Mosquito Research at VSU:

Heartworm Prevalence and Insecticide Resistance Studies

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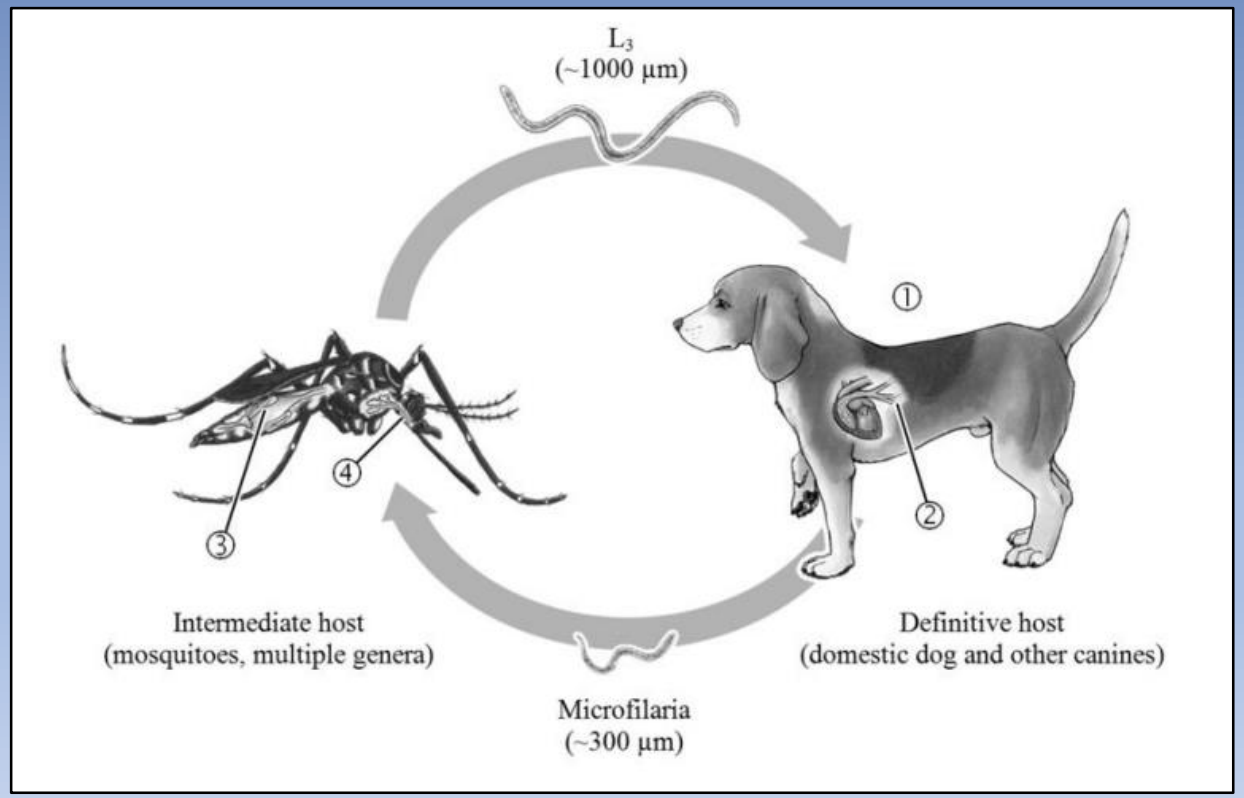
Dirofilaria immitis

- Causative agent of canine heartworm disease
- Transmitted by mosquito vectors
- Worldwide distribution

from "Dirofilaria immitis in Pinnipeds and a New Host Record", Alho et al., 2017



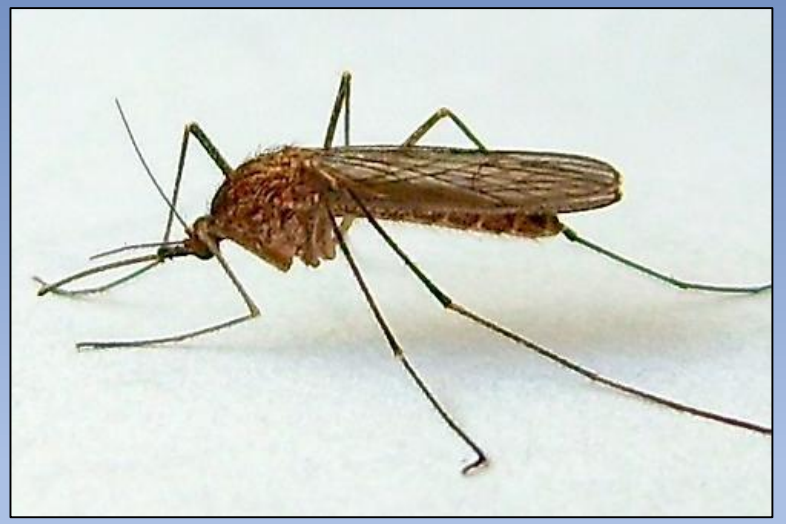
Heartworm lifecycle diagram posted by KalahariFox to https://www.deviantart.com/kalaharifox/art/Heartworm-lifecycle-211894608

Vectors

- Vary by region
- Vectors found in several genera

Anopheles crucians image taken by John Maxwell in 2009

Aedes vexans image taken by John Maxwell, 2012



Culiseta inornata image taken by Jim Moore, 2011

- Abundance data, in addition to presence, important for forecasting

Current Study

- Compile list of *D. immitis* vectors in South Georgia/North Florida region
- Compare vector species abundances & infection rates
  - Urban vs Rural

Trap Sites

- 8 urban sites located around Valdosta, GA
- 8 rural sites located on the Dixie Plantation in Greenville, FL

Traps

- Gravid traps & CDC Light traps
- Gravid traps set once weekly
- CDC traps set every other week
- June-September (16 weeks) 2018

Heartworm Testing

- Mosquitoes identified to species
- Abdomens discarded, heads & thoraces pooled for DNA extraction
- DNA amplified by polymerase chain reaction with *D. immitis* 16s rRNA primers
- Gel electrophoresis to determine pools containing L3 larvae
- Maximum likelihood estimate to determine infection rates

Current summary:

- 15,240 mosquitoes collected
- 29 species
- 944 pools (23 species)

Species	Valdosta	Greenville	Total
Ae. albopictus	430	7	437
Ae. vexans	59	723	782
Ae. unidentified	10	41	51
An. crucians	74	3640	3714
An. punctipennis	1	1	2
An. quadrimaculatus	3	23	26
An. unidentified	1	13	14
Cq. perturbans	55	606	661
Cs. melanura	116	173	289
Cx. coronator	4	7	11
Cx. erraticus	110	1747	1857
Cx. nigripalpus	245	1745	1990
Cx. quinquefasciatus	2621	45	2666
Cx. salinarius	21	94	115
Cx. territans	3	0	3
Cx. unidentified	359	490	849
Ae. atlanticus	72	80	152
Ae. canadensis	1	61	62
Ae. fulvus pallens	14	25	39
Ae. infirmatus	168	152	320
Ae. mitchellae	0	7	7
Ae. sticticus	1	0	1
Ae. triseriatus	1	1	2
Or. signifera	1	1	2
Ps. ciliata	0	84	84
Ps. columbiae	10	724	734
Ps. ferox	251	34	285
Ps. howardii	9	9	18
Ps. unidentified	38	0	38
Ur. lowii	3	2	5
Ur. sapphirina	4	7	11
Tox. rutilus	3	0	3
Ma. titillans	0	10	10
total	4688	10552	15240

Bray-Curtis Dissimilarity

- Urban/rural sites 81.5% dissimilar

- Do abundance differences of *D. immitis* vectors contribute to unequal infection rates?