Survey of dog parks in rural and urban environments suggests fecal contamination from abandoned poop piles

Presentation by Benjamin Hamilton

Dog Parks on Public Health

- Positive impact on owner and pet wellbeing
- Contribute to “One Health” of community
- Create a suitable environment for disease transmission
- GI parasites are common in dogs and contaminate the park
- Owners abandoning poop piles exacerbates the issue

Prevalence By Area

- 2020 study surveyed 288 public parks across 30 cities in US
- Found parasites in 20.7% of dogs sampled in parks nationwide
- 27.3% of dogs in urban parks in Southeast region had positive samples
- Evidence that parasite prevalence is much more location specific
- Studies from 2010, 2014 suggest prevalence is different between parks in urban and rural areas
- Indicates prevalence depends on environmental factors between urban and rural locations

Our Study

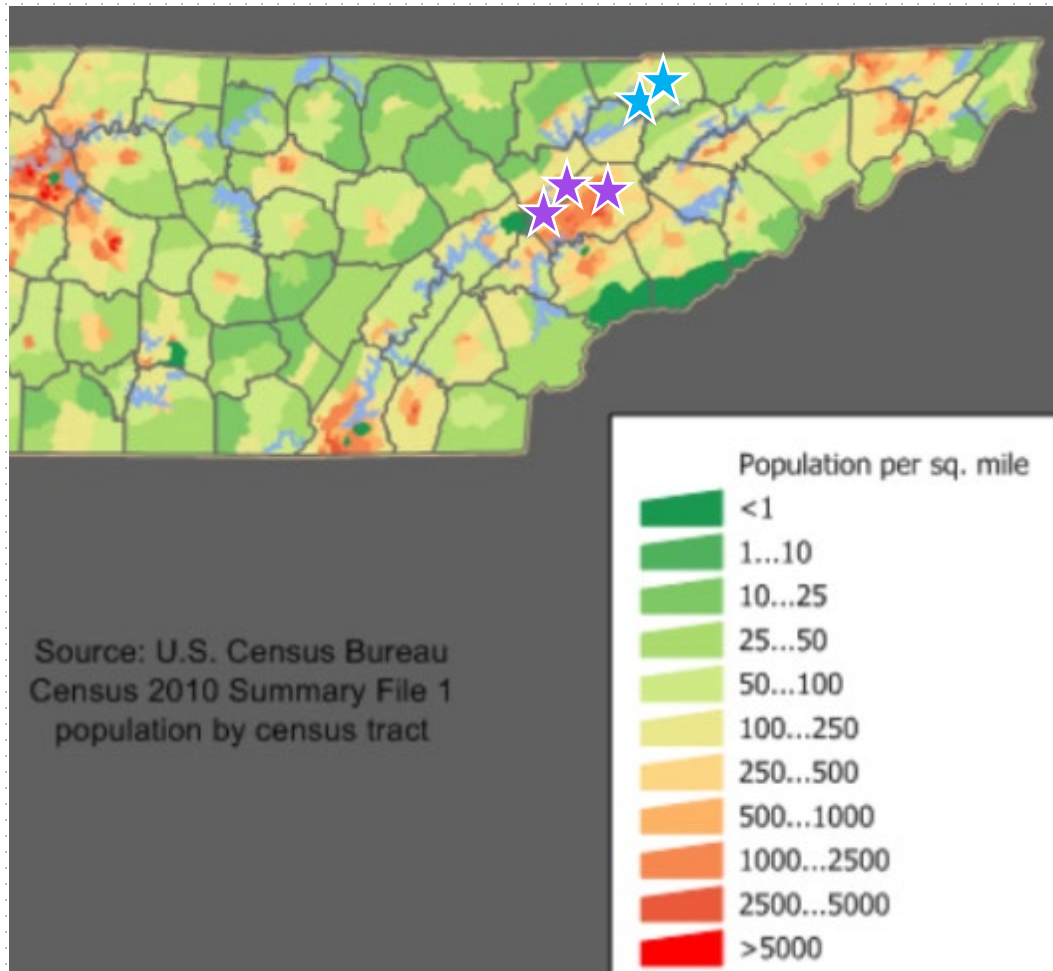
- Conclusions about parasite prevalence in dogs parks inform public health decisions
- Must be informed by current data and relevant to parks in specific areas
- Characterize prevalence of GI parasites in several dog parks in East Tennessee
- Determine difference in parasite abundance between parks in a rural and urban county

Sample Gathering

- Samples taken from dog parks in Spring 2023 from Knox and Claiborne County
- Collected from abandoned poop piles along random transects of the park
- Collected 10 samples per park per visit with # of transects recorded
- Samples were returned to lab and analyzed within 24 hrs

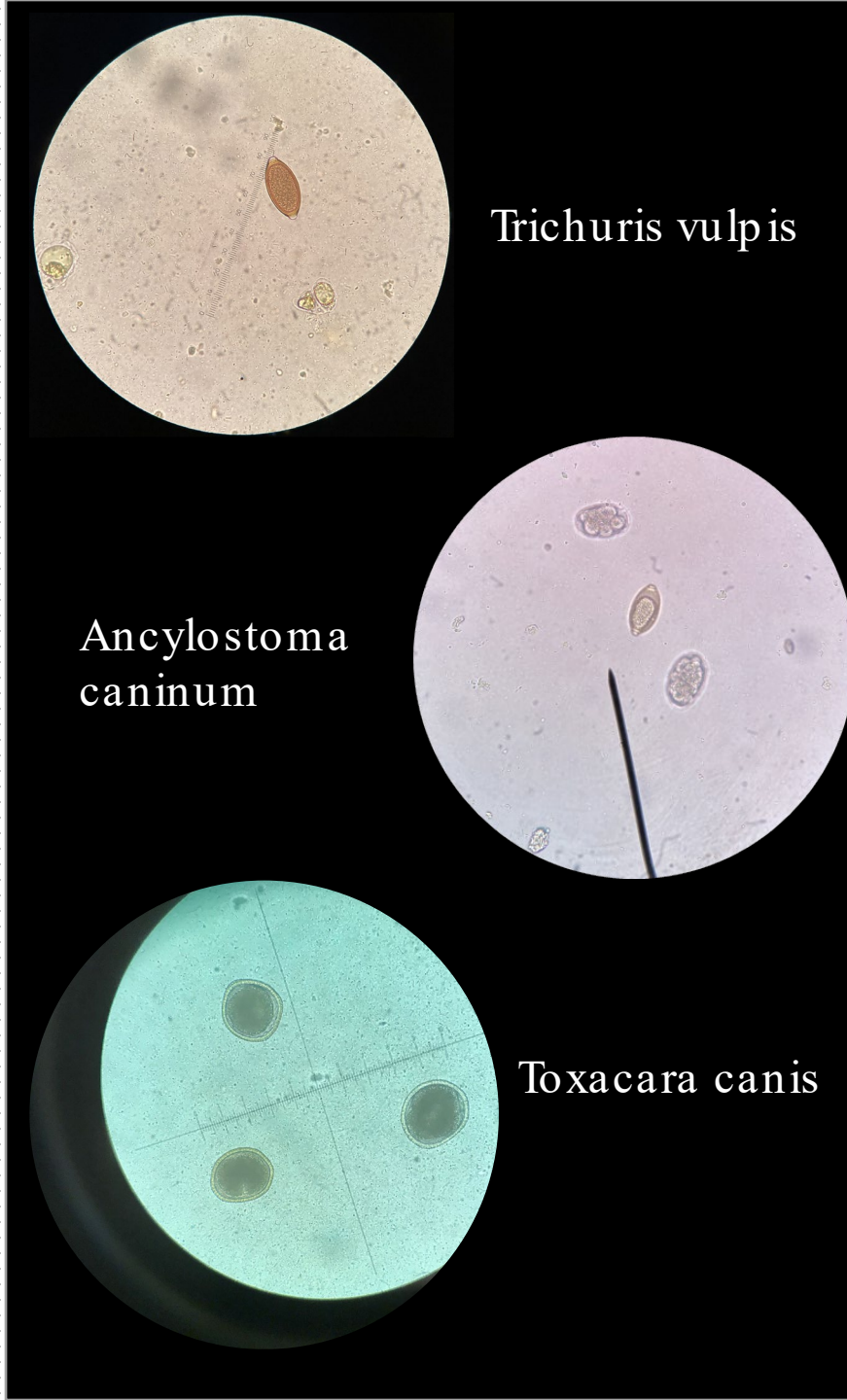
★ **Metro parks** – more dogs, less wildlife interface, distinct environment

★ **Rural parks** – fewer dogs, more wildlife interface, distinct environment



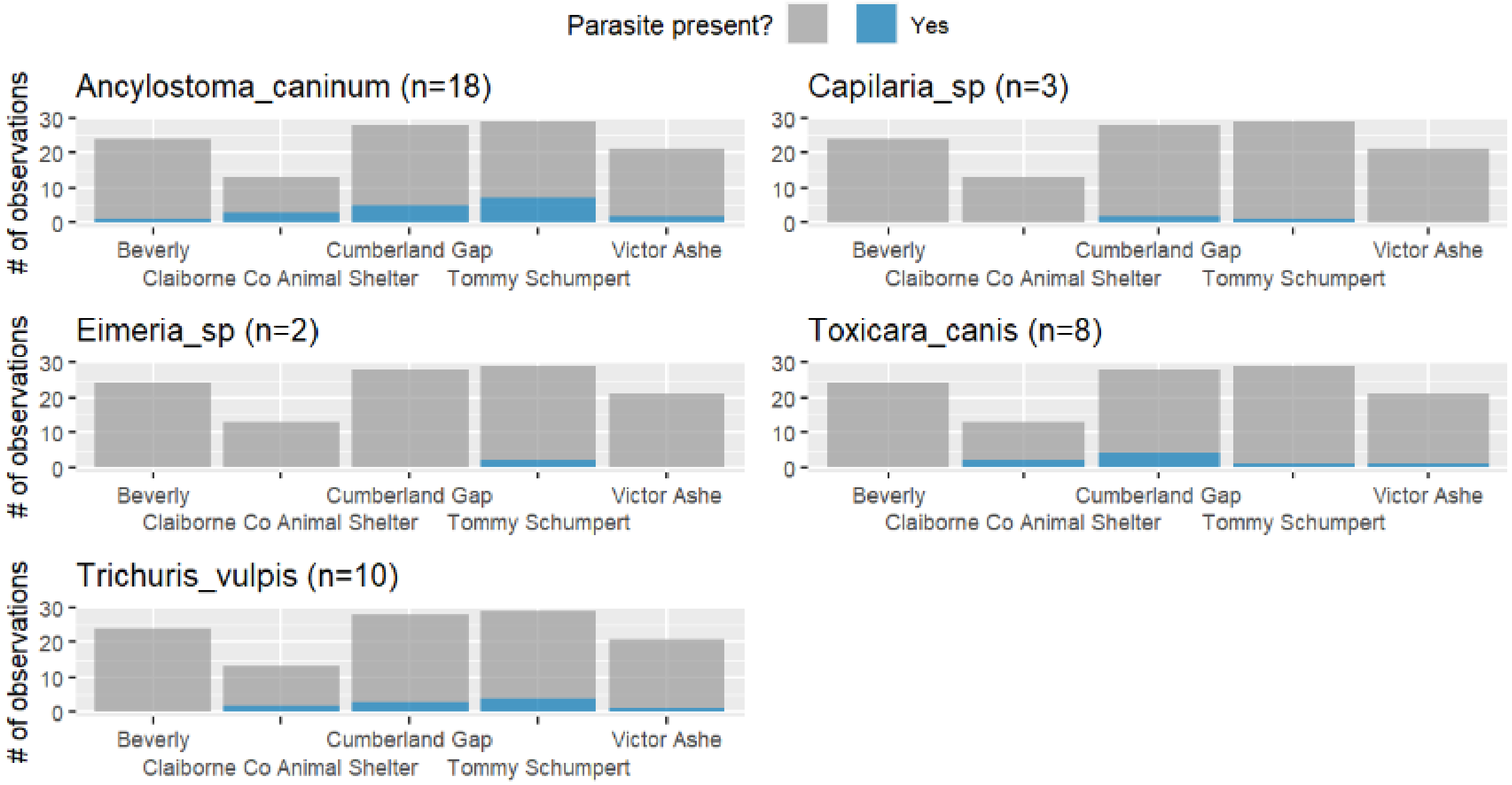
Fecal Analysis

- Samples were processed by centrifugal fecal flotation in sodium nitrate solution
- Isolated parasite eggs were observed microscopically (10X-40X)
- If found then parasites were identified
- Abundance of each taxa in sample was noted (Few, Many, Lots)



Results (so far)

- As of April 11th, 2023 115 fecal samples collected from 5 dog parks
- Five parasite taxa identified among 30 positive samples
- 12 positive samples had >1 type of parasite


Parasite present?
Yes
Ancylostoma_caninum (n=18)
Capilaria_sp (n=3)
Eimeria_sp (n=2)
Toxicara_canis (n=8)
Trichuris_vulpis (n=10)
# of observations
30
20
10
0
Beverly
Claiborne Co Animal Shelter
Cumberland Gap
Tommy Schumpert
Victor Ashe

Results (so far)

- Overall parasite prevalence of (30/115) by dog parks (n=5)
- Differences in overall parasite prevalence among parks ($p=0.46$; chi. sq. = 3.6) or by urban vs rural county ($p=0.37$) was not significant

	Claiborne County Animal Shelter	Cumberland Gap (Kaitlyn DeVries Memorial Dog Park)	Tommy Schumpert (Emma Jane Walker Memorial Dog Park)	Beverly	Victor Ashe	Total
Parasite – Yes	5	8	9	3	5	30
Parasite - No	8	20	20	21	16	85
Parasite %	38.5%	40%	45%	14.3%	23.8%	26.1%
Total	13	28	29	24	21	115

Discussion and Future Work

- The Kolp lab will continue sampling this summer and fall
- We will:
  - Add soil samples to test if parasites are contaminating soil
  - Test samples using PCR to confirm the presence or absence of parasites based on fecal flotation
  - Collect fresh fecal samples and query dog owners for pet lifestyle, health, and diet information

Long-term goal: to describe the risk factors of for parasite transmission among dog parks using a One Health approach that considers the human-animal bond, animal health, and the environment

Acknowledgements

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Any Questions?