Fall 2020 Jackson Winter Tick Project Report

 Image 1:

Photograph of moose calf in R Park courtesy of Zach Andres (@zandres87 on Instagram)

Summary

Winter ticks (*Dermacentor albipictus*) are a potential threat to the ~500 moose that call Jackson Hole home, so in 2020 researchers with USGS, WGFD, GTNP, and Montana State University initiated several projects to better understand winter tick-moose interactions in the area. In August 2020 researchers began the Jackson Winter Tick Project to regularly sample for winter ticks at 25 private residences and 10 BLM or county-owned properties in Wilson as well as sites in Grand Teton National Park (GTNP) and Bridger-Teton National Forest-Blackrock District (BTNF). Researchers sampled >36 km of tick and moose habitat every month, the equivalent of walking along the NER road from Jackson to Twin Creek Ranch seven times or walking along HWY 191 from Jackson to Moose!

From August-November researchers collected **>7,000 winter ticks**, **67% from grasses/forbs** (avg height: 18 inches), **19.4% from non-willow shrubs** (avg height: 23 inches), and **13.6% from willow** (avg height: 33 inches). Ticks were first detected on September 21st and detection ended November 24th at which point <5 ticks were detected per site. Similar numbers of ticks were detected from sites in GTNP and BTNF vs sites in Wilson. Knowing when winter ticks are active and what habitat they are associated with can help moose managers target their efforts to reduce moose exposure to this potentially dangerous parasite. Thank you very much for your support during the first year of the Jackson Winter Tick Project, without your participation this valuable information could not have been collected.

Images 2 & 3: On the left is a picture of a single winter tick larvae next to a fine point Sharpie marker. On the right is an image of >12 winter tick larvae questing on a Goldenrod leaflet; winter tick larvae tend to cluster on vegetation like this as a large ball or 'bomb' with hundreds of larvae grouped together! 'Questing' refers to host-seeking behavior, which for winter ticks involves climbing up to the top of a blade of grass or shrub as a cluster and waiting for a host (typically moose, elk, mule deer) to pass by. Photos courtesy of Zach Andres.

Future Projects:

We will be continuing projects researching moose-winter tick interactions into 2021 and would welcome any additional support you may be able to provide. The following is an outline of anticipated projects and ways you can help:

1. Winter tick deployment study

We would like to learn more about the climate conditions (temperature, humidity, UV exposure) that control winter tick larvae survival in different habitat types. This project will involve deploying ~20 engorged female ticks (ticks filled with blood) in a habitat on a property inside a small 1x1 meter enclosure fence and an attached climate condition measurement tool. The enclosure would be erected in late April and stay in place all summer until researchers would arrive September-November to collect larvae. If you are interested, please email me at tkoser@usgs.gov!

- Participation needed: Volunteer property owners to allow researchers to deploy winter ticks and collect larvae.

2. Non-invasive moose health study

The residential moose that frequent homes around Wilson may be experiencing health issues, but we are still unsure how much of a role winter ticks may be playing. We are looking for help from Wilson residents to collect snow urine and fecal samples as well as take pictures of local moose to determine body condition and hair loss. All sampling would take place April 15th - May 31st. If you are a member of Jackson Hole Wildlife Foundation, then you can simply upload moose pictures to their Nature Mapping platform, if you are not then you can contact me, Troy Koser (tkoser@usgs.gov), and I can provide sampling equipment and a location to upload moose photos. If you are interested, please email me at tkoser@usgs.gov!

- Participation needed: Snow urine and fecal samples collected from moose around Wilson between April 15th and May 31st. Also needed are photographs of moose during this time period.

Summary Tables:

Region	Location Type	Habitat Type	Vegetation for questing ticks	Total Ticks
North (Public Lands)	National Park/ National Forest	Sagebrush	-	300
North (Public Lands)	National Park/ National Forest	Willow	-	701
North (Public Lands)	National Park/ National Forest	Conifer	Shrub	45
North (Public Lands)	National Park/ National Forest	Conifer	Grass/forb	1357
North (Public Lands)	National Park/ National Forest	Cottonwood	Shrub	-
North (Public Lands)	National Park/ National Forest	Cottonwood	Grass/forb	141
North (Public Lands)	National Park/ National Forest	Aspen	Grass/forb	-
North (Public Lands)	National Park/ National Forest	Aspen	Shrub	1160
TOTAL				**3704**

Table 1: Total ticks collected in different habitat types across GTNP and BTNF from August-November. Habitat type refers to the dominant vegetation type present at the site while vegetation refers to the specific vegetation available for winter ticks to quest upon.

Region	Location Type	Habitat Type	Vegetation for questing ticks	Total Ticks

South (Private and Public Lands)	Residential Properties	Sagebrush	-	-
South (Private and Public Lands)	Residential Properties	Willow	-	-
South (Private and Public Lands)	Residential Properties	Conifer	Shrub	-
South (Private and Public Lands)	Residential Properties	Conifer	Grass/forb	81
South (Private and Public Lands)	Residential Properties	Cottonwood	Shrub	-
South (Private and Public Lands)	Residential Properties	Cottonwood	Grass/forb	235
South (Private and Public Lands)	Residential Properties	Aspen	Grass/forb	19
South (Private and Public Lands)	Residential Properties	Aspen	Shrub	27
TOTAL				**362**
South (Private and Public Lands)	Public Properties	Grass	-	627
South (Private and Public Lands)	Public Properties	Willow	-	345
South (Private and Public Lands)	Public Properties	Conifer	Shrub	-
South (Private and Public	Public Properties	Conifer	Grass/forb	-

Lands)				
South (Private and Public Lands)	Public Properties	Cottonwood	Shrub	786
South (Private and Public Lands)	Public Properties	Cottonwood	Grass/forb	1551
South (Private and Public Lands)	Public Properties	Aspen	Grass/forb	-
South (Private and Public Lands)	Public Properties	Aspen	Shrub	-
TOTAL				**3309**

Table 2: Total ticks collected in different habitat types across residential and public properties in Wilson from August-November. Habitat type refers to the dominant vegetation type present at the site while vegetation refers to the specific vegetation available for winter ticks to quest upon.

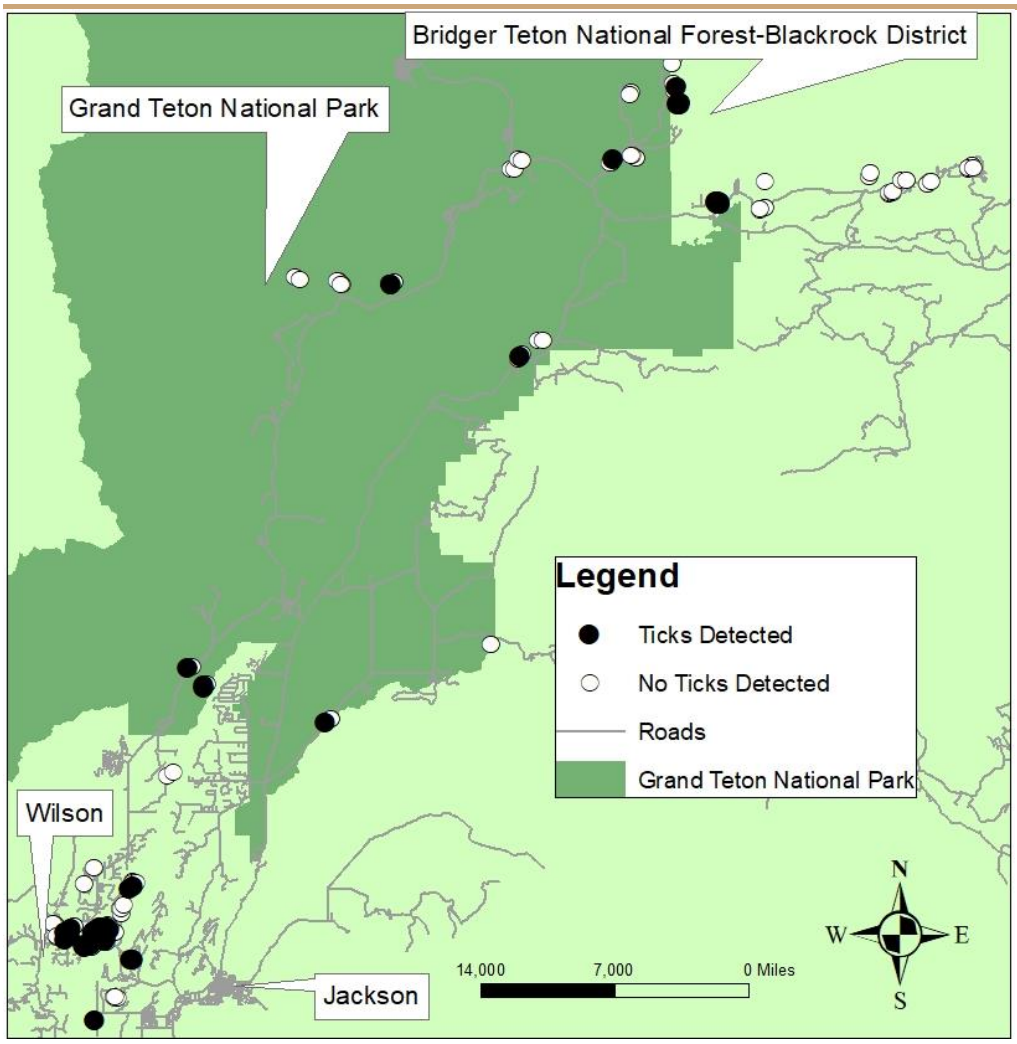

Image 4: Map of tick sampling locations in Fall 2020. 'North' region comprised of sites on GTNP and BTNF while the 'South' region included sites around Wilson.

Special Thanks to:

Grand Teton National Park

Bridger-Teton National Forest-Blackrock District

Jackson Hole Wildlife Foundation

Jackson Hole Land Trust

Wyoming Game and Fish Department

Teton County and Bureau of Land Management

Teton Conservation District