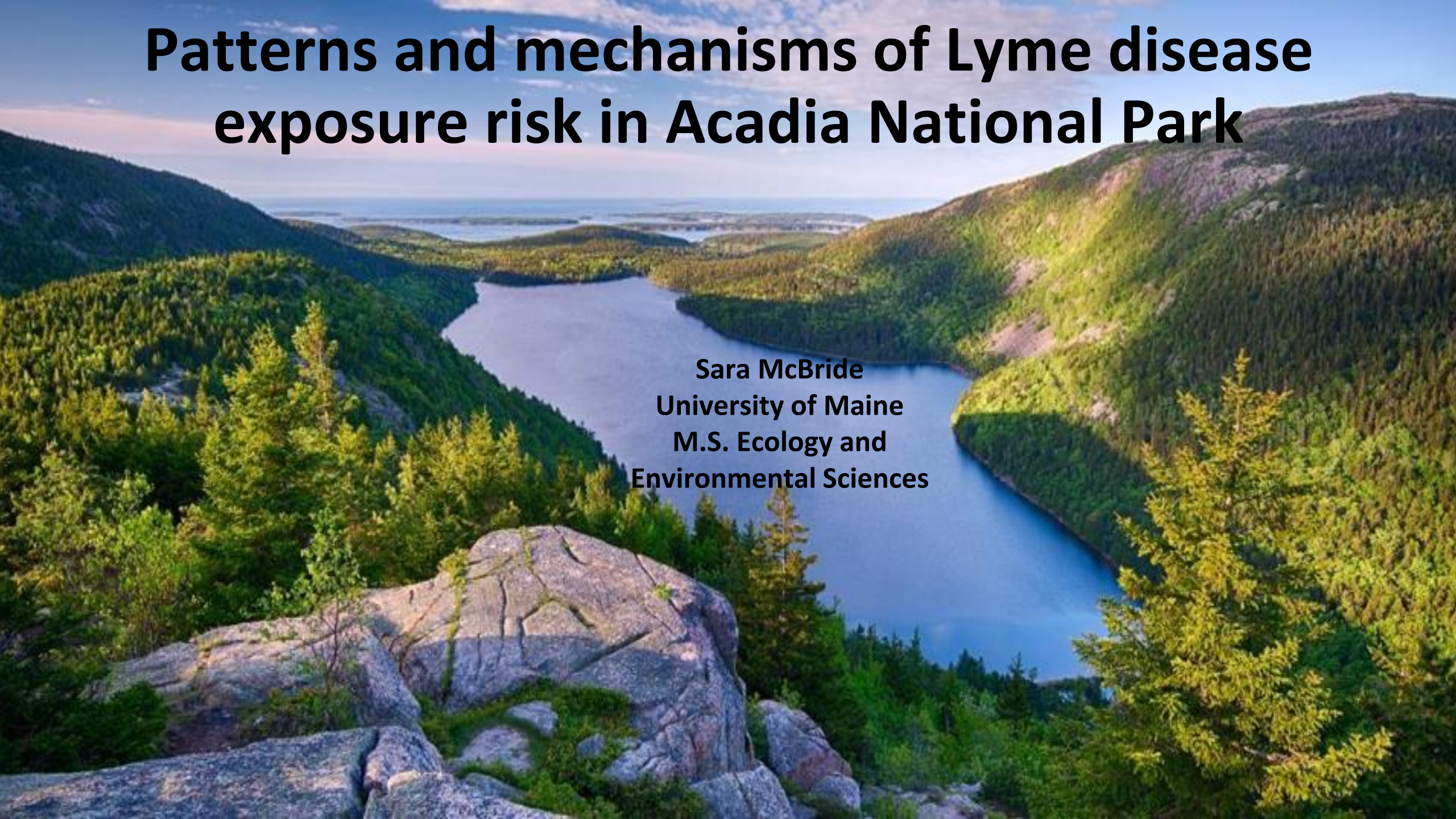
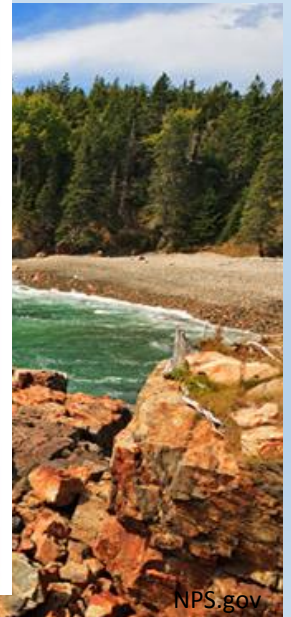
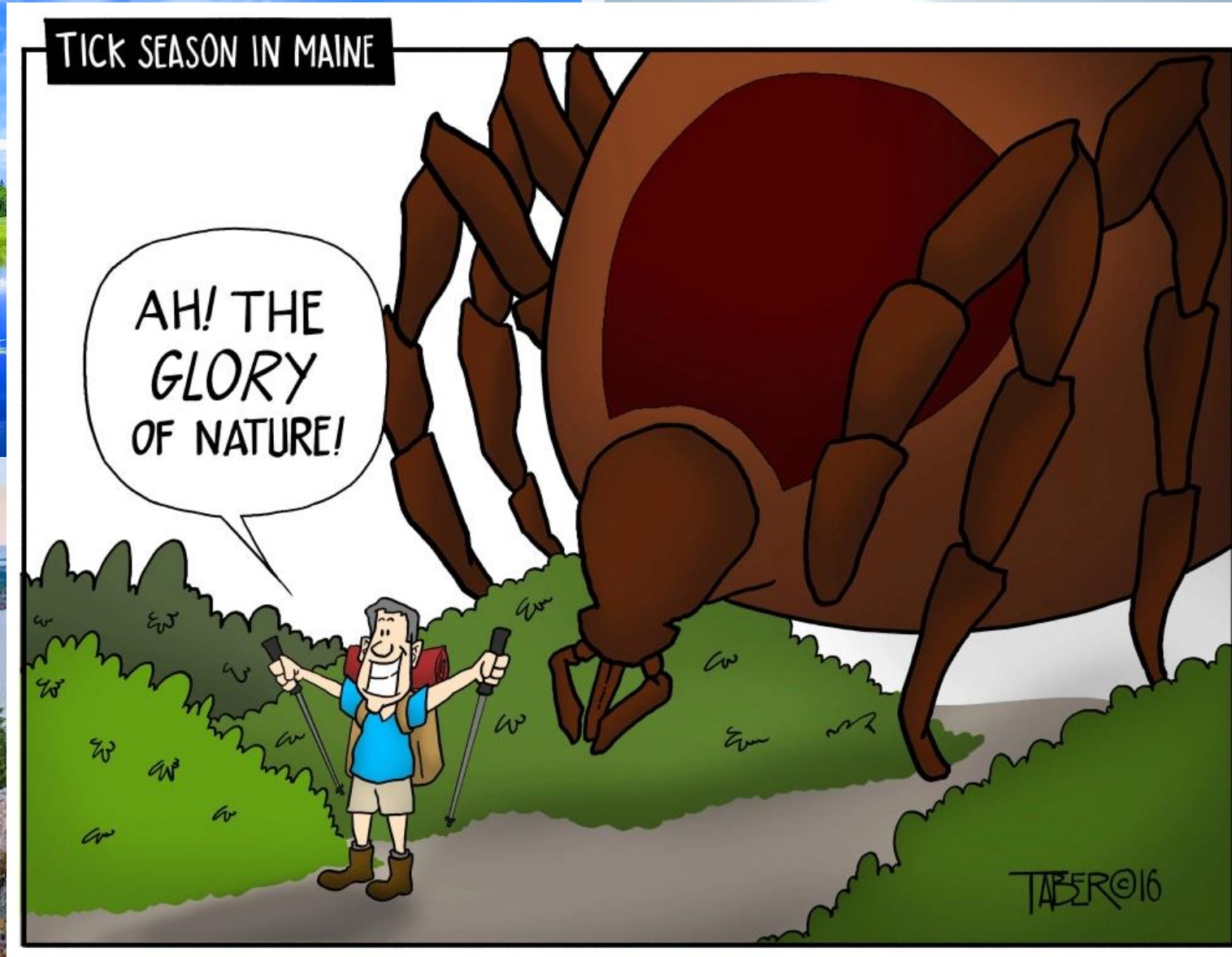


Patterns and mechanisms of Lyme disease exposure risk in Acadia National Park

**Sara McBride
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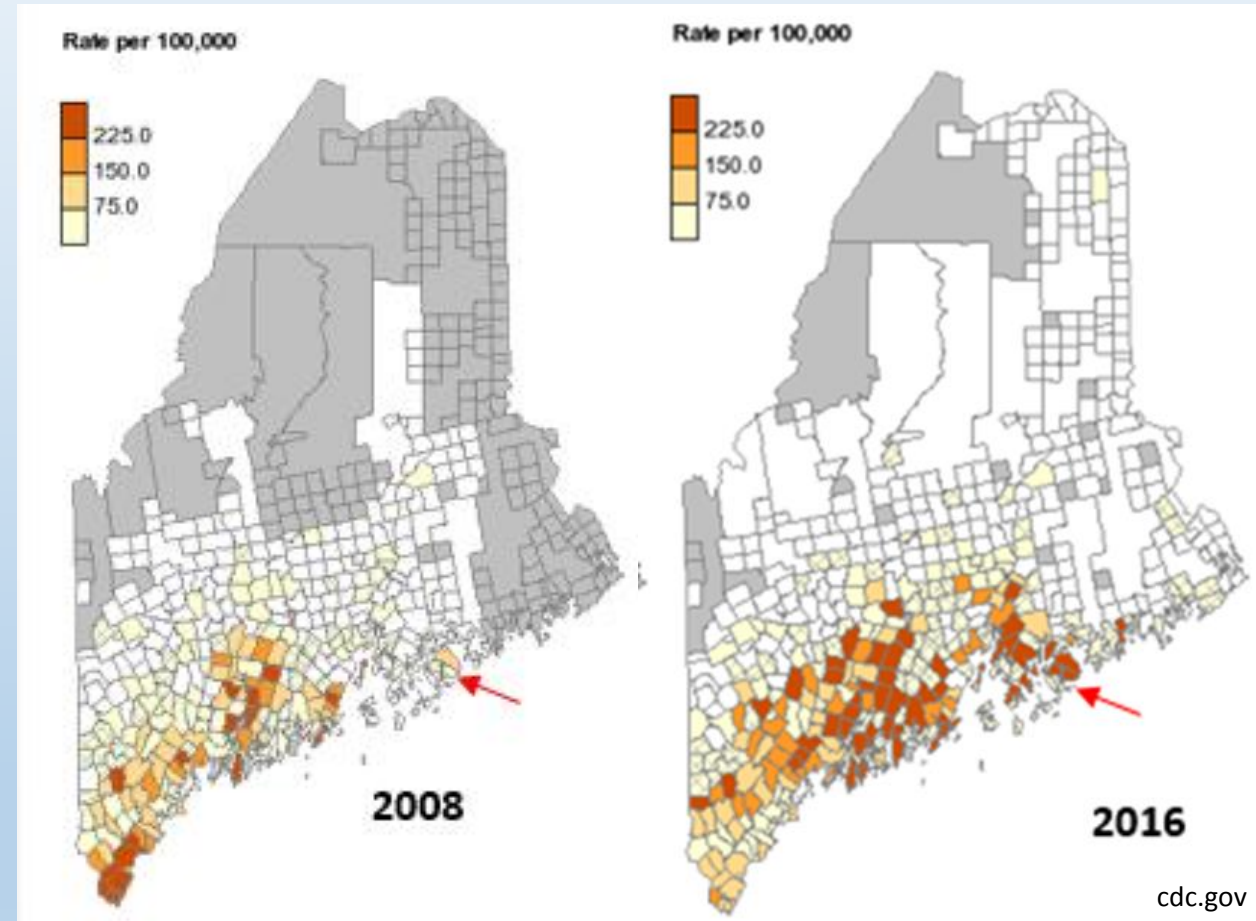


Acadia National Park



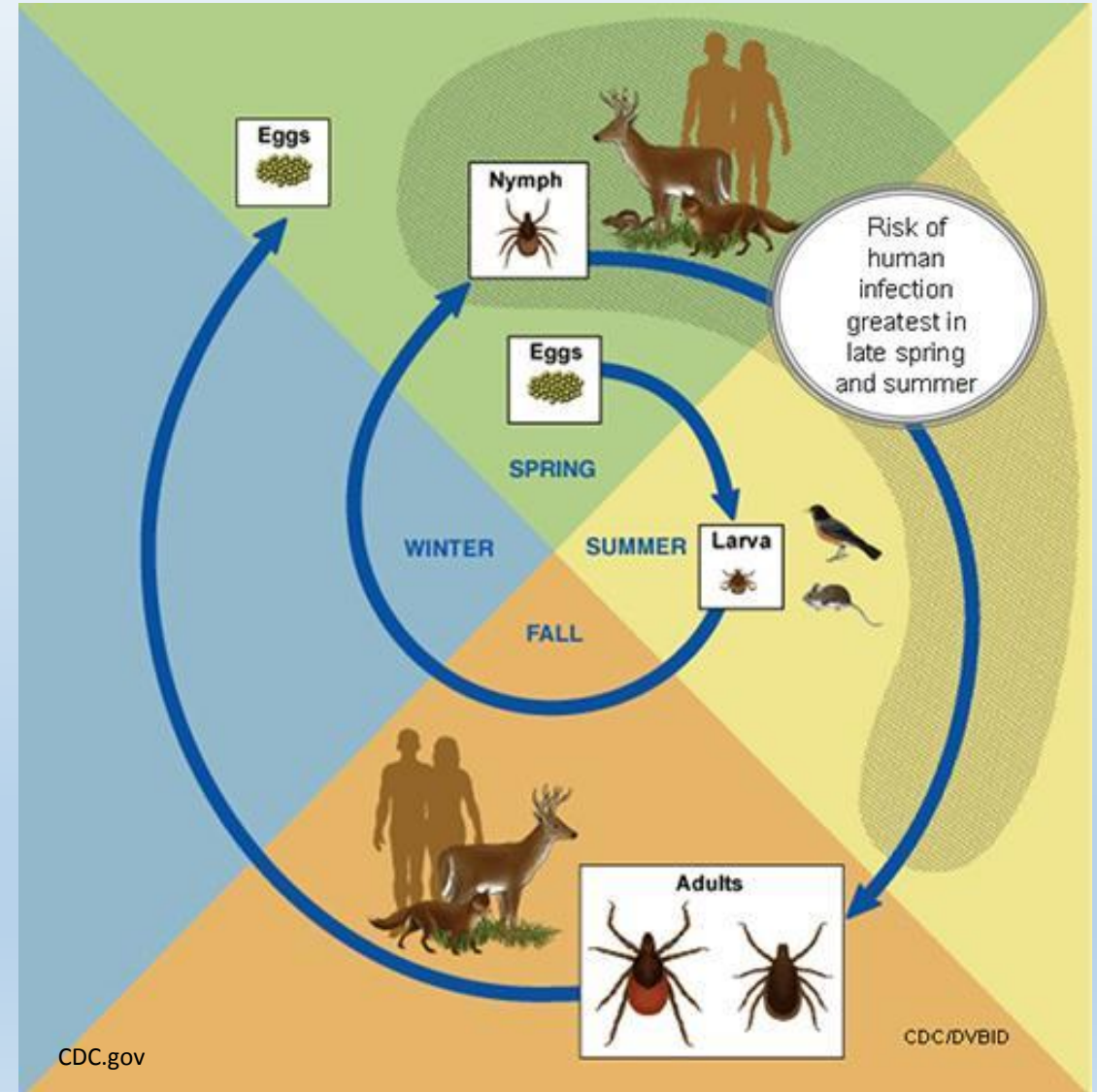
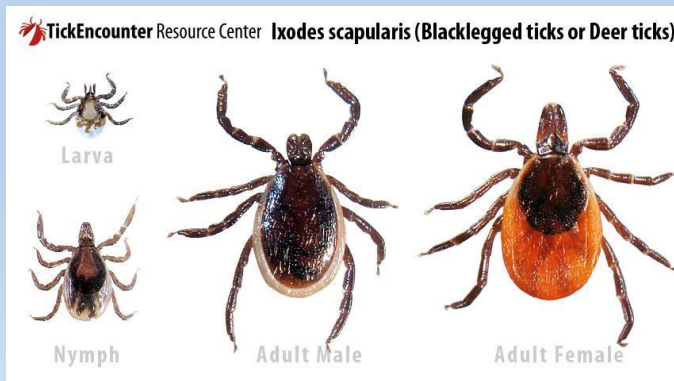
Overview of Ticks and Lyme Disease

- Maine – highest incidence rate of Lyme disease
- Increase in Blacklegged ticks in park over the past 25 years
- > 2 Million visitors annually
 - Surveyed visitors perceive tick-borne disease as future threat
- No comprehensive published Lyme disease risk assessment for over 25 years



Blacklegged Tick Life Cycle

- In late spring and summer nymphs cause most cases of Lyme disease
- Infected nymphs acquire Lyme bacteria during larval blood meal (usually a small mammal)
- Deer important reproductive host
- 90% life off-host where environmental conditions important



Objectives

- Develop a spatial model of Lyme disease risk using patterns of tick abundance and environmental data (elevation, vegetation type)
- Investigate how tick abundance has changed over time (since assessment published in 1992)
- Identify potential causal mechanisms of risk (small mammal, deer abundance)

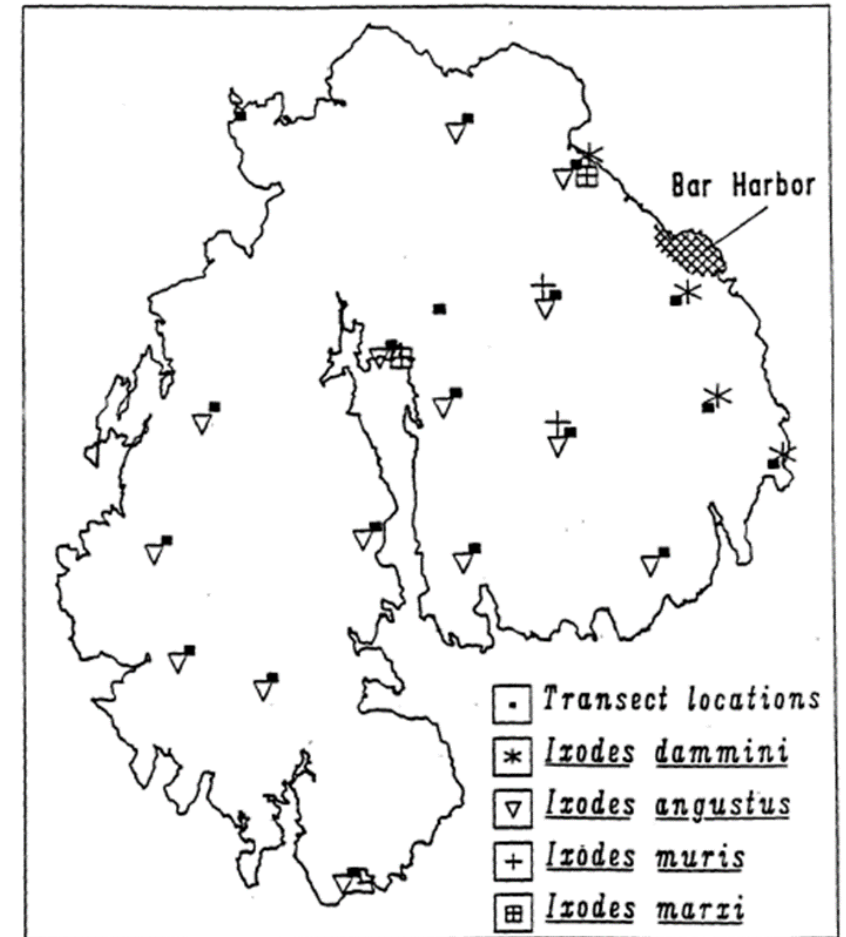


Fig. 1. Distribution of ticks removed from small mammals on MDI, 1989-1990.

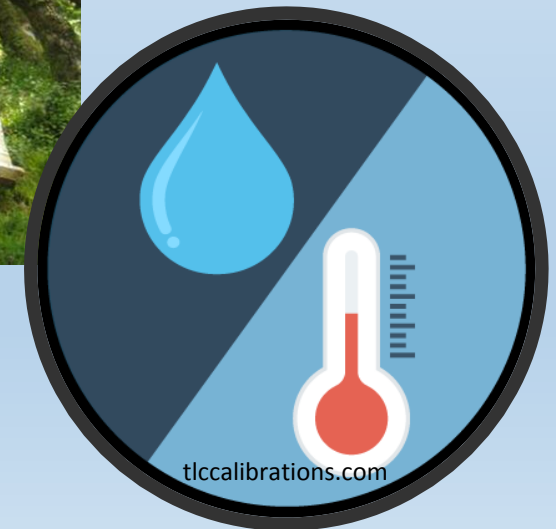
Methods

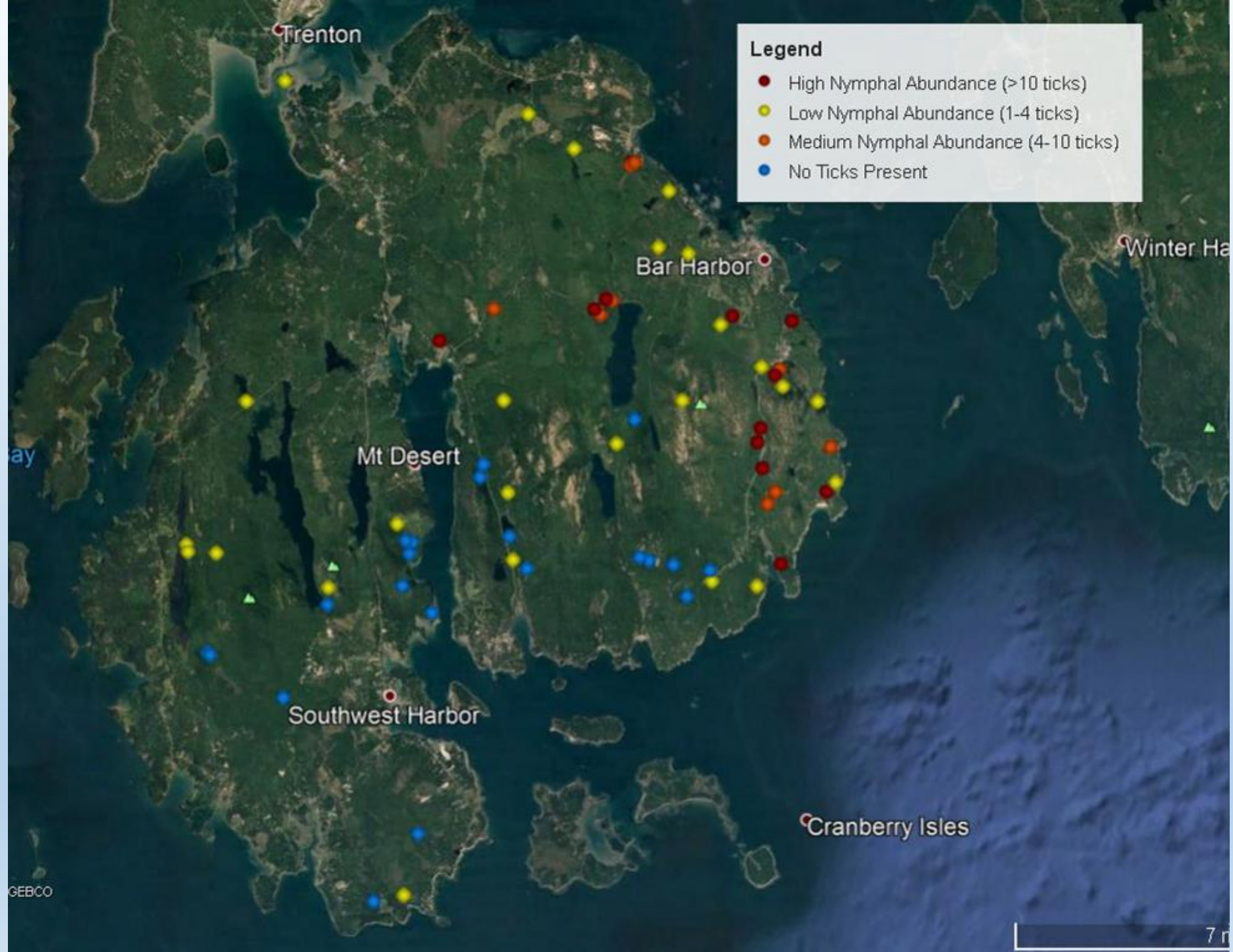
To determine tick abundance:

- Tick Collections at 70 sites across park

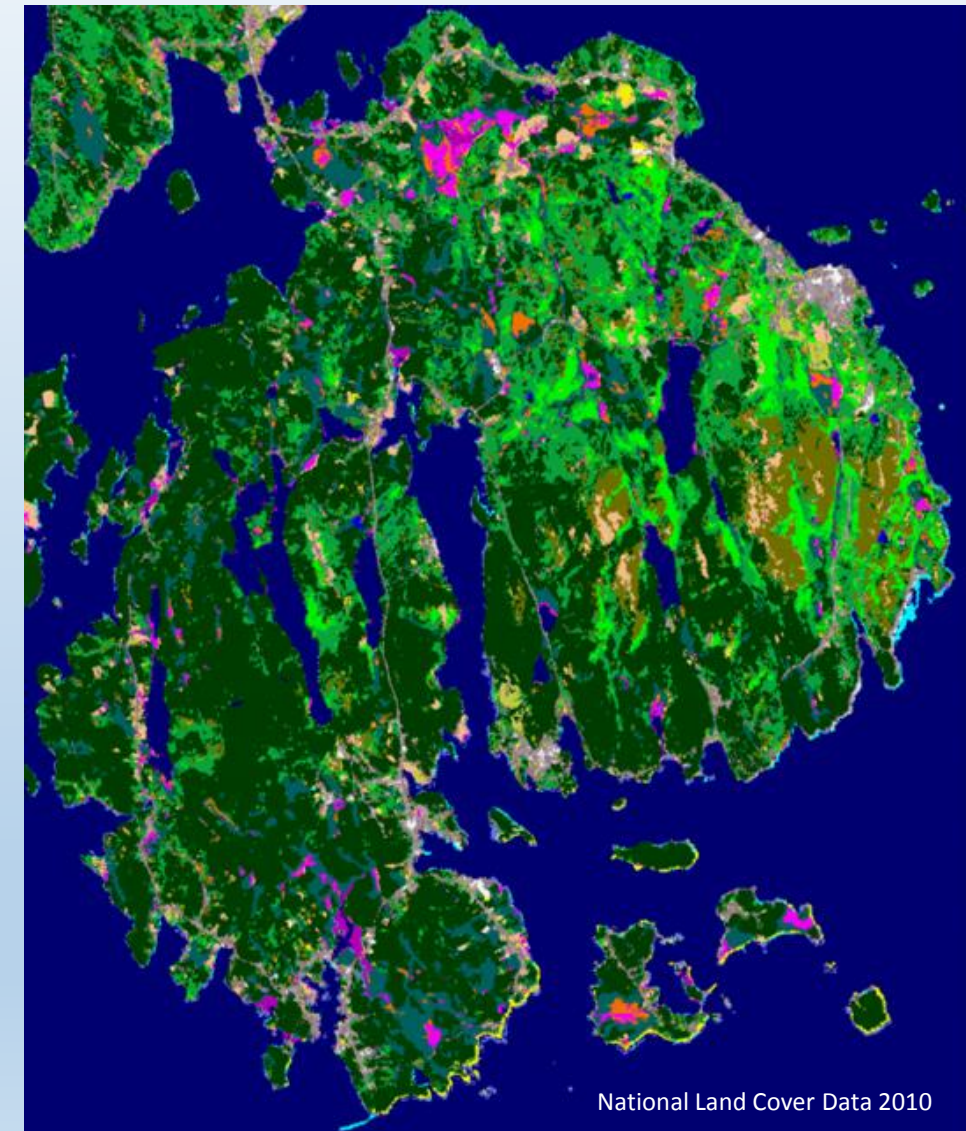
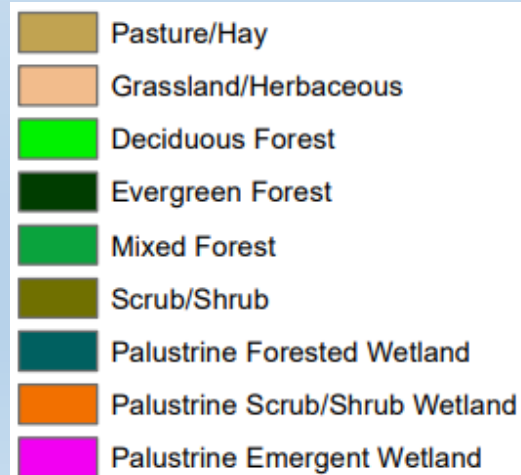
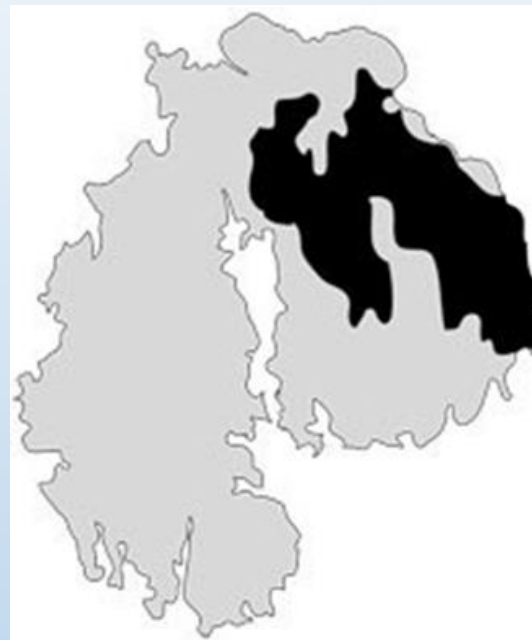
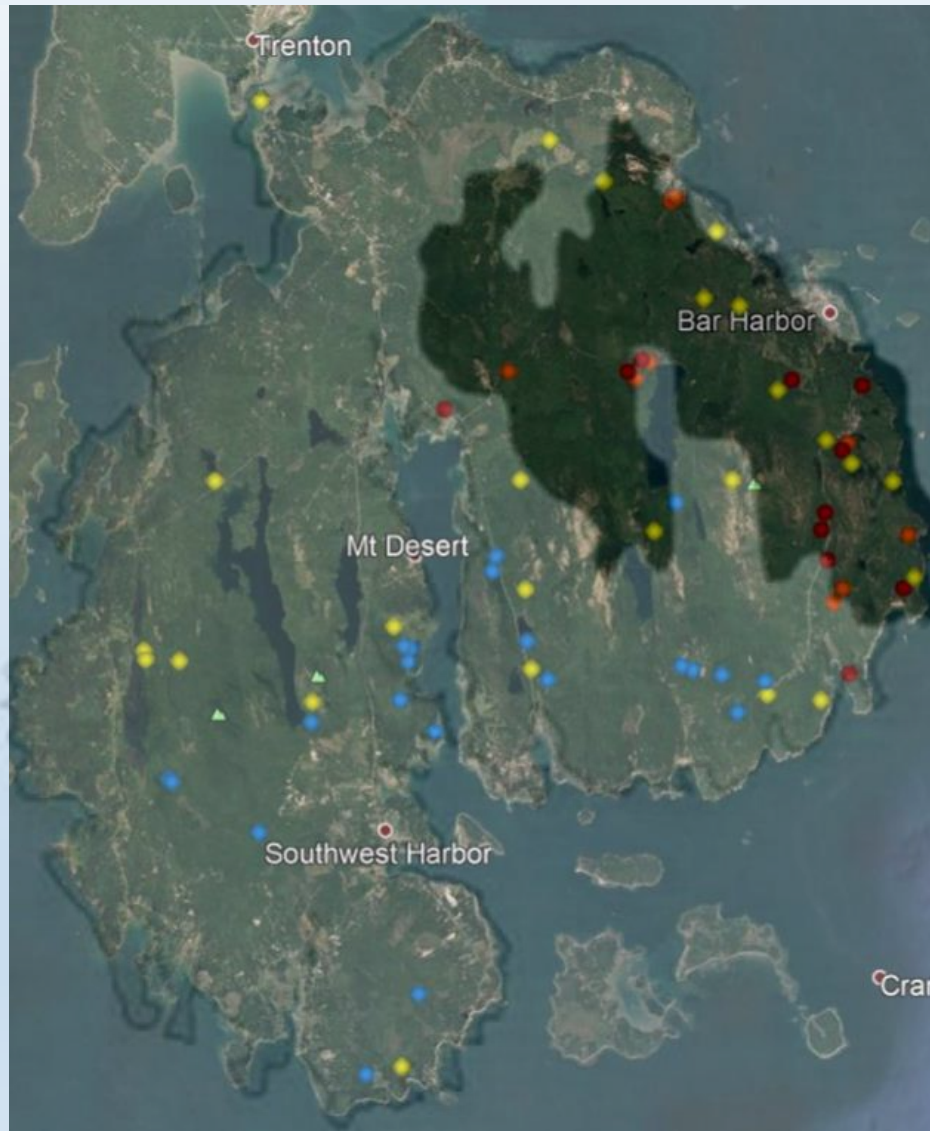
To investigate mechanisms:

- Small mammal trapping
- Vegetation Surveys
- Temperature and humidity data
- Deer scat surveys





Mechanisms: Vegetation?



Next Steps

- Determine environmental factors influencing tick abundance
 - Vegetation type
 - Elevation
- Create spatial risk model of tick abundance
- Test ticks and small mammal tissue for Lyme disease bacteria
- Do it all again next year

Acknowledgements



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