

Three-year study on the parasitic eyeworm in northern bobwhites from the Rolling Plains of Texas

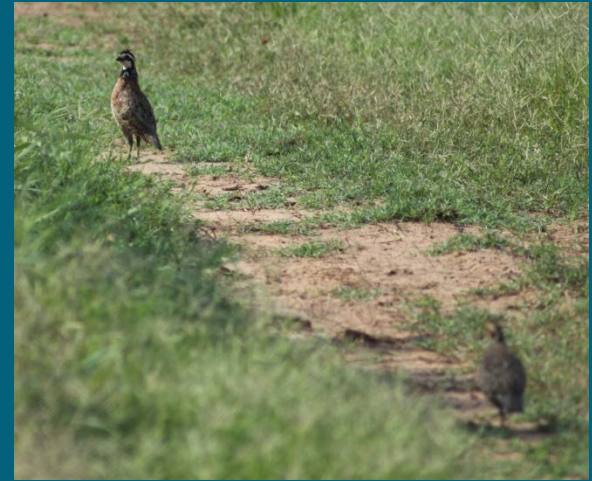


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Overview

- ⚙ Introduction of project
- ⚙ Background information on parasites
- ⚙ Objective of project
- ⚙ Study area
- ⚙ Methods
- ⚙ Results
- ⚙ Discussion
- ⚙ Conclusion

Introduction

- ⚙ Quail are enjoyed for hunting and other non-hunting recreation
- ⚙ Bring in revenue for small towns (Brennan 2007)
- ⚙ Bobwhites have been declining for several years
- ⚙ Some helminths can have negative impacts on bobwhites (Peterson 2007)
- ⚙ Little information on parasites in Rolling Plains or effects on bobwhites (Jackson 1969)

Background

- ✧ Little is known about potential negative effects of eyeworms
 - ✧ Cause vision problems
 - ✧ Cause distractions & make quail less attentive to surroundings
 - ✧ Jackson (1969) observed bobwhites exhibiting peculiar behavior when dogs attempted to flush them (i.e., running)
- ✧ 3 different species of eyeworms found in North America
 - ✧ *Oxyspirura mansoni*, domestic birds
 - ✧ *Oxyspirura pusillae*, wild birds
 - ✧ *Oxyspirura petrowi*, wild birds

Background

☼ Found:

☼ Ruffed grouse, greater prairie chicken, sharp-tailed grouse, and ring-necked pheasant

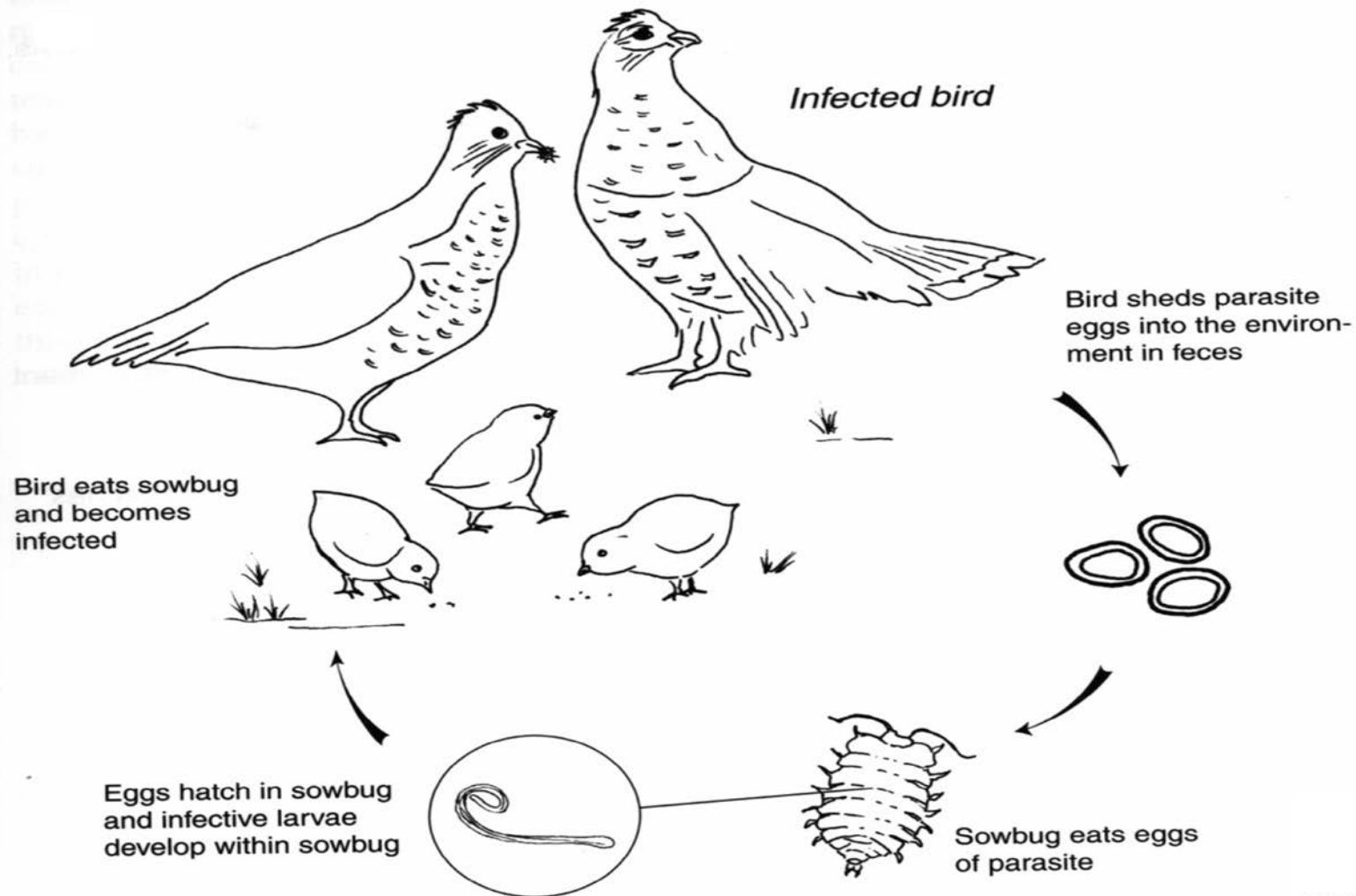
☼ Scaled and Montezuma quail in Texas (Pence 1975, Dancak et al 1982, Landgrebe et al. 2007)

☼ Intermediate host

☼ Cockroaches (Fielding 1926) and/or grasshoppers (Cram et al 1931)



Background-Life Cycle



Objectives



- ✧ Assess the prevalence, intensity, and abundance of *Oxyspirura petrowi* in northern bobwhites from the Rolling Plains of Texas
- ✧ Determine whether infections vary by
 - ✧ age (juvenile, adult)
 - ✧ sex (male, female)
 - ✧ Hunting season (2007-2008, 2009-2010, 2010-2011)

Study Area

☼ Location

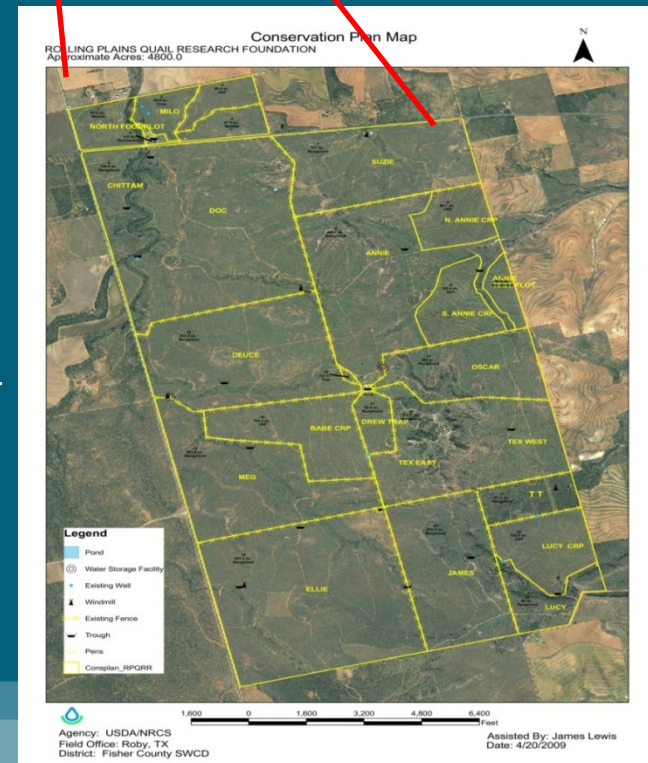
☼ Rolling Plains Ecoregion

☼ Fisher County, Texas

☼ Roby, Texas

☼ Rolling Plains Quail Research
Ranch

☼ Melton Ranch



Methods

- ✧ Hunter donated
- ✧ Quail sex and age identified in field
- ✧ Carcasses were frozen until necropsy
- ✧ Head removed
 - ✧ Eyes examined, nictitating membrane, and around the eye cavity
- ✧ Fixed in glacial acetic acid
- ✧ Stored in 70% ethanol and 8% glycerin



Methods

☼ 2007-2008 ($n = 33$)

- ☼ 9 adult males, 11 adult females, 5 juvenile males, and 8 juvenile females

☼ 2009-2010 ($n = 86$)

- ☼ 28 adult males, 18 adult females, 17 juvenile males, and 23 juvenile females

☼ 2010-2011 ($n = 54$)

- ☼ 17 adult males, 4 adult females, 18 juvenile males, and 15 juvenile females

Results

57% Prevalence

Intensity

Median: 4

Range: 1-40

Mean: 6

Total: 596

Abundance

Median: 1 Mean: 3.4

Range: 0-40



Results

Prevalence, Intensity, and Abundance of *Oxyspirura petrowi* by northern bobwhite age and sex from the Rolling Plains of Texas

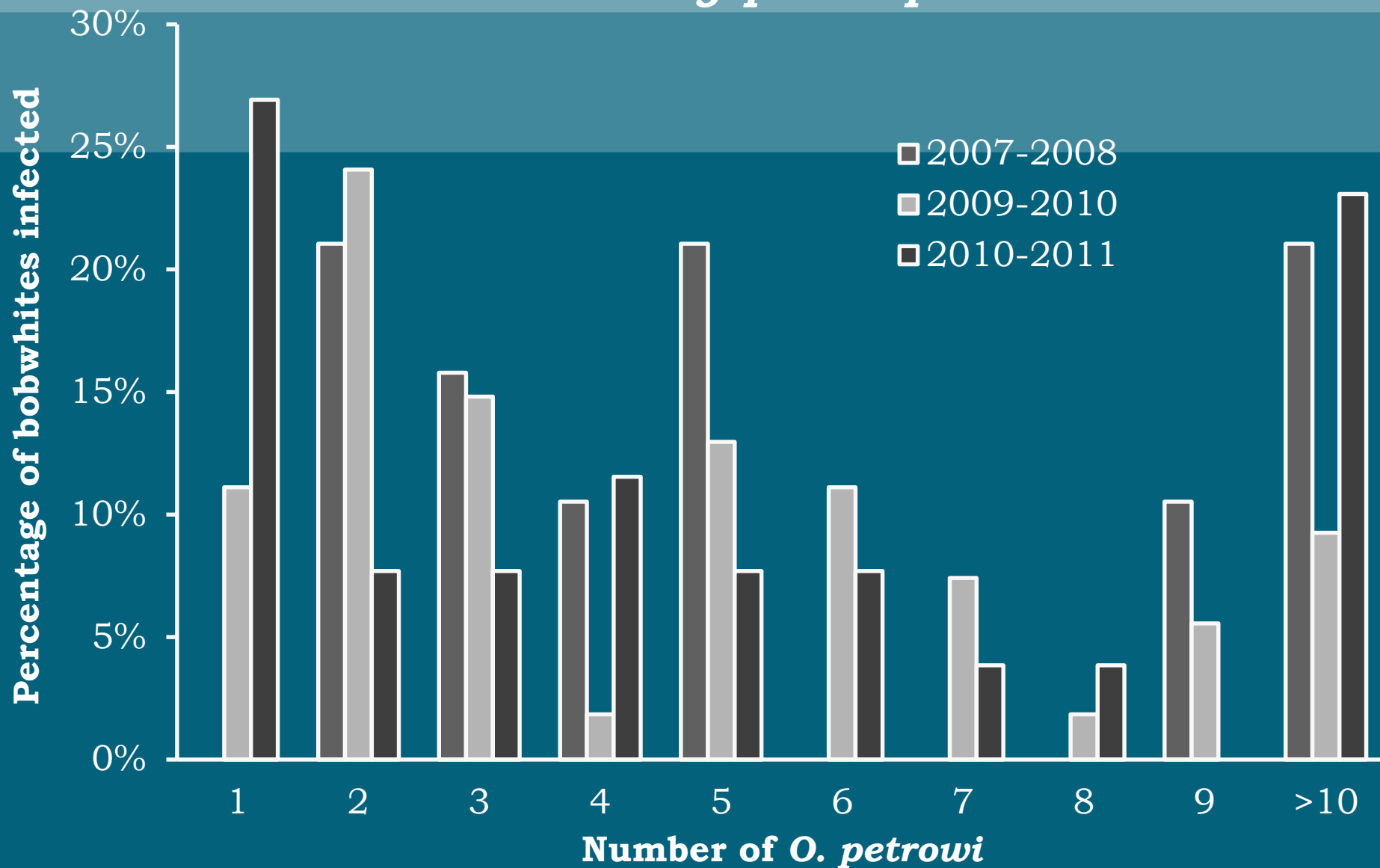
	Host Age		Host Sex	
	Adult	Juvenile	Male	Female
Number of Host	85	88	94	79
Prevalence No. Infected (%)	57 (67%)	42 (48%)	53 (56%)	46 (58%)
Intensity $\bar{x} \pm SD$	6.9 $\pm$ 7.3	4.8 $\pm$ 4.7	5.8 $\pm$ 5.2	6.3 $\pm$ 7.6
Abundance $\bar{x} \pm SD$	4.6 $\pm$ 6.8	2.3 $\pm$ 4.0	3.3 $\pm$ 4.8	3.7 $\pm$ 6.6

Results

Prevalence, Intensity, and Abundance of *Oxyspirura petrowi* in northern bobwhites by collection year from the Rolling Plains of Texas

	2007-2008	2009-2010	2010-2011
Number of Host	33	86	54
Prevalence No. Infected (%)	19 (58%)	54 (63%)	26 (48%)
Intensity $\bar{x} \pm SD$	8.3 $\pm$ 10.1	5.0 $\pm$ 4.2	6.5 $\pm$ 6.6
Abundance $\bar{x} \pm SD$	4.8 $\pm$ 8.6	3.1 $\pm$ 4.1	3.1 $\pm$ 5.6

Distribution of *Oxyspirura petrowi*



P-values from Chi-square comparisons for prevalence values of *Oxyspirura petrowi* from northern bobwhites in the Rolling Plains of Texas

Age	Sex	Year
0.0158 ↑A	0.8070	0.2337

A = adult, ↑ = higher

P-values from ANOVA comparisons for ranked values of *Oxyspirura petrowi* from northern bobwhites in the Rolling Plains of Texas

	Model	Age	Sex	Year
Intensity	0.3485	0.0849	0.8044	0.5795
Abundance	0.0291	0.0050	0.5483	0.5131

Discussion

- ⚙ Highest recorded number (40) of eyeworms in a host individual
- ⚙ Average 6 eyeworms per infected bird
- ⚙ Average 3.4 eyeworms per all birds
- ⚙ McClure ⁽¹⁹⁴⁹⁾ found 2 eyeworms in ring-necked pheasants in February

Discussion

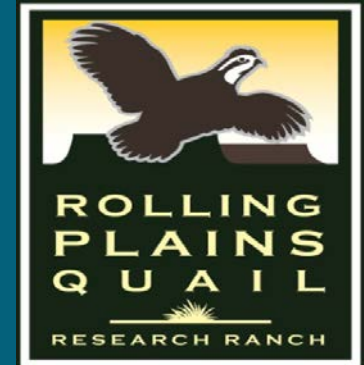
- ⊗ Prevalence & mean abundance were higher in adults
- ⊗ Prevalence & mean abundance were not significantly different for host sex or hunting season
- ⊗ Exposure probabilities to infected intermediate host are similar between sex

Conclusion

- ✧ Provides new information about the distribution patterns of eyeworms
- ✧ Host sex does not appear to be a major factor in helminth prevalence, abundance, and intensity
- ✧ Host age was an important factor in influencing prevalence and abundance
- ✧ Future studies are needed to determine if eyeworms have a negative impact

Thank you to the following people who helped...

- ✿ Rolling Plains Quail Research Ranch
- ✿ Paul Melton
- ✿ Lloyd LaCoste
- ✿ Barrett Koennecke
- ✿ Becki Perkins
- ✿ Britani Lolley
- ✿ Cady Mercer
- ✿ Photos by: Nicholas Villarreal



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A photograph of a quail, likely a Gambel's quail, standing on a dry, brown, and rocky ground. The bird has a distinctive black and white striped head, a white throat, and a body covered in mottled brown and black feathers. It is facing left. The word "Questions?" is overlaid in large, bold, black text across the lower half of the image.

Questions?