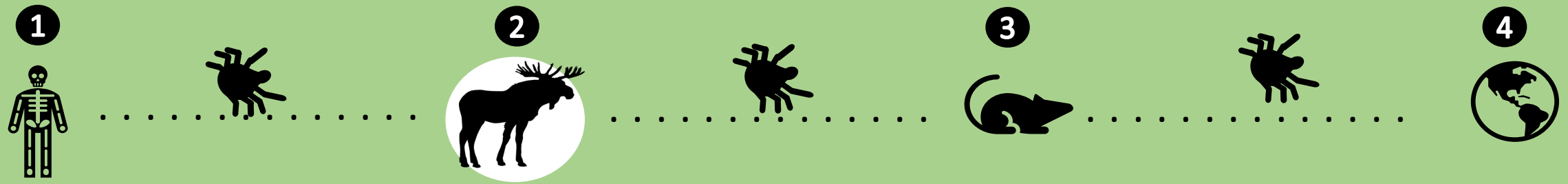
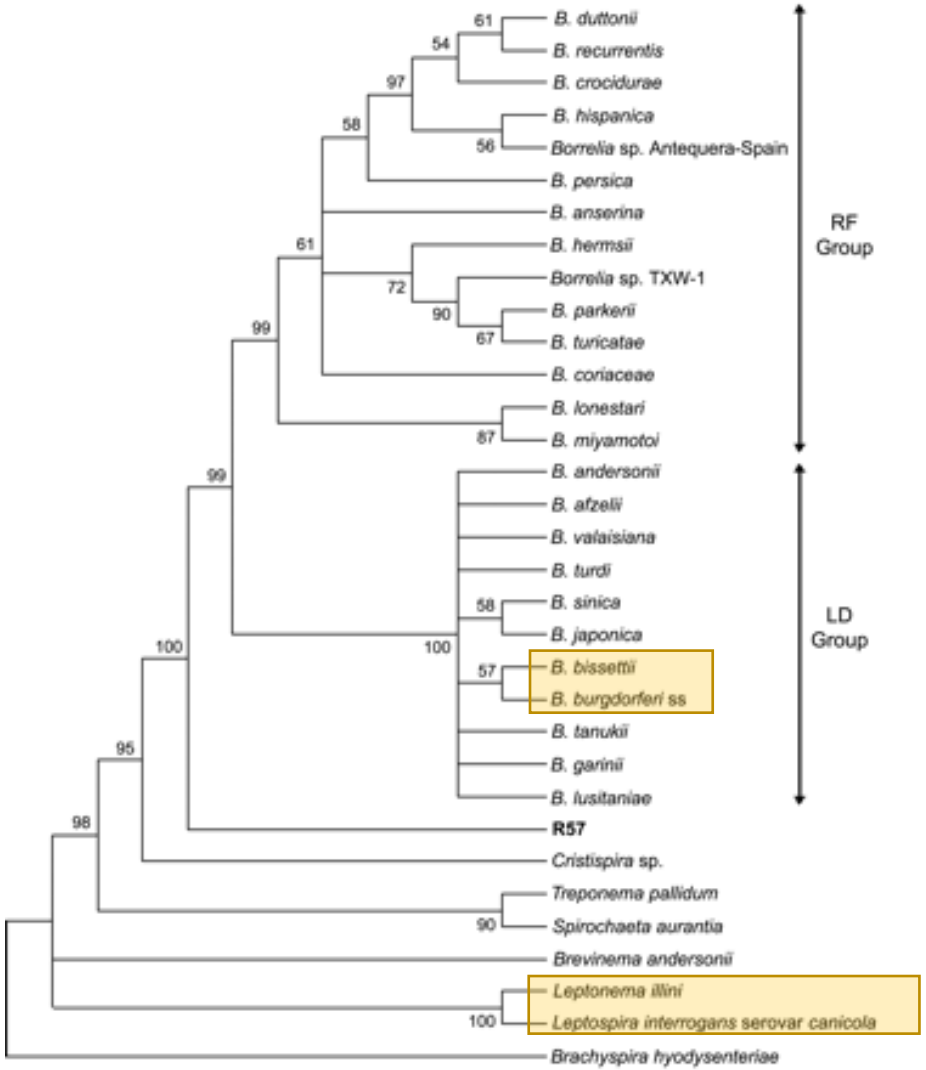
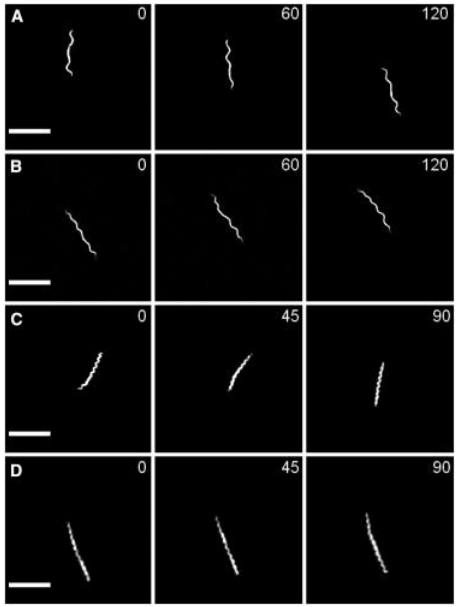
Zoonotic Diseases in the Maritimes

Samantha Bishop, MSc Candidate

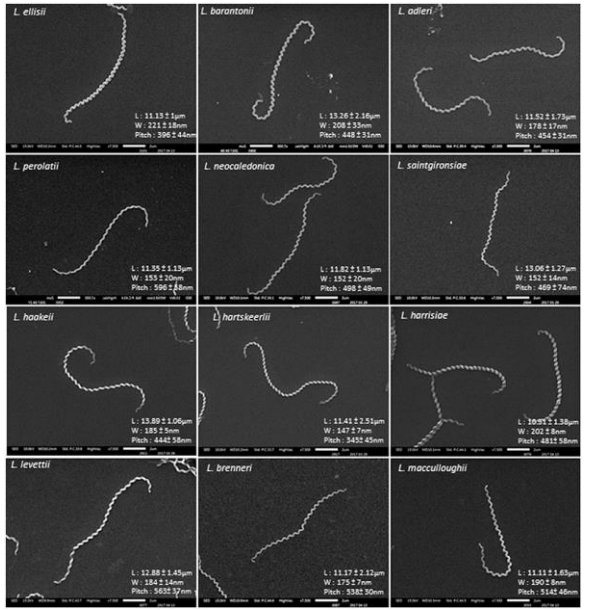


Gil H *et al*. 2005. Identification of a New *Borrelia* Species among Small Mammals in Areas of Northern Spain Where Lyme Disease Is Endemic. *Applied and Environ. Micro.* 71 (3) 1336-1345. DOI: 10.1128/AEM.71.3.1336-1345.2005



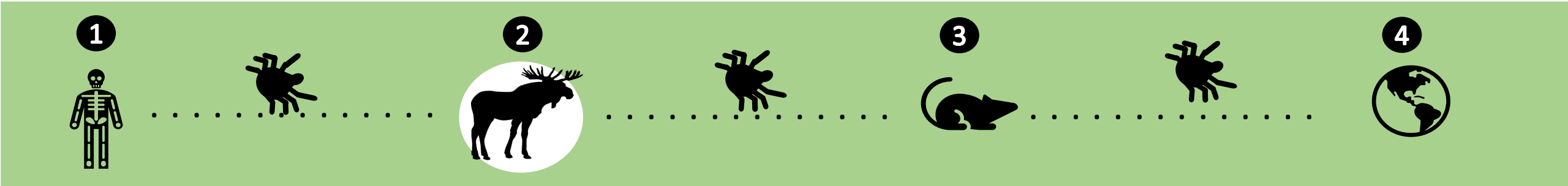


Thibeaux R *et al.* 2018. Biodiversity of Environmental *Leptospira*: Improving Identification and Revisiting the Diagnosis. *Front. Microbiol*. 9:816.

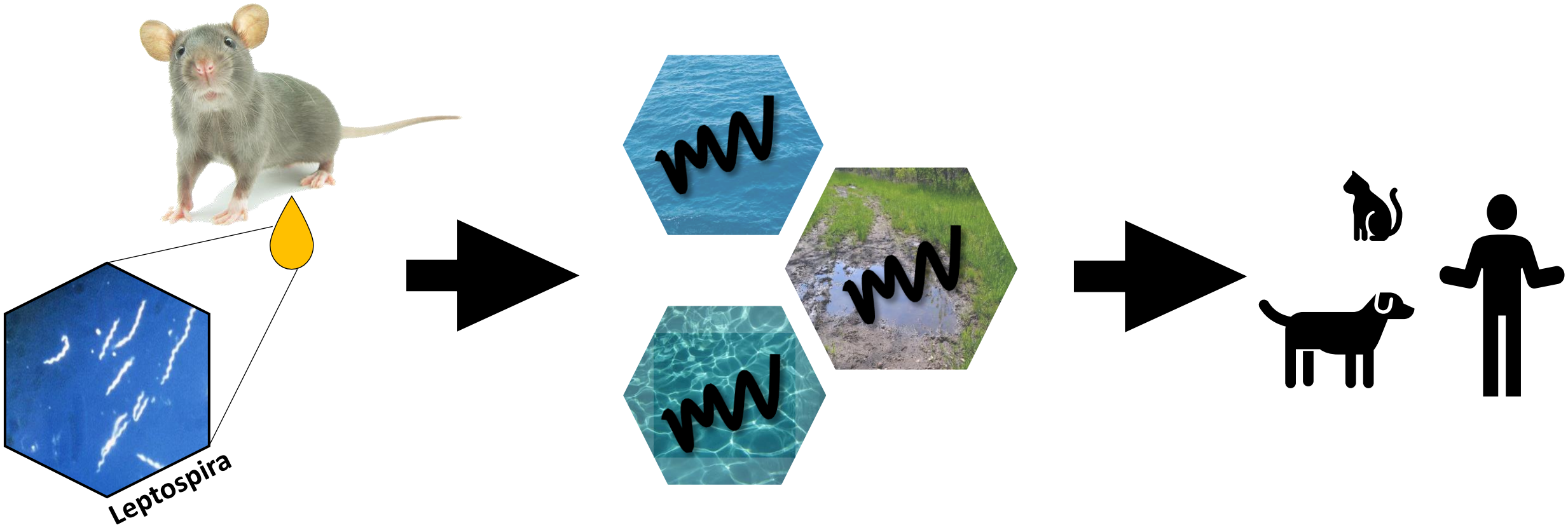


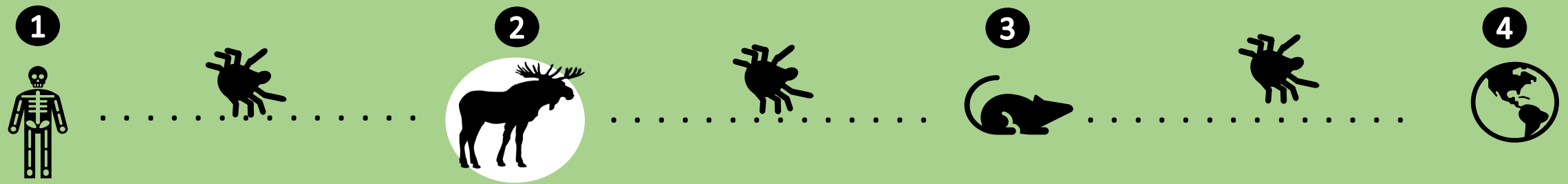
Harman M, *et al.* 2013. Viscous Dynamics of Lyme Disease and Syphilis Spirochetes Reveal Flagellar Torque and Drag. *Biophysical Journ.* 105 (10) : 2273-2280.

Leptospira
& Borrelia bissettii
& Borrelia burgdorferi

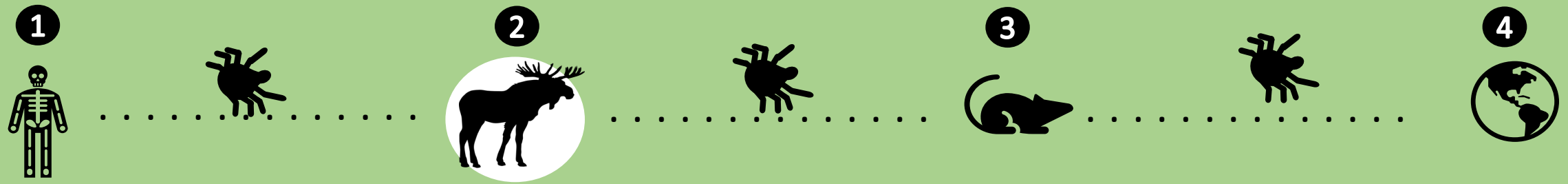


Leptospirosis

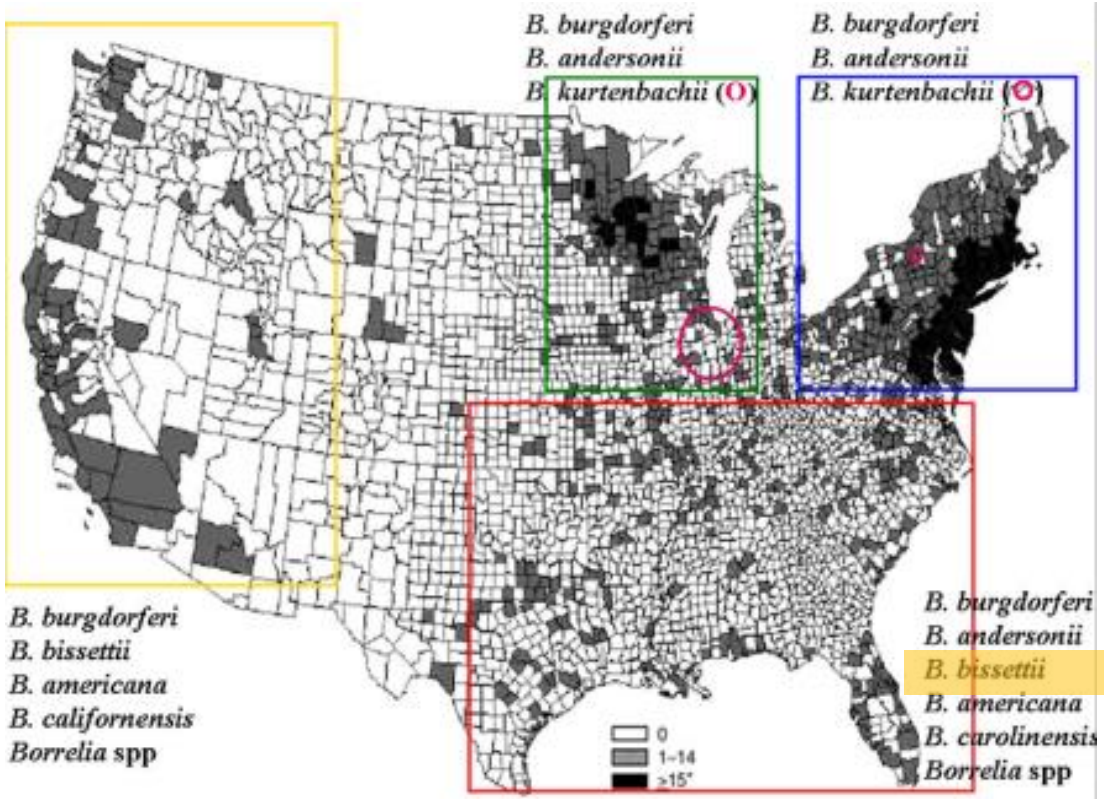




What is the significance?

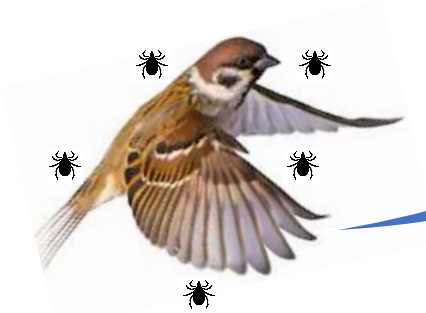


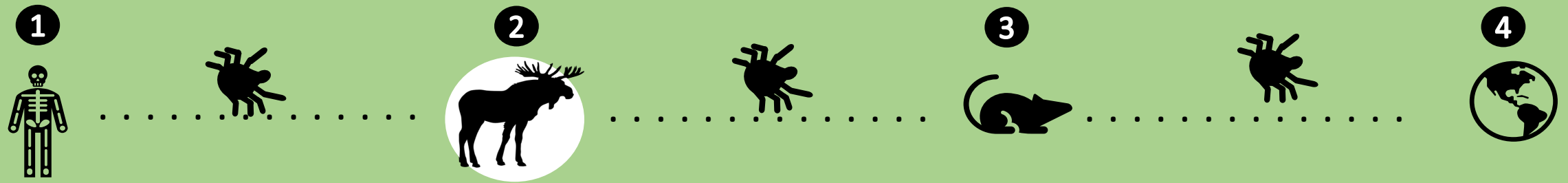
Borrelia bissettii



Margos G *at al.* 2010. Multilocus Sequence Analysis of *Borrelia bissettii* strains from North America Reveals a New *Borrelia* species, *Borrelia kurtenbachii*. *Ticks and Tick-borne Diseases*. 1(4):151-158.

https://www2.gnb.ca/content/gnb/en/departments/ocmoh/cdc/content/vectorborne_andzoonotic/Tick-Borne_Diseases/brief.html



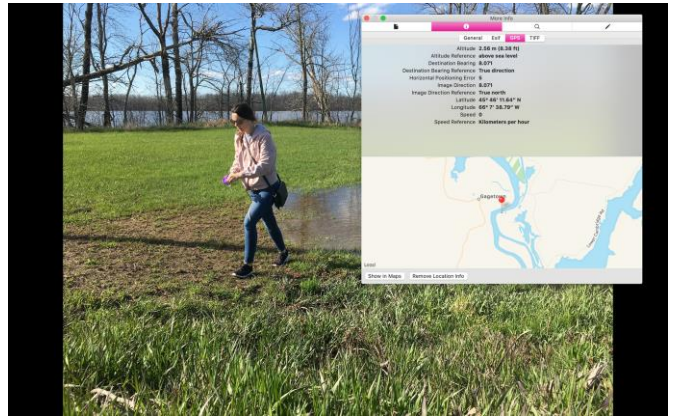


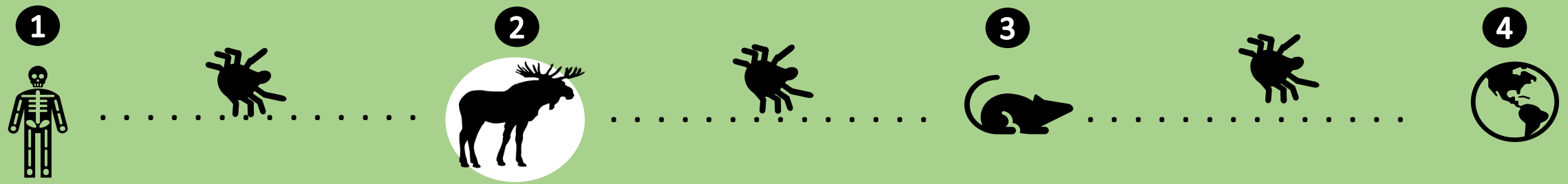
Specific aims

Frequency and species in Maritime wildlife populations

Create a geographic risk model of the province

Do *B. bissettii* and *B. burgdorferi* share a common host species in New Brunswick?





Methods

Obtain Samples

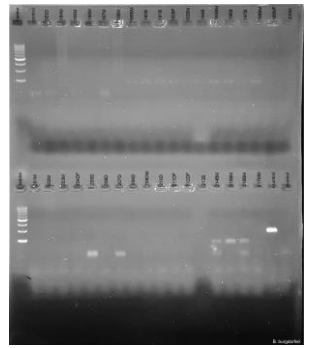
Dissect

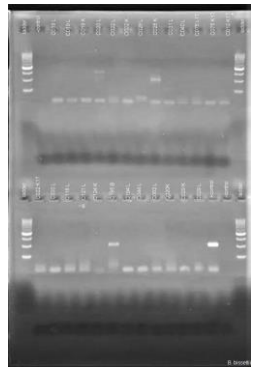
Extract DNA & nPCR

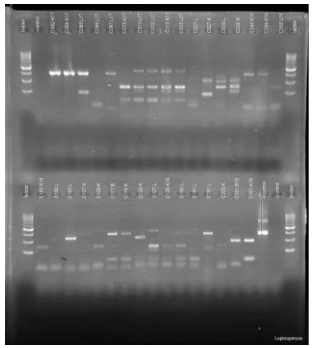
B. burgdorferi using 23s

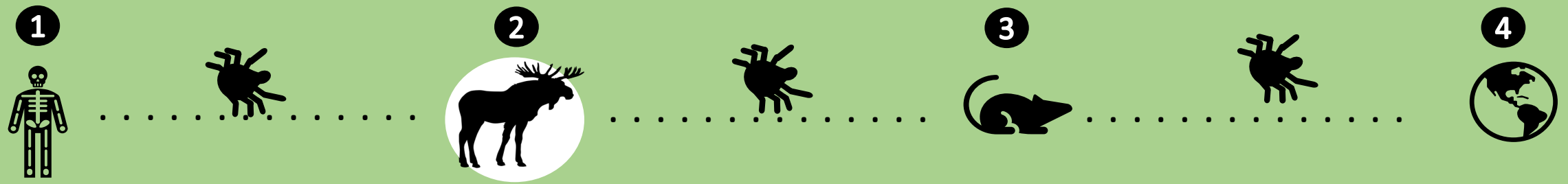
B. bissettii using ospA

L. interrogans using 16s

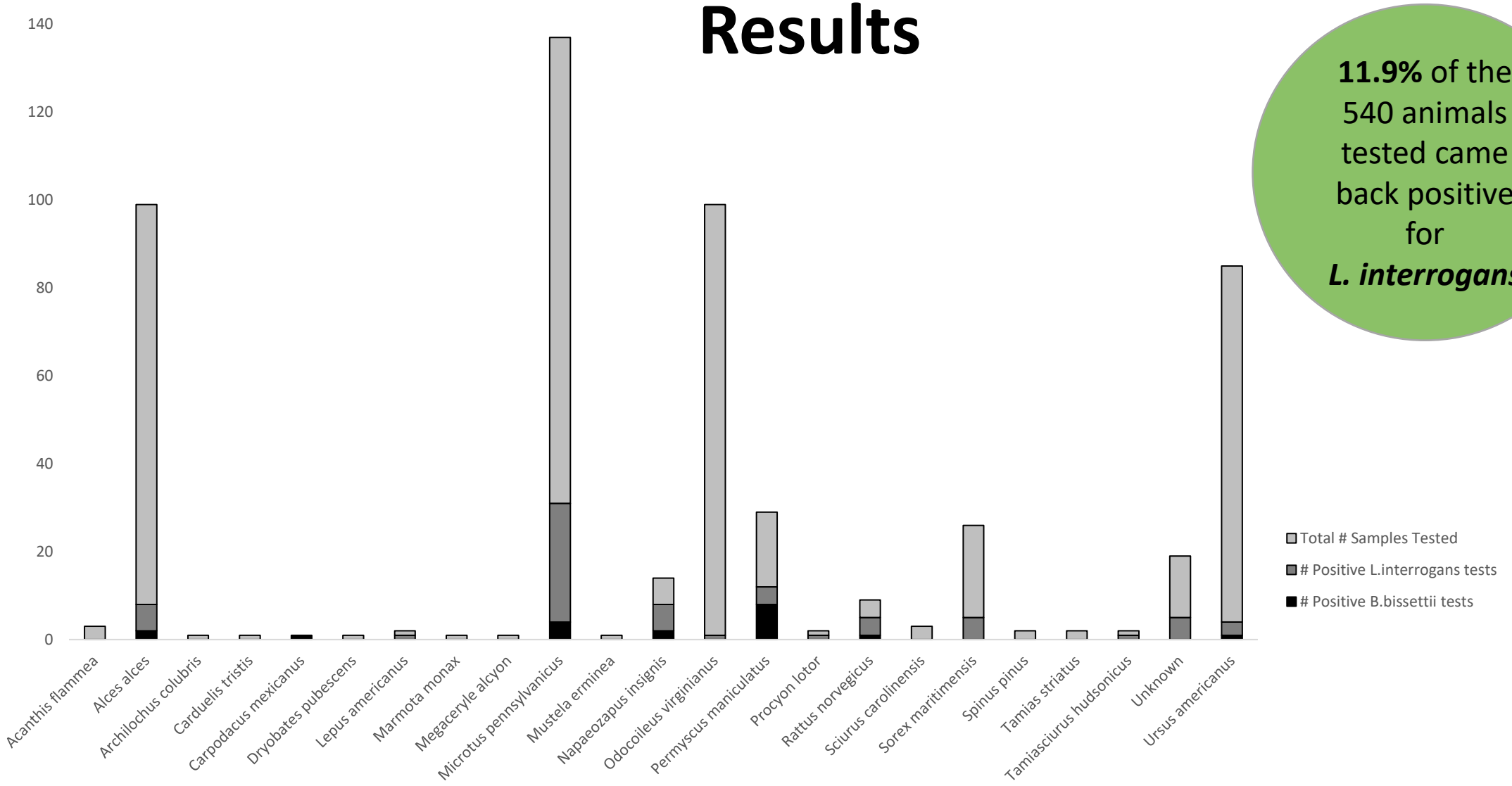






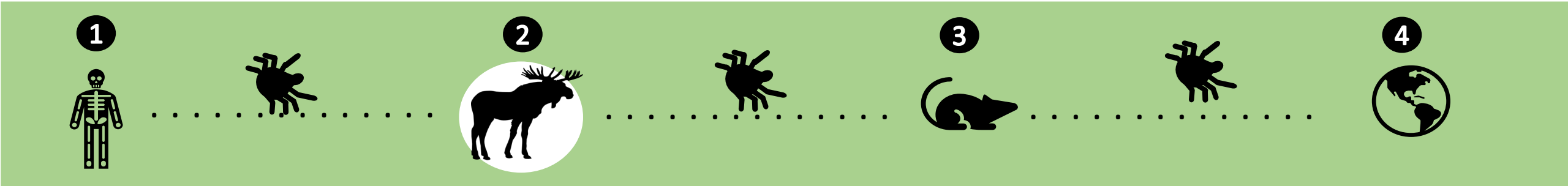


Results



11.9% of the 540 animals tested came back positive for ***L. interrogans***

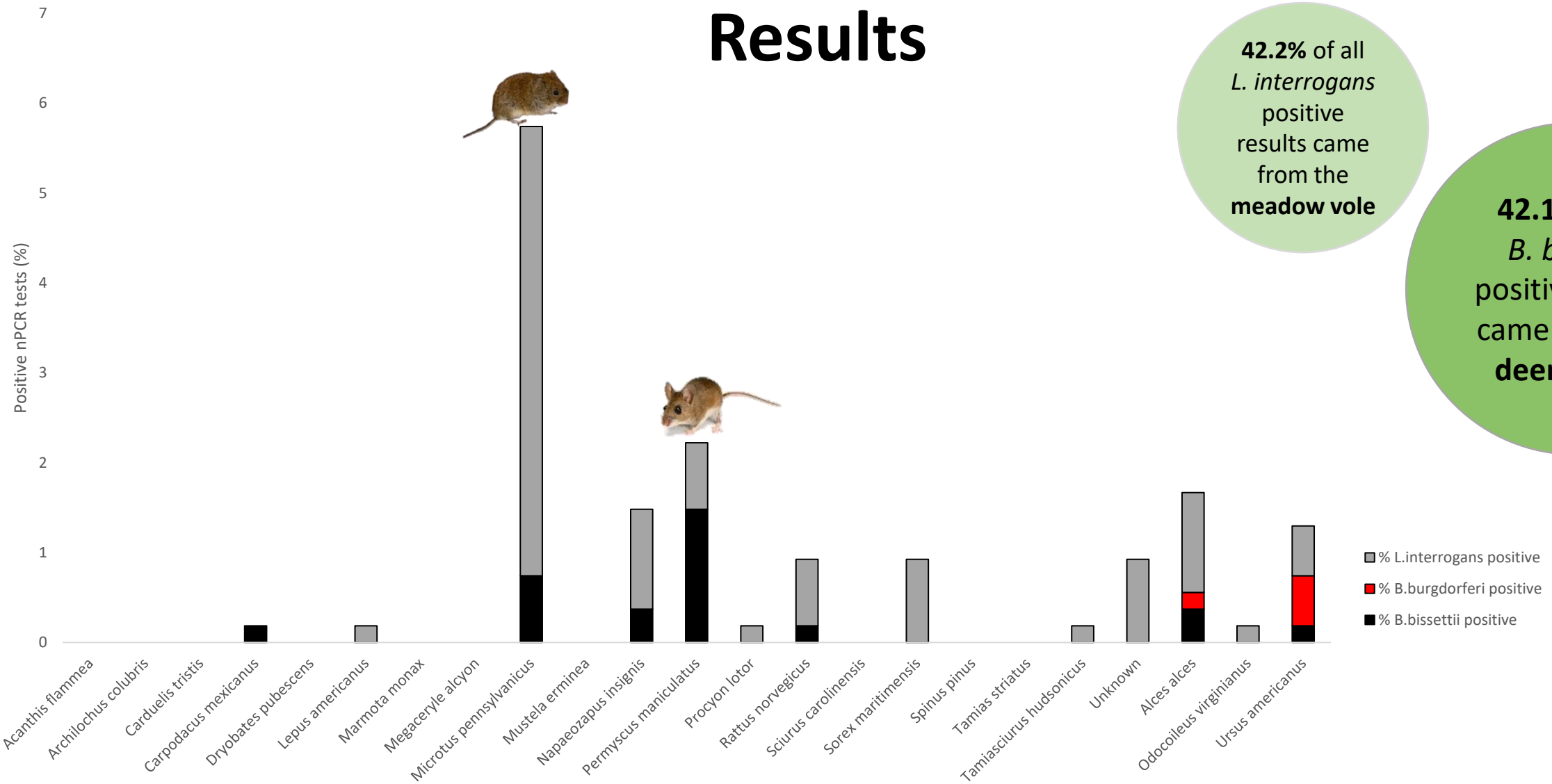
3.5% of the 540 animals tested came back positive for ***B. bissettii***

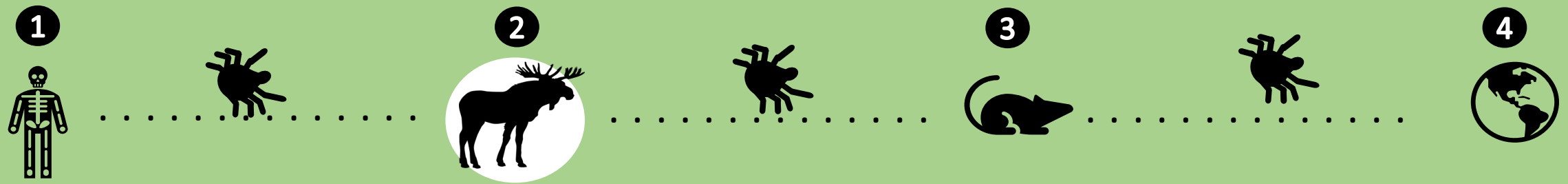


Results

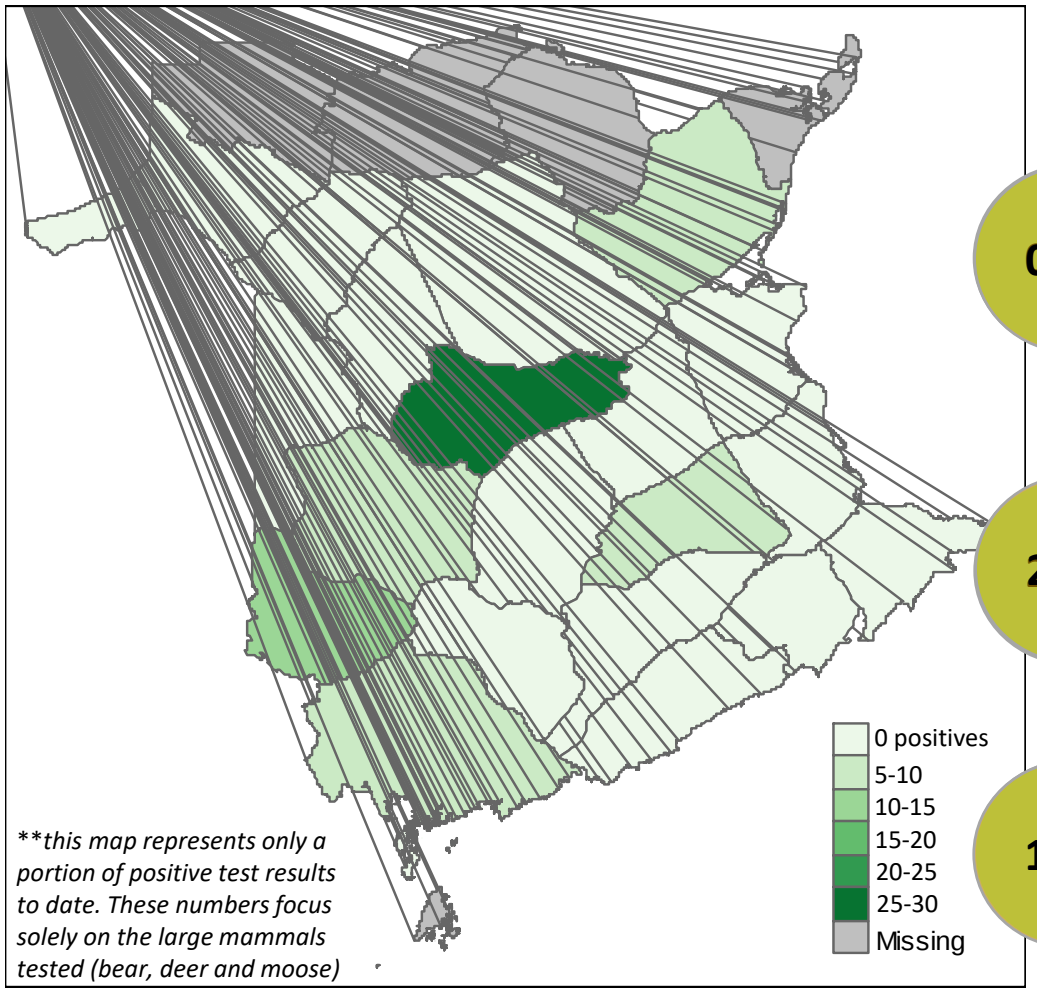
42.2% of all *L. interrogans* positive results came from the **meadow vole**

42.1% of all *B. bissettii* positive results came from the **deer mouse**

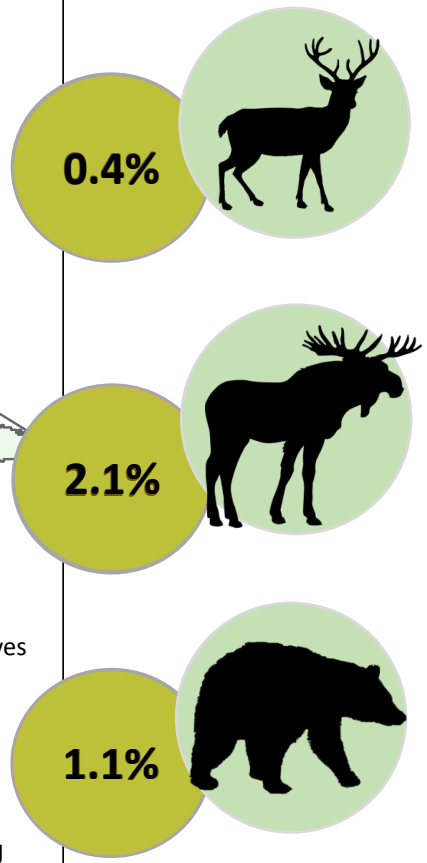




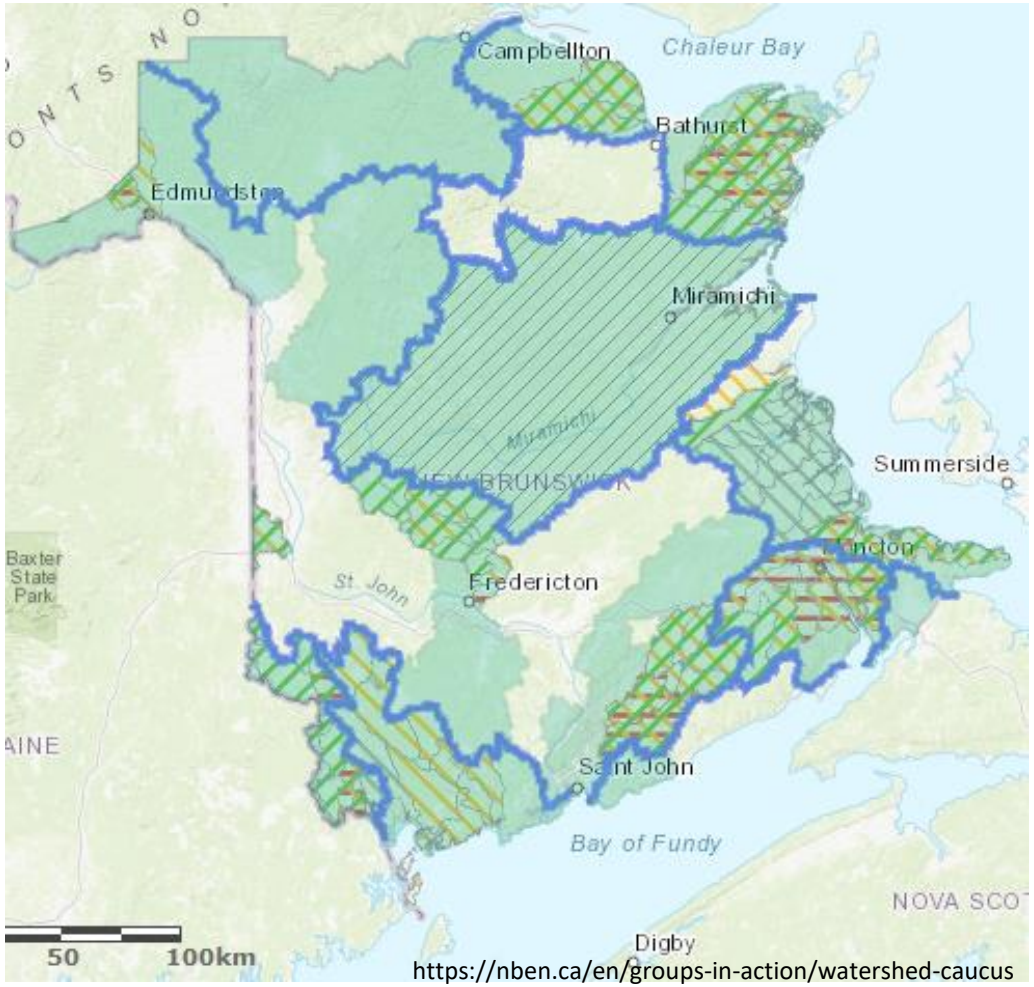
Leptospirosis



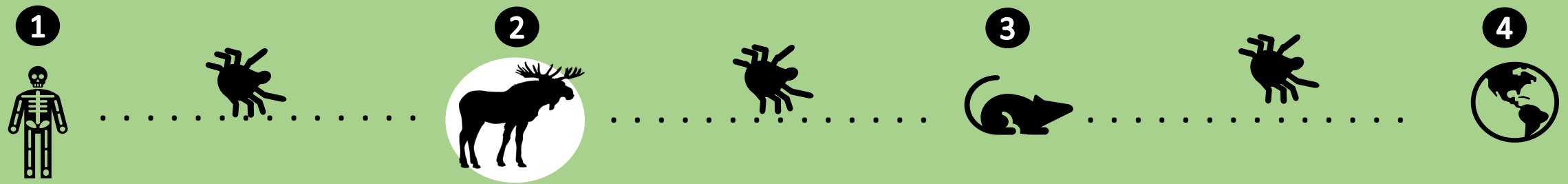
**this map represents only a portion of positive test results to date. These numbers focus solely on the large mammals tested (bear, deer and moose)



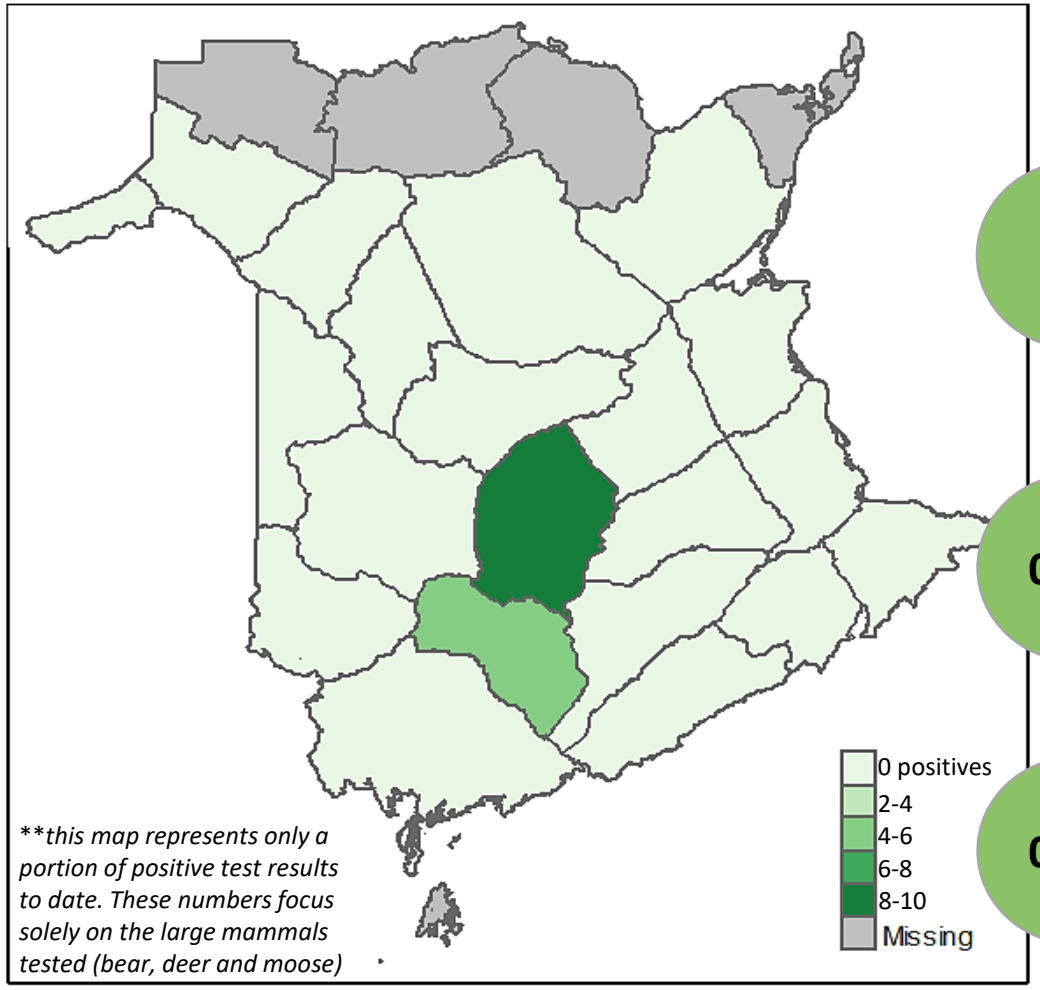
Watersheds of New Brunswick



https://nben.ca/en/groups-in-action/watershed-caucus



B. bissettii



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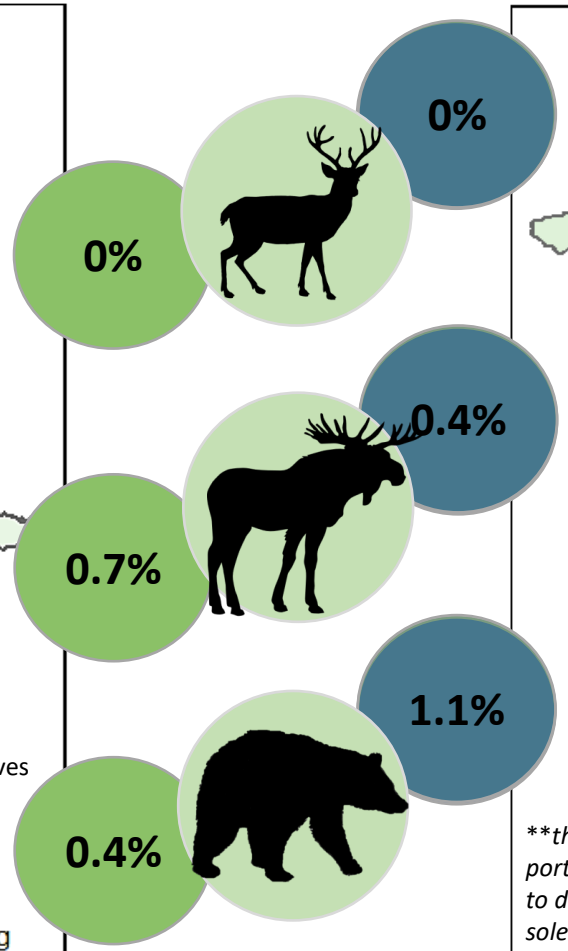
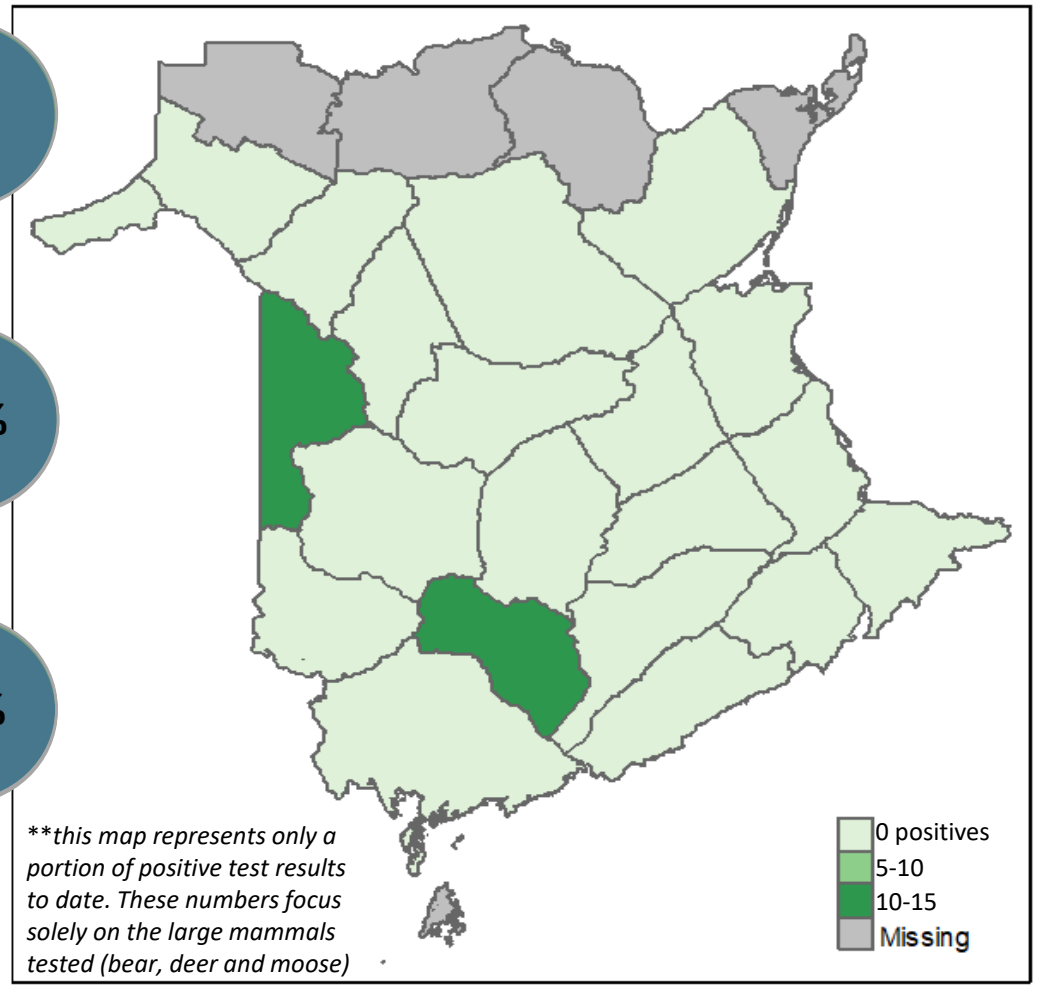


B. burgdorferi



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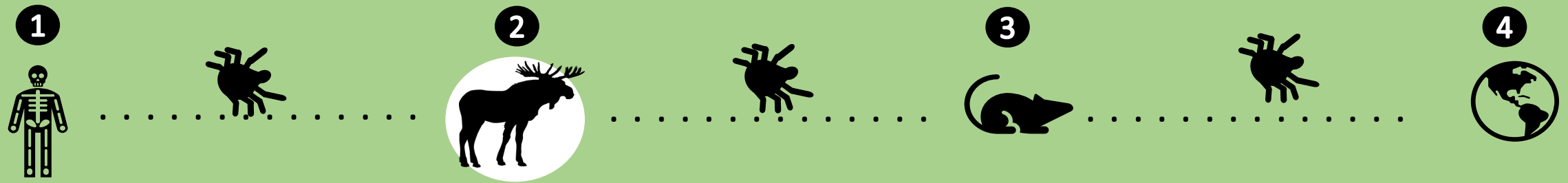
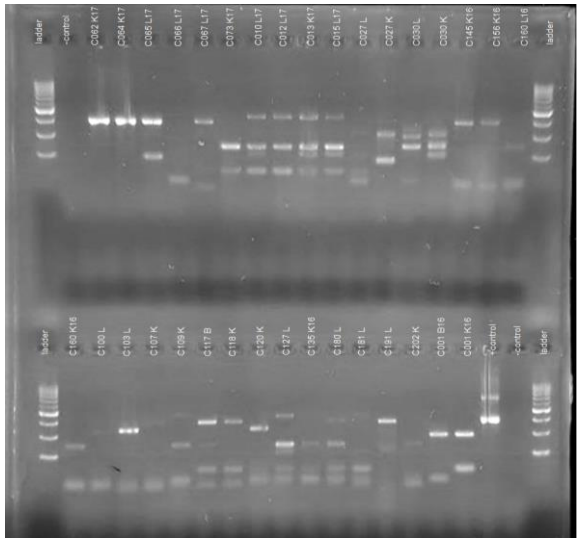
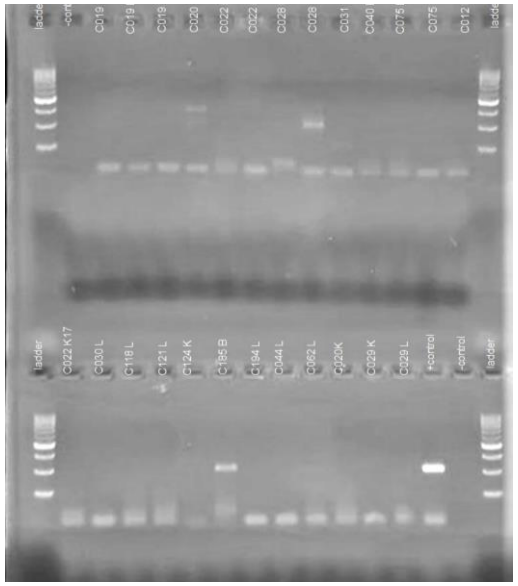
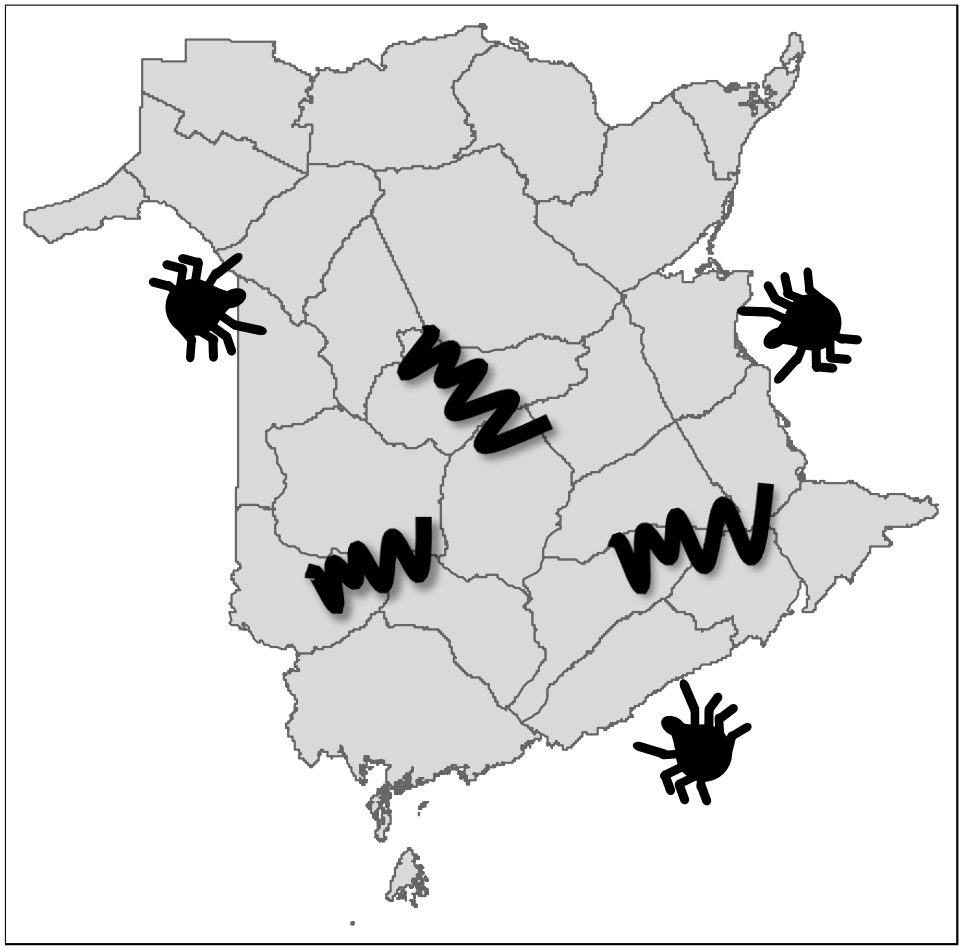


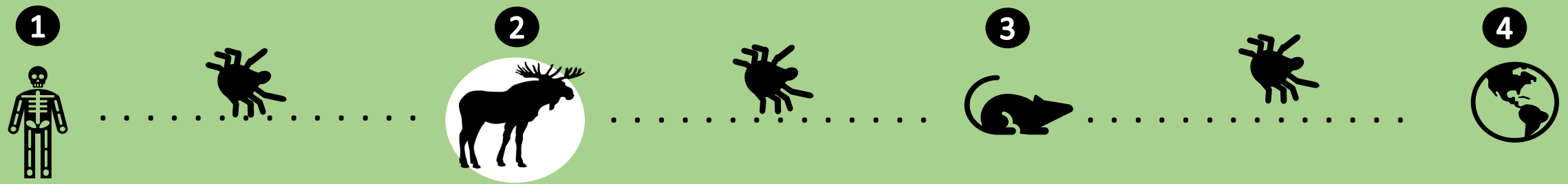
Conclusions:

Through nPCR and gel electrophoresis, we have been able to detect the presence of *L. interrogans, B. bissettii,* and *B. burgdorferi* in wildlife species in New Brunswick, Canada.









Conclusions: