



TEXAS TECH UNIVERSITY™

Parent-Reared Bobwhite Survival in the Texas Rolling Plains

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with the Texas Tech Department of
Natural Resources Management

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PARENT-REARED INTRODUCTION



Parent-Reared Model

■ Tall Timbers Model Review

- *Imprinting key to model success*
- *Rearing in simulated wild habitat setting*
- *Overwinter survival rate of up to 30%*
- *Up to 64% nest success in parent-reared hens*
(Lorenz 1937, Palmer et al. 2012)



■ Quail-Tech Alliance 2012 Parent-Reared Pilot Study

- *Completed initial infrastructure (pens, adoption boxes, etc.)*
- *Parent-reared and released multiple bobwhite broods in summer/fall 2012*



QUAIL-TECH ALLIANCE PARENT-REARED RESEARCH



2013-2014 Study Year

- 8 Ranches – 159 radio-marked Northern bobwhite released

2014-2015 Study Year

- 6 Ranches – 105 radio-marked Northern bobwhite released

All ranches located in the Rolling Plains of Texas

PARENT-REARED METHODS



Egg Production

- Quail-Tech Alliance Captive Wild-Strain Northern Bobwhite Breeding Colony
 - *Created from collection of eggs from wild nests on Quail-Tech Alliance program ranches in 2010*
 - *Egg production supplemented with wild-strain bobwhite eggs from Quail Run Farm, Thomasville, Georgia*



Egg Incubation

- Parent-Reared Study Incubation Protocol
 - *20 day incubation period*
 - *Incubator set to auto turn every 30 minutes*
 - *Specific temperature and humidity settings*





Egg Hatching

- Parent-Reared Study Hatching Protocol
 - *Eggs placed in hatcher for last 3-4 days*
 - *Continuous loop of wild nest sounds played*
 - *Specific temperature and humidity settings*



Chick Adoptions

- Parent-Reared Study Adoption Protocol
 - *Adoption performed within 12 hours of hatch*
 - *Hen introduced into box for 5 minutes pre-adoption*
 - *15-18 chicks placed into adoption box with hen*
 - *Hen observed for aggression towards chicks*
 - *Hen observed for brooding behavior with chicks*
 - *30-45 minute maximum time or new hen start*





Wild Habitat Pens

■ Early Pen Construction

- *Each pen constructed from (2) AKC commercial dog kennel kits, 1.22m x 4.88m x 1.83m*
- *½ mesh walls and door, commercial net top*
- *(1) meter square feed/water box at rear of pen*
- *Seeded with custom quail habitat mix*
- *Overhead sprinkler system for plant growth/bird cooling*

■ Later Pen Construction

- *1 ¼" square steel tube construction*
- *Wood frame walls and doors attached to tubing*
- *Same seeding and sprinkler system*





Parent-Rearing Process

- Brooding
 - *Parent bird brooding critical for life the first 2-3 weeks after hatch, precocial but no thermoregulation of body temperature*
- Early Learning – Imprinting
 - *Sexual selection, social-learning, fearfulness*
(Lorenz 1937; Jaynes 1956; Dowell 1992; Houdelier et al. 2011)
- Chicks to Juveniles in 6 to 8 weeks
 - *High protein, double medicated diet –*
 - *50 grams at 6 weeks or additional 2 week growth*
- Getting Ready for Release
 - *Weighing, banding, and vhf transmitter attachment*
 - *Week conditioning period for acclimation to radio collars and no parent bird*



PARENT-REARED METHODS



Release

- Parent-Reared Release Protocol
 - *Unload adoption boxes and place adjacent to cover*
 - *Spread milo for supplemental feed at release site*
 - *Play covey call over PA system to attract wild males*



Radio Telemetry Monitoring

- Weekly Telemetry Checks
- Parent-Reared Data Collection Protocol
 - *Establish bird as primary for each release site*
 - *Locate primary bird for 'first point of contact' vegetation composition*
 - *Veg comp each check (%W, %G, %F, %BG)*
 - *Record UTM coordinates for each bird location*
 - *Attempt ID of mortality cause*





Analysis

- Program Mark
 - *Nest survival modeling*
 - *Determine estimated daily survival by ranch and by MCP*
 - *Examination of woody cover covariate effect on parent-reared bird survival*
(White & Burnham 1999)

- ArcGIS - ArcMAP
 - *Plotted bird locations for Minimum Convex Polygon home range estimation*
 - *Generation of MCP's from Minimum Bounding Geometry tool*
(ESRI 2014)



PARENT-REARED RESULTS

Results

- 2013-2014 Parent-Reared Survival
 - *MCP daily survival = 0.065 to 0.975 for all ranches*
 - *Ranch daily survival = 0.933 (SE = 0.005; CI's: 0.92, 0.94)*
 - *MCP survival for entire study year = <0.01 for all ranches*
 - *Ranch survival for entire study year = <0.01 for all ranches*

- 2014-2015 Parent-Reared Survival
 - *MCP daily survival = 0.003 to 0.948 for all ranches*
 - *Ranch daily survival = 0.899 (SE = 0.009; CI's: 0.87, 0.91)*
 - *MCP survival for entire study year = <0.01 for all ranches*
 - *Ranch survival for entire study year = <0.01 for all ranches*



Discussion

- Study Range Conditions 2012-2015
 - *Habitat degraded from record drought (2011-2012)*
 - *Bobwhite populations in Texas bottoming out – record low numbers*
 - *Source birds absent or in low numbers*
 - *No predator control on study ranches*

- Range Conditions for Tall Timbers Study Success
 - *Birds released in intensively managed habitat areas*
 - *Predator control normal for Southeast U.S.*



Discussion

- Florida vs Texas
 - *Florida parent-reared birds did not survive any better than Texas parent-reared birds*
 - *Did not examine reproduction*
 - *Birds incorporated into wild coveys considered success*

- Highlighted Factors of Survival
 - *Parent-reared birds appear to lack predator avoidance skills*
 - *Woody cover appeared to have a positive relationship for first year of study but not during second year*
 - *Anti-predator learning apparently accomplished after joining wild covey*
 - *Examples of Survival*

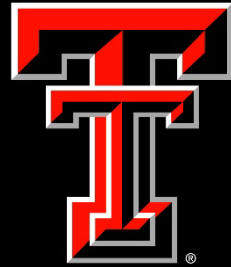


Future Studies

- What might work?
 - *Parent-rearing in remote enclosures*
 - *No human contact*
 - *Predator control*
 - *Predator aversion training*



Remote Quail Enclosure on Circle A Ranch, Archer County, Texas



QUESTIONS?