

Short Communication

A Preliminary Study on Mite Fauna of Bird Nests in Iran

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Abstract: A survey on mite fauna of bird nests was carried out in Tehran, Golestan and Sistan & Baluchestan provinces in 2008. A total of 18 nests belonging to six bird species, namely Rock Dove *Columba livia*, House Sparrow *Passer domesticus*, Eastern Olivaceous Warbler *Hippolais (Iduna) pallida*, White-eared Bulbul *Pycnonotus leucotis*, Common Magpie *Pica pica* and Crested Lark *Galerida cristata* were collected. Samples were processed by modified Berlese funnel. After extraction, ten mite species from nine families of three orders (Sarcoptiformes, Trombidiformes and Mesostigmata) and three suborders (Oribatida, Prostigmata and Monogynaspida) were identified as follow: *Acarus siro* Linnaeus, 1758, *Lepidoglyphus destructor* (Schrank, 1781), *Suidasia nesbitti* Hughes, 1948, *Acaropsellina sollers* (Kuzin, 1940), *Cheyletus malaccensis* Oudemans, 1903, *Cheyletus carnifex* Zachvatkin, 1935, *Eutogenes foxi* Baker, 1949, *Tetranychus urticae* Koch, 1836, *Cenopalpus* sp. and *Lasioseius penicilliger* Berlese, 1916. In this study, the mite fauna were dominated by the species *S. nesbitti* from the family Suidasiidae and *T. urticae* from the family Tetranychidae.

Introduction

Arthropods are associated with bird nests. Mites from birds have been studied extensively around the world (Fain & Philip 1977, Masan & Orszaghova 1995, Gwiazdowicz *et al.* 2000). Several species of birds' mites are parasites and are usually found on the bodies or at nests of birds (Bochkov & Fain 2003, Bloszyk *et al.* 2006). In addition, bird nests serve as habitat for some of astigmatic mites. A large number of species of this group are stored product mites (Acaridae, Glycyphagidae, *etc.*) and house dust mites (Pyroglyphidae). The most abundant and most often occurring Acaridae species are *Acarus siro* L., 1758, *A. farris* (Oudemans, 1905), *Aleuroglyphus ovatus*, (Troupeau, 1878),

Tyrophagus putrescentiae (Schrank, 1781), *Cosmoglyphus oudemansi* (Zachvatkin, 1937) and *Caloglyphus oudemansi* (Michael, 1903); from Glycyphagidae, *Lepidoglyphus destructor* (Schrank, 1781), *Glycyphagus domesticus* (De Geer, 1778) and *Blomia freemani* Hughes, 1948; from Pyroglyphidae *Dermatophagoides farinae* Hughes, 1961 and from Suidasiidae *Suidasia nesbitti* Hughes, 1948 and *Suidasia medanensis* Oudemans, 1924 (Sinha 1968, Mahmood 1992, Putatunda 2002, Athanassiou *et al.* 2003).

Our knowledge on the association between bird and mites in Iran is very limited. This report focuses on recording mite fauna of bird nests.

Materials and Methods

A total of 18 bird nests was examined for the co-occurrence of, and the relationship with, injurious mites where cereal products were stored and in adjacent areas. Samples were collected from silos, flour-mills, farms around stored wheat and gardens in Tehran, Golestan and Sistan & Baluchestan provinces in 2008. Whole nests of six bird species namely, Rock Dove *Columba livia*, House Sparrow *Passer domesticus*, Eastern Olivaceous Warbler *Hippolais (Iduna) pallida*, White-eared Bulbul *Pycnonotus leucotis*, Common Magpie *Pica pica* and Crested Lark *Galerida cristata* were examined (Table 1). Mites were extracted from the nests by using modified Berlese funnels and extracted mites transferred into 70% ethyl alcohol (Krantz & Walter 2009). Specimens were cleared in lactophenol and mounted on glass slides using Hoyer's medium.

Table 1. Bird species and locality of sampling in Iran.

Bird species	Province	Location	Habitat	Total of nest examined	Number of nest with mites
<i>Passer domesticus</i>	Tehran	Garden	<i>Cupressus sempervirens</i> tree	4	2
<i>Hippolais (Iduna) pallida</i>	Tehran	Garden	<i>Cupressus sempervirens</i> tree	5	2
<i>Columba livia</i>	Tehran	Flour-mill	Inside the storage	1	1
<i>Columba livia</i>	Tehran	Silo	Outside the storage	2	1
<i>Pycnonotus leucotis</i>	Sistan	& Farm	Unknown tree	3	1
<i>Pica pica</i>	Baluchestan	Farm	Olive tree	2	2
<i>Galerida cristata</i>	Golestan	Farm	Olive tree	1	1
6	3	4	5	18	10

Table 2. Occurrence of mites at nests of six bird species.

Classification of Acari (Krantz & Walter 2009)	Mite species	Nest of birds						Total number of mites
		<i>Passer domesticus</i>	<i>Hippolais (Iduna) pallida</i>	<i>Columba livia</i>	<i>Pycnonotus leucotis</i>	<i>Pica pica</i>	<i>Galerida cristata</i>	
Superorder: Acariformem, Order: Sarcoptiformes, Suborder: Oribatida	Acaridae <i>Acarus siro</i> Linnaeus, 1758				1			1
	Glycyphagidae <i>Lepidoglyphus destructor</i> (Schrank, 1781)				1			1
	Sudasiidae <i>Suidasia nesbitti</i> Hughes, 1948					64		64
	Oribatidae	1	1				7	9
Superorder: Acariformem, Order: Trombidiformes, Suborder: Prostigmata	Anystidae	1						1
	Cheyletidae <i>Acaropsellina sollers</i> (Kuzin, 1940)			7				7
	<i>Cheyletus malaccensis</i> Oudemans, 1903	1	2					3
	<i>Cheyletus carnifex</i> Zachvatkin, 1935		2					2
	<i>Eutogenes foxi</i> Baker, 1949		1					1
	Tetranychidae <i>Tetranychus urticae</i> Koch, 1836	18					2	20
	Tenuipalpidae <i>Cenopalpus</i> sp.	2						2
Superorder: Parasitiformes, Order: Mesostigmata, Suborder: Monogynaspida	Asidae <i>Lasioseius penicilliger</i> Berlese, 1916	1		1				2
	TOTAL	24	6	8	2	64	9	113

Results

More than half of the nest samples were associated with mites (55.5%). A total of ten mite species from nine families of three orders were found in the 10 nests of bird. In this study, mites frequency (percentage of samples in

which the species is present) was below 30%, but the dominancy of species (percentage of an individual species in relation to all species) was differed between 10 to 60%. More than 60% of all the mites belonged to the group Astigmatina,

30% to Prostigmata, 7% to other oribatids and the rest to the Mesostigmata.

In this report, two mite species, *Suidasia nesbitti* (Astigmatina: Suidasiidae) and *Tetranychus urticae* (Prostigmata: Tetranychidae) were dominant in the nests of *Pica pica* (56%) and *Passer domesticus* (15.9%), respectively (Table 2). The greatest variety of mite species was found at *Passer domesticus* nests (50%, Table 2).

Discussion

Astigmatic mites associated with bird nests have been studied by researchers in different countries. In Britain, Woodroffe (1953) found several species of astigmatic mites with a number of their predators in sparrows' nests. In Poland, Wasylik (1959) studied the mite fauna of *Passer domesticus* nests and reported 10 species of Astigmatina, which were common pests of stored foods. Fain *et al.* (1993) investigated mite fauna of nests of *Bubo bubo* (L.) and found 13 species of astigmatic mites. In southern Poland, Solarz *et al.* (2004) studied mites of bird nests and identified 29 species from the Astigmatina.

The dominant mite species, *Suidasia nesbitti* Hughes, 1948 (Suidasiidae), occurs in a variety of foodstuffs (Saleh *et al.* 1985), broken grains and dust in wheat grain in Mazandaran and Tehran provinces in Iran (Ardeshir *et al.* 2000, Ardeshir 2002). This species is both a herbivore and detritivore and feeds on organisms inhabiting dead organic materials. It has also been found on birds' skin from Central Africa (Hughes 1976). The second dominant mite species, *Tetranychus urticae* Koch, the two-spotted spider mite, is a widespread and major pest of deciduous fruit trees (Krantz & Walter 2009). It was found in greenhouses and in grasses and wheat that are of host plants for this species. It was collected from stored grains.

In this survey, three species of astigmatic mites were collected from the nests. These species are known pests of stored foods. They are considered to be of economic importance and some species such as *A. siro* are able to feed either the germ or the endosperm of the grain or both (Sinha 1979). From the medical point of view, these three astigmatic species are important because they cause dermatitis in people. *Acarus siro* and *L. destructor* induce allergic reactions like rhinitis and asthma in

humans (Fain *et al.* 1990). They feed on spores and mycelia and can carry fungi spores to other places, thus distributing the fungi from bird nests to grain stocks (Sinha & Mills 1968).

The frequency of mites in these nests was very low. The lack of astigmatic mites in the samples of the present study may be related to effect of unfavourable conditions or presence of their predators. Four species were from Cheyletidae: mites of this family are the most important acarine predators in stored products (Hughes 1976).

It was noted that in stored grains, bird nests are potential sources of mite infestation and it is likely that the mites were transported to these stores when birds visited them. However, further research is necessary to fill such gaps in our knowledge of mite fauna at the nests of these and many other bird species across in Iran.

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