

SPECIES COMPOSITION AND PREVALENCE  
OF *BORRELIA* INFECTIONS IN *IXODES* TICKS  
FROM THE SOUTHEASTERN COASTAL UNITED STATES



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## Outline

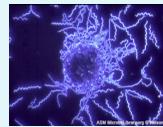
- ▶ Introduction and Justification
- ▶ Objectives
- ▶ Methods
- ▶ Anticipated Results
- ▶ Future Directions

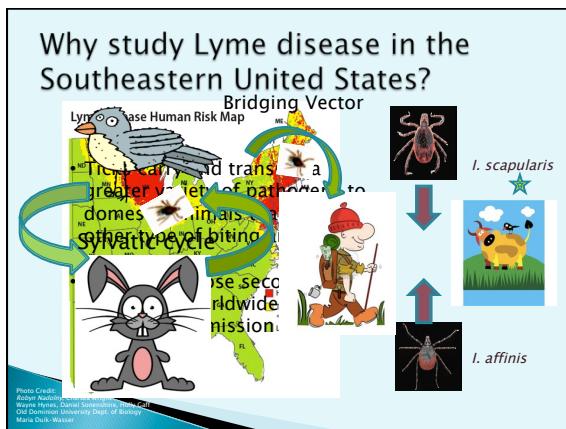


## Introduction & Justification

M.S. research project on *Ixodes* ticks in the southeastern coastal United States:

- tick species composition
- prevalence of the Lyme bacteria






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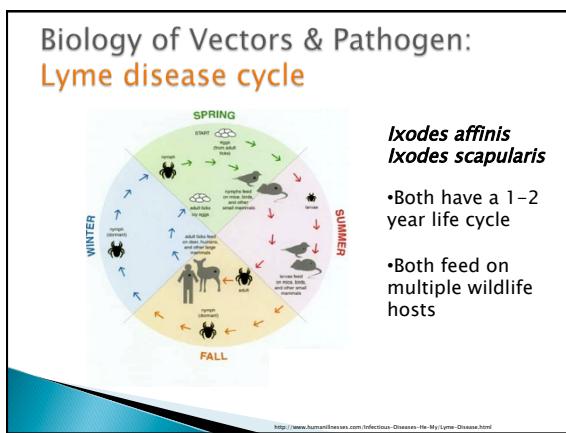
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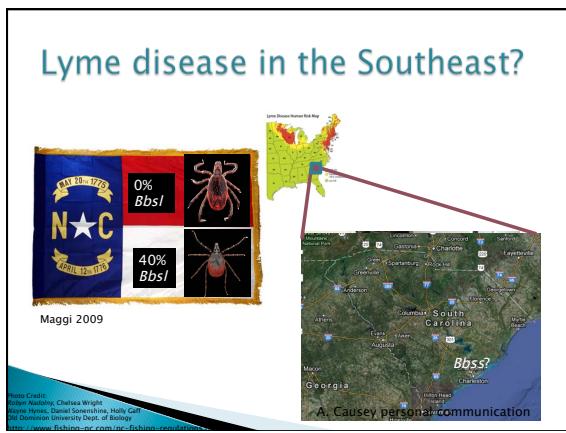
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## What's there?

18 Species of *Borrelia* currently recognized in the *Bbs1* complex

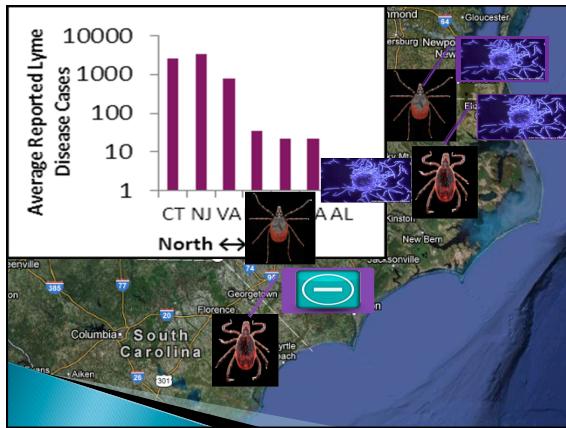
<i>Borrelia</i> species	Vector	Hosts/servoirs	Geographical distribution
<i>B. afzelii</i>	<i>I. ricinus</i> , <i>I. persulcatus</i>	Rodents	Asia, Europe
<i>B. americana</i>	<i>I. pacificus</i> , <i>I. minor</i>	Birds	United States
<i>B. andersoni</i>	<i>I. dentatus</i>	Cotton tail rabbit	United States
<i>B. bavariensis</i>	<i>I. ricinus</i>	Rodents	Europe
<i>B. bisettii</i>	<i>I. ricinus</i> , <i>I. scapularis</i> , <i>I. pacificus</i> , <i>I. trianguliceps</i>	Rodents	Europe, United States
<i>B. burgdorferi</i> sensu stricto	<i>I. ricinus</i> , <i>I. scapularis</i> , <i>I. pacificus</i>	Rodents, birds, lizards, big mammals	Europe, United States
<i>B. californiensis</i>	<i>I. pacificus</i> , <i>I. Jeffersoni</i> , <i>I. spinipalpis</i>	Kangaroo rat, mule deer	United States
<i>B. carolinensis</i>	<i>I. pacificus</i>	Rodents, birds	United States
<i>B. garinii</i>	<i>I. ricinus</i> , <i>I. persulcatus</i> , <i>I. hexagonus</i> , <i>I. nipponensis</i>	Birds, lizards, rodents	Asia, Europe
<i>B. japonica</i>	<i>I. ovatus</i>	Rodents	Japan
<i>B. kurenbachii</i>	<i>I. scapularis</i>	Rodents	Europe, United States
<i>B. miyamotoi</i>	<i>I. ricinus</i>	Rodents, lizards	Europe, North Africa
<i>B. tonakii</i>	<i>I. ovatus</i>	Rodents	China
<i>B. turdi</i>	<i>I. tonakii</i>	Unknown (possibly dogs and cats)	Japan
<i>B. spりmanii</i>	<i>I. turdus</i>	Birds	Japan
<i>B. valaisiana</i>	<i>I. ricinus</i>	Rodents	Europe
<i>B. yangtze</i>	<i>I. granulatus</i> , <i>I. granulosus</i> , <i>I. granulatus longicornis</i> , <i>I. granulosus</i>	Birds, lizards	Asia, Europe
Gennospecies 2	<i>I. pacificus</i>	Rodents	China
		Unknown	United States

Rudenko et al. 2011

## Objectives

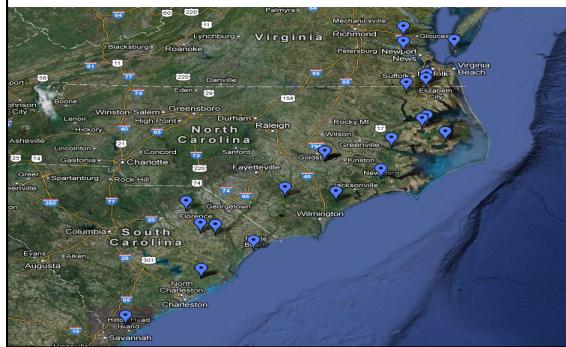
1. To test for North– South latitudinal trends in *Ixodes* spp. genotype, and *Bbs1* prevalence and strain type.
2. In South Carolina, to compare the prevalence of *Bbs1* and Ixodid tick species collected from wild mesomammals with those from a) vegetation, and b) domestic dogs (Sentinels).

## Materials and Methods



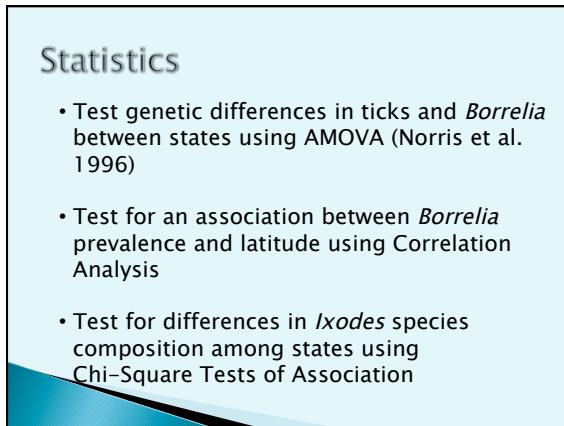
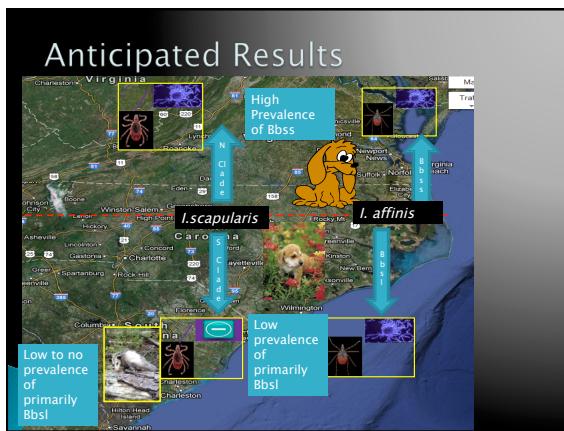
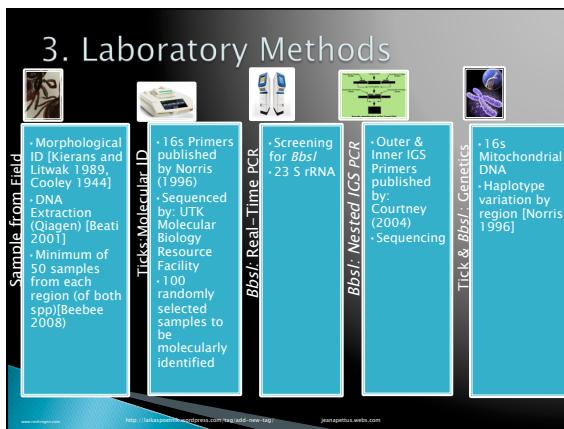
## Methods

## 1. Research Sites



## 2. Methods for Comparing Sylvatic and Domestic Cycles





## Future Directions

1. Investigation of genetic variation among *Ixodes* populations using Next-Generation molecular tools.
2. Genetic markers may be useful for tracking geographic shifts in *Borrelia*-infected tick populations.
3. Confirmation of *Borrelia* in domestic dogs? → outreach to veterinary practices in the Southeast.

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Questions?



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