

Exclosure: an experimental technique for protection of northern bobwhite nest

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Background

- Bobwhite nest success 28-46%
 - Average 45% in south Texas
 - Previous nest success 38%
- Research of predator removal is contradictory
 - Beasom (1974), Lehmann (1984) success to slightly successful
 - Guthery and Beasom (1977), Frost (2000) found no increase or ambiguous results



Exclosure

- Exclosures have been used successfully for various ground nesting species to allow nests to progress past the nesting stage
 - Ducks (*Anas* spp.) (Cowardin et al. 1998)
 - 72%
 - Piping plovers (*Charadrius melodus*) (Melvin et al. 1992)
 - 17% → 90%
 - Sea turtles (*Caretta caretta*) (Ratnaswamy et al. 1997)
 - 92.4% nest success



Objectives

- Evaluate nest exclosures as a research tool to eliminate vertebrate predation on bobwhite nests
- Hen/brood ability to move through exclosure or abandonment



Study Area

- Refugio County, TX
 - 10,040 ha
 - Working ranch:
 - Cattle, Oil, and Agricultural
 - Coastal Prairie
 - Grasses, oak (*Quercus spp.*), mesquite (*Prosopis spp.*), huisache (*Acacia spp.*)



Methods

- Walk-in-funnel traps
- 6g necklace radio transmitter
- Homing to monitor
 - 2-3 days (early nest cycle)
 - Daily (last nest cycle)
- Hens nested at random



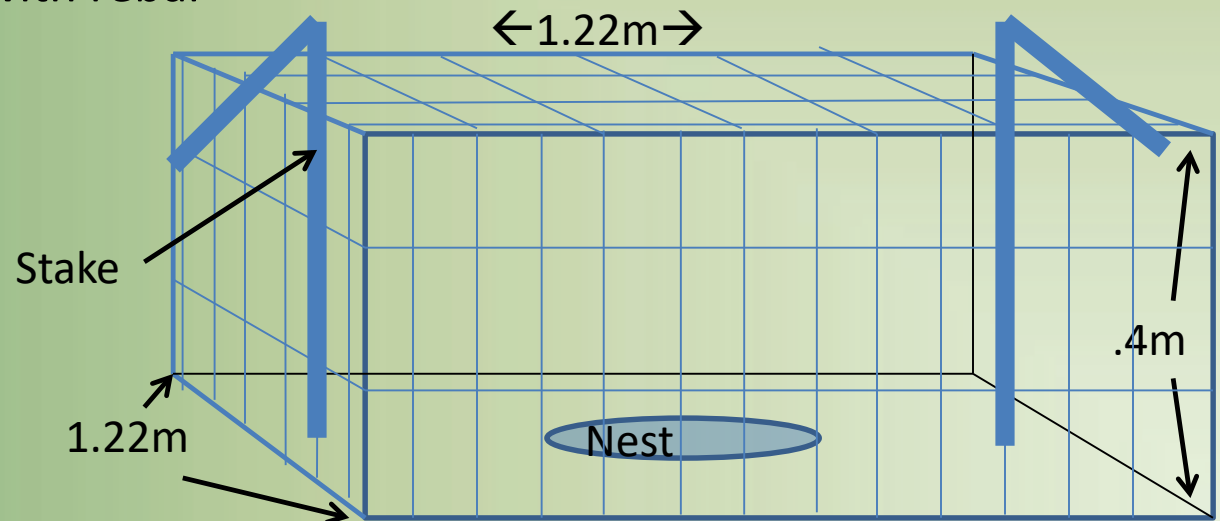
Methods (continued)

- Randomly assigned a treatment
 - Exclosure
 - Control



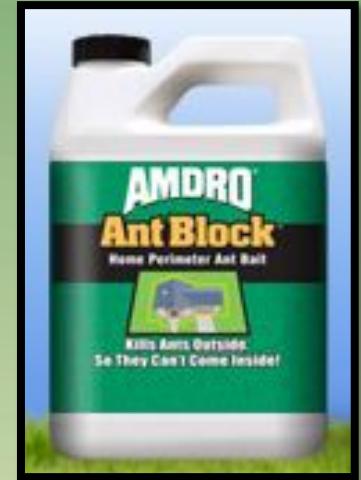
Methods (continued)

- Enclosure
 - Attempted to install while hen was away
 - Welded wire
 - 1.22m x 1.22m x 0.4m
 - 5cm x 10cm openings
 - Staked with rebar



Methods (continued)

- Amdro®
 - Red imported fire ants
 - Spread 1.7kg/ha 60 square meter
- Snake-a-way®
 - Prevent snakes
 - 85kg 10-12 cm band around nest
- Chemicals were used to increase chances of nest success



Methods (continued)

- Nests were labeled as:
 - Successful = 1 egg hatched
- Nest predators
 - Imported fire ant or other



http://www.desertmuseum.org/invaders/invaders_fireant.php



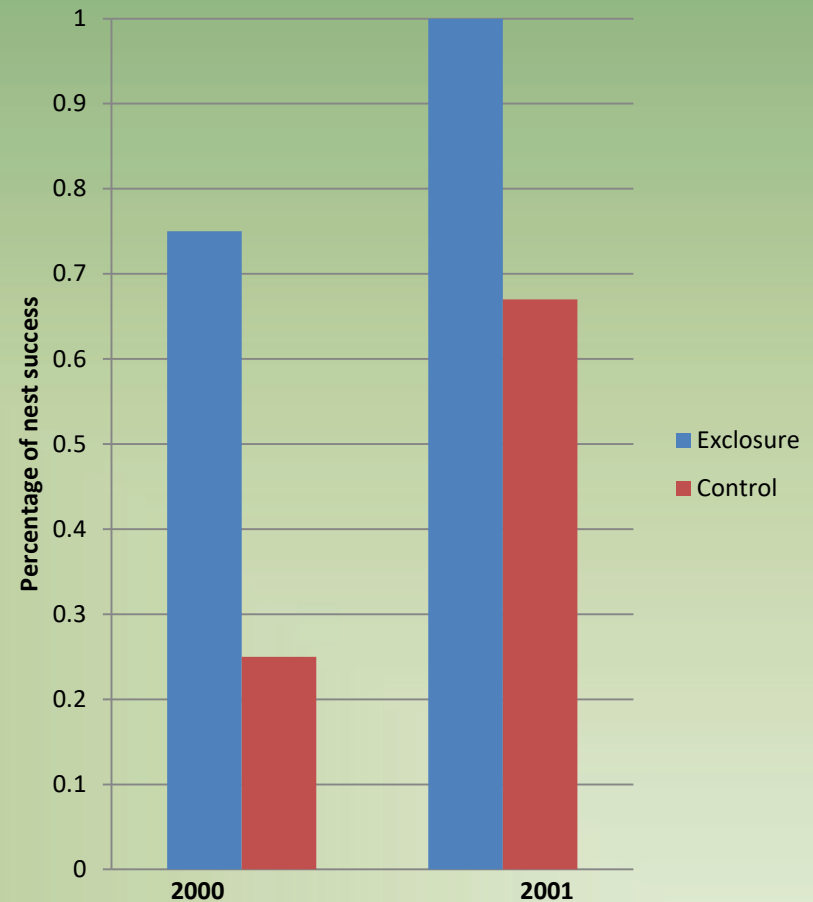
Results

- Hens did not abandon due to exclosure
 - 4 exclosures were installed with hens on nest
 - Hens that flushed returned to incubate
- One control nest was depredated by red imported fire ants
- One exclosure nest was destroyed in each year (N=2)
 - Unknown predator but signs point to:
 - Long-tailed weasels (*Mustela frenata*),
 - Hispid cotton rats (*Sigmodon hispidus*),
 - Eastern spotted skunks (*Spilogale putorius*)



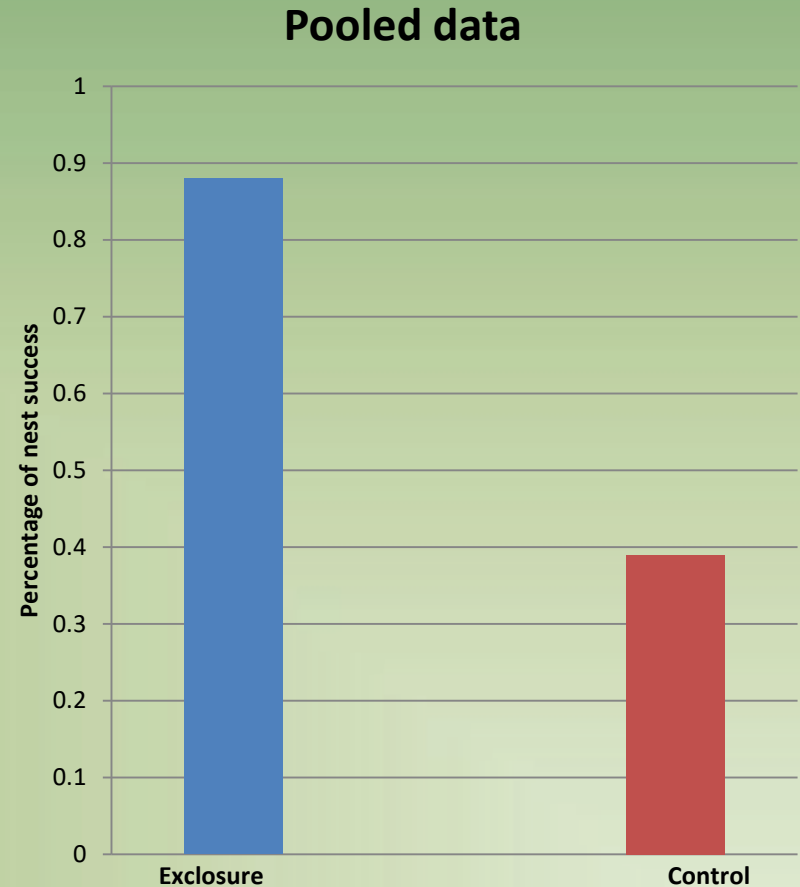
Results (continued)

- 2000
 - 75% exclosure (n=4)
 - 25% control (n=12)
- 2001
 - 100% exclosure (n=4)
 - 67% control (n=6)



Results (continued)

- 2000
 - 75% exclosure (n=4)
 - 25% control (n=12)
- 2001
 - 100% exclosure (n=4)
 - 67% control (n=6)
- Pooled data ($P=.011$)
 - 88% (n=8)
 - 39% (n=18)



Discussion

- Individual nest predators were difficult to accurately determine except for Red Imported Fire Ants
- Sample size did not allow for extensive evaluation of all aspects of the study
- Provide successful, non-lethal form of nest protection from typical vertebrate nest predators for research purposes



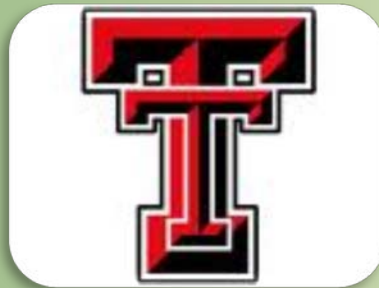
Discussion (continued)

- Hen movement was unimpeded
- Brood dispersal with hen was not affected
- Potential future research:
 - Investigate chemical deterrent
 - Different habitat throughout the bobwhites range
 - Motion capture cameras to identify individual predators of exclosure nests



Acknowledgements

- Texas Red Imported Fire Ant Initiative
- J.F. Welder Heirs
- Technicians and graduate students



Texas Tech University
Natural Resources Management



Questions

