

Cattle populations in Cameroon are exposed to bacterial zoonoses and pose a potential public health risk.

Epidemiology of bacterial zoonoses in pastoral and dairy cattle in Cameroon, Central Africa.

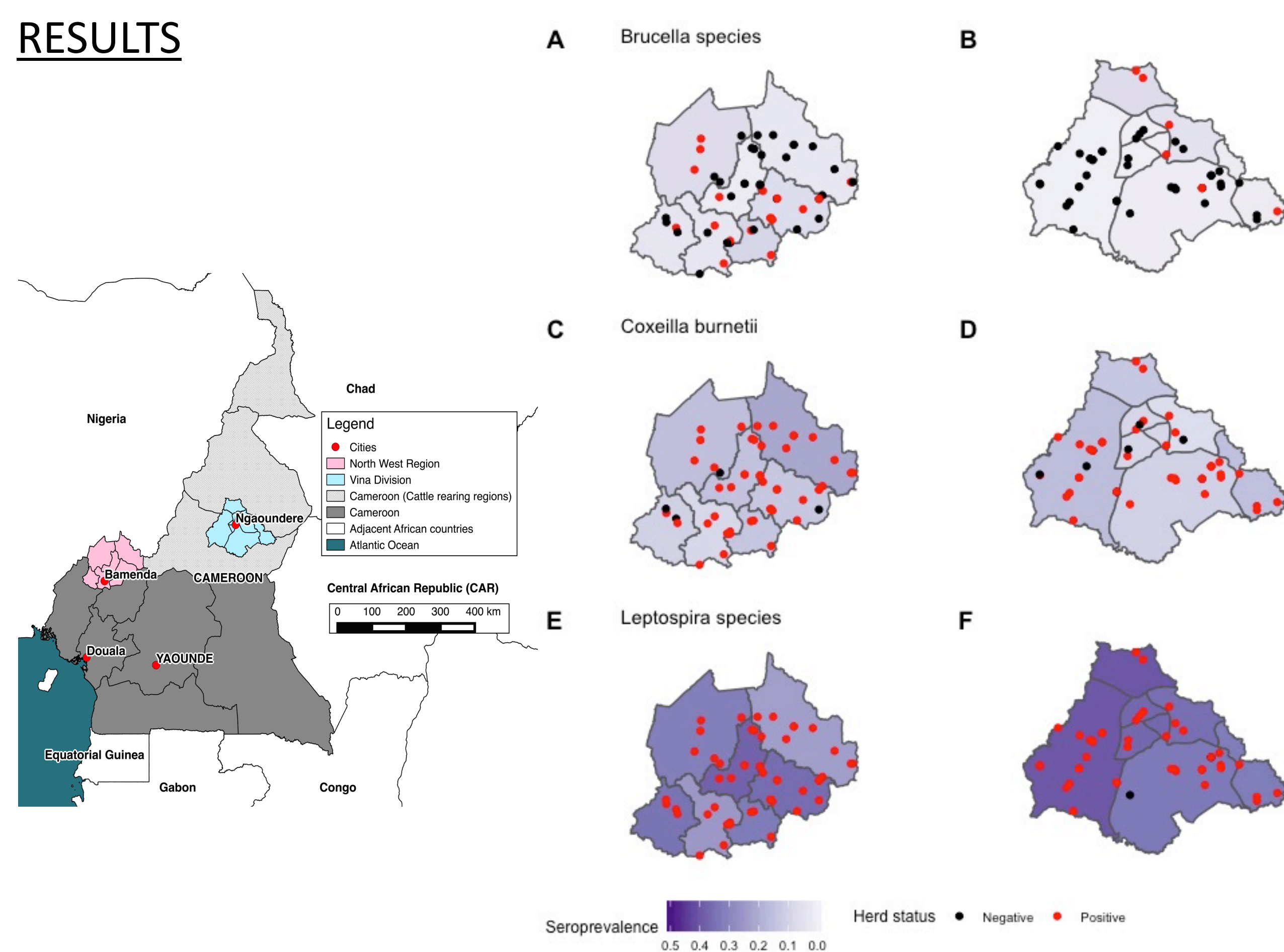
INTRODUCTION

- Cattle are nutritionally, economically and culturally important to rural communities in Cameroon.
- Since 2000, increase in cattle numbers and demand for dairy products highlights potential risk of zoonosis transmission.
- As cattle are kept under different management systems, risk factors for zoonosis transmission could be different and lead to differences in prevalence in pastoral and dairy cattle populations.
- The aim of this study was to describe the epidemiology of bacterial zoonoses in pastoral and smallholder dairy cattle populations.

METHODS

- A stratified cross-sectional study sampled 1498 cattle for 100 pastoral herds in the North West Region (NWR) and Vina Division in Cameroon. Separately, 60 smallholder dairy cattle were sampled from 46 dairy herds in the NWR.
- Individual animal and herd-level husbandry data were collected. Serum samples were tested for *Brucella species*, *Coxiella burnetii* and *Leptospira hardjo* antibodies to indicate exposure.
- Cattle samples and epidemiology was described and risk factors investigated using multivariable mixed-effects logistic regression models.

RESULTS



- Pastoral cattle were exposed to *Brucella spp* (1-5%), *C. burnetii* (10-20%) and *Leptospira harjo* (30-40%).
- Differences in distribution noted between study sites for *Brucella spp* with pastoral cattle being at greater risk if kept with sheep or had increased contact with other cattle.
- C. burnetii* and *Leptospira hardjo* exposure was associated with increased age and in co-infected cattle.
- Dairy cattle were less exposed to bacterial zoonoses than pastoral cattle (<10%).

DISCUSSION

- This work highlights that zoonosis exposure is still widespread in cattle, but transmission risk factors are different in dairy to pastoral cattle.
- Result suggest that changes in husbandry behaviors for one infection may prevent exposure to livestock rearing communities to protect public health and livelihoods.

Model	brucPN ~ SHEEPO + FENCEC + TRACAT + (1 HER_ID) Binary outcome: <i>Brucella spp.</i> seropositive.		
Variable	Level	OR (95% CI)	P value
Keep or rear sheep	No	Base	
	Yes	4.44 (2.12-9.34)	<0.01
Fencing cattle in at night	No	Base	
	Yes	3.72 (1.81-7.63)	<0.01
Undertake transhumance	No	Base	
	Yes	3.98 (2.06-7.68)	<0.01

Table 1: Final MLR model factors associated with *Brucella spp.* seropositivity in pastoral cattle (n=1498). Outcome variable: brucPN: *Brucella spp.* seropositivity. Explanatory variables included as fixed effects include SHEEPO: Keep or rear sheep; FENCEC: Fencing cattle in at night; TRACAT: Undertake transhumance. Explanatory variables included as random effects include HER_ID: herd.

Model	QfevPN ~ ANIDEN + LeptoPN + (1 HER_ID) Binary outcome: <i>C. burnetii</i> seropositive.		
Variable	Level	OR (95% CI)	P value
Age (By dentition score (DS))	Young (<2 years: DS 0)	Base	
	Adult (≥2 and <5 years: DS 1-4)	3.12 (2.01-4.84)	<0.01
	Old adult (≥5 years: DS 5)	2.32 (0.81-6.63)	0.12
<i>L. hardjo</i> seropositivity	Negative	Base	
	Positive	1.81 (1.32-2.47)	<0.01

Table 2: Final MLR model factors associated with *C. burnetii* seropositivity in pastoral cattle (n=1498). Outcome variable: QfevPN: *C. burnetii* seropositivity. Explanatory variables included as fixed effects include ANIDEN: Age; LeptoPN: *L. hardjo* seropositivity. Explanatory variables included as random effects include HER_ID: herd.

Model	QfevPN ~ ANIDEN + LeptoPN + (1 HER_ID) Binary outcome: <i>C. burnetii</i> seropositive.		
Variable	Level	OR (95% CI)	P value
Age (By dentition score (DS))	Young (<2 years: DS 0)	Base	
	Adult (≥2 and <5 years: DS 1-4)	3.52 (2.62-4.72)	<0.01
	Old adult (≥5 years: DS 5)	3.42 (1.60-7.28)	<0.01
<i>C. burnetii</i> seropositivity	Negative	Base	
	Positive	1.82 (1.32-2.51)	<0.01

Table 3: Final MLR model factors associated with *Leptospira interrogans serovar hardjo* seropositivity in pastoral cattle (n=1498). Outcome variable: LeptoPN: *L. hardjo* seropositivity. Explanatory variables included as fixed effects include ANIDEN: Age; QfevPN: *C. burnetii* seropositivity. Explanatory variables included as random effects include HER_ID: herd.



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