Lack of Seasonality for Cercariae of *Nanophyetus salmincola* in the Snail *Juga silicula*

An Honors Thesis by Shelby Nicole Lofton
Purpose
Building upon knowledge of the life cycle of *Nanophyetus salmincola*.

Hypothesis
Colder water temperatures result in greater amounts of shed *N. salmincola* cercariae than warm water temperatures.
Introduction

Juga snail & *Nanophyetus salmincola*
Life cycle of *N. salmincola* is considered complex with 3 hosts & 6 life stages.
Juga Snail

- *Juga silicula*
- Generalist
- Live up to seven years
Materials & Methods

How I did what I did
South Santiam River

- Cold water site
- Found at Cascadia State Park
Oak Creek

- Warm water site
- Found at Oregon State University
Sample Reach

- Locations
- Transects: 3x3m
- Sampling: range of substrates
- Collecting snails
Experimental Design

- Sampling: end of month
- Data: °C
- Returning
Parasite evaluations

- Laboratory: snail incubation
  - Light exposure
  - 12 well plate
Through the Microscope

- Dissecting microscope
- Measurement
- Determined presence/prevalence of cercariae
Results

Found it
Daily mean temperatures of South Santiam River

Month: Aug, Sept, Oct, Nov, Dec, Jan, Feb, Mar, April, May, June, July
Temp (°C):
- Aug: 19.5
- Sept: 14
- Oct: 12
- Nov: 10
- Dec: 8.5
- Jan: 3
- Feb: 5
- Mar: 5
- April: 10
- May: 13
- June: 16
- July: 18
Oak Creek Shedding & Temperatures

Shedding of Cercaria (%)

Month | Shedding of Cercaria (%) | Temp (°C)
--- | --- | ---
AUG | 2 |
SEP | 1 |
OCT | 6 | 6
NOV | 6 |
DEC | 5 |
JAN | |
FEB | |
MAR | 5 |
APR | |
MAY | |
JUNE | 1 |
JULY | |
Snail Dimensions

- Length & width $p = 0.0000$
- $> 4\text{mm in width } p = 0.0077$
- Month to month $p = 0.2470$
Conclusion

What could this mean?
Maturation & Shedding of Cercariae

- Stream temperature & time of year did not appear to be a contributing factor to shedding of *N. salmincola* cercariae.

- Maturation: no clean pattern

- Supported by data from colleagues
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<th>Date</th>
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<th>Temp (°C)</th>
<th>Shed Cercariae (%)</th>
<th>Number of Snails</th>
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Here’s where I Drop the mic

Implies fish can be vulnerable to infection by *N. salmoncola* at any time during the year.
Questions?
No Timmy, this gentleman is not homeless:
He is a slug...

Hagen Cartoons: http://www.hagen cartoons.com