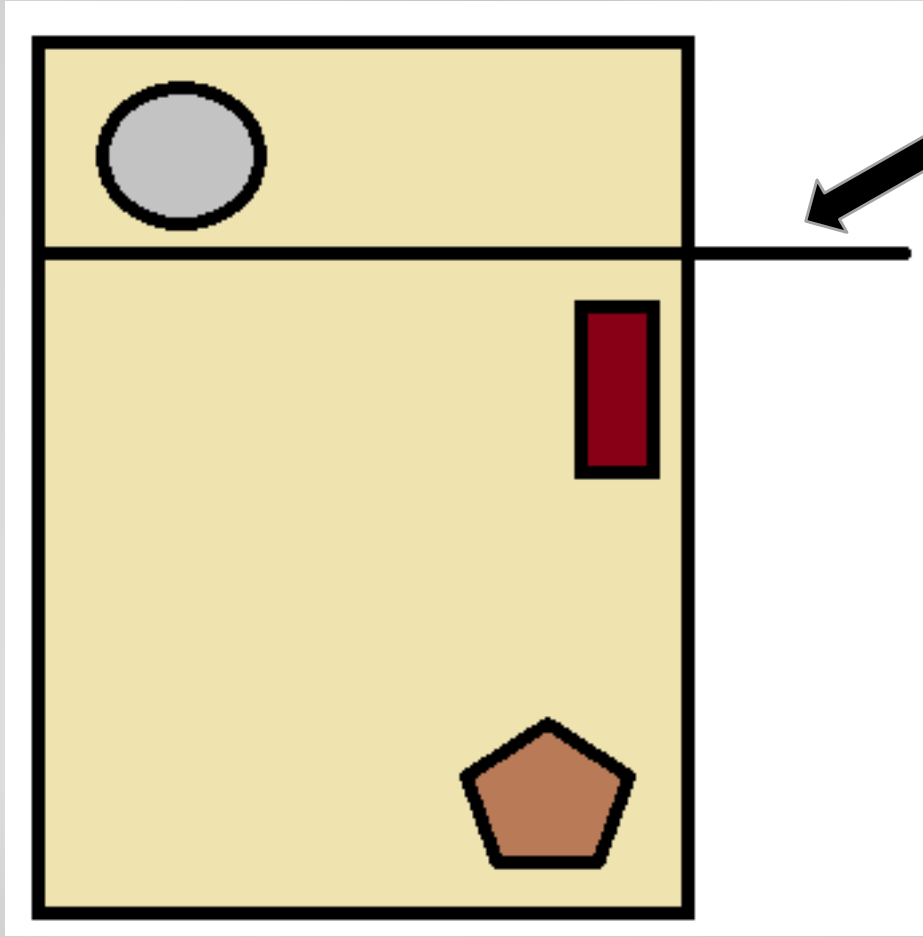


Seed Tray





**Refuge  
Rock**



**Removable  
Panel**



# *Data Collection*

- 120 trials (n=60)
- Duration and Frequency of Grooming Recorded
  - Short Sandbathing
  - Extended Sandbathing
  - General Grooming



# *Results*

- Preliminary Results:
- Dependent Variables:
  - Short Sandbathing,
  - Extended Sandbathing
  - Grooming behaviours
- Independent Variables:
  - Treatment
  - Population
  - Trial order



# *Results*

- Population × Treatment
  - Frequency Short Sandbathing p-value= 0.004
  - Duration Short Sandbathing p-value= 0.007



# *Results*

- Population      x      Treatment
  - Frequency Short Sandbathing      p-value= 0.004
  - Duration Short Sandbathing      p-value= 0.007
  - Frequency Extended Sandbathing      p-value= 0.033
  - Duration Extended Sandbathing      p-value= 0.021

# *Results*

## Sandbathing Behaviours

**Fallow Agriculture**

**>**

**Parking Lot**

**Predator Stimulus**

**>**

**Mirror Stimulus**

# *Results*

- Associated Behaviours
  - Escape Behaviours



Image: <http://www.natureposters.org/poster-7538-5282712/kangaroo-rat-mid-jump-photographic-print/>



# Results

- Associated Behaviours
  - Escape Behaviours
  - Digging



# Results

- Associated Behaviours
  - Escape Behaviours
  - Digging
  - Smelling and Increased Vigilance





## *How is this applicable?*

- Behaviour
  - Posture or activity
- Autonomic
  - Visceral or endocrine responses
- Subjective
  - Emotional or feeling

[Boissy *et al.*, 2007]



## *Take Home Message*

- Translocation is a very prominent method of conservation in Stephens' kangaroo rats
- Improved knowledge of these practices are needed
- This can be done by incorporating behaviour functionality and the motivation behind behavioural displays

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**Questions?**

