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**LICE AND MITES COLLECTED FROM A WOOD THRUSH (*Hylocichla mustelina*), A BLACK-AND-WHITE WARBLER (*Mniotilta varia*), A COMMON GRACKLE (*Quiscalus quiscula*), AND A NORTHERN MOCKINGBIRD (*Mimus polyglottos*) ON VACA KEY, FLORIDA**

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Florida's bird fauna is species-rich with over 500 species known from the state (Greenlaw et al. 2014). Yet little to nothing is known about the ectoparasite fauna of most species; what is known was summarized by Forrester and Spalding (2003). Since then few contributions have been made to our knowledge. This note reports ectoparasites removed from three birds found dead outside a building on Vaca Key in the City of Marathon, Monroe County, Florida (24.729984, -81.039438) and one bird killed by a moving vehicle also on Vaca Key. All birds were examined for ectoparasites and specimens were handled and prepared for study as in previous reports (Hribar and Miller 2011; Hribar 2013, 2014). Slide-mounted specimens were sent to specialists for identification.

The Wood Thrush (*Hylocichla mustelina*) was once much commoner than it is now; since 1966 its numbers have declined almost 2% per year (Sauer et al. 2012). It is rarely observed in the Florida Keys, and then only in the spring and autumn, during migration (USFWS 1994). Forrester and Spalding (2003) reported no records of ectoparasitic mites from this bird in Florida. An unidentified feather mite *Analges* sp. (Analgidae) was recovered from a Wood Thrush in Tennessee (Reeves et al. 2007).

A Wood Thrush was found dead on 9 April 2014. Five feather mites were recovered from the specimen: one male of the family Analgidae and four mites of Trouessartiidae; two trouessartiid specimens were collected *en copula*. All mite specimens were sent for identification but apparently were lost or discarded. Given the lack of information on the ectoparasite fauna of Wood Thrushes and their declining numbers, even these limited data may prove useful.

A Black-and-white Warbler (*Mniotilta varia*) was found on 5 May 2015. Over 100 feather mites were collected. Nineteen were mounted on slides and were identified as follows: *Amerodectes seiurus* Mironov and Chandler (Proctophyllodidae), 4 males, 3 females; an undescribed *Analges* sp. (Analgidae), 1 male; and an undescribed *Trouessartia* sp. (Trouessartiidae), 4 males, 4 females, 3 tritonymphs. This mite was described from specimens taken from an Ovenbird, *Seiurus aurocapilla* in Georgia (Mironov and Chandler 2017). This is apparently the first report of this mite in Florida. Five feather lice were found: 2 males, 1 female, 2 nymphs. These were identified as *Menacanthus aurocapillus* Carriker (Phthiraptera: Menoponidae). This louse has previously been taken from *M. varia* in the British West Indies (Price 1977). The present report appears to be the first record of this louse from Florida (Forrester and Spalding 2003).

A juvenile Common Grackle (*Quiscalus quiscula*) was found on 25 June 2015. Three mites and two lice were taken from the specimen. The mites were identified as an undescribed *Trouessartia* sp. (Trouessartiidae), 1 male and 1 female; and one oribatid mite (Oribatei). Oribatid mites generally inhabit soil but there are surprisingly many records of these mites being taken from birds (Krivolutsky and Lebedeva 2004a, b; Lebedeva and Lebedev 2008). The lice were identifiable only to genus, *Myrsidea* (Menoponidae). Lice previously known from the Common Grackle include *Myrsidea fuscomarginata* (Osborn) and *Philopterus quisicali* (Osborn) (Philopteridae) (Peters 1936, Clay 1968, Forrester et al. 1995).

A Northern Mockingbird (*Mimus polyglottos*) was found on 1 May 2018, dying after apparently being struck by a vehicle. Four *Analges* sp. mites (Analgidae), representing an undescribed species, were recovered from this specimen: 1 male, 1 female, and 2 tritonymphs. Feather mites do not appear to have been reported previously from mockingbirds in Florida (Phillis and Cromroy 1972, Forrester and Spalding 2003). Northern Mockingbirds are among the species most likely to turn up as roadkill in Florida (Forrester and Spalding 2003).

An unknown number of passerine birds die each year in Florida after colliding with windows in buildings (Forrester and Spalding 2003). Avise and Crawford (1981) mentioned that collisions with low-rise buildings, buildings less than 35 meters in height (Emporis Standards 2018), and low-strung power lines might account for many more bird deaths than collisions with towers and high-rise buildings. Later, Loss et al. (2014) reported that as many as 988,000,000 birds were killed annually in the United States due to collisions with manmade structures, over half of them low-rise buildings. Bird deaths due to collisions with vehicles are very difficult to quantify and any estimate is probably too low (Forrester and Spalding 2003).

As in previous reports of feather mites from the Florida Keys, a number of undescribed species were collected (Hribar 2013, 2014; Hribar and Miller 2011). By one estimate as few as 20% of feather mite species may be known to science (Mironov 2003). Mites belonging to the genus *Analges* are found in down feathers and downy parts of vaned body feathers (Mironov 1999). *Analges* is the most species-rich genus in the Analgidae, with about 60 species known exclusively from passerines (S. Mironov, pers. comm.). *Trouessartia* mites are found in the vanes of remiges (major wing feathers) and rectrices (tail feathers) (Mironov 1999). *Trouessartia* is the most species-rich genus in the Trouessartiidae, with about 115 species known mainly from passerines and a few species from Piciformes (Hernandes 2014, Mironov and Bermúdez 2017). The genus *Amerodectes* (Proctophyllodidae) contains about 40 species, all known from passerines (Mironov and Chandler 2017). *Amerodectes* mites, like other Proctophyllodidae, are found on the ventral sides of remiges and rectrices in corridors between adjacent barbs (S. Mironov, pers. comm., Mironov and O'Connor 2014). The preferred area for oviposition by some lice in the genus *Myrsidea* is on the upper neck region of the host bird (Cicchino and Valim 2015). Similarly, at least one species in the genus *Menacanthus* also oviposits on the neck and head of the host (Saxena et al. 2012).

Lice and feather mites generally do not directly affect their host's fitness (Hamstra and Badyaev 2008). The number of feather mites found on a bird appears to have no direct relationship to any aspect of body condition or fitness (Matthews et al. 2018). Feather mites feed on secretions of the uropygial gland but there may not be a direct relationship between glandular secretions and mite numbers (Proctor 2003, Pap et al. 2010). It is possible that mites and lice may serve as vectors of pathogens infecting birds. Quill mites (Syringophyllidae) have been found naturally infected with the bird pathogen *Anaplasma phagocytophylum* and some lice are intermediate hosts of parasitic nematodes (Cohen et al. 1991, Skoracki et al. 2006).

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