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**PARASITIC MITES COLLECTED FROM PERCHING BIRDS
(AVES: PASSERIFORMES) ON VACA KEY, FLORIDA**

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Birds are among the better-known and more commonly studied groups of animals (Somveille et al. 2013). The arthropod fauna inhabiting their feathers, however, is less well known. Ticks, mites, lice, and flies can be found in the feathers of many birds. Among the mites that can infest birds are feather mites, which infest the barbs of the vane of the feather, and quill mites, which infest the interior of the quill. Feather mites feed on bacteria, fungi, skin secretions, and feather fragments. Strictly speaking, feather mites are not parasites, but commensals (Philips 2000). Quill mites feed by piercing the inner surface of the quill with their mouthparts. This can result in feather loss when infested birds peck at the quills (Castro 1974). Forrester and Spaulding (2003) reported that 37 species of ectoparasitic mites have been collected from Passeriformes in Florida. Hribar and Miller (2011) and Hribar (2013) reported collection of five additional mite taxa from birds found dead on Vaca Key, Florida. This note presents records of parasitic mites taken from three birds, an Indigo Bunting (*Passerina cyanea*), a Black-and-white Warbler (*Mniotilta varia*), and a Common Yellowthroat (*Geothlypis trichas*), on Vaca Key during April and May 2013. Birds were found dead outside a building in the City of Marathon, Florida (24.729984, -81.039438). Bird and mites were handled and prepared for study in a manner identical to previous reports (Hribar and Miller 2011, Hribar 2013). As in previous reports, slide-mounted specimens were sent to a specialist for identification. All specimens have been deposited into the Florida State Collection of Arthropods, Gainesville (accession numbers E2013-8182-1 through E2013-8191-1). Results are presented in Table 1.

Amerodectes mites (Proctophyllodidae) were collected from all three birds examined. *Amerodectes* mites are found on a variety of New World bird species in nine families (Valim and Hernandez 2010). *Proctophyllodes* mites, also in the family Proctophyllodidae, were found on the Black-and-white Warbler. The genitalia of the male specimens are very similar to that of *P. brevisquadratus* Atyeo and Braasch; this mite has been collected from Black-and-white Warblers in Massachusetts and Michigan (Aty eo and Braasch 1966). An unidentified *Proctophyllodes* species was found on a Black-and-

Table 1. Number, sex, and stage of mites collected from birds on Vaca Key.

Host	Date Collected	Mite	Number and Stage
Cardinalidae			
Indigo Bunting (<i>Passerina cyanea</i>)	9 April 2013	Proctophyllodidae <i>Amerodectes</i> sp.	7 F, 4 M, 2 Nymph
		Trouessartiidae <i>Trouessartia</i> sp.	7 F, 4 M, 3 Nymph
		Psoroptoideidae <i>Mesalgoides</i> sp.	1 F, 5 M, 1 Nymph
		Rhinonyssidae	1
		Syringophilidae	1
		Tenuipalpidae <i>Brevipalpus</i> sp.	1
Parulidae			
Black-and-white Warbler (<i>Mniotilta varia</i>)	29 April 2013	Proctophyllodidae <i>Proctophyllodes</i> sp.	13 F, 3 M, 1 Nymph
		Analgidae Prob. <i>Analges</i> sp.	1 F
		Trombiculidae <i>Neoschoengastia</i> sp.	1 Larva
Common Yellowthroat (<i>Geothlypis trichas</i>)	6 May 2013	Proctophyllodidae <i>Amerodectes</i> sp.	1 M

white warbler in Newfoundland, Canada (Wheeler and Threlfall 1986). *Proctophyllodes* mites are found mainly on passeriform birds and usually each species of mite is associated with a single bird species or a small group of closely related bird hosts (Mironov 2012). *Trouessartia* mites (Trouessartiidae) also were recovered from the Indigo Bunting. *Trouessartia* spp. are found primarily on Passeriformes, and as with *Proctophyllodes*, each species of *Trouessartia* appears to be restricted to one or a few closely related bird species (Atyeo and Peterson 1970, Santana 1976). In this case, the *Trouessartia* sp. taken from the Indigo Bunting likely is an undescribed species, as none are known from Indigo Buntings (Mironov 2012).

The only other feather mite species found on the birds in any numbers was a psoroptoidid mite (Psoroptoididae), *Mesalgoides* sp. Psoroptoidid mites are commonly found on passerine birds (Gaud and Atyeo 1996). They are also known from Caprimulgiformes, Piciformes, Psittaciformes, and Strigiformes (Gaud and Atyeo 1982). Single specimens of 4 other mite families were found on the birds. The Black-and-White Warbler hosted one mite from the family Trombiculidae, genus *Neoschoengastia*. Mites of this family are chiggers. Five species have been reported from passeriform birds in Florida (Forrester and Spalding 2003). The turkey chigger, *Neoschoengastia americana* (Hirst) has been collected from at least 45 species of wild birds, as well as domestic chickens and turkeys, a few mammals, and at least one lizard (Everett et al. 1972). This chigger is known from Bobwhite Quail in Leon County, Florida (Doster et al. 1980). The same warbler also hosted one specimen of Analgidae, which are feather mites commonly associated with passerine birds (Gaud and Atyeo 1996).

The Indigo Bunting was a host for three other mites of three different families. One Syringophilidae mite was collected from the Indigo Bunting. This family consists of quill mites rather than feather mites. Quill mites infest the interior of the quill of the feather, whereas feather mites infest the barbs of the vane. The species may be *Syringophilopsis passerina* Clark, which has been reported previously from Indigo Buntings in Florida (Kethley 1970). Another mite taken from the Indigo Bunting was a Rhinonyssid, which are found in the nasal passages of birds. Rhinonyssid mites are obligate endoparasites but most species seem not to cause significant pathology to their hosts (Knee et al. 2008). This specimen appears to be the first record of a nasal mite from an Indigo Bunting in Florida. Previous records of Rhinonyssidae from Florida include Dade and Leon Counties; most specimens were identified as *Ptilonyssus sairae* Castro (Forrester and Spalding 2003). One unusual finding on the Indigo Bunting was a mite of the family Tenuipalpidae, genus *Brevipalpus*. These mites are the false spider mites, and this discovery is unusual because this family is

phytophagous. *Brevipalpus* mites are plant parasites and are found on a wide range of host plant species in at least 15 plant families (Beard et al. 2012). Nevertheless, tenuipalpid mites have been recovered from birds' nests in Iran and elsewhere (Ardeshir 2010 and references therein). Phoretic transport of these mites is not limited to birds. A species of tenuipalpid mite has been taken during phoretic transport by phlebotomine sand flies in Tunisia (Macfarlane et al. 1969).

Virtually nothing is known about the effects of the above mite species (if any) on their host birds. The apparent species diversity of avian ectoparasites and the number of undescribed forms collected from just a few bird specimens suggest that taxonomists and systematists may have a fertile ground for research. Combined studies of hosts and parasites can reveal interesting biogeographic and phylogenetic patterns (e.g., Hasegawa 1999, Poulin et al. 2011). Given the present lack of knowledge and the information to be gained, a comprehensive study of the acarine associates of birds in Florida (or anywhere else) would be a fascinating project to undertake.

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