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# New Ectoparasite (Phthiraptera; Siphonaptera; Diptera) Records from Birds (Strigiformes: Passeriformes) and Mammals (Lagomorpha; Rodentia) in Southeastern Oklahoma

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**Abstract:** Little is known about many of the ectoparasites occurring on higher vertebrate hosts in Oklahoma. Here, we report nine taxa of ectoparasites from Oklahoma for the first time. These include five species of chewing lice [*Degeeriella fulva* from *Buteo lineatus* (red-shouldered hawk), *Strigiphilus otus* from *Megascops asio* (eastern screech owl), *Philopterus osborni* and *Myrsidea interrupta* from *Corvus brachyrhynchos* (common crow), and *Stachiella octomaculatus* from *Sylvilagus floridanus* (eastern cottontail)], three species of fleas [*Cediopsylla simplex* and *Odontopsyllus multisinosus* from *S. floridanus*, and *Polygenis gwyni* from *Neotoma floridana* (eastern woodrat)], and a dipteran (*Ornithoctona erythrocephala* from *B. lineatus*).

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## Introduction

Over the past half-decade, our research consortium has provided information on various ectoparasites occurring on hosts in Oklahoma for the first time (McAllister et al. 2013a, b, 2014, 2016, 2017a, 2018; McAllister and Durden, 2014a, b, 2017; Connior et al. 2015). One of these reports presented information on a road-killed great-horned owl (*Bubo virginianus*) from the state that yielded information on five taxa of parasites. This showed that utilizing road-killed raptors for parasite surveys was an excellent way to conduct research in the name of conservation

rather than having to collect and then euthanize live specimens. Here, we continue that research by reporting new state records for nine taxa of ectoparasites from select birds and mammals.

## Methods

Three avians from McCurtain County, including a common crow (*Corvus brachyrhynchos*), eastern screech owl (*Megascops asio*), and red-shouldered hawk (*Buteo lineatus*) were found dead on the road. In addition, an eastern cottontail (*Sylvilagus floridanus*) was shot and an eastern woodrat (*Neotoma floridana*) was found dead. All

were brought to the laboratory for ectoparasitic examination. Those specimens that appeared to be recently killed showed no sign of putrefaction. The feathers and hair were vigorously brushed over a white enamel tray to help see ectoparasites and those found were placed in individual vials of 70% (v/v) ethanol; selected specimens were cleared in 10% potassium hydroxide, dehydrated through an ethanol series, further cleared in xylene, and slide-mounted in Canada balsam (Price et al. 2003). Hosts were deposited as photovouchers and are housed in the Eastern Oklahoma State University-Idabel collection, Idabel, Oklahoma. Voucher specimens of ectoparasites were deposited in the General Ectoparasite Collection in the Department of Biology at Georgia Southern University, Statesboro, Georgia, or the G. P. Gillette Museum of Arthropod Diversity Colorado State University (CSUC), Fort Collins, Colorado, under individual accession numbers.

## Results and Discussion

All birds and mammals examined were infested with various live ectoparasites. Nine taxa, including five species of chewing lice, three species of fleas, and a dipteran, were collected. All ectoparasites are reported from Oklahoma for the first time. The nine ectoparasite species recovered are presented below in annotated format.

### Insecta: Phthiraptera: Ischnocera: Philopteridae

***Degeeriella fulva* Giebel.** – Three males and seven females (accession no. L3820) were removed from a *B. lineatus* collected on 2 March 2018 from Wright City (34° 04' 5.9088"N, 95° 00' 19.368"W). This louse is a common ectoparasite of a wide variety of raptors (Emerson 1972; Price et al. 2003) although Emerson (1940) did not record it from Oklahoma.

***Strigiphilus otus* Emerson.** – One male, one female, and two nymphs of *S. otus* (L3814) were taken from *M. asio* collected on 22 January 2018 from Smithville (34° 28' 0.4794"N, 94° 38' 37.6794"W). This louse is mainly an ectoparasite of the screech owl and the genus is

restricted to owls. Previous records from *M. asio* are from Arizona, Georgia, Indiana, Maryland, Minnesota, New York, Oregon, Texas, and British Columbia, Canada (Emerson 1955). There are records from four additional species of New World owls from Coahuila and Michoacan, México, and Arizona (Clayton 1990; Price et al. 2003).

***Philopterus osborni* Edwards.** – One female *P. osborni* (L3816) was found on *C. brachyrhynchus* collected from Smithville (34° 28' 0.4794"N, 94° 38' 37.6794"W). This louse is widespread in North America and has been recorded from five species of *Corvus* but mainly from *C. brachyrhynchus* (Price et al. 2003). Philopterid chewing lice are ectoparasites of birds and some species serve as vectors of filarial nematodes (Durden 2018).

### Menoponidae

***Myrsidea interrupta* Osborn.** – Two males and one female *M. interrupta* (L3816) were removed from *C. brachyrhynchus* collected on 8 February 2018 from Smithville (34° 28' 0.4794"N, 94° 38' 37.6794"W). This chewing louse was originally described from an American crow from Nebraska and is widespread in North America (Emerson 1972). However, Emerson (1940) did not record it from Oklahoma. This louse appears to be genus specific as it has only been recorded from birds of the genus *Corvus* (Price et al. 2003).

### Trichodectidae

***Stachiella octomaculatus* Paine.** – Two males, one female, and two nymphs of *S. octomaculatus* (L3819) were taken from a *S. floridanus* collected on 10 March 2018 from Haworth (33° 50' 47.3994"N, 94° 39' 9.7194"W). This louse is typically found on the raccoon, *Procyon lotor*. The host association recorded here might be considered accidental and/or could be the result of both mammals cohabitating in a nest or burrow.

### Siphonaptera: Pulicidae

***Cediopsylla simplex* (Baker) (rabbit flea).** – Three males and two females of *C. simplex* (L3817) were found on *S. floridanus*

collected on 10 March 2018 from Haworth (33° 50' 47.3994"N, 94° 39' 9.7194"W). This is a widespread flea of lagomorphs and their predators in the eastern two-thirds of North America (Holland 1985; Durden et al. 2012).

#### Rhopalopsyllidae

***Polygenis gwyni* (C. Fox).** – A single male *P. gwyni* (L3815) was found on a *N. floridana* collected on 29 January 2018 in Smithville (34° 28' 0.4794"N, 94° 38' 37.6794"W). This is an unusual occurrence since woodrats tend to be uncommon hosts of this flea. It is more often reported from hispid cotton rats (*Sigmodon hispidus*), the most commonly recorded host of *P. gwyni* (McAllister et al. 2017b). In addition, there are also several records of *P. gwyni* from Virginia opossum (*Didelphis virginiana*) and some other mammals throughout its range in the southern U. S. (Smit 1987; Durden et al. 2012).

#### Leptopsyllidae

***Odontopsyllus multispinosus* Baker.** – One male and one female *O. multispinosus* (L3817) were found on *S. floridanus* collected on 10 March 2018 from Haworth (33° 50' 47.3994"N, 94° 39' 9.7194"W). This is a large flea associated with leporids and their predators in eastern North America (Holland 1985; Durden et al. 2012).

#### Diptera: Hippoboscidae

***Ornithoctona erythrocephala* (Leach).** – A single female of *O. erythrocephala* (CSUC) was taken from *B. lineata* collected on 2 March 2018 from Wright City (34° 04' 5.9088"N, 95° 00' 19.368"W). This louse fly infests raptors and other medium to large-sized birds (Bequaert 1954). It has a wide geographic distribution and has been recorded from seven Canadian Provinces, 24 U. S. states, and México, as well as Central and South America as far south as Chile. To date, 16 genera, 25 families, and 14 orders of birds are known as hosts. The broad geographic distribution and wide host range could indicate that the nominal taxon *O. erythrocephala* actually includes several cryptic species, molecular studies might clarify this. Louse flies (213 species) belong to a family of pupiparous dipterans, which in their adult stage are ectoparasites of birds and mammals

(Bequaert 1954; Maa 1969; Dick 2006).

In conclusion, we document nine new distributional records for ectoparasites of some common birds and mammals from Oklahoma. Once again (see Nelder and Reeves 2005; McAllister et al. 2017), this survey illustrates the significance of salvaging road-killed raptors and other birds and vertebrates which can yield knowledge on their parasites when data could not be otherwise obtained because of state and federal restrictions on collecting and euthanizing live birds, all in the spirit of conservation. In addition, these ectoparasites can be screened for significant tick, louse, and flea borne pathogens as shown by Reeves et al. (2005).

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