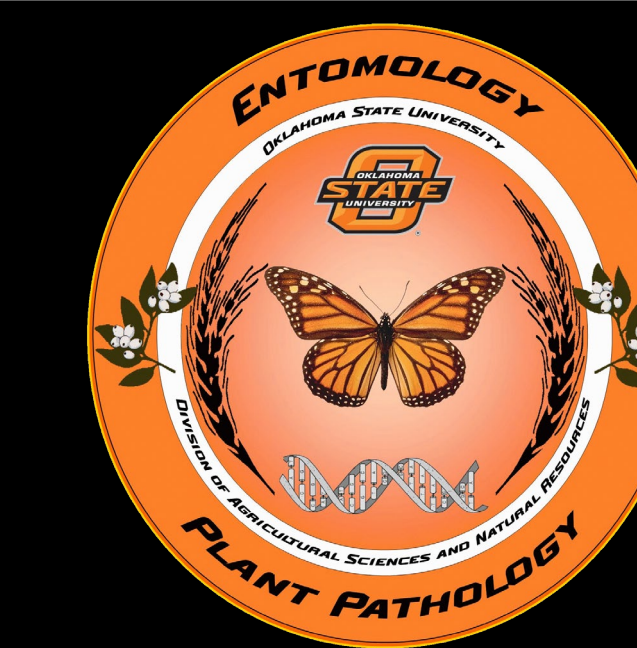


Ectoparasites Crawling on a Host Near You; A Case Series of Ectoparasites in Central Oklahoma

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Abstract

Ectoparasites on wild raptors and mammals pose a threat to the health of the animal, and possibly to the surrounding community should the ectoparasite be a vector for a zoonotic pathogen. Studies examining ectoparasites of wildlife in Central Oklahoma are limited in number. The survey was conducted by removing ectoparasites off of exotic in-patients at OSU's veterinary hospital and preserving the parasites in 70% ethyl alcohol. The total number of cases included 22 host species with a total of 51 animals: 32 raptors and 19 mammals. The ectoparasitic collections resulted in 220 individual ectoparasites; with a diversity of 14 lice species, 4 hematophagous fly species, 4 tick species, and 4 flea species. 14 lice, 4 hematophagous fly, and 3 tick species were identified from the raptors, and 4 tick and 4 flea species were identified from the mammals. Ten species of lice and one hematophagous fly species have never been reported in Oklahoma. Of the ectoparasites surveyed, 4 tick, 3 hematophagous fly, and 3 flea species are potential vectors of zoonotic disease pathogens.

Methods

- Between 2016-2018, ectoparasites were obtained from patients admitted into the Exotics Ward of Boren Veterinary Medical Hospital.
- Samples were collected by hand and/or forceps and placed into plastic 1.3ml capped-tubes with 70% ethyl alcohol, labeled with species, case number, and date, and stored at room temperature.
- Identified to Order using a Wild Heerbrugg stereomicroscope.
- Ticks were identified to species by keys (Dubie et al. 2017).
- Chewing lice were identified to genus using established keys: a textbook (Price et al. 2003) as well as published keys (Scharf et al. 1965 and Nelson et al. 1965).
- Fleas were identified using a pictorial key (Gerhardt et al. 1945).
- Flies were identified using keys (Bequaert 1953 and Bequaert 1955).

Results

- A table of the hosts and ectoparasites identified.
- The number at the end of the host name indicates the number of hosts while the number at the end of the species name indicates the quantity of ectoparasites of that species that was found on the host
- Species names that are bolded denotes that the parasite's picture is displayed on the map at the site where the host was reported.
- The map to the right presents the host's recorded location



Myrsidea fuscomarginata found on Common Grackle, measures 0.25mm x 1.75mm



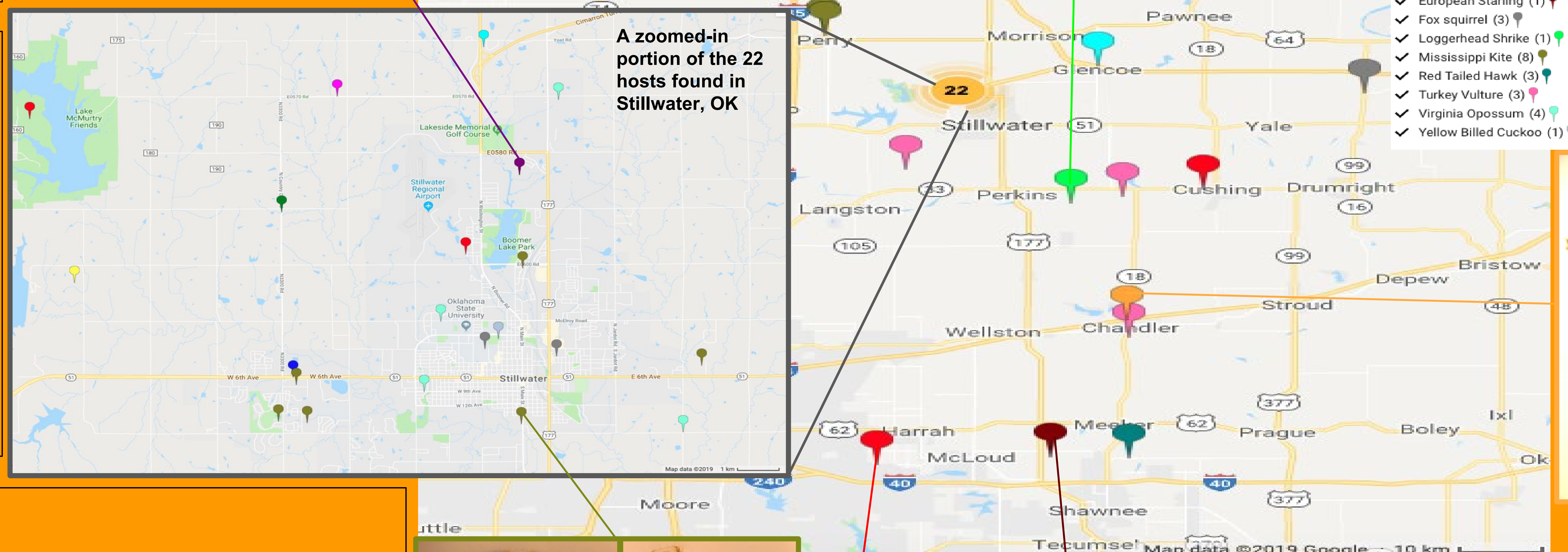
Kurodaia fulvofasciata, found on Red-Tailed Hawk, measures 0.5mm x 2mm



Ornithoctona erythrocephala, found on Broad Wing Hawk, measures 4mm x 9mm



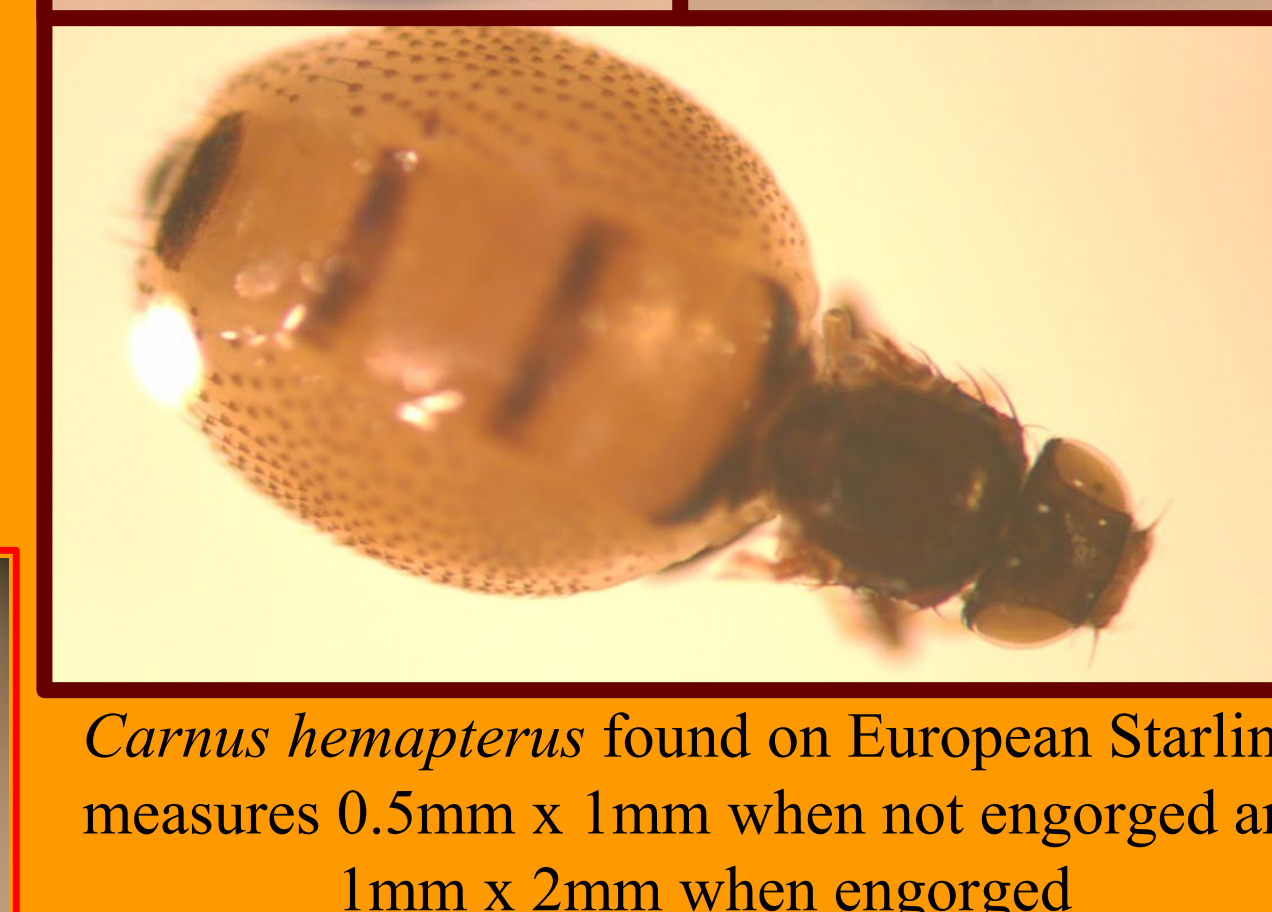
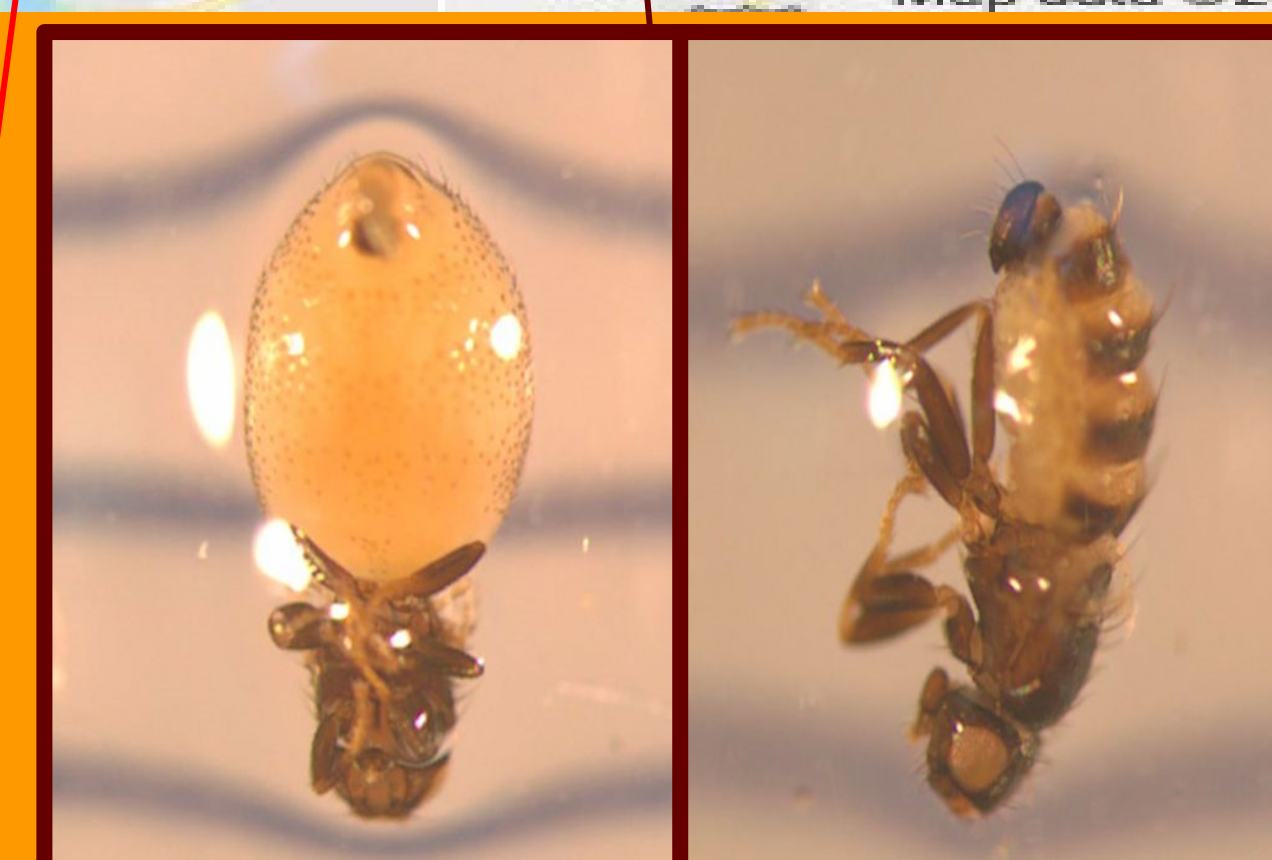
Laemobothrion maximum female found on Red-Tailed Hawk, measures 2mm x 9mm



Ornithoctona fusciventris found on Loggerhead Shrike, measures 3mm x 6mm



Laemobothrion maximum male found on Mississippi Kite, measures 1.5mm x 7mm



Carnus hemapterus found on European Starling, measures 0.5mm x 1mm when not engorged and 1mm x 2mm when engorged



Cediopsylla simplex found on a Cottontail Rabbit, measures 1mm X 2mm

Conclusion

The ten species of lice never reported in Oklahoma are all Mallophagan, chewing lice: eight Amblycera and two Ischnocera. The eight Amblycera species are: *Colpocephalum nanum*, *Cuculiphilus alternatus*, *Cuculiphilus snodgrassi*, *Kurodaia fulvofasciata*, *Laemobothrion atrum*, *Laemobothrion glutinans*, and *Myrsidea fuscomarginata*. The two Ischnocera are: *Degeeriella rufa* and *Philopterus sialii*. The species of hematophagous fly never reported in Oklahoma is a Hippoboscid, Louse fly, *Ornithoctona fusciventris*. The ectoparasites collected that are potential vectors of zoonotic disease pathogens are: 4 ticks species, *Amblyomma americanum*, *Dermacentor variabilis*, *Haemaphysalis leporispalustris*, and *Ixodes scapularis*; 4 flea species, *Cediopsylla simplex*, *Ctenocephalides felis*, *Hoplopsyllus affinis*, and *Pulex irritans*; and 3 hematophagous fly species, *Icosta americana*, *Ornithoctona erythrocephala*, and *Ornithoctona fusciventris*.

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Host	Host Latin Name	Tick Species
Barred Owl	<i>Strix varia</i>	<i>Dermacentor variabilis</i> (1-Adult)
Bobwhite Quail	<i>Colinus virginianus</i>	<i>Amblyomma americanum</i> (1- Nymph)
Common Grackle	<i>Quiscalus quiscula</i>	<i>Haemaphysalis leporispalustris</i> (3 - Nymph)
		<i>A. americanum</i> (9- Nymph)
Host	Host Latin Name	Lice Species
American Coot	<i>Fulica americana</i>	<i>Laemobothrion atrum</i> (2-Adult, 3 Juv)
Yellow Billed Cuckoo	<i>Coccyzus americanus</i>	<i>Cuculiphilus snodgrassi</i> - (1-Adult)
Peregrine Falcon	<i>Falco peregrinus</i>	<i>Degeeriella rufa</i> - (1-Adult)
Barred Owl	<i>S. varia</i>	<i>Kurodaia magna</i> - (1-Adult)
Barn Owl	<i>Tyto alba</i>	<i>Strigiphilus spp.</i> - (1- Adult)
Great Horned Owl (2)	<i>Bubo virginianus</i>	<i>Strigiphilus spp.</i> (10- Adult)
Turkey Vulture (3)	<i>Cathartes aura</i>	<i>Laemobothrion glutinans</i> - (3-Adult, 2 Juv)
		<i>Colpocephalum kelloggi</i> - (24-Adult)
		<i>Cuculiphilus alternatus</i> - (1-Adult)
Mississippi Kite (9)	<i>Ictinia mississippiensis</i>	<i>Laemobothrion maximum</i> (8-Adult, 4-Juv)
		<i>Degeeriella fulva</i> - (1-Adult)
		<i>Kurodaia fulvofasciata</i> (3-Adult, 1 Juv)
Red Tailed Hawk (2)	<i>Buteo jamaicensis</i>	<i>Colpocephalum nanum</i> (3-Adult)
		<i>K. fulvofasciata</i> - (2-Adult)
		<i>L. maximum</i> - (1-Adult)
Common Grackle	<i>Q. quiscula</i>	<i>Myrsidea fuscomarginata</i> - (4-Adult)
Eastern Blue Bird	<i>Sialia sialis</i>	<i>Philopterus sialii</i> - (2-Adult)

Host	Host Latin Name	Tick Species
Fox squirrel	<i>Sciurus niger</i>	<i>Amblyomma americanum</i> (2-Nymph)
Opossum (4)	<i>Didelphis virginiana</i>	<i>Dermacentor variabilis</i> (2-Adult)
		<i>A. americanum</i> (3-Nymph,4-Larva)
		<i>Haemaphysalis leporispalustris</i> (35-Adult, 25-Nymph, 2-Larva)
		<i>A. americanum</i> - (1-Nymph)
		<i>D. variabilis</i> - (3-Nymph)
Rabbit (7)	<i>Sylvilagus floridanus</i>	
Bobcat	<i>Lynx rufus</i>	<i>Ixodes scapularis</i> - (28-Adult)
Woodchuck	<i>Marmota monax</i>	<i>A. americanum</i> - (1-Adult, 3-Nymph)
Host	Host Latin Name	Flea Species
Fox squirrel (2)	<i>S. niger</i>	<i>Hoplopsyllus affinis</i> - (5-Adult)
Kinkajou	<i>Potos flavus</i>	<i>Pulex irritans</i> - (1-Adult)
Rabbit	<i>S. floridanus</i>	<i>Cediopsylla simplex</i> - (1-Adult)
	<i>Mustela putorius furo</i>	<i>Ctenocephalides felis</i> - (1-Adult)
Host	Host Latin Name	Fly Species
European Starling	<i>Sturnus vulgaris</i>	<i>Carnus hemapterus</i> - (15-Adult)
		<i>Ornithoctona fusciventris</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>	(1-Adult)
Red Tailed Hawk (2)	<i>Buteo jamaicensis</i>	<i>Icosta americana</i> - (2-Adult)
		<i>Ornithoctona erythrocephala</i>
		(1-Adult)
Broad Wing Hawk	<i>Buteo platypterus</i>	
	<i>Ictinia</i>	
Mississippi Kite	<i>mississippiensis</i>	<i>I. americana</i> - (1-Adult)