

Note: This is Online Appendix 1 of Bokaba, R.P., Dermauw, V., Morar-Leather, D., Dorny, P., Van Schalkwyk, L. & Neves, L., 2024, ‘An investigation into *Toxoplasma gondii* at the human-livestock-wildlife interface, South Africa’, *Onderstepoort Journal of Veterinary Research* 91(1), a2130. <https://doi.org/10.4102/ojvr.v91i1.2130>

Supplementary Data

Supplementary files

S1 Table Additional data representing the seroprevalence of *T. gondii* focusing on the different age ranges, sex and village categories in humans, and in the different domestic and wildlife species in the Bushbuckridge Municipality, South Africa.

Categories	Value	n+/n (%)
Part I: Clinic		
<u>Humans (n=160)</u>		
Age	18-35 years	5/93 (5.4%)
	36-45 years	5/24 (20.8%)
	46-55 years	0/20 (0.0%)
	56-65 years	3/14 (21.4%)
	>65 years	1/9 (11.1%)
Part II: Community		
<u>Cats (n=9):</u>		
Age	6 -11 months	0/2 (0.0%)
	1-2 years old	0/7 (0.0%)
Sex	Female	0/9 (0.0%)
	Male	0/0 (0.0%)
Village	Athol	0/1 (0.0%)

Gottenburg	0/0 (0.0%)
Tlhavekisa	0/8 (0.0%)
Utha	0/0 (0.0%)

Chickens (n=336):

Age	3 -6 months	8/112 (7.1%)
	7 -11 months	1/39 (2.6%)
	1-3 years old	5/165 (3.0%)
	>3 years old	0/20 (0.0%)
Sex	Female	13/263 (4.9%)
	Male	1/73 (1.4%)
Village	Athol	12/72 (16.7%)
	Gottenburg	0/90 (0.0%)
	Tlhavekisa	0/93 (0.0%)
	Utha	2/81 (2.5%)

Goats (n=358):

Age	3 - 1year	12/148 (8.1%)
	2-5 years old	22/175 (12.6%)
	6-10 years old	5/33 (15.2%)
	>10 years old	1/2 (50.0%)
Sex	Female	32/258 (12.4%)
	Male	8/100 (8.0%)
Village	Athol	5/75 (6.7%)
	Gottenburg	12/123 (9.8%)
	Tlhavekisa	10/79 (12.7%)

Utha 13/81 (16.1%)

Part III: Conservation area

Impala (n=97):

Age	Juvenile	0/10 (0.0%)
	Young adult	0/5 (0.0%)
	Sub-adult	1/22 (4.5%)
	Old	4/60 (6.7%)
Sex	Female	2/41 (4.9%)
	Male	3/56 (5.4%)

Wild dogs (n=54):

Age	Juvenile	2/2 (3.7%)
	Young adult	8/8 (100.0%)
	Prime Adult	1/1 (100.0%)
	Adult	27/27 (100.0%)
	Old	2/2 (100.0%)
	Unknown	14/14 (100.0%)
Sex	Female	16/16 (100.0%)
	Male	25/25 (100.0%)
	Unknown	13/13 (100.0%)

Wildebeest (n=43):

Age	Sub-adult	0/1 (0.0%)
	Old	9/35 (25.7%)
	Unknown	0/7 (0.0%)
Sex	Female	9/33 (27.27%)

Male	0/3 (0.0%)
Unknown	0/7 (0.0%)

Warthog (n=97):

Age	Piglet	0/1 (0.0%)
	Juvenile	0/15 (0.0%)
	Young adult	2/23 (8.7%)
	Sub-adult	1/3 (33.3%)
	Prime adult	4/13 (30.8%)
	Old	6/42 (14.3%)
Sex	Female	6/58 (10.3%)
	Male	7/39 (17.9%)

Zebra (n=66):

Age	Young adult	0/5 (0.0%)
	Sub-adult	1/5 (20.0%)
	Prime adult	0/1 (0.0%)
	Old	5/53 (9.4%)
	Unknown	0/2 (0.0%)
Sex	Female	4/37 (10.8%)
	Male	2/29 (6.9%)

S2 Table Additional data collected from the questionnaires conducted for household owners, per household, focusing on the knowledge and practices related to *Toxoplasma* transmission in the Mnisi Community, Mpumalanga (n=384).

Knowledge and animal practices	
Variables	Frequency (%)

Knowledge on toxoplasmosis (<i>n</i> =384)	
Yes	8/384 (2.1%)
No	376/384 (97.9%)
Accessibility to water (<i>n</i> =384)	
Yes	384/384 (100.0%)
No	0/384 (0.0%)
Source of water supply (<i>n</i> =384)	
Fetch water at main tap and borehole	260/384 (67.7%)
Have their own tap and borehole	124/384 (32.3%)
Plant fruits and vegetables (<i>n</i> =384)	
No	257/384 (66.9%)
Yes	127/384 (33.1%)
Reason for growing fruits and vegetables (<i>n</i> =127)	
Consumption in the household	115/127 (90.6%)
Selling in the communities	0/127 (0.0%)
Both consumption and selling	12/127 (9.4%)
How do they prefer their meat to be cooked (<i>n</i> =384)	
Rare (cooked outside, bloody on the inside)	16/384 (4.2%)
Medium done (bit of blood on the inside)	54/384 (40.1%)
Well done (fully cooked)	340/384 (81.8%)
Pet owner or farmer or both (<i>n</i> =384)	
Pet owner (cats and dogs)	138/384 (35.9%)
Informal farmer (livestock)	242/384 (63.0%)

Both pet owner and farmer	110/384 (28.6%)
None of the above	114/384 (29.7%)
Do you clean after your companion animals (<i>n</i> =138)	
No	3/138 (2.2%)
Yes	135/138 (97.8%)
How frequent do the household owners clean after their companion animals (<i>n</i> =138)	
Once a week	11/138 (8.0%)
Twice a week	37/138 (26.8%)
Three times a week	48/138 (34.8%)
Four times a week	7/138 (5.1%)
Five times a week	1/138 (0.7%)
Everyday	26/138 (19.6%)
Less than once a week	5/138 (3.6%)
Never	3/138 (2.2%)
Where do the companion animals reside (<i>n</i> =138)	
Indoors/in the yard	13/138 (9.4%)
Outdoors/free roaming	15/138 (10.9%)
Both indoors and outdoors	110/138 (79.7%)
Practice of carcass disposal of companion animals (<i>n</i> =138)	
Bury in the yard	35/138 (25.4%)
Bury in the bush/river	30/138 (21.7%)
Burn the carcass in the yard	1/138 (0.7%)
Throw it away in the bush/river	67/138 (48.6%)

No experience	5/138 (3.6%)
Do you clean after your farm animals (<i>n</i> =242)	
No	17/242 (7.0%)
Yes	225/242 (93.0%)
How frequent do the household owners clean after their farm animals (<i>n</i> =242)	
Once a week	30/242 (12.4%)
Twice a week	64/242 (26.5%)
Three times a week	70/242 (28.9%)
Four times a week	15/242 (6.2%)
Everyday	26/242 (10.7%)
Less than once a week	20/242 (8.3%)
Never	17/242 (7.0%)
Where do your farm animals reside (<i>n</i> =242)	
Indoors/in the yard	15/242 (6.2%)
Outdoors/free roaming	22/242 (9.1%)
Both indoors and outdoors	205/242 (84.7%)
Practice slaughtering of livestock (<i>n</i> =242)	
No	(9/242) 3.7%
Yes	(233/242) 96.3%
Where is the slaughtering done (<i>n</i> =242)	
Inside the yard	196/242 (81.0%)
Outside the yard	15/242 (6.2%)
Both inside and outside the yard	22/242 (9.1%)

No slaughtering	9/242 (3.7%)
Practice of carcass disposal of livestock (n=242)	
Bury in the yard	28/242 (11.6%)
Burn the carcass in the yard	3/242 (1.2%)
Bury in the bush/river	11/242 (4.6%)
Throw it away in the bush/river	141/242 (58.3%)
Consume/Eat	46/242 (19.0%)
Feed the dogs	3/242 (1.2%)
No experience	10/242 (4.1%)

S3 Text. Questionnaire used, per household, focusing on the knowledge and practices related to *Toxoplasma* transmission in the Mnisi Community, Mpumalanga (n=384).

Questionnaire

UNIVERSITY OF PRETORIA

VETERINARY SCIENCES FACULTY

TROPICAL DISEASE DEPARTMENT

COMMUNITY QUESTIONNAIRE

*My name is Refilwe Bokaba and I am conducting a survey for the residents in the Mnisi Community, Mpumalanga, South Africa. The survey will help me learn more about your community and investigate whether the socio-economical, environmental and husbandry conditions could impact or influence the transmission of a parasite known as *Toxoplasma gondii*. This parasite is known to cause toxoplasmosis in all warm blooded animals including humans. The information will be used for research purposes only and for my PhD at the University of Pretoria, Veterinary Sciences Faculty.*

Name: _____

Date: _____

Village: _____

Female/Male: _____

Age range (tick below):

A. 18 - 30	<input type="checkbox"/>
B. 31 - 40	<input type="checkbox"/>
C. 41 - 50	<input type="checkbox"/>
D. 51 - 60	<input type="checkbox"/>
E. 61 AND OLDER	<input type="checkbox"/>

Current education (tick below):

A. NO FORMAL EDUCATION	<input type="checkbox"/>
B. GRADE 4 - 7	<input type="checkbox"/>
C. GRADE 8 - 11	<input type="checkbox"/>
D. MATRIC	<input type="checkbox"/>
E. HIGHER CERTIFICATE	<input type="checkbox"/>
F. DIPLOMA	<input type="checkbox"/>
G. DEGREE	<input type="checkbox"/>

ABOUT TOXOPLASMOSIS

1. Have you heard of or know about Toxoplasmosis? (tick below)

YES

NO

2. If "YES", which species is affected by Toxoplasmosis? (tick below)

A. I DO NOT KNOW	<input type="checkbox"/>
B. ONLY HUMANS	<input type="checkbox"/>
C. ONLY CATTLE AND GOATS	<input type="checkbox"/>
D. ONLY BIRDS	<input type="checkbox"/>

E. ALL MAMMALS AND BIRDS	
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FOR COMPANION ANIMAL OWNERS

3. Are you a dog or cat owner? (tick) YES NO

4. If "YES" fill in how many dogs and/or cats you own? (fill in table below)

SPECIES	NUMBER
1. CAT/S	
2. DOG/S	

5. Where do your companion animals reside? (tick below)

A. INDOORS/IN THE YARD	
B. OUTDOORS/FREE ROAMING	

6. How many times do you clean after your companion animals? (tick below)

A. ONCE A WEEK	
B. ONCE A MONTH	
C. ONCE A YEAR	
D. NEVER	

7. What do you feed your companion animals? (tick below)

A. COMMERCIALY PREPARED FOOD FROM THE SHOPS	
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B. FOOD YOU PREPARED FROM THE HOUSE	
C. THE COMPANION ANIMALS FIND THEIR OWN FOOD	

8. What do you do with your companion animals when they die?

FOR FARMERS

9. Are you a farmer? (tick) YES NO

10. If YES name the types of farm animals you own and how many animals you have in your farm? (fill in the table below)

TYPE OF FARM ANIMALS	NUMBER
1.	
2.	
3.	
4.	
5.	
6.	
7.	

11. Where do your animals reside? (tick below)

A. IN AN ENCLOSED AREA	
B. OUTSIDE FREE ROAMING	

12. How many times do you clean after your farm animals? (tick below)

A. ONCE A WEEK	
B. ONCE A MONTH	
C. ONCE A YEAR	
D. NEVER	

13. What do you feed your farm animals? (tick below)

A. COMMERCIALY PREPARED FOOD FROM THE SHOPS	
B. FOOD YOU PREPARED FROM THE HOUSE	
C. VEGETATION THAT YOU GROW	
D. FEED IN AGRICULTURAL PASTURE LANDS	

14. What do you do with your farm animals after they die?

15. Do you slaughter your farm animals? (tick below)

YES

NO

16. If YES, what is the purpose for the slaughtering?

17. Name the species of farm animals you regularly slaughter?

18. Where do you slaughter your farm animals?

FOR ALL COMMUNITY MEMBERS

19. Do you regularly see animals outside your house? (tick below)

YES

NO

a. If YES, how many times do you see animals outside your house?
(tick below)

A. EVERY DAY	
B. ONCE A WEEK	
C. ONCE A MONTH	

b. If YES to Q19, name the types of animals you regularly see outside your house? (fill in the table below)

TYPE OF ANIMALS	
1.	
2.	
3.	
4.	
5.	
6.	
7.	

20. Do you have access to clean water? (tick) YES NO

21. Where do you get your water OR where does the water you use, come from? _____

22. Do you plant any vegetables? (tick) YES NO

a. If yes in Q22, are the vegetables for? (tick below)

A. FOR FOOD IN THE HOUSE	<input type="checkbox"/>
B. FOR SELLING	<input type="checkbox"/>
C. BOTH A AND B	<input type="checkbox"/>

23. Do you wash your vegetables before you eat or cook? (tick below)

YES

NO

24. Where do you store your meat before cooking?

25. How well do you cook your meat? (tick below)

A. RARE (COOKED OUTSIDE BUT BLOODY INSIDE)	<input type="checkbox"/>
B. MEDIUM (WITH A BIT OF BLOOD IN THE MEAT)	<input type="checkbox"/>
C. WELL DONE (FULLY COOKED)	<input type="checkbox"/>

26. Would you ever eat uncooked meat? (tick below)

YES

NO

27. Do you eat chicken? (tick below)

YES

NO

a. If YES in Q27, where do you get your chicken? (tick below)

D. YOU PURCHASE FROM A STORE/FLEA MARKET	<input type="checkbox"/>
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E. FROM YOUR OWN INFORMAL FARM	
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28. What other types of meat do you eat?

Thank you very much for your time and information!