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Baylisascaris procyonis Impacts Raccoon (Procyon lotor) Diets

Matthew E. Ingle
Cedarville University, mingle@cedarville.edu

Stephen G. Dunbar
Loma Linda University

Jaynee L. Bartsch
Cedarville University, jbartsch@cedarville.edu

Kyle J. Culbertson
Cedarville University, kylejculbertson@cedarville.edu

Taylor A. Fulton
Cedarville University, tfulton@cedarville.edu

See next page for additional authors

Presenters
Matthew E. Ingle, Stephen G. Dunbar, Jaynee L. Bartsch, Kyle J. Culbertson, Taylor A. Fulton, Katherine R. Guffey, Aubrey J. Juris, Ashlie N. Nolan, Dan P. Nordquist, Carrie E. Rowlands, and Joshua A. Sitler

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Ingle, M.E.[1,2], Dunbar, S.G.[2], Bartsch, J.L.[1], Culbertson, K. J.[1], Fulton, T. A.[1] Guffey, K.R.[1], Juris, A. J.[1], Nolan, A.N.[1], Nordquist, D. P.[1] Rowlands, C.E.[1], and Sitler, J. A.[1]
[1] Department of Science and Mathematics. College of Arts and Sciences. Cedarville University.
[2] Department of Earth and Biological Sciences. School of Medicine, Loma Linda University.

Introduction

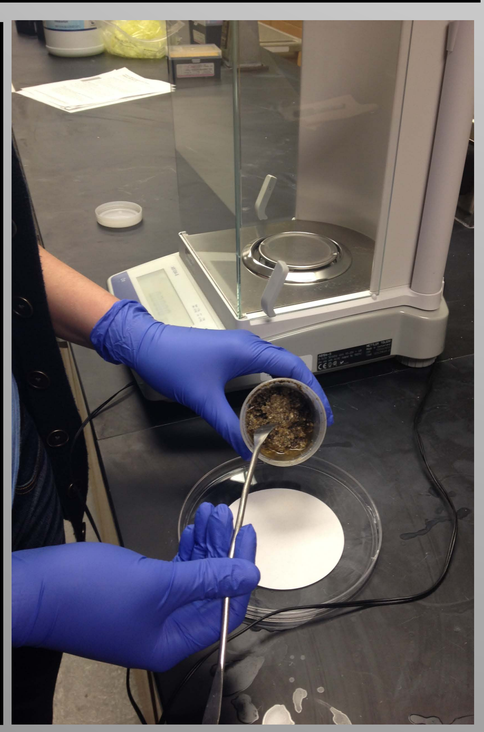
Raccoons (Procyon lotor) are the definitive host for raccoon roundworms (Baylisascaris procyonis). Raccoon roundworm is responsible for a dangerous neurological disease known as larva migrans encephalopathy. Raccoons are omnivorous animals and rely on various food items. Dietary analyses help determine how a raccoon changes its diet in response to environmental features. Raccoons eat whatever food resource is most convenient and abundant. Parasite infections can potentially affect host eating habits in order to keep the host alive and active longer. In this study, we analyzed the diets of necropsied raccoons from ten townships of Clark and Greene Counties by examining their stomach contents.

Hypothesis

Raccoons from townships with high prevalence (>60%) have the same vertebrate tissue and plant tissue prevalence as raccoons from townships with low roundworm prevalence (<60%) at necropsy.

Methods

We categorized stomach contents by separating out plant material, vertebrate tissue, and invertebrate tissue storing each sample separately in an ethanol solution. Before processing , we set the samples out in petri dishes to dry. Our research team used an electronic balance to mass the total stomach contents. We also massed all of the plant content separately to compare and obtain a percentage of plant material in the raccoons' diet. We conducted two $\chi 2$ tests for equality of distributions.



Results

County	Township	Number of Raccoon stomachs	Vertebrate tissue*	Vertebrate tissue prevalence	Plant Tissue**	Plant tissue prevalence
Greene		119	110	0.924	87	0.731
	Beavercreek	42	41	0.976	24	0.571
	Xenia	27	25	0.926	19	0.704
	Miami	50	44	0.880	44	0.880
Clark		72	66	0.917	63	0.875
	German	9	8	0.889	8	0.889
	Green	22	21	0.955	18	0.818
	Harmony	16	15	0.938	16	1.000
	Mad River	8	8	1.000	8	1.000
	Moorefield	13	11	0.846	10	0.769
	Springfield	4	3	0.750	3	0.75
> 0.60 prevalence		101	92	0.911	87	0.861
< 0.60 prevalence		90	84	0.933	63	0.700

Table 1.1-Prevalence of vertebrate and plant tissues found in stomach contents for the nine townships from Clark and Greene Counties, OH.

Vertebrate Stomach Contents				Plant Stomach Contents			
Observed	yes	no	Total	Observed	yes	no	Total
> 60	92	9	101	> 60	87	14	101
< 60	84	6	90	< 60	63	27	90
Total	176	15	191	Total	150	41	191
Expected	yes	no		Expected	yes	no	
> 60	93.06806	7.931937		> 60	79.31937	21.68063	
< 60	82.93194	7.068063		< 60	70.68063	19.31937	

Table 1.2- Observed vs. expected stomach contents in high vs. low prevalence townships.

Conclusions

- There is no significant difference between raccoons from townships with high prevalence (>60) and those with low prevalence (<60) with regards to proportion of raccoons with vertebrate tissue in the stomach at necropsy.
- Plant tissue prevalence did differ significantly between the two groups ($c^2 = 7.353$, df = 1, p = 0.007), with raccoons from high *B. procyonis* prevalence having significantly higher plant tissue prevalence (0.861 vs 0.700).

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