

Efficacy of Targeted Mist Netting to Capture Northern Bobwhites During the Non-Breeding Season in Ohio

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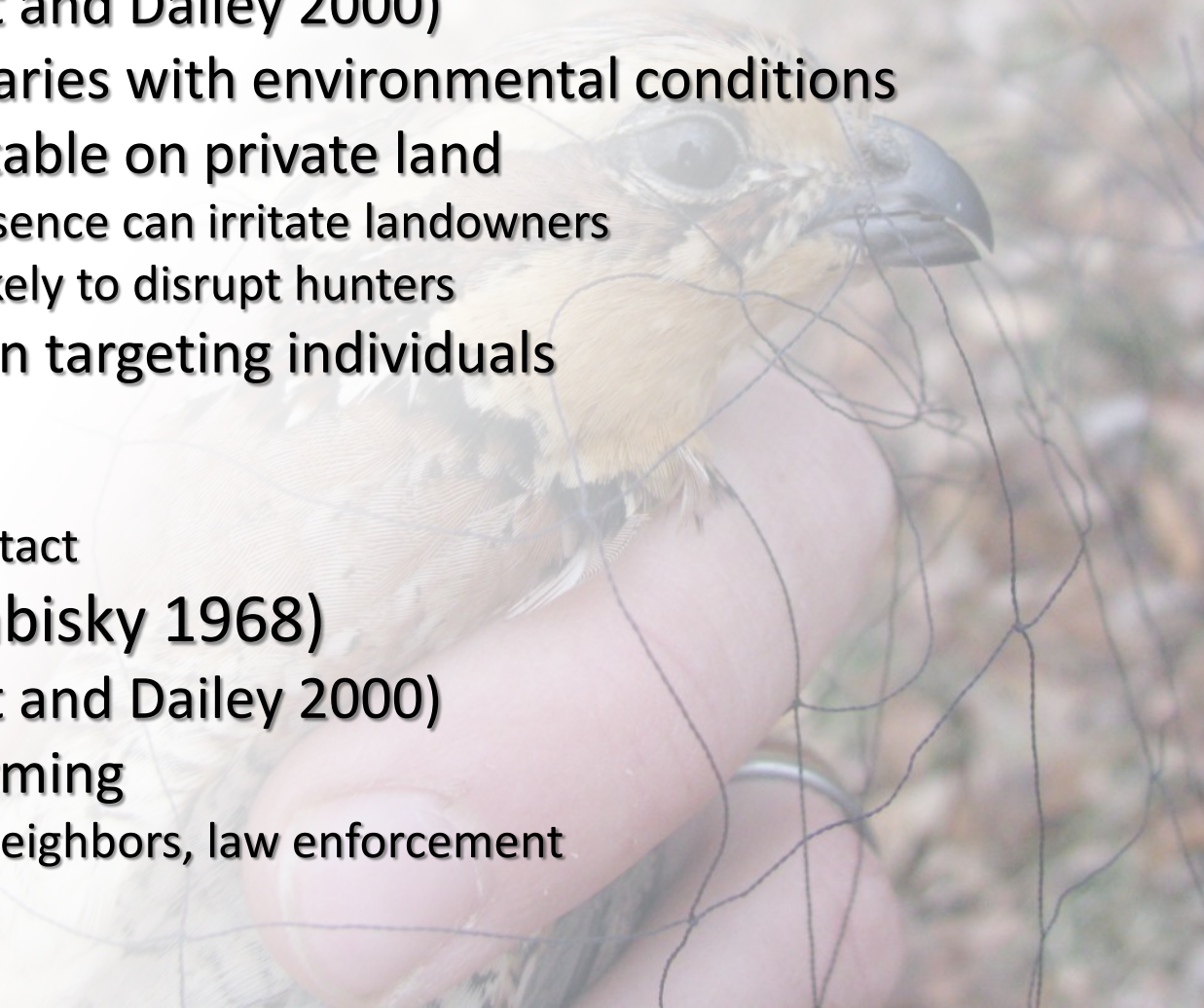
Ohio Bobwhite Research

- Study Area
 - Southwestern Ohio
 - 4 private land sites
 - >50 landowners
- Habitat Composition
 - 55% Row crops
 - Corn, soybeans, and wheat
 - 19% Early successional
 - Grasslands, old fields, fencerows, and ditches
 - 13% Forest
 - Woodlots



Common Capture Techniques

- Baited Funnel Traps (Stoddard 1931)
 - Effective (Truitt and Dailey 2000)
 - Effectiveness varies with environmental conditions
 - Not always suitable on private land
 - Increased presence can irritate landowners
 - Trap checks likely to disrupt hunters
 - Inefficient when targeting individuals
 - Radiomarked
 - Pointing dogs
 - Incidental contact
- Nightlighting (Labisky 1968)
 - Effective (Truitt and Dailey 2000)
 - Potentially alarming
 - landowners, neighbors, law enforcement



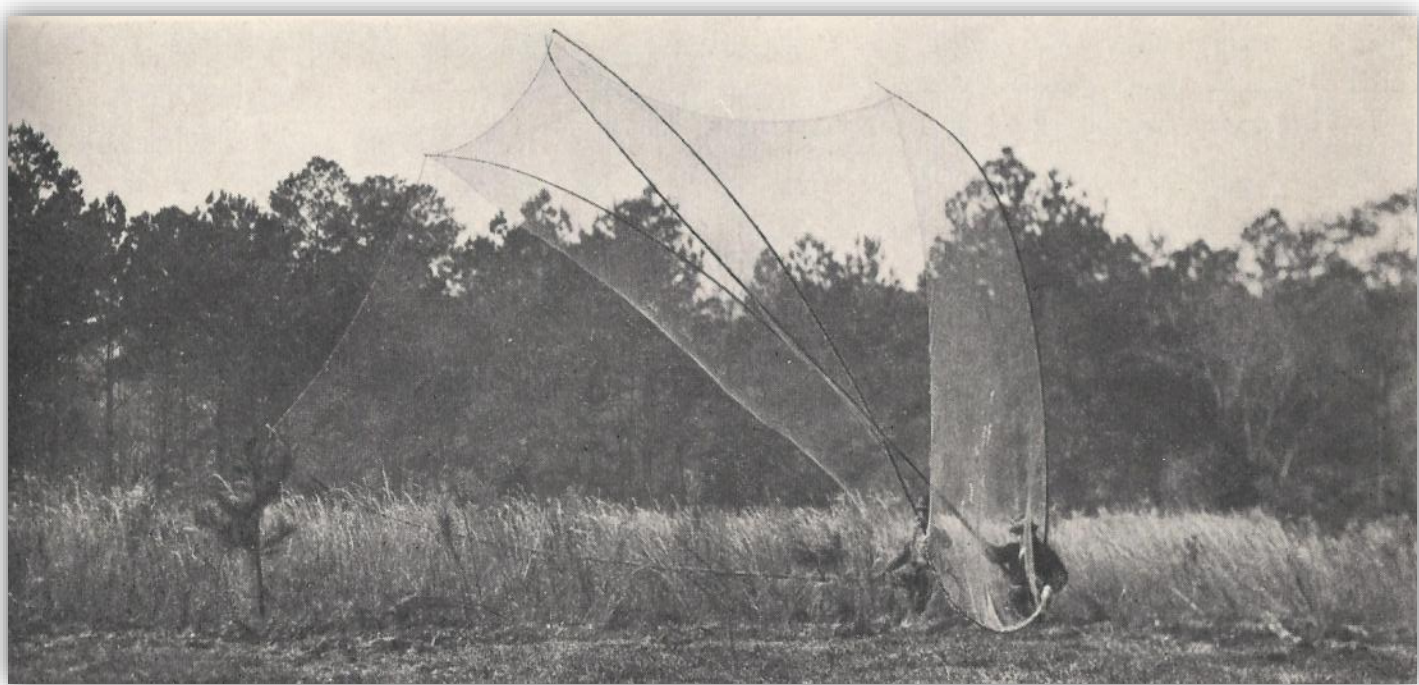
Alternative Capture Techniques

- Targeted Mist Netting
 - Gallinaceous species
 - Pointing dogs (Skinner 1998)
 - Radiotelemetry (Schladweiler and Mussehl 1969)
 - Researchers driving birds (Silvy and Robel 1968, Campbell 1972, Browers and Conelly 1986)



Alternative Capture Techniques

- Targeted Netting for Bobwhites



“Clapnets” (Stoddard 1931: 441)

Alternative Capture Techniques

- Mist Netting Bobwhites
 - Breeding season with audio lure (Cink 1975, Lohr et al. 2011)
 - Nonbreeding season?



Introduction

- Evaluate the efficacy of targeted mist netting
- Compare targeted mist netting with baited funnel trapping...
 - Body mass
 - Age ratio
 - Sex ratio
 - Post-capture survival



Methods

- Netting and trapping used concurrently
 - 1 October-28 February 2009-2011
 - Maintain ≥ 1 radio in each known covey
- Implementation of capture technique
 - Non-random
 - Opportunistic



Methods

- Traps
 - 30x40x45cm
 - Burlap buffer
- Trapping
 - Concealed within cover in areas with evidence of activity
 - Pre-baited, Baited
 - Cracked corn
 - Checked twice daily
 - After sunrise
 - Sunset



Methods

- Mist Nets
 - 2.6x12m, four-shelf nets
 - 61mm mesh
 - Suspended between 3.05m conduit poles
 - Furled and rolled on poles



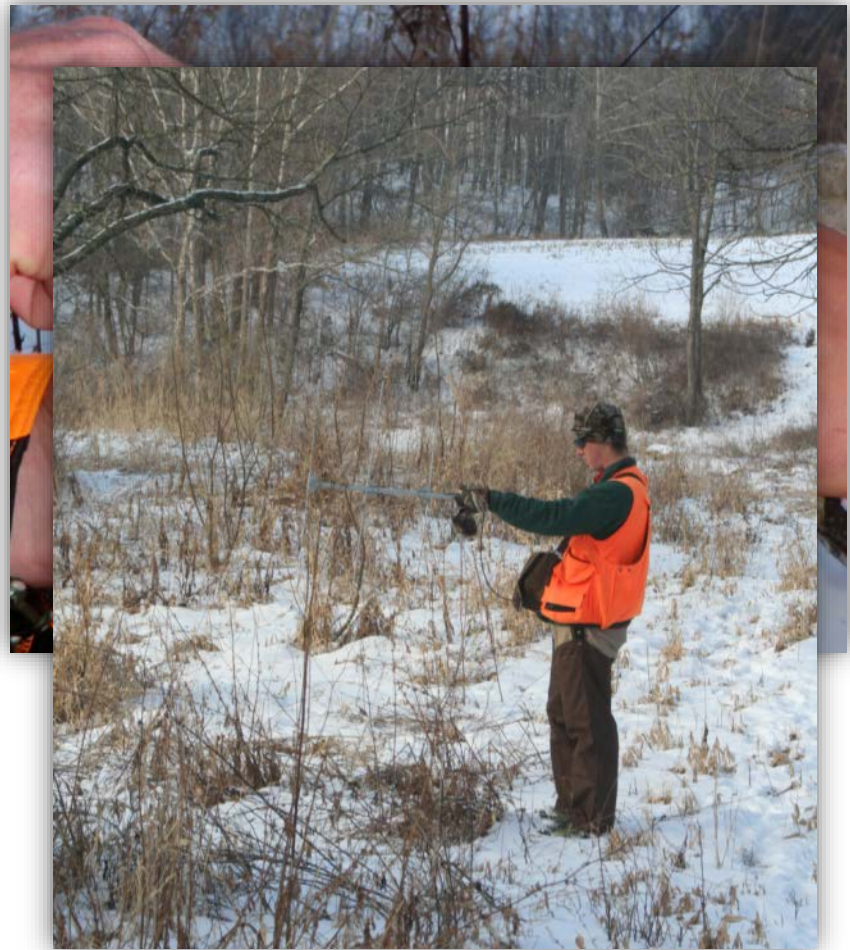
Methods

- Mist Netting
 - Locate bobwhite
 - Radiotelemetry
 - Pointing dogs
 - Incidental contact
 - Erect nets near bobwhite
 - Intersect predicted flush direction
 - Flush toward nets



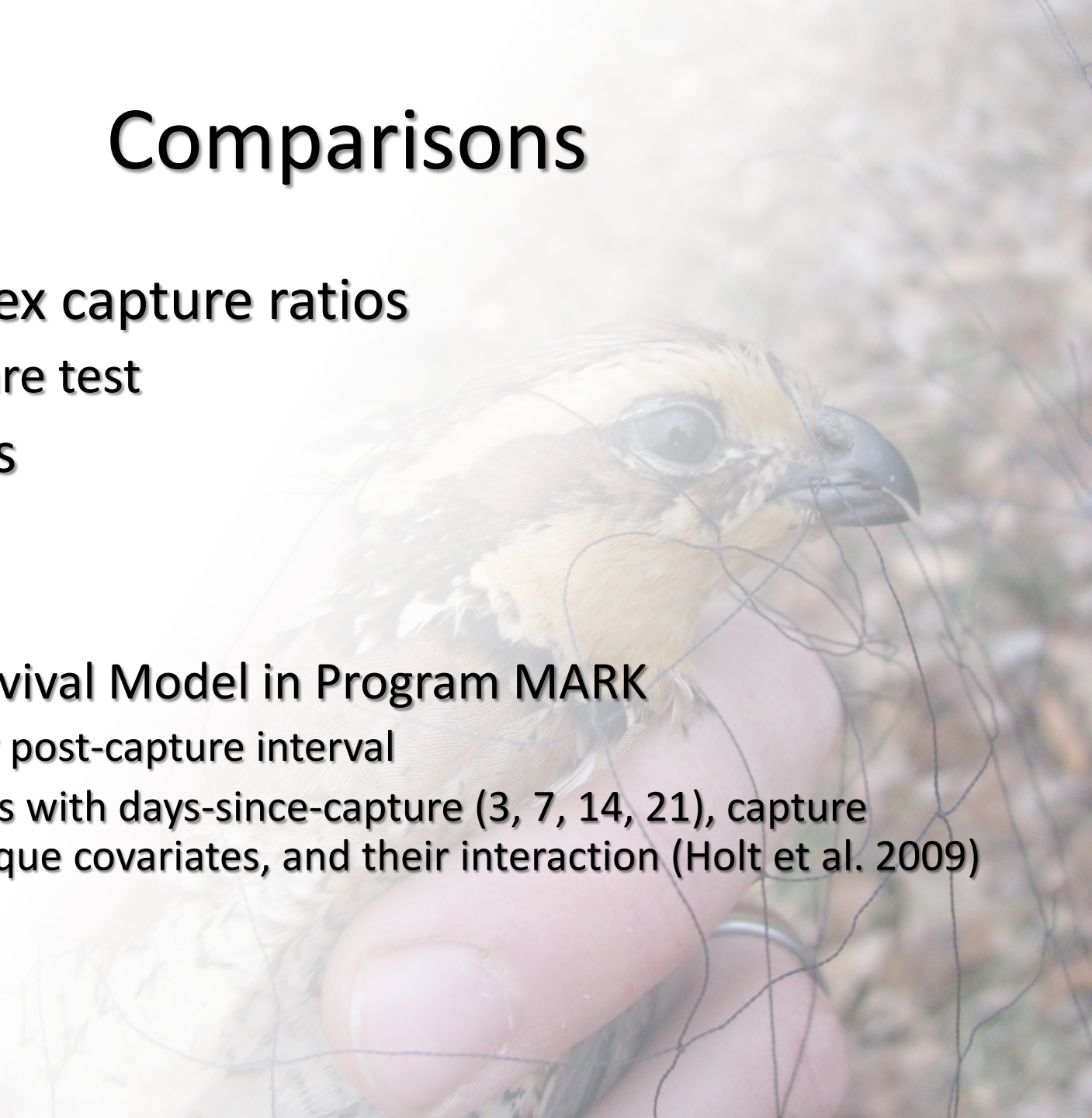
Methods

- Capture/handling
 - Age and sex (Rosene 1969)
 - Body mass
 - Leg band
 - Radiotransmitters
 - 6.6g pendant
 - Mortality-sensing
- Radiotracking
 - ≥ 6 times/week



Comparisons

- Age and sex capture ratios
 - Chi Square test
- Body mass
 - t-test
- Survival
 - Nest Survival Model in Program MARK
 - 21 day post-capture interval
 - Models with days-since-capture (3, 7, 14, 21), capture technique covariates, and their interaction (Holt et al. 2009)
 - AICc



Results

	2009-10	2010-11	Total
Trapping captures	137	120	257
Netting captures	105	148	253

- Trapping (2010-2011)
 - 484 trap-days
 - .306 birds /trap-day
- Netting (2009-2011)
 - 201 targeted netting attempts
 - ≥ 1 bobwhite flushed after nets deployed
 - 141 successful
 - ≥ 1 bobwhite captured

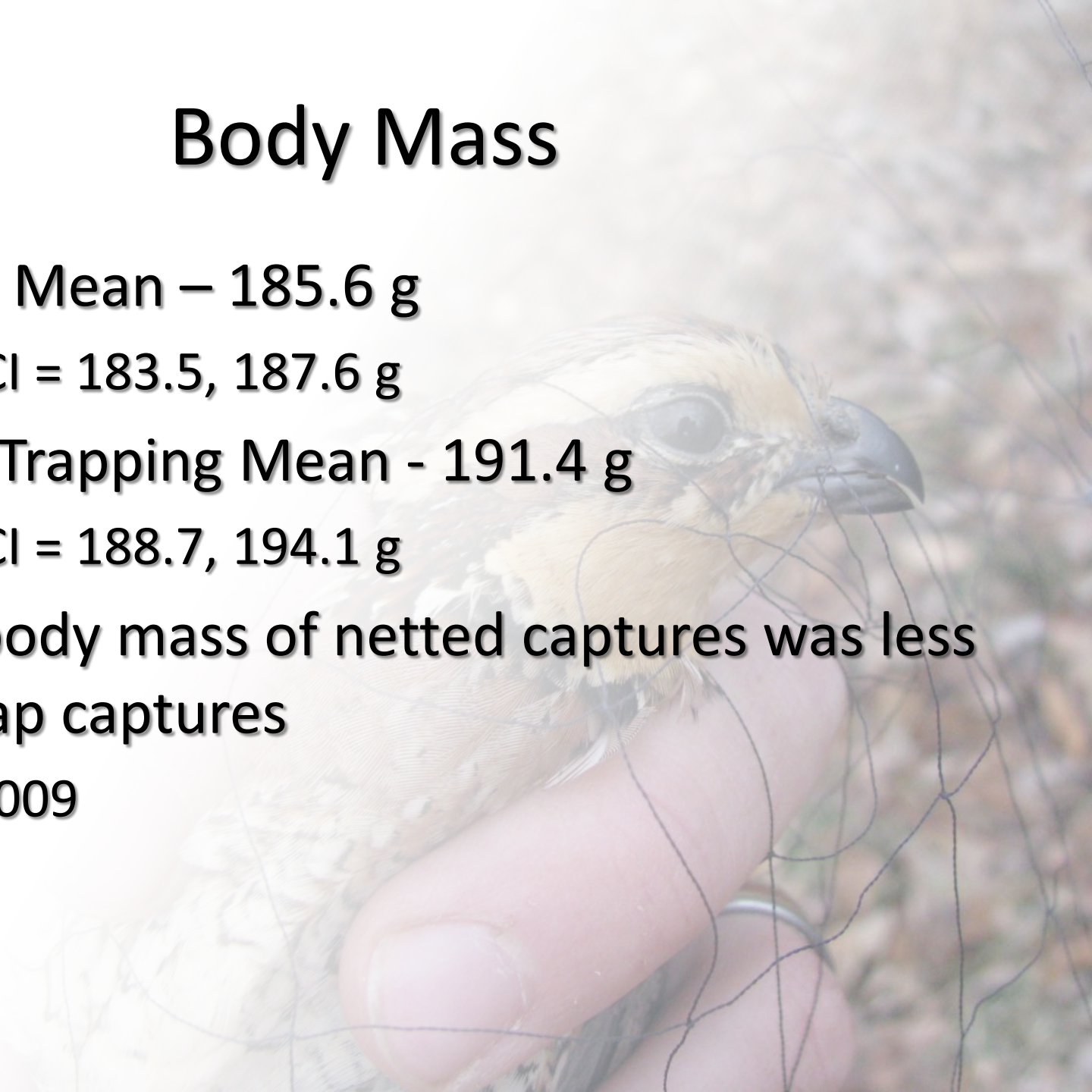
Results

		Targeted netting	Funnel traps
Sex	Male	132	136
	Female	104	106
	Unknown	21	11
Age	Adult	59	52
	Juvenile	191	200
	Unknown	7	1

- No difference in sex ratio of captures
 - ($\chi^2 = 0.001$, $df = 1$, $P = 0.973$)
- No difference in age ratio of captures
 - ($\chi^2 = 0.480$, $df = 1$, $P = 0.4884$)

Body Mass

- Netting Mean – 185.6 g
 - 95% CI = 183.5, 187.6 g
- Funnel Trapping Mean - 191.4 g
 - 95% CI = 188.7, 194.1 g
- Mean body mass of netted captures was less than trap captures
 - $P = 0.009$



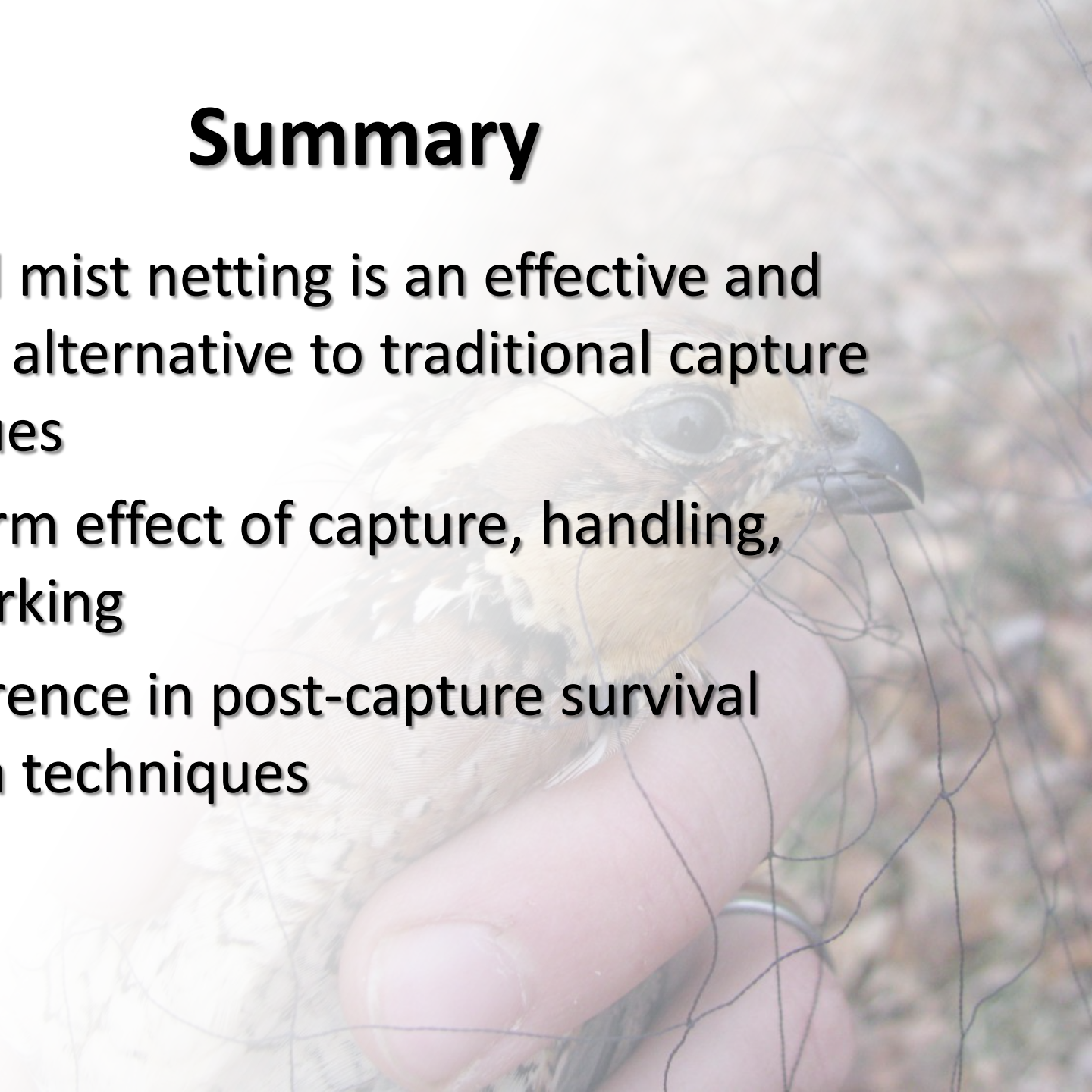
Survival Results

Model	ΔAIC_c	w_i
7 DSC	0.000	0.275
14 DSC	0.807	0.183
21 DSC	1.873	0.108
Technique+ 7 DSC	1.989	0.102
Technique + 14 DSC	2.796	0.068
3 DSC	2.826	0.067
Technique + 21 DSC	3.860	0.040
Technique+ 7 DSC + Technique x 7 DSC $n = 259$ (netting $n = 156$, trapping $n = 103$)	3.992	0.037
Null	4.407	0.030

- Short-term acute effect of capture
- No difference among techniques
 - $\beta_{net} = 0.002$
(-0.214, 0.219)
 - odds ratio = 1.002
(0.807, 1.244)

Summary

- Targeted mist netting is an effective and versatile alternative to traditional capture techniques
- Short term effect of capture, handling, radiomarking
- No difference in post-capture survival between techniques



Summary

- Capture rates of age and sex classes were similar
- Netting may provide more accurate estimates of body mass
 - “Crop full”, “Crop FULL”, “Crop bulging”



Netting is well suited for use...

- On private land
 - Reduces investigator presence
 - Avoid recreational users (e.g. hunters)
- Radiotelemetry studies
 - Capture specific individuals
 - Quickly capture individuals multiple unmarked coveys
- With other techniques to optimize capture
- Breeding season
 - Calling males
 - Radiomarked pairs
 - Incidental contact
 - Fledged young
 - May merit additional research



Research and Management Implications

- Corral (Smith et al. 2003)
 - Roosted, brooding adult
 - Effective
 - Requires that chicks can not fly
 - 1-12 days post-hatch
- Targeted Netting
 - Flying chicks
 - ≥ 12 days post-hatch
 - Smaller chicks capable of passing through nets
 - Experiment with smaller mesh



Acknowledgements

- Field Assistants
 - Mauri Liberati
 - Jay Jordan
 - Bryce Adams
 - Bret Graves
 - Nan Radabaugh
 - Mark Peugeot
 - Laura Jenkins
 - George Fee
 - Chris Grimm
 - Matt Crowell
- Funding
 - Ohio Department of Natural Resources, Division of Wildlife
 - Federal Aid
- ≥ 50 Cooperating Landowners
- Fallsville Wildlife Area
- Indian Creek Wildlife Area



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Questions