Liver Flukes (*Fascioloides magna*) in White-Tailed Deer During Hunting Season 2019

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Introduction

Life cycle begins as embryonated eggs pass through feces and land in wetlands where they encounter snail intermediate hosts. Development inside the snail lasts 40-58 days and includes a sporocyst and cercarial stage (Haider et. al. 2012). White-tailed deer (*Odocoileus virginianus*) ingest infected snails and are then infected (Dunkel et al. 1996). Once inside the deer, the migrating larvae cause lesions in the liver while the adult stage stimulates fibrous pseudocysts to form which often leads to inflammation, liver malfunction, and death (Nagy et al. 2018). Generally, a liver fluke infection is not lethal, but the flukes are able to continue movement through domestic animals causing fatal destruction of liver tissue (Wobeser and Schumann 2014). The presence of dead end hosts often exerts a dilution effect of parasites and may reduce the prevalence in a multi-host system (Pruvot et. al. 2016).

Negative association between the cattle density and the occurrence of liver flukes in elk (*Cervus elaphus*) harvested (Nagy et. al. 2018). The large American liver fluke, *Fascioloides magna*, is common in wild and domestic ruminants throughout North America. The meat inspection process does not screen for the presence of *F. magna*, this may be a reason why the infection is underreported (Pruvot et. al. 2016). We performed a t-test to determine if the number of flukes per host differed by harvest location, however, no statistical difference was found.

Hypothesis

Liver flukes (*Fascioloides magna*) will be more prevalent from white-tailed deer (*Odocoileus virginianus*) harvested in counties within the forest zones than in the farmland zones because intermediate hosts are more prevalent in forests.

Methods

- Deer livers were collected from the start of archery deer season on September 14th until the closing of the traditional 9-day gun deer season on December 1st, for a total duration of 79 days for collection.
- Livers were obtained through the donation of hunter harvested deer, which entailed a statewide range.
- We recorded date of harvest, county of harvest, sex, location of harvest (wetlands, etc.), and general body condition of the individual (how was condition assessed?).
- Livers were dissected within three days or frozen prior to dissection.
- We dissected 61 livers in a lab at the University of Wisconsin-Stevens Point following proper lab protocol and disposal methods.
- We performed a t-test to determine if the number of flukes per host differed by harvest location.

Results

- No statistical difference for infection intensity between the prevalence in forested and farmland zones.
- More samples collected from the forest zone would be beneficial to even the distribution of livers for the hypothesis. Deer home ranges are large (give data) and so the harvest location might not reflect area where deer might acquire infection.
- Future studies could compare age class and fluke prevalence to determine if deer acquire more over time.

Discussion

- We dissected 61 livers vut internsity (number of flukes per host) did not differ with habitat where the deer was harvested (p-value of 0.3547, Fig. 1).

References