

ECTOPARASITIC ACARINA (ANALGOIDEA) FROM
NON-PASSERIFORM BIRDS OF NORTH AMERICA

by

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ABSTRACT

ECTOPARASITIC ACARINA (ANALGOIDEA) FROM
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The host-parasite associations between feather mites and their North America non-passeriform avian hosts are presented. From this non-passiform fauna numbering 398 species, host-parasite associations from 267 bird species have been included in this study. Extensive collecting of feather mites from museum study skins as well as verified records in the literature have shown these birds to host 125 feather mite genera currently assigned to 18 families. The annotated list of host-parasite associations includes the host, feather parasites, and the geographical provenience of the specimens. Mite records from other geographical regions were included if the bird species also occurred in North America. A key to the feather mite families of the world has also been included.

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INTRODUCTION

Species of the superfamily Analgoidea (feather mites) are a diverse assemblage of obligatory parasites of all major avian groups except penguins. Currently there are 1400 or more described species and an equal or greater number of known new species which are assigned to 24 families, subdivided into 45 subfamilies, 240 named and 106 new genera (Peterson 1975). The number of genera presently assigned to the analgoid families is given in table 1. For the two families Psoroptoididae and Pyroglyphidae, each of which contain non-feather mite groups, number of genera are given only for the avian parasites.

Recent studies using conventional and numerical taxonomic methodologies have defined at least 3 major suprafamilial groupings within the Analgoidea (table 2). Each of these groups is parasitic on numerous avian orders. Peterson (1975) recognized (1) the "Analgoid complex" (2) the "Freyanid complex" composed of the Freyanidae and a new family based on the genus Caudifera, and (3) the "Pterolichoid complex" with the largest number of species and diversity of hosts (table 2). Since these complexes were reported there has been some feeling that the Alloptidae and Proctophylloidae, originally included in the "Analgoid complex", should be regarded as a separate familial complex, the Alloptoid Complex.

Modern literature has generally dealt with the feather mites of birds native to Europe, Africa, and Asia. Nearly all of these studies were taxonomic investigations. There have been no comprehensive

Table 1. Synopsis of Analgoid taxa.

Family	Total number of mite genera	Mite genera from non-passeriform birds, North America
1 Alloptidae	32	20
2 Proctophyllodidae	35	6
3 Pterolichidae	64	22
4 Avenzoariidae	29	15
5 Falculiferidae	14	4
6 Kramerellidae	8	4
7 Xolalgidae	18	7
8 Analgidae	44	10
9 Dermoglyphidae	6	3
10 Freyanidae	13	8
11 Rectijanuiidae	1	1
12 Gabuciniidae	13	7
13 Ovacaridae	3	2
14 Syringobiidae	13	8
15 Psoroptoididae (in part)	3	1
16 Epidermoptidae	7	1
17 Eustathiidae	16	6
18 Dermationidae	8	1
19 Caudiferidae	3	-
20 Crypturoptidae	9	-
21 Hypoderidae	1	-
22 Pyroglyphidae (in part)	6	-
23 Thoracosathidae	1	-

Table 1 continued. Intrafamilial groups within the Analgoidea.

24 Vexillariidae	"PTEROLICHIDID COMPLEX"	"ANALGOID COMPLEX"
Caudifuridae	Avaomeriidae	Analgoidae
Freyanidae	Crypturaptidae	Dermoglyphidae
	Eustathiidae	Xolalgidae
	Falculliferidae	
	Gebuonidae	
	Krameraliidae	
	Pterolichidae	
	Ractijaniidae	
	Syringobidae	
	Theracovethidae	
	Vexillariidae	
ALLOPTOID COMPLEX		UNASSIGNED FAMILIES
Alloptidae		Dermactinidae
Proctoshyllodidae		Epidermatidae
		Hypocnidae
		Oreocnidae
		Pachynotidae
		Pteroglyphidae

Table 2. Suprafamilial groups within the Analgoidea.

"FREYANID COMPLEX"	"PTEROLICHOID COMPLEX"	"ANALGOID COMPLEX"
Caudiferidae	Avenzoariidae	Analgoidea
Freyanidae	Crypturoptidae	Dermoglyphidae
	Eustathiidae	Xolalgidae
	Falculiferidae	
	Gabuciniidae	
	Kramerellidae	
	Pterolichidae	
	Rectijanuiidae	
	Syringobiidae	
	Thoracosathidae	
	Vexillariidae	
ALLOPTOID COMPLEX		UNASSIGNED FAMILIES
Alloptidae		Dermationidae
Proctophyllodidae		Epidermoptidae
		Hypoderidae
		Ovacariidae
		Psoroptoididae
		Pyroglyphidae

zoogeographical studies of the ectoparasitic mite fauna and no faunal list published since Radford (1953). Few studies were directed toward feather mites of the New World and the North American fauna has been totally neglected. Investigations into other aspects of feather mite biology have been virtually nonexistent since Dubinin's work in the 1950's, even though such information is requisite for a thorough understanding of host-parasite associations.

Most feather mite taxa are in need of revision and others, although known, have not been formally established. Old descriptions are often inadequate when confronted with material collected from new geographic regions or avian hosts. Also, species determinations are difficult, if not impossible, without the type specimens; many of which are lost, deposited in obscure European museums, or in poor condition. For these reasons, mites in this study have been identified to species only when type material or a reliable recent revision was available.

This study is intended to be a survey of the feather mites associated with North American non-passeriform birds. Of the 398 species of non-passeriform birds which were considered to comprise the North American fauna, feather mite records were included for 267. In 209 instances hosts were collected in North America. Feather mite records from other geographic regions, for bird species which also occur in North America, have been included to supplement North American records. The lack of mite material after repeated attempts at collection from some avian taxa would make it seem that feather mites are rare or absent from some species. Concentrated efforts at collection will probably show most of these to be populated by feather

mites.

Key to the Families of Feather Mites

About 125 feather mite genera were identified in this study, many species of which are undescribed. An important aid in the identification of these mites was an unpublished key to the families and genera of the world prepared by Dr. J. Gaud, Dr. W.T. Atyeo, and Dr. P.C. Peterson. The family key was translated from French and included in this study by permission of the authors.

The host-parasite records have been arranged primarily according to the classification of Morony (1975). Peters ("Check List of Birds of the World") and the AOU checklist were used as supplementary sources for avian taxonomy.

- Setae p and q absent; two ventral setae on the anterior tarsi, inserted at the apex of the segment Vexillariidae
- 1. Setae p and q present, easily visible; ambulacra with the disc and stem in the same plane, the stem being an extension of the axis of the disc
- Setae p and q, if present, minute and setaceous; ambulacral stem closes an oblique angle with the plane of the disc as well as the axis of the disc
- 2. A single vertical internal seta; posterior legs inserted apically; adanal discs always present in the males, sclerotized, with membranous corona
- Two vertical internal setae or none; posterior legs not inserted marginally; adanal discs of males setae with cornea strongly sclerotized
- 3. Trochantal setae absent and sclerite on g, present on g

Key to the Families of Feather Mites

- 1. Three ventral setae on tarsus IV; without pulvitractor plate 2
 - Less than three ventral setae on tarsus IV; usually with pulvitractor plate 14
- 2. A single ventral setae on tarsus III 3
 - Three ventral setae on tarsus III 4
- 3. Apical tarsal setae p and q present; four ventral setae on tarsus I and II, inserted at mid-length of the segment Kramerellidae
 - Setae p and q absent; two ventral setae on the anterior tarsi, inserted at the apex of the segment Vexillariidae
- 4. Setae p and q present, easily visible; ambulacra with the disc and stem in the same plane, the stem being an extension of the axis of the disc 6
 - Setae p and q, if present, minute and setaceous; ambulacral stem closes an obvious angle with the plane of the disc as well as the axis of the disc 5
- 5. A single vertical internal seta; posterior legs inserted marginally; adanal discs always present in the males, tubular, poorly sclerotized, with membraneous corona Caudiferidae
 - Two vertical internal setae or none; posterior legs not inserted marginally; adanal discs of males sessile with corona strongly sclerotized Freyanidae
- 6. Trochanteral setae absent and solendion σ_1 , present on genu III Eustathiidae

- Presence of tarsal setae on legs I and II; solendion σ_1 , absent on genu III 7
7. Ambulacral discs with apical point; pregenital apodeme with long longitudinal slot Rectijanuiidae
 Ambulacral discs rounded or concave at the apex; pregenital apodeme in the shape of a Y or inverted U 8
8. Posterior legs not inserted marginally; coxal fields always with a sclerotized border; epimerites I fused into a sternum; sub-humeral setae, setiform Syringobiidae
 Without this ensemble of characters 9
9. Setae kT absent on tibia IV (some Falculiferidae also); genital discs of the females posterior to setae c2. Gabuciniidae
 Setae kT present on tibia IV with rare exception (Pterophagoides, Atyeonia and Psilolichus); genital discs of the females anterior to setae c2 10
10. Only two pairs of central setae; male genital organ situated between epimerites I; female with spermaduct forming a posterior median appendix, long, strongly sclerotized and almost as wide as the posterior legs. Thoracosathidae
 Genital organ rarely in the anterior third of the idiosoma, or three pairs of Central setae; female spermiduct thin and unsclerified 11
11. The compliment of dorsal hysterosomal setae is imperfect; the posterior extremity of the female spermaduct clearly protrudes and forms an appendix 1/2 the length of tarsus IV (often longer). Crypturoptidae

- Setae 1_1 to 1_5 always present; exterior protuberence of the spermaduct is absent or greatly reduced 12
12. Pregenital apodeme absent in the female; tocostome is Ω shaped or as an inverted U or in a transverse slit; subhumeral setae long, rarely dilated, or if dilated, at the basal part only Falculiferidae
- Pregenital apodeme present, or if absent, the tocostome Λ shaped; subhumeral setae strongly dilated and sword shaped 13
13. Solenidion σ_1 and trochanteral setae absent on all legs Ochrolichidae
- Solenidion σ_1 present on at least genu I; trochanteral setae present Pterolichidae
14. One seta on tarsus IV Ovacaridae
- Two ventral setae and three apico-dorsal setae on tarsus IV; legs IV always present in adult stages. 15
15. Tibial setae kT absent on legs IV (kT rudimentary on Monojoubertia latefolia (Proctophyllodidae)). 16
- Setae kT present on tibia IV 18
16. Solenidion σ_7 absent on genu II and inserted at the middle of the segment on genu I. Proctophyllodidae
- Solenidion σ_7 present on genu II, or if absent, solenidion σ_7 of genu I is inserted apically (Psilobrephosceles ortygo-metrae (Alloptinae)) 17
17. Subhumeral setae generally posterior to the humeral setae; gnathosoma elongated with long palps diverging towards the

- apex; trochanteral setae present Alloptidae
 Subhumeral setae generally anterior to the humeral setae;
 vertical setae always absent; legs never conical . . . Xolalgidae
18. Solenidion σ_1 absent on genu III 19
 Solenidion σ_1 present on genu III 20
19. Anterior legs conical; tarse very short with an apico-dorsal
 claw; female pregenital apodeme without connections to
 epimerites I Epidermoptidae
 Anterior legs subcylindrical; tarse normal; female pregenital
 apodeme a transverse hyphen shaped structure joining the
 central extremities with epimerites I Dermationidae
20. Solenidion ω_1 inserted apically on tarsus I near solenidion
 ω_3 ; tarsus II with ω_1 inserted within the basal third of
 the segment Pyroglyphidae
 Solenidion ω_1 inserted at the same level (the basal half of
 the segment) on tarsus I and II 21
21. Ambulacral discs pointed with a large sclerotized central
 plate approximately 1/3 the width of the disc. . . .Avenzoariidae
 Ambulacral discs rounded, sclerotized central plate generally
 reduced to a thin axial band 22
22. Posterior legs inserted marginally; female with the pregenital
 apodeme absent; a single pair of genital discs. . .Dermoglyphidae
 Posterior leg inserted laterally; two pairs of genital discs
 Analgidae

Ecological Aspects of Feather Mite Biology

The feather mite-bird association may be categorized as commensalistic; the mite population surviving at no apparent cost to the host. The nutritional requirements of the feather mites remain unknown, most authors suggesting fragments of feathers, sloughed epithelial cells, secretions of the uropygial gland, or fungi.

The microhabitat of most feather mites is limited to the ventral surfaces of remiges and rectrices. Only a few species of the genus Trouessartia are known to inhabit the dorsal surface of the secondary and tertiary wing feathers and tail feathers (Dubinin 1951). Contour feathers occasionally support mite populations also. One mite family, Syringobiidae, has members which inhabit the quills of feathers.

Dubinin (1950, 1951) was the first to note that particular feathers and parts of feathers are subjected to different stresses and that any feather has a morphology to which a series of microhabitats can be related. Exposed and protected microhabitats on the flight feathers of the Anatidae were used to illustrate their significance. The central portion of flight feathers have enclosed "air corridors" formed by the tegmin of adjacent barbs. Sections of the vane distant from the rachis lack the tegmin membranes and the corridors formed between adjacent barbs are consequently exposed. Two different species complexes of the mite family Freyanidae occupy these microhabitats; the Freyana anatina group is associated with the "air corridors", and the F. largifolia group is restricted to the exposed areas.

Dubinin (1951) attempted to summarize and contrast the general morphological adaptations of the feather mites of relatively protected

areas of the secondary feathers with those of the exposed primaries as follows:

mites of primary feathers

- large body dimensions
- strongly sclerotized and darkly colored
- dorsal setae short
- flaps and lateral expansions for better feather contact;

mites of secondary feathers

- small dimensions, delicate
- less strongly sclerotized
- dorsal setae longer
- absence of organs for firmer feather attachment.

Other examples of mite distributions patterns on feathers are known but the parameters responsible have not been defined. Peterson (1975) observed that the spacing between feather barbs varied both within and among the feathers of 17 bird species examined. Proctophyllodes eggelstoni, which occur on the lower primaries and secondaries of the red-winged blackbird Agelaius phoeniceus, were found to inhabit different feather zones on the two feather types and also were restricted to certain ranges of barb widths along the length of barb (Peterson 1975). There is also some evidence that different sexes and developmental stages have slightly different habitat preferences.

Mite populations utilizing sheltered microhabitats, such as the zone of overlap between secondary feathers, require fewer morphological specializations and apparently can tolerate a wider range of physical parameters (Peterson 1975). This accounts for the wide

range of avian hosts with which Proctophyllodes eggelstoni, and other proctophyllodid species which inhabit lower primaries and secondaries, are associated (Peterson 1975). Dubinin's concept of protected and exposed partitioning of feathers has been expanded to include coverts, secondaries, contour feathers, and the hollow of the quill as protected areas; exposed areas being the distal ends of primary feathers removed from zones of overlap (Peterson 1975).

The ontogenetic development of a feather mite typically passes through 5 life stages; egg, hexapod larva, protonymph, tritonymph, and adult (figure 1). Most feather mites are oviparous and eggs are attached to the ventral surface of a particular feather type or deposited within the quill as in the Syringobiidae. Certain mites, for example Freyana, Zachvatkinia, Avenzoaria, and Gabucinia, can also adopt an ovoviviparous mode of egg development; a change probably caused by seasonal climatic conditions (Dubinin and Vasilev 1958). A single egg usually develops but the author has observed the unusual occurrence of 2 eggs in a female of Proctophyllodes eggelstoni. The hexapod larva is generally unsclerotized, with the exception of the small propodosomal shield, when it emerges from the egg. In the protonymph legs IV appear as do more setae and one pair of genital discs. A full compliment of setae and the second pair of genital discs characterize the tritonymph. The genital apparatus and sclerotization are completely developed in the adult. Within the Analgidae, Pterolichidae, Falculiferidae, and Dermoglyphidae some species pass through an additional instar, the deutonymph (hypopus), which develops between the protonymph and tritonymph. This non-feeding instar

inhabits subcutaneous connective tissues and may invade the air sacs of birds. Dubinin (1956) suggested that this life stage was a facultative and periodical response to less than optimum ecological conditions.

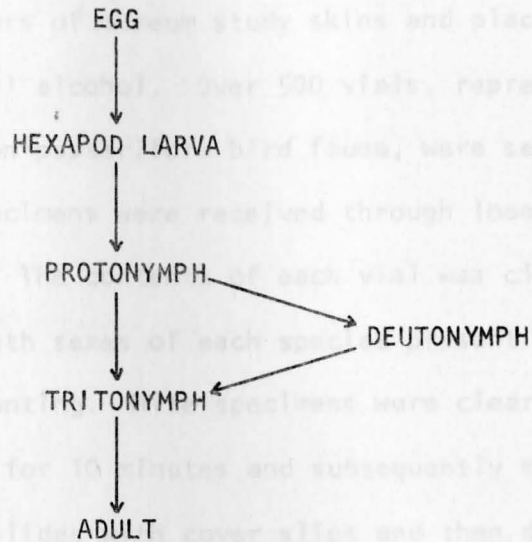


Figure 1. Ontogenetic development of the feather mites.

MATERIALS AND METHODS

The feather mites used in this study were provided by Dr. Paul C. Peterson, Youngstown State University, and Dr. Warren T. Atyeo, University of Georgia. The mites were obtained by scraping the primary and secondary feathers of museum study skins and placing them in vials containing 70% ethyl alcohol. Over 500 vials, representing 53% of the North American non-passeriform bird fauna, were secured in this manner. Additional specimens were received through loans or from field collected birds. The contents of each vial was closely examined and exemplars of both sexes of each species present were removed and prepared for mounting. Mite specimens were cleared in lactophenol at 93 degrees C for 10 minutes and subsequently mounted in Hoyer's medium on glass slides with cover slips and then dried in an oven for 3 days at 50 degrees C. To retard deterioration the cover slips were sealed with a commercial ringing compound. A Wild-Heerbrugg phase contrast microscope was used to examine the specimens.

HOST-PARASITE ASSOCIATIONS

Feather mites probably evolved from nidicolous Acaridei similar to the modern Tyroglyphidae. Presumably these preadapted progenitors were capable of utilizing a wide variety of ancestral avian hosts. As ecological specialization of the host evolved, particularly with respect to flight patterns, behavior, nesting habits, and food source, mites became more closely associated with a particular bird. Such is the case in analgoid parasites of non-passeriform birds where the mite-bird association is generally monoxenic or limited to a small number of closely related birds, i.e. genus specific. This is not the case in mites recorded from passeriform birds where a single mite species often parasitizes a broad range of disparate avian hosts, i.e. polyxenic associations.

There are two schools of thought concerning the significance of feather mite parasites to the understanding of avian evolution. First, according to the Fahrenholz rule, the classification of permanent parasites may provide guides to the relationships of their hosts. The possibility of using feather mites to elaborate ornitho-phylogeny was first pointed out by Dubinin (1951, 1953, 1958); subsequently Cerny (1972) studied the systematic position of several avian taxa by the presence or absence of various Mallophaga and feather mites.

Recently, Kethley and Johnston (1975 pg. 235) concluded that, "Hosts exert strong selective pressures on their ectoparasites through preening and grooming activities. These selective pressures force an ectoparasite to conform, for any given topographic region of the host,

to a suitable facies that will allow it to avoid host defenses." Consequently, host-transfers are most likely to occur between hosts with similar topographic features, the parasites tracking the resource sub-units of the host which may be host-independently variable characters. (Kethley and Johnston 1975)

This assumption leads to two contrasting models of host-parasite evolution. If the parasite evolutionarily tracks the host, i.e. they evolve together, congruent host-parasite relations are to be expected (Fahrenholz rule). Non-congruent host-parasite relationships are expected if the parasite tracks an independently distributed resource on the host (Kethley and Johnston 1975). Congruence refers to host and parasite taxonomics, implies their phylogenies, and alludes to the degree of host specificity. The congruent model results if the Fahrenholz rule holds. The argument for two evolutionary models hinges on the existence of both host dependent and independent factors which can be exploited to varying degrees by different parasites.

The ecology and phylogeny of the host-parasite relationship may or may not be independently related in a given situation. Host specific patterns of parasitism exist among feather mites, but their evolutionary significance is debatable. Throughout this paper the restrictions of parasites to host groups have been pointed out. Additional collections are expected to elucidate what have been regarded as accidental associations, a term which also includes the possibility of post-mortem contamination. Tables 3 through 6 summarize the host-parasite associations detailed in the faunal list which follows.

to a list

From

Table

	Gaviidae	Podicipedidae	Diomedidae	Procellariidae	Hydrobatidae	Phaethontidae	Pelecanidae	Sulidae	Phalacrocoracidae	Fregatidae	Ardeidae	Ciconiidae	Threskiornithidae	Phoenicopteridae
Brephocales (1)	X			X	X		X							X
Echinocarus (1)		X												
Allostellus (1)		X								X				
Alloptes (1)				X			X	X	X	X			X	
Connivalobus (1)				X	X									
Microspalax (1)				X										
Laminilloptes (1)				X		X								
Gnychalioptes (1)				X		X								

Table 3. Mite genera associated with families of the avian orders Gaviiformes (Gaviidae), Podicipediformes (Podicipedidae), Procellariiformes (Diomedidae, Procellariidae, Hydrobatidae, Phaethontidae, Pelecanidae, Sulidae, Phalacrocoracidae, and Fregatidae), and Ciconiiformes (Ardeidae, Ciconiidae, Threskiornithidae, and Phoenicopteridae). Parenthesized numbers after the mite genera refer to the mite families in table 1.

Schizuroliidae (2)												X		
Andeocarus (3)												X		
Psycotolimus (3)												X		
Tanicaalkya (3)												X		
Zachvatkina (4)			X	X	X									
Soutomagninla (4)							X	X	X		X		X	
Faldoffar (5)											X			
Freyneilla (6)													X	
Ingrassia (7)	X			X	X									
Pteralioptes (7)													X	
Analloptes (7)													X	
Antipex (8)														
resloginia (8)													X	
Nealges (9)								X						
Adiparalgiidae (9)														
Bionefanerus (10)			X											
reulanyassa (10)								X						
Microalichus (10)								X						
posiliana (10)														
Freyneops (10)														
sunatieria (10)														

list

	Columbidae	Psittacidae	Cuculidae	Tytonidae	Strigidae	Caprimulgidae	Apodidae	Trochilidae	Trogonidae	Alcedinidae	Picidae
Thysanocernus (1)							X				
Pterodectes (2)	X										
Proctophylloides (2)					X			X	X		
Trochilodectes (2)								X			
Toxerodectes (2)								X			
Proterothrix (2)										X	
Protolichus (3)	X	X									
Aralichus (3)		X									
Rhytidelesma (3)		X									
Anilichus (3)			X								
Zachvatkinia (4)			X								
Bychovskiata (4)								X			
Pteronyssus (4)											X
Pterotrogus (4)											X
Falculifer (5)	X										
Pterphagoides (5)	X										
Pterophagus (5)	X										
Triainacarus (5)	X										
Kramerella (6)				X	X						
Dermonoton (6)				X	X						
Coraciacarus (12)			X								
Piciformobia (12)			X			X					
Paragabucinia (12)						X					
Gabuciniidae (12)								X			
Capitolichus (12)											X
Rhynchocaulus (17)							X				
Neochauliacia (17)							X				
Chauliacia (17)							X				
Echineustathia (17)							X				
Chaeteustathia (17)							X				
Mimeustathia (17)							X				
Diplaegidia (8)	X										
Megninia (8)	X										
Protalgus (8)				X	X						
Pandalura (8)				X	X						
Protonyssus (7)		X									
Passeroptes (18)								X			

Annotated List of Host-Parasite Associations

GAVIIFORMES

Gaviidae

The avian order Gaviiformes includes four species of loons, all of which are represented in North America. Two genera (three species) of feather mites have been recorded from three of these species. Brephosceles forciger was redescribed by Peterson (1971) from the common loon in Northern Europe. In this study the mite was recollected and its zoogeographical range extended to include North America. The remaining species, Ptiloxenus colymbi and P. major, are tentative records of Dubinin (1956). Although numerous loons have been examined, these species have never been recollected from the type host. Species of the genus Ptiloxenus are usual parasites of grebes and probably host specific to this group of birds.

Gavia arctica (Linnaeus) 1758 Arctic LoonBrephosceles forciger (Megnin and Trouessart) 1884

This species has been recorded from the arctic loon of Europe by Dubinin (1956), Vasilev (1960), and Peterson (1971). This mite has never been collected from this host in North America.

Ptiloxenus colymbi (Canestrini) 1878

Dubinin (1956) tentatively recorded this mite from an arctic loon in Russia. It is probably a contaminant and invalid host-parasite record.

Gavia immer (Brunnich) 1764 Common LoonBrephosceles forciger (Megnin and Trouessart) 1884

Originally described from the common loon, B. forficiger was subsequently recorded by Peterson (1971) as representing a small isolated population in Northern Europe. In this study a small population was recovered from a loon collected in New York, the extended zoogeographical range to include North America.

Gavia stellata (Pontoppidan) 1763 Red-throated Loon

Ptiloxenus major (Megnin and Trouessart) 1884

This is a tentative record of Dubinin (1956).

Undoubtedly this is a contaminant and invalid host-Parasite record.

PODICIPEDIFORMES

Podicipedidae

From the total of 20 species of Grebes, six of which are represented in North America, valid parasite records have been obtained from Podiceps auritus, P. major, P. dominicus, P. grisegena, and P. podiceps. Associated with the grebes is a single feather mite genus, Ptiloxenus (= Schizurolichus Cerny, 1969). Although not formally synonymized, the genus Schizurolichus has long been recognized as a synonym for Ptiloxenus. All but one member of this mite genus (four species) are associated exclusively with the avian family Podicipedidae, the exception being Ptiloxenus phoenicopteri, a parasite of the flamingo.

Podiceps auritus (Linnaeus) 1758 Horned Grebe

Ptiloxenus nr. major (Megnin and Trouessart) 1884

P. major was recorded from this bird by Dubinin (1956) and Mack-fira and Cristae (1966) from the U.S.S.R.

Ptiloxenus and Hungary respectively. To date, the mite species has never been collected in North America.

Podiceps caspicus (Hablitzl) 1783 Eared Grebe

Ptiloxenus major (Megnin and Trouessart) 1884

Dubinín (1956) and Mack-fira and Cristae (1966) recorded this species from the U.S.S.R. and Hungary respectively.

To date, the mite species has never been collected in North America.

Podiceps dominicus (Linnaeus) 1766 Least Grebe

Ptiloxenus (=Schizurolichus) elegans (Cerny) 1969

This mite was described by (Cerny) 1969 from Podiceps dominicus in Cuba. In this study Ptiloxenus elegans has

been recovered from the same host species collected in Venezuela.

Podiceps grisegena (Boddaert) 1783 Red-necked Grebe

Ptiloxenus major (Megnin and Trouessart) 1884

This mite was recorded from the red-necked grebe in the U.S.S.R. and Hungary by Dubinín (1956) and Mack-fira and Cristae (1966). The mite species has never been recorded from North American grebes.

Podilymbus podiceps (Linnaeus) 1758 Pied-billed Grebe

Ptiloxenus n. sp.

Two distinct species have been identified as ectoparasites of the pied-billed grebe, both of which were collected from the same individual bird in Texas. This species could not be positively identified and the possibility exists that it is new.

Ptiloxenus (=Schizurolichus) elegans (Cerny) 1969

This is the second species that is associated with the pied-billed grebe. It was collected from the same bird as the previous species of Ptiloxenus in Texas and represents the first time P. elegans has been reported from North America.

PROCELLARIIFORMES

The four families assigned to this bird order include Diomedidae (albatrosses), Procellariidae (Shear waters and fulmars), Hydrobatidae (storm petrels), and Pelecanoididae (diving petrels). Representatives of all but the last occur in North America.

The predominant feather mites on these birds belong to the families Alloptidae, Freyanidae, and Avenzoariidae. In general, the mites from the Procellariidae and Hydrobatidae are morphologically similar, but several of those associated with the Diomedidae are restricted to this family and unique, i.e. heavily sclerotized and often assymetrical.

Diomedidae

Two of the 14 species of this bird family are considered to be part of the North American bird fauna; both of which occur on the Pacific coast. A total of five mite species were identified from these hosts; four from Diomedea nigripes and three from D. immutabilis. Two acarine families (Alloptidae and Freyanidae) are represented on each of these albatrosses.

Diomedea immutabilis (Rothschild) 1983 Laysan AlbatrossDiomedacaras gigas (Trouessart) 1895

This species was identified from birds collected on Midway Island. It was previously recorded by Dubinin (1949)

from Kamchatka and by Atyeo and Peterson (1970) from Siberia.

Echinacarus petaliferus (Trouessart) 1898

This mite genus is restricted to the bird genus *Diomedea*. The two species of Echinacarus are consistently collected from the same bird. Peterson (1972) recorded E. petaliferus from Midway Island and Laysan Island as a parasite of both the Laysan and black-footed albatross.

Echinacarus rubidus (Trouessart) 1886

This species has been recorded only from Japan and Laysan Island (Peterson 1972).

Zachvatkinia trouessarti (Bonnet) 1924

Dubinín (1949) collected this species only from the Laysan albatross. To date, it has never been recollected from the type host.

Diomedea nigripes Audubon, 1839 Black-footed Albatross

Alloptes pacificus Peterson and Atyeo, 1972

Peterson and Atyeo (1972) collected the type material from Midway Island.

Diomedacarus gigas (Trouessart) 1895

Aty eo and Peterson (1970) collected this species from Midway Island, Sakhalin Island, Japan and the West Indies.

In the present study D. gigas was recollected from California, Midway Island, and the Pacific Ocean.

Echinacarus petaliferus (Trouessart) 1898

This parasite has been reported from the black-footed albatross by Peterson (1972).

Zachvatkinia sp.

Dubinín (1949) lists Zachvatkinia trouessarti as a parasite of the Diomedidae and specifically mentions it as occurring on both Diomedea nigripes and D. immutabilis. Until the acquisition of additional material and in the absence of a recent revision, any specific determinations must be tentative. In this study material has been identified to the generic level only from birds collected in the North Pacific and on Midway Island.

Procellariidae

This family of birds is represented in North America by ten of 56 species. From those species which represent the North American element, two families of mites have been identified; Alloptidae, which includes the genera Microspalax, Connivelobus, Alloptes, Brephosceles and Avenzoariidae, represented by a single genus, Zachvatkinia. The later genus is common on the Procellariiformes, pelecaniformes, and Charadriiformes but details of the host-parasite associations are poorly known.

Fulmarus glacialis (Linnaeus) 1761 Fulmar

Dubinín (1949) listed the following parasites of the fulmar:

Connivelobus major (Trouessart and Newmann) 1888;

Microspalax manicata (Megnin and Trouessart) 1884

Alloptes tubinarii (Dubinín) 1949; and

Zachvatkinia puffini (Buchholz) 1869.

Calonectris diomedea (Scopoli) 1769 Cory's Shearwater

Microspalax ardenae Dubinín, 1949

Dubin (1949) recorded this mite species from birds of the Atlantic Ocean.

Zachvatkinia sp.

Specific identification cannot be made with certainty until the genus is revised. This species was obtained from a bird collected in Massachusetts.

Puffinus bulleri Salvin, 1888 New Zealand Shearwater

Brephosceles selenopeltatus Peterson, 1971

This species was recorded by Peterson (1971) from Chile. It is known to occur on three members of the avian subgenus Thelodroma and is probably host specific to this taxa.

Connivelobus n.sp.

This genus is currently being revised and specific determinations cannot be made with certainty without the type material. However, the above probably represents a new species collected from the New Zealand shearwater of Chile.

Puffinus carneipes Gould, 1884 Pale-footed Shearwater

Microspalax sp.

Microspalax ardenae was collected from this host in Australia by Dubin (1949). Our material was collected from birds of Japan.

Zachvatkinia sp.

Mite material was obtained from this shearwater collected in Japan.

Puffinus creatopus Coues, 1864 Pink-footed Shearwater

Alloptes sp.

Alloptes was identified from Puffinus creatopus collected in Monterey, California.

Zachvatkinia sp.

Dubinín (1949) recorded Zachvatkinia puffini from California. The specimens obtained for this study were also collected in California. However, until the genus is revised, specific determinations must remain tentative.

Puffinus gravis (O'Rielly) 1818 Greater Shearwater

Alloptes sp.

Alloptes was taken from a bird collected at the Davis Straits.

Brephosceles parvatus Peterson, 1971

This recently described species was collected from Canada by Peterson (1971).

Brephosceles puffini Peterson, 1971

Peterson (1971) originally described this mite from Brunswick, Canada.

Microspalax sp.

In this study an unidentified species of Microspalax was collected from birds of the following localities; Brunswick, Labrador, Newfoundland, Hudson Straits, Davis Straits, Argentina and Massachusetts. Dubinín (1949) had previously recorded Microspalax manicata from the Ferrerski Island, Massachusetts.

Zachvatkinia sp.

This genus was identified from Puffinus gravis collected in the following localities; Hudson Straits, Davis Straits, Brunswick, Nova Scotia, Newfoundland, Labrador, Sable Island, Greenland, Massachusetts, Argentina, and the South Atlantic. Dubinin (1949) has previously reported Zachvatkinia puffini from California from this host.

Puffinus lherminieri Lesson, 1839 Audubon's ShearwaterConnivelobus sp.

Dubinin (1949) gives this shearwater as the only host from which Connivelobus longipenis has been collected; reported from Bonin Island. Our material was collected from Saba, Dutch West Indies.

Microspalax sp.

Dubinin (1949) reported Microspalax puffini from the Bahama Islands as a parasite of Audubon's shearwater.

Zachvatkinia sp.

Dubinin (1949) also reported Zachvatkinia puffini from the Bahama Islands. In this study a species of Zachvatkinia was examined from Green Key, Bahama Islands.

Puffinus puffinus (Brunnich) 1967 Manx ShearwaterBrephosceles balati Cerny, 1967

Cerny (1967) recorded this species from Troihoved, Czechoslovakia. The type material is unavailable for

study and it is possible that Brephosceles balati is conspecific with the following B. bilobatus.

Brephosceles bilobatus Peterson, 1971

Peterson (1971) described this species from Johnston Island, North Pacific Ocean.

Brephosceles parvatus Peterson, 1971

Peterson (1971) described this species from a manx shearwater collected in the Pacific Ocean.

Puffinus tenuirostris (Temminck) 1835 Slender-billed Shearwater

Alloptes sp.

The mite material was examined from birds collected at Bristol Bay, Alaska and the Aleutian Islands.

Brephosceles marlae Peterson, 1971

Peterson (1971) described this species collected from the following localities: Little Sitka Island, Alaska; Unimak Pass, Aleutian Islands; and Copper Island, Comander Islands.

Brephosceles parvatus Peterson, 1971

Peterson (1971) collected this mite from Alaska.

Brephosceles superbus (Dubinin) 1949

In this study the specimens were examined from Barrow, Alaska. The species was described by Peterson (1971) from Rogers Bay.

Ingrassia oceanica (Vitzthum) 1929

Dubinin (1949) reported this mite from Wrangel Island. To date we have been unable to recollect this species from the type host.

Microspalax sp.

Material was examined from the following localities:

Copper Island, Commander Islands; Bearing Sea; Akutan Island, Aleutian Islands; Bristol Bay, Alaska; Barrow, Alaska; Sydney, Australia. Dubinin (1949) recorded Microspalax manicata from Chukotka, Pobideniya Bay and from Wrangel Island.

Zachvatkinia sp.

Again, Dubinin (1949) reported Zachvatkinia puffini from this host. However, since the genus has never been revised, and the type material is unavailable for study, specific identifications cannot be made with certainty. In this study Zachvatkinia was identified from hosts collected in Alaska, Oregon, California, and the Commander Islands.

Hydrobatidae

This family of 21 bird species occurs in North America with the presence of four species. Feather mites have been recorded from each of these. Five mite species have been collected from the avian genera Oceanodroma and Oceanites. The mite families Alloptidae, Xolalgidae and Avenzoariidae were found associated with the avian family.

Oceanodroma furcata (Gmelin 1789 Fork-tailed Petrel

Zachvatkinia hydrobatidii Dubinin, 1949

Dubinin (1949) reported this species from the fork-tailed petrel collected in the Sea of Okhotsk. This mite species has never been reported from North America.

Oceanodroma homochroa (Coues) 1864 Ashy Petrel from Leache's

Zachvatkinia nr. hydrobatidii Dubinin, 1949

This species was identified from a host collected on Faralone Island, California. The species identification is tentative.

Oceanodroma leucorhoa (Vieillot) 1817 Leache's Petrel

Brephosceles balati Cerny, 1967

Cerny (1967) reported this species from birds collected presumably in Czechoslovakia. It has not been reported from North America.

Brephosceles formosus Cerny 1967

This species was identified from Leache's petrels collected at Kent Island, Brunswick and Gull Island, Newfoundland. Cerny (1967) reported the type specimens from the host collected in the Faeroe Islands.

Connivelobus cymochoreae Dubinin, 1949

Examples of this species were identified from Gull Island, Newfoundland. Dubinin (1949) collected this species from southern Alaska, and California.

Ingrassia oceanodromae Cerny, 1967

Cerny (1967) described this species from the type material collected at Myggenas, Faroe Islands. It has never been reported from North America.

Zachvatkinia nr. hydrobatidii Dubinin, 1949

In this study Z. hydrobatidii was tentatively identified from hosts collected at Gull Island, Newfoundland.

Dubinín (1949) collected this mite from Leache's petrels in southern Alaska and California.

Oceanites oceanicus (Kuhl) 1820 Wilson's Petrel

Zachvatkinia nr. hydrobatidii Dubinín, 1949

This species was identified from hosts collected in the following localities: the Palmer Peninsula, Antarctica; Andvers Islands, Antarctica; and the South Shetland Islands.

PELECANIFORMS

Phaethontidae 1899

This bird order is represented in the world by three species, two of which, Phaethon aethereus and P. lepturus, occur in North America. Two genera of feather mites, Laminalloptes and Onychalloptes, both of the family Alloptidae, have been found on birds of this order. Laminalloptes occurs only on the three species of Phaethon. All three species of Laminalloptes have been found on the same bird, being indiscriminate as to which species of the Phaethon they populate (Ateyo and Peterson 1967). The genus Onychalloptes also appears to be restricted to the host genus Phaethon (Peterson and Ateyo 1968).

Phaethon aethereus Linnaeus, 1758 Red-billed Tropicbird

Laminalloptes minor (Trouessart) 1885

Ateyo and Peterson (1967) reported this species from the South Seas. In this study L. minor was identified from birds collected in Lower California and on Cape Verde Island.

Laminalloptes simplex (Trouessart) 1885

Ateyo and Peterson (1967) reported this species from

Phaethon aethereus. This mite species has never been reported from North America.

Laminalloptes phaetontis (Fabricius) 1775

Atyeo and Peterson (1967) reported this species from the red-billed tropic bird. This mite species has never been reported from North America.

Onychalloptes microphaeton (Trouessart) 1885

Peterson and Atyeo (1968) identified this mite from the South Seas and Lower California.

Onychalloptes minutus (Trouessart) 1899

The type specimens for this mite species were collected from the South Seas (Peterson and Atyeo 1968). This mite species has not been collected from North America.

Phaethon lepturus Daudin, 1802 Yellow-billed Tropicbird

Laminalloptes minor (Trouessart) 1885

This species was recollected from the South Seas by Atyeo and Peterson (1967). In this study L. minor was identified from birds collected on Eastern Island, Midway Island, and Mauritius. The mite species has been reported from North America but not in association with this host.

Laminalloptes phaetontis (Fabricius) 1775

This mite species was identified from birds collected on Eastern Island, Midway Island and the Virgin Islands.

Laminalloptes simplex (Trouessart) 1885

This species was identified from tropicbirds collected on Eastern Island and Midway Island. Atyeo and Peterson (1967) have previously reported this host-parasite association. Laminalloptes simplex has never been reported from North America.

Onychalloptes sp.

This species could not be identified to species for certain. Peterson and Atyeo (1968) have reported Onychalloptes microphaeton from this bird from Midway Island. In this study a species of Onychalloptes was collected from the yellow-billed tropicbird of the Maldive Islands.

Pelecanidae

Eight species are assigned to this bird family, the two North American species of which yielded feather mites. The three mite genera collected were Alloptes, a new species of Brephosceles, and Scutomegninia. The first two are of the family Alloptidae, the last is of the Avenzoariidae.

Pelecanus erythrorhynchos Gmelin, 1789 White PelicanAlloptes sp.

Mite material was examined from Minnesota and Texas.

Pelecanus occidentalis Linnaeus, 1766 Brown PelicanAlloptes sp.

This species was found on brown pelicans collected in Florida, the Galapagos Islands, Puerto Rico and Haiti.

Brephosceles n. sp.

This apparently is the same species that was collected from the Sulidae, however, the specimen is slightly damaged with legs IV missing at the level of the genu. One male was examined from a bird collected in the Galapagos Islands. The absence of any other specimens of Brephosceles from the brown pelican makes the validity of this host-parasite record suspect.

Scutomegninia sp.

Scutomegninia has not been recently revised and its several species are not easily resolved. Mite material was examined from pelicans collected in the Galapagos Islands, Puerto Rico, and Haiti.

Sulidae

Nine species are assigned to this family, four of which occur in North America. Sula sula from Cuba has also been included because of the number of feather mites Cerny (1967) listed from it.

Feather mites of the families Alloptesidae, Proctophyllodidae, and Avenzoariidae were collected from the Sulidae. Among these was a new species of Brephosceles from Sula dactylatra. A morphologically interesting species, probably new, of what keys to Sulanyssus was collected from Morus bassanus. Dubinin (1953a) believed that the mite genus Sulanyssus was restricted to the avina genus Sula.

Morus bassanus (Linnaeus) 1758 Gannet

Alloptes sp.

A single female of Alloptes was examined from this host collected in England.

Pterodectes sp.

One male and one female were examined from hosts collected in Scotland. This is probably an accidental occurrence on the gannet, Pterodectes usually occurring on passeriform birds.

Scutomegninia sp.

This species is different from that which occurs on Sula neboxii. This mite species was obtained from gannets collected in New Jersey, French Morocco, Scotland, and England.

Sulanyssus n. sp.

This mite species was examined from gannets collected in New Jersey, French Morocco, Scotland and England.

Sula neboxii Milne-Edwards, 1882 Blue-footed BoobyScutomegninia sp.

This mite species was similar to that found on the Pelecanidae. The genus was identified from a blue-footed booby collected in Arizona.

Sula dactylatra Lesson, 1831 Blue-faced BoobyAlloptes sp.

A single female of this genus was examined from a bird collected in the Pacific Ocean.

Brephosceles n. sp.

This species appears to belong in Peterson's (1971) Brephosceles species group II or III. Legs IV extend slightly beyond the end of the body. The terminal lobes are parallel and widely separated with the interlobar

lamellae cleft in a U shape. This mite species was first obtained from a bird collected in the San Benedict Islands, Mexico.

Sulanyssus caput-medusae (Trouessart) 1886

This species was collected from the following locations in the Pacific Ocean; Christmas Island, San Benedict Island, Midway Island and Clipperton Island.

Sula leucogaster (Boddaert) 1783 White-bellied Booby

Sulanyssus caput-medusae (Trouessart) 1886

Cerny (1967) reported both Sulanyssus caput-medusae and S. oluschae from this host in Cuba. In this study the mite species S. caput-medusae was collected from the white-bellied booby in the following Pacific Ocean locales: Christmas Island, Lisianski Island, Enderbury Island and Howland Island.

Sula sula (Linnaeus) 1766

Cerny (1967) recorded four feather mites from this host in Cuba:

Megninia ogivalis (Trouessart) 1889;

Nealges poppei (Trouessart) 1886;

Sulanyssus caput-medusae (Trouessart) 1886; and

Sulanyssus oluschae (Dubinin) 1953.

Phalacrocoracidae

There are 33 species of Phalacrocoracidae, six occurring in North America. Feather mites parasitized three of these. Three families of feather mites were represented on these birds; Alloptes, Avenzariidae and Freyanidae. Two species of Alloptes occur on Phalacrocorax

auritus and a brief description was included to aid in distinguishing them. Michaelichus and Dinalloptes are both restricted to the host genus Phalacrocorax.

Phalacrocorax auritus (Lesson) 1831 Double-crested Cormorant

Alloptes sp. 3

Legs IV on this mite extend past the body terminus by the length of the tarse and the femur/genu is enlarged on all legs. This species was collected from birds of South Dakota, Minnesota, Iowa, and Florida.

Alloptes sp. 4

In this mite species setae sh and l₁ are short and dilated. The legs are relatively short and sub-equal. Mite material was collected from the double-crested cormorant of Florida.

Dinalloptes chelionatus Atyeo and Peterson, 1966

Males of this mite genus display asymmetry in the trans-hypertrophy of legs II and IV. Atyeo and Peterson (1966) collected the type specimens for this species from the double-crested cormorant of Florida.

Michaelichus nr. heteropus (Michael) 1881

The three species of Michaelichus are restricted to the subgenera of the host genus Phalacrocorax: M. heteropus on the subgenus Phalacrocorax; M. urile on the subgenus Urile; M. microcarbonis on the subgenus Microcarbo (Dubinin 1953, Atyeo and Peterson 1970). Species of this mite genus exhibit asymmetry. In this study the mite species was identified from hosts collected in

Minnesota, South Dakota, Texas, and Florida. The species appeared to conform to M. heteropus but Cerny (1967) recorded M. urile from this host in Cuba.

Scutomegninia nr. phalacrocoracis Dubinin and Dubinina, 1940
Dubinin (1951) described eight species of Scutomegninia but Atyeo and Peterson (1967) recognized only five of these. The species S. serrulata and S. phalacrocoracis, both of which occur on the Phalacrocoracidae, are possibly conspecific (Aty eo and Peterson) 1967.

In this study the species was collected from double-breasted cormorants of Minnesota, South Dakota, Texas, and Florida.

Phalacrocorax carbo Linnaeus, 1758 European Cormorant

Alloptes sp.

Nikolskaya (1939) reported Alloptes subcrassipes from the Astrakhan Preserve, U.S.S.R. Alloptes has not yet been reported from this host in North America but it was examined from this cormorant collected in Thailand.

Michaelichus nr. heteropus (Michael) 1881

M. heteropus was reported from this host in the Astrakhan Preserve, U.S.S.R. by Nikolskaya (1939). In this study a species near M. heteropus was obtained from this host collected in the Astrakhan Preserve, U.S.S.R.

Scutomegninia phalacrocoracis Dubinin and Dubinina, 1940.

Dubinin (1951) recorded this species from this host.

In this study S. phalacrocoracis was collected from India, Thailand, and Bechuanaland.

Phalacrocorax olivaceus (Humboldt) 1805 Olivaceous Cormorant

Michaelichus nr. heteropus (Michael) 1881

Mite material was examined from this host collected in Texas, Ecuador, and Brazil.

Scutomegninia nr. phalacrocoracis Dubinin and Dubinina, 1940

This mite species was identified from olivaceous cormorants collected in Ecuador and Brazil.

Anhingidae

Four species of Anhinga comprise this bird family. No mite material has been collected from the North American representative Anhinga anhinga. Alloptes and Scutomegninia were found on Anhinga rufa from French Equatorial Africa, perhaps indicating what can be expected from North America.

Fregatidae

There are five species assigned to Fregatidae but only one of these occurs in North America. The feather mites from Fregata magnificens were all of the family Alloptidae. Two species of Alloptes occurred on this host, one of which (sp. 1) may be new.

Fregata magnificens Mathews, 1914 Man-o-war Bird

Alloptes sp.1

This species is characterized by terminal lobes which are united for 2/3 of their length and then diverge posteriorly with an interlobar lamella between them.

Lamella also extend laterally from the level of epimerites IV B posteriorly to the isthmus of the

terminal lobes. Legs IV extend well past the posterior end of the body. The mite material was obtained from hosts collected in Honduras and Florida. The species was also collected from Fregata aquila, Laysan Island.

Alloptes sp. 2

The genus Alloptes is in need of revision and the species considered here could not be positively identified without such a work. The species was collected from birds of Florida, Honduras, Dominican Republic, and the Lesser Antilles.

Alloptellus confventris (Trouessart) 1886

Peterson and Atyeo (1972) reported this mite species from the Dominican Republic, Lesser Antilles, and Guatamala. In this study the species was found on man-o-war birds collected in the Dominican Republic and Florida.

CICONIIFORMES

Ardeidae

The order Ciconiiformes is assigned six families including the Phoenicopteridae (Morony 1975). Four of these (Ardeidae, Ciconiidae, Threskiornithidae and Phoenicopteridae) have North American representatives. The Ardeidae is comprised of 64 bird species, 13 of which occur in North America. Nine of these have yielded feather mites. The feather mite fauna of the Ciconiiformes is large and diverse, 22 genera representing nine families. A new species, probably of Gaud's (unpublished) Ptyctolaimus was found on several members of

the Ardeidae and appeared to be restricted to this family, as was

Ardeacarus.

Nycticorax nycticorax (Linnaeus) 1758 Black-crowned Night Heron

Ardeacarus ardeae (Canestrini) 1878

Dubinín (1956) reported this mite-bird association from hosts in the Danube Delta. In this study the species was identified from the black-crowned night heron collected in Texas and South Africa.

Pterodectinae

A single female belonging to this mite subfamily was found on this host collected in Taiwan. It is probably not a valid record.

Nyctanassa violacea (Linnaeus) 1758 Yellow-crowned Night Heron

Ardeacarus ardeae (Canestrini) 1878

This species was identified from yellow-crowned night herons collected in Florida.

Ptyctolaimus n. sp.

The males of this mite species appear to have a larger genital organ than Ardeialges (Gaud and Mouchet 1959). The adanal discs are completely separated, each on a separate terminal lobe. Post-genital sclerotization is heavy. Females have the spermatheca heavily sclerotized. This species was obtained from yellow-crowned night herons collected in Texas.

Ardeola ibis Linnaeus, 1758 Cattle EgretArdeacarus ardeae (Canestrini) 1878

This species was identified from hosts collected in Taiwan, South Africa and Florida.

Freyana largifolia (Megnin and Trouessart) 1884

Two males of this mite species were identified from South Africa. This is an unusual host-parasite association and may be accidental, i.e. not valid.

Falculifer sp. (Canestrini) 1878

Cerny (1967) lists this mite genus as a parasite of this host in Cuba.

Hydranassa caerulea (Linnaeus) 1758 Little Blue HeronArdeacarus ardeae (Canestrini) 1878

This mite species was identified from birds collected in Florida, Panama and Texas.

Scutomegninia sp. Great Blue Heron

One male and one female of this mite genus were identified from hosts collected in Texas.

Hydranassa tricolor (Muller) 1776 Louisiana HeronArdeacarus ardeae (Canestrini) 1878

This species was identified from herons collected in North Carolina and French Guiana.

Ptyctolaimus n. sp. Ciconiidae

This species was identified from Louisiana herons collected in French Guiana, Trinidad and Brazil. It appears to be the same species that is found on the yellow-crowned night heron of North America.

Hydranassa rufescens (Gmelin) 1789 Reddish Egret

Ardeacarus ardeae (Canestrini) 1878

This species was identified from reddish egrets collected at two locations in Texas.

Ptyctolaimus n. sp.

Mite material was identified from hosts collected in Texas.

Egretta thula (Molina) 1782 Snowy Egret

Ardeacarus ardeae (Canestrini) 1878

A. ardeae was collected from this host in Texas.

Ptiloxenus (=Schizurolichus) elegans (Cerny) 1969

A single male of this mite species was recollected from a snowy egret in Texas. This is probably an accidental host-parasite relationship, P. elegans usually being a parasite of the Podicipedidae.

Ardea herodias Linnaeus, 1758 Great Blue Heron

Ptyctolaimus n. sp.

This species was identified from hosts collected in Texas.

Ardeacarus ardeae (Canestrini) 1878

Mite material was examined from the great blue heron but no geographical data was available.

Ciconiidae

This bird family contains 17 species, only one of which is considered to be part of the North American fauna. One species of mite, of the family Pterolichidae, occurred on Mycteria americana.

Mycteria americana Linnaeus, 1758 Wood Ibis

Taeniosikya encylophylla Gaud, 1961

This mite species was collected from the wood ibis of Florida.

Alloptes sp. 3 Threskiornithidae

Threskiornithidae is assigned 33 species of birds, 5 of which occur in North America. Feather mites have been found on each of these. Eleven genera of feather mites have been identified from the mite families Alloptidae (5 genera), Kramerellidae (1 genus), Freyanidae (1 genus), Xolalgidae (2 genera), Analgidae (1 genus), and Avenzoariidae (1 genus). At least three species of Scutomegninia occur on this bird family, however, all of them may not be represented in North America. Three species of Alloptes were encountered from the host Eudocimus ruber. In this study the mite genera Gaudium, Certuroptellus, Anisanchus, and Freyanopsis were not found to be associated with any other North American bird families.

Eudocimus albus (Linnaeus) 1758 White Ibis

Gaudium abbreviatus (Trouessart) 1885

Peterson and Atyeo (1972) reported this mite from Mexico. In this study the species was identified from a white ibis collected in Texas.

Eudocimus ruber (Linnaeus) 1758 Scarlet Ibis

Alloptes sp. 1

This mite species is similar to that found on Plagadis falcinellus. Mite material was examined from the scarlet ibis of British Guiana.

Alloptes sp. 2

This species was tentatively identified as belonging to the genus Alloptes. Mite material was examined from Georgetown, British Guiana.

Alloptes sp. 3

Mite material was examined from Georgetown, British Guiana.

Gaudium abbreviatus (Trouessart) 1885

G. abbreviatus was identified from hosts collected in Venezuela and Surinam.

Plegadis falcinellus (Linnaeus) 1766 Glossy IbisAlloptes sp.

Mite material was examined from Texas, Chile, Iran and Celebes.

Analloptes sp.

Two males were examined from this host but no further geographical data was available. Gaud (1968) mentions this mite genus as occurring on the avian family Rallidae and its occurrence on this host may be accidental.

Freyanopsis periproctus Gaud and Atyeo, 1974

This species was identified from the glossy ibis of the Celebes. This host-parasite association has not been recorded from North America.

Scutomegninia sp. 1

This species was examined from hosts collected in Texas.

Scutomegninia sp. 2

This species was distinguished from the previous one by the thinness of legs III and by the spermaduct connected to the posterior body margin of the female. This species was examined from a bird collected in the Celebes.

Plegadis chihi (Vieillot) 1817, White-faced IbisAlloptes sp.

The mite material was identified from hosts collected in Nevada and Mexico.

Megninia sp.

This species has all terminal setae inserted at nearly the same level, bilobation being absent. Legs IV are short, not extending to the body terminus. Legs III are hypertrophied and extend well beyond the terminus. One male and one nymph were examined from a white-faced Ibis collected in Texas. The identification was tentative.

Scutomegninia sp.

Mite material was examined from birds collected in Nevada. This species appeared to be different from those found on Eudocimus.

Ajaia ajaja (Linnaeus) 1758 Roseate SpoonbillAnisanchus ptilotus (Peterson and Atyeo 1975, unpublished)

This species was identified from hosts collected in Texas, Brazil and Mexico.

Ceraturoptellus euryurus (Trouessart) 1885

This Peterson and Atyeo (1972) reported this mite from Texas, Mexico, Cuba, and Colombia.

In this study it was recollected from a roseate spoonbill in Texas.

Freyanella sp.

The males of this mite species have the scapular setae in a straight line and equally spaced. The female

body is of a round shape with the small epigynum well forward at the level of the scapular setae and near epimerites I. Cerny (1967) reported Freyanella

halleri (Megnin and Trouessart) 1884 from this host in Cuba. In this study a species of Freyanella was

examined from roseate spoonbills collected at five locations in Texas and in Colombia.

Scutomegninia ajajana Novaes and Carvalho, 1952

This species was identified from roseate spoonbills collected in Texas and Colombia.

Trouessartia trachelura (Trouessart) 1855

This mite was reported as a parasite of the roseate spoonbill from Cuba by Cerny (1967) and from Brazil by Novaes and Carvalho (1952).

This mite species has not been reported from the spoonbill of North America.

Phoenicopteridae

This bird family is assigned six species one of which, Phoenicopus ruber, occurs in North America. Four species of feather mites of the families Alloptidae, Freyanidae, and Pterolichidae have been found on this host. Among these was a new species of a genus near Brephosceles. All of the mite species collected from the flamingo appear to be unique to the Phoenicopteridae.

Phoenicopus ruber Linnaeus, 1758 American Flamingo

Brephosceles n. sp.

One male of this species was examined from India.

This species is distinct from other new species of the Brephosceles encountered in this study and is only tentatively assigned to this genus.

Rhynchaoloptes pyrgognathus n. sp.

Peterson and Atyeo have recently described this morphologically unusual new species but the paper is still in press. In this study the species was identified from birds collected in the Galapagos Islands, Kenya and India.

Halleria hirsutirostris Megnin and Trouessart, 1884

Cerny (1967) reported this mite from Cuba. Zumpt (1961) mentioned this species as occurring on Phoenicopus ruber from Europe and Africa. In this study the species was identified from hosts collected at the Houston, Texas Zoo and in the Bahama Islands.

Ptiloxenus phoenicopteri (Megnin and Trouessart) 1884

Dubinín (1956) reported this mite from France, Italy, and southern Africa. Cerný (1967) listed it from Cuba. This species has never been reported from flamingos collected in North America.

ANSERIFORMES

Anatidae

The avian systematics of the A.O.U. (1961) has been used in this bird order. The Anseriformes is assigned 150 species of birds, 50 of which occur in North America. Sixteen genera of feather mites representing nine families were found to be parasites of the 33 species of birds examined. Freyana was associated with all of the avian genera from which mites were collected. The following new species of feather mites were also encountered: a new species from a genus similar to Rhytidelasma was collected from Anser albifrons; Rectijanua n.sp. from Dendrocygna bicolor and Aythya affinis, Plesiabdellorhynchus porosus from Aythya colaris; a new species of what appears to be Pteronyssus from Aythya valisineria and an unidentified member of the Oxyalginæ from Aythya marila. In North America each of these species is restricted to the Anatidae.

Anser albifrons (Scopoli) 1769 White-fronted GooseAlloptes sp.

Mite material was examined from a bird collected in Minnesota.

Freyana anserina (Megnin and Trouessart) 1884

Cerný (1967) reported this mite from Cuba. In this study the species was identified from the

white-fronted goose of Minnesota.

Rhytidelasma n. sp.

This mite species was similar to a species of Rhytidelasma found on Conuropsis carolinensis, Psittacidae, but differs in not having epimerites I fused. The specimen was slightly damaged, the humeral and subhumeral setae missing. The post-lobar lamellae were banded. One male was examined from a host collected in Minnesota and the identification remains tentative.

Paralgoides sp.

Gaud and Mouchet (1959) reported this genus from a member of the Charadriiformes and Passeriformes. This specimen was damaged, legs III and IV and tarsi I and II missing. However, features of the body conform closely to drawings and descriptions by Gaud and Mouchet (1959). In this study one male was examined from Anser albifrons collected in Minnesota.

Branta bernicla (Linnaeus) 1758 American Brandt

Freyana sp.

Mite material was examined from New Jersey.

Chen hyperborea (Pallas) 1769 Snow Goose

Freyana anserina (Megnin and Trouessart) 1884

Cerny (1967) reported this mite from Cuba. In this study the species was found on a snow goose collected in Minnesota.

Dendrocygna autumnalis (Linnaeus) 1758 Black-bellied Tree duckFreyana sp.

Material was examined from Lometa, Texas, and Nicoya, Costa Rica. McDaniel (1966) reported Freyana dendrocygni from Texas. He also reported the following mites as occurring on this host: Brephosceles sp.; Leptosphyra (=Ingrassia) sp.; and Avenzoaria sp.

McDaniel explains the presence of Avenzoaria on black-bellied tree ducks by their association with Charadriidae and Scolopacidae species in southern Texas, the usual hosts.

Alloptellus dendrocygnus Dubinin, 1955

This species is known only by four poorly preserved females from Texas and remains undescribed (Peterson and Atyeo 1972). Cerny (1967) listed it from a different host, Dendrocygna autumnalis, in Cuba.

Dendrocygna bicolor (Vieillot) 1816 Fulvous Tree DuckAlloptoïdes sp.

There are still taxonomic problems within the genus Alloptoïdes (Peterson and Atyeo 1972). The species considered here has features intermediate between Alloptoïdes aythinae and A. gynurus. The postgenital sclerotization pattern in the male is similar to A. gynurus. The female bears little resemblance to the one figured by Peterson and Atyeo (1972). The species was collected from a California host.

Rectijanua n. sp.

This mite differs from R. radfordi, the only described species of the genus by the position of the genital organ at the level of legs IV and by the unlobed body terminus (Gaud 1961). No information other than the name of the host was available for this specimen.

Freyana sp.

Cerny (1967) reported Freyana dendrocygni from Cuba. McDaniel (1966) reported both F. dendrocygni and F. largifolia from this host. In this study mite material was examined from Texas and California.

Alloptellus dendrocygnus (Dubinin) 1955

This species was reported from Texas by Dubinin (Peterson and Atyeo 1972). Cerny (1967) listed it from Cuba.

Anas platyrhynchos Linnaeus, 1758 MallardBrephosceles anatina Dubinin, 1951

Cerny (1967) recollected this mite from the type host (mallard) in Cuba.

Freyana sp..

Cerny (1967) reported both Freyana anatina and F. largifolia from Cuba. In this study material was examined from a mallard collected in the Commander Islands.

Ingrassia velata (Megnin) 1877

Cerny (1967) reported this species from Cuba. Niethammer (1938) also reported this mite species from

the mallard.

Megninia ginglymura

This species was reported by Niethammer (1938)
from this host.

Cerny (1967) reported the following mites from Cuba:

Alloptoides bisetatus (Haller) 1881;

Proctophyllodes picae Vassilev, 1962; and

Bdellorhynchus polymorphus Trouessart, 1885.

Anas diazi Ridgway, 1886 Mexican Duck

Freyana sp.

Mite material was examined from the Mexican duck
collected in New Mexico and Mexico.

Anas fulvigula Ridgway, 1874 Mottled Duck

Freyana sp.

Mite material was examined from the mottled duck
of Florida.

Bdellorhynchus sp.

Mite material was identified to this genus from
hosts collected in Florida.

Anas rubripes Brewster, 1902 Black Duck

Freyana sp.

Freyana was examined from the black duck collected
at two locations in Texas.

Bdellorhynchus sp.

This genus was also among the mite material examined
from a black duck collected in Texas.

Anas strepera Linnaeus, 1758 GadwallFreyana sp.

Cerny (1967) reported both Freyana anatina and F. largifolia from Cuba. In this study Freyana was obtained from gadwalls collected in Texas and India.

Bdellorhynchus polymorphus Trouessart, 1885

Cerny (1967) reported this species from Cuba.

Ingrassia sp.

Mite material was examined only from a gadwall collected in India.

Anas acuta Linnaeus, 1758 PintailFreyana sp.

Cerny (1967) reported Freyana anatina anatina and F. l. largifolia from this host in Cuba.

Brephosceles sp.

Two females, which could not be positively identified to species, were collected from pintails of India.

Proctophyllodes picae (Koch) 1840

Atyeo and Braash (1966) reported this mite from a pintail collected in Macedonia as a questionable record, the mite usually occurring on Passeriform hosts of the family Corvidae. Cerny (1967) also listed this mite as occurring in Cuba.

Ingrassia sp.

Cerny (1967) reported Ingrassia velata from this host collected in Cuba. In this study a species of

Ingrassia was examined from a pintail collected in
India.

Bdellorhynchus polymorphous Trouessart, 1885

This species was reported from a pintail collected
in Cuba by Cerny (1967).

Anas crecca Linnaeus, 1758 Common Teal.

Freyana sp.

Cerny (1967) reported Freyana a. anatina and F. l. largifolia from Cuba. In this study Freyana was examined from hosts collected in New Brunswick, and India.

Proctophyllodes picae (Koch) 1840

Cerny (1967) reported this mite from Cuba. Atyeo and Braash (1966) regard this mite species from the Anatidae as a questionable record.

Bdellorhynchus polymorphous Trouessart, 1885

Cerny (1967) reported this mite from a teal in Cuba.

Anas carolinensis Gmelin, 1789 Green-winged Teal

Freyana sp.

Mite material was examined from this host collected in Texas. Non-freyanid nymphs were found from the same bird and may be Bdellorhynchus.

Anas discors Linnaeus, 1766 Blue-winged Teal

Freyana sp.

Cerny (1967) reported Freyana l. largifolia from this host in Cuba.

Anas cyanoptera Vieillot, 1816 Cinnamon TealFreyana sp. (1967) reported Bdellorhynchus polymorphusFreyana was identified from hosts collected in Washington and Texas.Bdellorhynchus sp. Wood Duck

One mite material was examined from Washington.

Mareca americana (Gmelin) 1789 BaldpateFreyana sp. on this host.Cerny (1967) listed both Freyana a. anatina and F. l. largifolia from the baldpate in Cuba. In this study mite material was examined from the host collected in Texas.Mareca penelope (Linnaeus) 1758 European WidgeonFreyana sp. Larson and Ayres. In this study the species was

Material was examined from India, China, and Denmark.

Ingrassia sp.

One male was examined from this host collected in India.

Spatula clypeata (Linnaeus) 1758 ShovelerFreyana sp. (1967) reported Freyana a. anatina and F. l. largifoliaCerny (1967) reported Freyana a. anatina and F. l. largifolia from this host in Cuba. In this study mite material was examined from Massachusetts and British Columbia.

Bdellorhynchus sp.

Cerny (1967) reported Bdellorhynchus polymorphus from Cuba. In this study the mite material was examined from a shoveler collected in Massachusetts.

Aix sponsa (Linnaeus) 1758 Wood Duck

One female of the genus Zachvatkinia was examined from a wood duck in Illinois but is believed to be an accidental occurrence on this host.

Freyana sp.

Freyana was identified from wood ducks collected in Illinois, Texas and Florida.

Plesiobdellorhynchus porosus

This new genus and species will soon be published by Peterson and Atyeo. In this study the species was identified from the host collected in New York.

Aythya americana (Eyton) 1838 RedheadFreyana sp.

One nymph and one larvae were examined from Texas.

Aythya collaris (Donovan) 1809 Ring-necked DuckFreyana sp.

Cerny (1967) reported Freyana a. anatina and F. largifolia nyrocae from this host in Cuba. In this study the mite genus was examined from birds of South Carolina and Texas.

Proctophyllodes nr. picae (Koch) 1840

This is the only species of Proctophyllodes known to occur on the Anatidae. The female of this species

was not available from the type host so Atyeo and Braash' did not describe it. They did, however, include a figure of the posterior female body which closely matches this female. One female of a mite species similar to P. picae was examined from this host collected in Texas. This is probably not a valid host-parasite record.

Plesiobdellorhynchus porosus (Peterson and Atyeo, unpublished)

Aythya affinis This species has been identified from a ring-necked duck collected at the Duck Creek Wildlife area, Missouri.

Aythya valisineria (Wilson) 1814 Canvasback

Freyana sp.

Freyana was collected from canvasbacks of Nebraska and New York.

Pteronyssus sp.

Bucephala albeola One male of this genus was examined from Nebraska. The possibility exists that it is a contaminant and does not indicate a valid host-parasite association.

Aythya marila (Linnaeus) 1761 Greater Scaup

Freyana sp. (Linnaeus) 1758 Old Scaup

Mite material was identified from this host collected in New York.

Oxyalginæ in Ontario.

Histioglyphus This feather mite has been tentatively assigned to the Oxyalginæ. It superficially resembles Plesiobdellorhynchus but differs, among other things,

in the gnathosomal conformation. Legs III and IV are inserted at the same level with legs IV hypertrophied. Legs I and II are inserted near each other. The adanal discs are absent and only a pair of irregular lightly sclerotized plates remain. The posterior body terminus is unlobed with a pair of lamellae.

Specimens were examined from the greater scaup collected in New York.

Aythya affinis Eyton, 1838 Lesser Scaup

Freyana sp.

This mite species was identified from hosts collected in Iowa, Texas and Ontario.

Rectijanua n. sp.

This is not a described species of Rectijanua. The mite material was identified from this host collected in Iowa.

Bucephala albeola (Linnaeus) 1758 Bufflehead

Freyana sp.

Freyana was identified from this host collected in New York.

Clangula hyemalis (Linnaeus) 1758 Old Squaw

Freyana sp.

Mite specimens were identified from this host collected in Ontario.

Histrionicus histrionicus (Linnaeus) 1758 Harlequin Duck

Freyana sp.

This genus was identified from this duck species

collected in New York.

Brephosceles nr. discidicus Peterson, 1971

This may be a species other than discidicus. Only females were collected from this host in New York.

B. discidicus was reported by Peterson (1971) from Cygnus bewickii.

Oxyura jamaicensis (Gmelin) 1814 Ruddy Duck

Bdellorhynchus oxyurae Dubinin, 1956

Dubinin (1956) collected this mite from the southern United States. In this study the species was collected from ruddy ducks of California, Texas, and Louisiana.

Oxyura dominica (Linnaeus) 1766 Masked Duck

Cerny (1967) reported Freyana undulativentris and Para-freyana nomonyxi from this host in Cuba.

Mergus merganser (Linnaeus) 1758 Common Merganser

Freyana sp.

Mite specimens were obtained from this host collected in England.

Brephosceles discidicus Peterson, 1971

This species was collected from the common merganser of England. McDaniel (1966) reported Brephosceles forficiger from this host. If this was a valid record it is unusual because B. forficiger is rare and known only from the Gaviidae.

Bdellorhynchus sp.

One female was examined from this host collected in England.

Mergus serrator Linnaeus, 1758 Red-breasted Merganser

Niethammer (1938) reported Freyana anatina and Avenzoaria sp. from this host, presumably collected in Germany.

FALCONIFORMES

The Falconiformes is assigned 226 species, 33 of which occur in North America. Feather mites have been collected from only 9 avian species representing 4 families. With more collecting feather mites are expected to be found on many more species of birds of this order. Feather mites from five families have been found associated with these hosts: Gabuciniidae (2 genera), Pterolichidae (1 genus), Kramerellidae (2 genera), Analgidae (3 genera), and Avenzoariidae (1 genus). Although the mite family Gabuciniidae was recently revised by Gaud and Atyeo (1974), great difficulty was still encountered in the identification of its members and most of the determinations must remain tentative, even at the level of the genus.

Cathartidae

Cathartes aura (Linnaeus) 1758 Turkey VultureAncyralges sp.

This mite occurs on the turkey vulture in Ohio.

Hieracolichus sp.

The mite material, tentatively identified to this genus, was from a turkey vulture collected in the Panama Canal Zone.

Coragyps atratus (Bechstein) 1793 Black Vulture

Hieracolicus sp.

This mite genus was collected from this host from Florida. This mite species appears to be the same as that collected from Cathartes aura.

Pseudalleptinus sp. Pandionidae

Pandion haliaetus (Linnaeus) 1758 Osprey

Bonnetella fusca (Nitzsch) 1818

Cerny (1967) reported this mite from Cuba. In this study the species was found associated with ospreys collected in Maryland, Washington, Texas, Trinidad, and Manchuria.

from hawks of Accipitridae

Ictinia mississippiensis (Wilson) 1811 Mississippi Kite

Ateacarus sp.

Gaud (1974) recollected this mite from birds of the subfamily Buteoninae. In this study the mite material was obtained from a kite collected in Texas.

Circus cyaneus (Linnaeus) 1766 Marsh Hawk

Pseudogabucinia intermedia (Megnin and Trouessart) 1884

This species was reported from Cuba by Cerny (1967). The genus was erected by Gaud (1961) and further elaborated by him in 1968.

Buteo lineatus (Gmelin) 1788 Red-shouldered Hawk

Hieracolicus n. sp.

This genus was established by Gaud (1974) for four previously known species parasitic only on the

Falconiformes. The species considered here has no part of the propodosomal shield posterior to the scapular setae which are inserted off the shield. This may be a new species. The mite specimens were obtained from a hawk collected in Texas.

Pseudalloptinus sp.

The mite material was obtained from this host collected in Florida.

Buteo swainsoni (Bonaparte) 1838 Swainson's Hawk

Hieracolicus sp.

This mite species is distinct from that found on

Buteo lineatus. The mite material was collected from hawks of Arizona and Colorado.

Falconidae

Polyborus cheriway (Jacquin) 1784 Caracara

Aetacarus sp.

The genus Aetacarus was tentatively identified from a caracara collected in Texas.

Falco columbarius (Linnaeus) 1758 Merlin

Protalges accipitrinus Trouessart 1885

This mite was reported by Cerny (1967) from Cuba.

In this study what appear to be Gabuciniid nymphs were examined from a merlin collected in Texas.

Falco peregrinus (Tunstall) 1771 Peregrine Falcon

Aetacarus n. sp.

The mite material was obtained from this falcon collected in Malay. This species does not fit well

into any of the Gabuciniidae genera though it is certainly of that family. Aetacarus is a tentative identification.

Hieracolichus nisi (Canestrini) 1878

Cerny (1967) collected this mite from Cuba.

Niethammer (1938) reported the following mites from Germany:

Kramerella lunulata major;

Megninia strigisoti; and

Protalges attenuatus.

GALLIFORMES

Cracidae

The avina order Galliformes is assigned 270 species, only 21 of which occur in North America. Sixteen of these species were parasitized by feather mites. The feather mite fauna was of the mite families Pterolichidae (4 genera), Analgidae (1 genus), and Ovarcaridae (1 genus). A possibly new species of Pterygocrusolichus was collected from the host Ortalis vetula. Gaud (1974) noted that the genus Megninia contains many species parasitic on the galliform birds and that there are problems in their specific identification.

Ortalis vetula (Wagler) 1830 Chachalaca

Pterygocrusolichus n. sp.

Dubin (1956) recorded Pterygocrusolichus chanyi

from the Meleagridae. In this study a species was collected from the chachalaca of Texas and Mexico.

P. chanyi appears to differ from the one under consideration here in its hysterosomal conformation and chaetotaxy while most other characteristics of the genus are

displayed by both species.

Megninia sp.

This mite genus was identified from this host collected in Mexico.

Phasianidae

Melagris gallopavo (Linnaeus) 1758 Turkey

Megninia sp.

Cerny (1970) reported Megninia ginglymura from this host in Cuba.

Pterygocrusolichus chanayi (Trouessart) 1885

Cerny (1970) reported this mite-bird association from Cuba. In this study the species was found on a turkey collected in Louisiana.

Pterolichus obtusus Robin, 1877

Cerny (1970) reported this mite from Cuba.

Pterolichus latus Cerny, 1970

Cerny (1970) also reported this mite from a turkey in Cuba.

Dendragopus canadensis (Linnaeus) 1758 Spruce Grouse

Pterolichus sp.

This species was examined from birds collected in Labrador and Alaska.

Megninia sp.

One female was examined from a host collected in Labrador.

Lagopus lagopus (Linnaeus) 1758 Willow Ptarmigan
 Dubinin (1956) reported Pterolichus obtusus and
Pseudalloptes bimucronatus from this host in the U.S.S.R.

Lagopus mutus (Montin) 1766 Rock Ptarmigan
 Dubinin (1956) also reported Pterolichus obtusus and
Pseudalloptes bimucronatus from the rock ptarmigan of the
 U.S.S.R.

Lagopus leucurus (Richardson) 1831 White-tailed Ptarmigan

Pterolichus sp.

A species of Pterolichus was identified from this
 host collected in Colorado.

Megninia sp.

This species is different from others examined in
 having the body only slightly lobed. The specimens of
Megninia were obtained from a white-tailed ptarmigan
 collected in Colorado.

Bonasa umbellus (Linnaeus) 1766 Ruffed Grouse

Pterolichus sp.

Material was examined from Maine, West Virginia,
 and Indiana.

Tympanuchus cupido (Linnaeus) 1758 Greater Prairie Chicken

Pterolichus sp.

This mite material was obtained from hosts collected
 in Texas.

Tympanuchus phasianellus (Linnaeus) 1758 Sharp-tailed Grouse

Pterolichus sp. Dubinin, 1956

One female of this mite genus was examined from this host in Canada.

Callipepla squamata (Vigors) 1830 Scaled Quail

Pseudaloptes n. sp. reported this species from the

This is probably a new species. It was collected from scaled quail from Mexico.

Colinus virginianus (Linnaeus) 1758 Bobwhite

Megninia sp. Gaud (1974) reported Megninia

Cerny (1967) reported Megninia cubitalis from Cuba.

In this study Megninia was identified from this host collected in Illinois, Indiana, Georgia, and Florida.

Ovacarus wilsoni Gaud and Atyeo, 1975

Gaud and Atyeo (1975) collected this species from a bobwhite from Florida.

Pterolichus sp. from phasants from China and Nebraska.

Cerny (1967) reported this mite from Cuba.

Cyrtonyx montezumae (Vigors) 1830 Harlequin Quail and the previous

Nymphs of either Pseudaloptes or Pterolichus were examined from this quail collected in Mexico.

Alectoris graeca (Meisner) 1804 Chukar was examined from a phasant

Dubinin (1956) reported Pterolichus obtusus and Pseudaloptes bisubulatus from this host in the U.S.S.R.

Perdix perdix (Linnaeus) 1758 Gray Partridge

Dubinin (1956) reported the following mites from this host:

Pterolichus obtusus Robin, 1877;

Pterolichus solutocurtus Dubinin, 1956;

Pseudalloptes bisubulatus Robin, 1877; and

Pseudalloptes bimucronatus (Trouessart) 1884.

Megninia cubitalis (Megnin) 1877

Barysheva (1939) reported this species from the gray partridge.

Gallus gallus (Linnaeus) 1758 Chicken

Cerny (1970) reported Pterolichus obtusus and Megninia ginglymura from Cuba. Gaud (1974) reported Megninia cubitalis and M. hologastra, the latter from Australia, as occurring on the chicken. The feather mites associated with the chicken in North America have never been elaborated.

Phasianus colchicus (Linnaeus) 1758 Ring-necked Pheasant

Pterolichus nr. obtusus Robbin, 1877

Specimens of what appear to be P. obtusus were collected from pheasants from China and Nebraska.

Pseudalloptes bimucronatus (Trouessart) 1884

Dubinin (1956) reported this species and the previous one both from the ring-necked pheasant.

Grallobia sp.

One female of Grallobia was examined from a pheasant collected in China. This may be an accidental association, Grallobia usually occurring on the avian family Rallidae.

GRUIFORMES

Gruidae

Two of the fifteen species of this bird family occur in North America. Both birds are of the genus Grus and were found to be parasitized by only Geranolichus gruis (Pterolichidae), which apparently is restricted to this host family.

Grus americana (Linnaeus) 1758 Whooping Crane

Geranolichus nr. gruis (Trouessart) 1884

This species was similar to G. gruis and was examined from whooping cranes collected in Texas and Illinois. Gaud (1968) discussed this mite species.

Grus canadensis (Linnaeus) 1758 Sandhill Crane

Geranolichus gruis (Trouessart) 1884

Dubin (1956) recorded this mite from the sandhill crane of Siberia.

Aramidae

The single species of this bird family occurs in North America. The following feather mite families have been collected from this host: Pterolichidae (3 genera); Alloptidae (1 genus); Proctophyllodidae (1 genus); Analgidae (1 genus); Xolalgidae (1 genus); Freyanidae (1 genus); and Dermoglyphidae (1 genus).

Aramus guarauna (Gmelin) 1789 Limpkin

Aramobius n.g. n.sp. (unpublished by Gaud and Atyeo)

This mite species was collected from hosts from Florida, Paraguay, and Haiti. This mite is morphologically quite

similar to Pseudalloptinus.

Sokoloviana n. sp.

This possibly is a new species. It was identified

from a Limpkin collected in Paraguay. Usually

Sokoloviana is a parasite of the Charadriiformes.

Pterolichus coccyger Trouessart and Neuman, 1888

Cerny (1967) also collected this mite from the

Limpkin in Cuba.

Aramalichus foliatus Peterson and Atyeo, 1968

Peterson and Atyeo (1968) collected this mite from

Florida and Bolivia. In this study the species was

identified from limpkins collected in Florida and

Haiti.

Protalges sp. Trouessart, 1885

Protalges was identified from this host collected in

Florida.

Freyana anatina (Koch) 1844

The mite material was obtained from a limpkin

collected in Florida. This record is unusual because

Freyana is generally associated with the Anatidae.

Dermoglyphus arami Oudemans, 1905

Cerny (1967) reported this mite from Cuba.

Rallidae

This family of 139 bird species has nine North American representatives, six of which have yielded feather mites. Grallobia and Grallolichus, both of the mite family Pterolichidae, occurred on

almost all of the members of this bird family examined. They generally occurred together and were apparently restricted to the Rallidae. The Alloptidae (3 genera), Analgidae (1 genus), and Xolalgidae (4 genera) are other feather mite families which occur on these hosts. Three new species were found on Gallinula chloropus from the Philippine Islands. Gaud (1968) has studied the feather mites of the African Ralliform and Gruiform birds and that paper was helpful in this study.

Rallus longirostris (Boddaert) 1783 Clapper Rail

Alloptes sp.

The mite material was obtained from birds collected in Lower California, Mexico.

Grallobia sp.

A species of this genus was found on clapper rails collected in North Carolina and California.

Grallobia and Grallolichus are discussed by Gaud and Mouchet (1963).

Grallolichus sp.

Grallolichus was collected from Clapper rails of North Carolina, California, and Lower California.

Rallus elegans (Audubon) 1834 King Rail

Grallobia sp.

This species was collected from king rails from Virginia and Florida.

Grallolichus sp.

King rails collected in Texas, Virginia, and Florida were parasitized by a species of Grallolichus.

Rallus limicola Vieillot, 1819 Virginia RailGrallobia sp.

The mite material was obtained from Virginia rails collected in Arizona, Texas, and Minnesota.

Grallolichus sp.

Grallolichus was found on rails collected in California, Arizona, and Minnesota.

Metanalges sp.

Metanalges was found on hosts collected in Minnesota and Indiana. Gaud (1968) discussed this mite genus.

Porzana carolina (Linnaeus) 1758 SoraGrallobia sp.

Grallobia occurred as a parasite on soras collected in New York, Massachusetts, North Dakota, Texas, and Idaho.

Psilobrephosceles ortygometrae (Canestrini) 1878

This species was identified from a sora collected in North Dakota. An unidentifiable Alloptinae female was also found on this host. P. ortygometrae was discussed by Atyeo and Peterson (1968).

Gallinula chloropus (Linnaeus) 1758 Florida gallinuleGrallobia sp.

Gaud (1968) collected Grallobia gallinulae from the Florida gallinule of Africa. Cerny reported G. dubinini from Cuba. Grallobia sp. was collected from Asia by McClure and Ratanaworabhan (1971). In this study a species of Grallobia was found on this host collected

in North Carolina.

Grallolichus sp.

In this study Grallolichus was identified from gallinules of North Carolina and the Phillipine Islands. Gaud (1968) recollected Grallolichus proctogamus from this host in Africa.

Analloptes sp.

The mite material was obtained from a host collected in the Phillipine Islands. The identification was tentative and may be in error.

Psilobrephosceles ortyometrae (Canestrini) 1878

Gaud (1968) reported this mite species from South Africa. In this study the species was collected from this host in the Phillipine Islands.

Parazumptia gallinulae Peterson and Atyeo (in Press)

This species was obtained from a Florida gallinule collected at Vizeaya, Phillipine Islands. This is a new genus and species related to Zumptia.

Zumptia maclurei Peterson and Atyeo (in Press)

Zumptia was previously thought to be monotypic with Z. dermoglyphoides the only known species collected from Limnocolax flavirostra in the Cameroons (Gaud and Mouchet 1959 and Zumpt 1961).

Gaud reported the following mites from this host:

Megniniella gallinulae (Buchholz) 1870 from Europe and Africa;

Metanalges grossus (Berlese) 1898 from Europe and Africa; and

Gymnalloptes pallens Gaud, 1968 from France and Madagascar.

Cerny recorded Megniniella fulicae, M. gallinulae and

Metanalges grossus from Cuba.

Fulica americana (Gmelin) 1789 Coot

Grallobia sp.

Mite Material was collected from coots in Nebraska and Texas.

Grallolichus sp.

Grallolichus was identified from a coot collected in Texas.

CHARADRIIFORMES

This order is assigned 334 species of birds, 112 of which occur in North America. Feather mites have been found on 89 of these species representing 7 bird families. Some 33 genera of mites representing 10 mite families have been found associated with the Charadriiformes. Hemifreyana, Freyanomorpha, Sokoloviana, Bregatovia, and Avenzoaria are usually restricted to the Charadriiformes. However, Avenzoaria has been noted from the Anseriformes by other authors and Bychovskiata was collected from the Trogoniformes in this study. Cerny (1971) found Laronyssus to be restricted to the bird family Iaridae, Dichobrephosceles to the Scolopacidae, Pseudavenzoaria to the genus Tringa, Pomeranzevia to Numenius, Avenzoaria totani to Tringa, Zachvatkinia stercorarii to Stercorarius, and Bregatovia limosae and Montchadskiana buchholzi to Limosa. Species of Syringobia are all parasites of the charadriiformes (Gaud 1972). The taxonomy of feather mites of the African Charadriiform birds has

been well studied by Gaud (1972).

Haematopodidae

Haematopus ostralegus Linnaeus, 1758

Alloptes sp.

Mite material was examined from this host collected in British Columbia and Alaska. This is a different species from that found on Haematopus palliatus.

Brephosceles haematopi Peterson, 1971

This species was collected by Peterson (1971) from this host from Australia.

Bychovskiata sp.

Specimens of Bychovskiata were obtained from this host collected in British Columbia.

Sokoloviana sp.

Gaud and Mouchet (1963) reported Ptiloxenus rehbergi from this host but this mite species has since been recognized as being synonymous with Sokoloviana. In this study mite specimens were examined from hosts collected in British Columbia and Alaska.

Haematopus palliatus Temminck, 1820 American Oyster Catcher

Alloptes sp.

This species occurred on an American oyster catcher from Texas.

Brephosceles turgidus Peterson, 1971

This species was collected from North Carolina by Peterson (1971).

Sokoloviana sp.

Mite material was identified from this host collected in Sonora, Mexico.

Recurvirostridae

Himantopus himantopus (P.L.S. Muller) 1766 Black-necked StiltAlloptes sp.

Gaud (1972) collected Alloptes eurytrichus from this host in Madagascar. In this study Alloptes was found on stilts collected from Florida and Haiti.

Ingrassia centrotibia Gaud, 1972

Gaud (1972) recorded this mite from Africa.

Bychovskiata sp.

Mite material was examined in Florida and Haiti.

Sokoloviana sp.

Gaud (1972) recollected Sokoloviana gracilis from Africa and Cerny (1967) listed it from Cuba. The one male which the author examined was somewhat damaged and did not look much like S. gracilis. Mite specimens were collected from stilts of Florida, Celebes, and Thailand.

Recurvirostra americana Gmelin, 1789 American AvocetAlloptes sp.

Alloptes occurred on Avocets collected in Saskatchewan and Mexico.

Bychovskiata sp.

Mite material was examined from hosts collected in

Saskatchewan, Idaho and Mexico.

Pomeranzevia nr. numenii (Canestrini) 1878

This species was identified from an American avocet collected in Saskatchewan.

Sokoloviana nr. mariae Dubinin, 1956

S. mariae was found on avocets from Saskatchewan, Idaho, and Mexico.

Zachvatkinia sp.

One female specimen of this species was collected from a host from Saskatchewan.

Charadriidae

Pluvialis dominica (Muller) 1776 Golden Plover

Montchadskiana sp.

In this study a species of Montchadskiana was found on golden plovers from Texas, Illinois, and the Philippine Islands. Cerny (1967) listed Montchadskiana pachusetae and M. pluvialis from Cuba. The latter was also recollected from Asia by McClure and Ratanaworabhan (1971).

Bychovskiata sp.

Cerny (1967) reported Bychovskiata squatarolae from Cuba and McClure and Ratanaworabhan (1971) collected a species of Bychovskiata from Asia.

In this study specimens of Bychovskiata were collected from the golden plover of the Philippine Islands.

Ingrassia sp.

McClure and Ratanaworabhan collected this mite from Asia.

Pluvialis squatarola (Linnaeus) 1758 Black-bellied Plover

Alloptidae

One female mite was examined and could not be identified.

Montchadskiana hastigera (Megnin and Trouessart) 1884

Cerny (1967) listed it from Cuba and Gaud (1972) reported this mite from Africa.

Bychovskiata squatarolae (Camestrini) 1878

Gaud (1972) recollected this species from this host in western Europe and Africa. Cerny (1967) listed it from Cuba.

Plutarchusia longitarsa (Megnin and Trouessart) 1884

Gaud (1972) recollected this mite from Africa.

Cerny (1967) listed it from Cuba.

Cerny (1967) also reported the following mites from the black-bellied plover in Cuba:

Avenzoaria dubinini Cerny, 1960; and

Bregatovia mucronata (Megnin and Trouessart) 1884.

Charadrius hiaticula Linnaeus, 1758 Semipalmated PloverAlloptes sp.

Alloptes occurred on this host from Rhode Island and South Carolina.

Ingrassia nr. centrotibia Gaud, 1972

Gaud (1972) collected Ingrassia centrotibia from

Africa. In this study it was recovered from plovers collected in Rhode Island, South Carolina and Alaska.

Sokoloviana sp.

In this species the paragenital sclerites fuse posteriorly with what might be considered part of epimerites IVB. Setae Pai (?) are apical on the terminal lobes. None of the terminal setae appear to be dilated, although some are missing through damage. This species occurred on a semipalmated plover from Alaska.

Phyllochaeta bouveti (Megnin and Trouessart) 1884

This mite was reported by Gaud (1972) from this host in Europe.

Xiphiiurus xiphiiurus (Megnin and Trouessart) 1884

Gaud (1972) reported this mite from Africa.

Atelespoda thylacodes Trouessart, 1897

This mite was reported from the U.S.S.R. by Gaud and Atyeo (1975).

Charadrius semipalmatus Bonaparte, 1825 Semipalmated Plover

Alloptes sp.

Alloptes was identified from hosts collected in Newfoundland, Rhode Island and Connecticut.

Sokoloviana sp.

This mite species was taken from a plover collected in Connecticut.

Charadrius wilsonia Ord, 1814 Wilson's PloverBrephosceles virginensis Peterson, 1971

Peterson (1971) recovered this mite from Wilson's plovers collected in Virginia, Columbia, and Mexico.

Freyanomorpha ambigua Gaud, 1957

This species was identified from Wilson's plovers collected in Virginia, North Carolina, and Mexico.

Atelespoda crena (McDaniel) 1963

Cerny (1967) listed this mite from Cuba. Gaud and Atyeo (1975) reported it from Wilson's plover in Texas.

Charadrius vociferus Linnaeus, 1758 KilldeerBrephosceles longistriatus Peterson, 1971

Peterson (1971) collected this mite from Texas and Puerto Rico.

Bychovskiata sp.

Bychovskiata was identified from a killdeer collected in Oregon.

Charadrius melodus Ord, 1824 Piping PloverBrephosceles longistriatus Peterson, 1971

This mite was collected by Peterson (1971) from Louisiana and Mississippi.

Bychovskiata sp.

Bychovskiata was recovered from plovers collected in Newfoundland, Rhode Island, Maryland, and Mississippi.

Sokoloviana sp.

This species is similar to that found on Charadrius hiaticula except that the paragenital sclerites were free. This species occurred on a plover collected in Newfoundland.

Charadrius alexandrinus Linnaeus, 1758Brephosceles tuberi Peterson, 1971

Peterson (1971) collected this species from Thailand and Ceylon.

Brephosceles charadrii Dubinin, 1951

This mite was reported by Gaud (1972) from the U.S.S.R. and by Cerny (1967) from Cuba.

Bychovskiata sp.

Cerny (1967) listed Bychovskiata pseudocharadrii from Cuba. Gaud (1972) reported B. charadrii from Africa.

Freyanomorpha ambigua Gaud, 1957

This mite was collected by Gaud (1957) from Cameroon, by Cerny (1967) from Cuba, and by McClure and Ratanaworabhan (1971) from Asia. In this study the species was recovered from snowy plovers collected in Mississippi, Florida and Texas.

Ingrassia centropoda (Robin and Megnin): 1877

Cerny (1967) listed this mite species from Cuba. Gaud (1972) reported finding the following mite species associated with snowy plovers in Cameroon:

Ingrassia centrotibia Gaud, 1972;

Ingrassia semidentata Gaud, 1972; and

Xiphiurus xiphiurus (Megnin and Trouessart) 1884.

Scolopacidae

Limosa haemastica (Linnaeus) 1758 Hudsonian Godwit

Alloptes sp.

Alloptes was recovered from this host collected at the Bering Straits.

Avenzoaria sp.

Avenzoaria was collected from the Hudsonian godwit of Maryland.

Limosa lapponica (Linnaeus) 1758 Bar-tailed Godwit

Alloptes sp.

Alloptes was identified from this bird collected in Denmark.

Limosa fedoa (Linnaeus) 1758 Marbled Godwit

Alloptes sp.

Alloptes occurred on this host from California.

Bregatovia nr. obtusolobata

This species was recovered from a marbled godwit collected in California.

Numenius phaeopus (Linnaeus) 1758 Whimbrel

Alloptes sp.

Gaud (1972) collected Alloptes procerus from Cameroon.

In this study a species of Alloptes was found on a Whimbrel collected in Virginia.

Pomeranzevia nr. numenii (Canestrini) 1878

This mite was reported by Gaud (1972) from Europe and Africa and by Cerny (1967) from Cuba. In this

Tringa study the species was found to occur on whimbrels collected in New York, Virginia, Georgia, Philippine Islands, Thailand, and Australia.

Numenius americanus Bechstein, 1812 Long-billed Curlew

Tringa Alloptes sp. (1789) Lesser Yellowlegs

Alloptes was found on this host species collected in Arizona. Alloptes was reported by Gentry (1967) from

Pomeranzevia ninni (Canestrini) 1879

This species occurred on a curlew from Texas.

Tringa melanoleuca (Gmelin) 1789 Greater Yellowlegs

Alloptes sp.

One female of Alloptes was recovered from this host collected in Utah. Alloptes was collected from the lesser

Avenzoaria sp. of Alaska, Texas, and Florida.

Mite specimens were collected from Tringa melanoleuca from New Jersey and Florida. Avenzoaria from Cuba.

Bregatovia nr. obtusolobata Dubinin, 1951

This mite species was found on the greater yellowlegs in Florida, Arizona, and Idaho. Bregatovia had two

Bregatovia nr. selenura (Megnin and Trouessart) 1884

B. selenura was identified from birds collected in New Jersey, Idaho, and Arizona. Bregatovia sawtooth appearance.

Montchadskiana sp. Montchadskiana willgeri from Cuba. Montchadskiana

Mite material was examined from New Jersey. Montchadskiana

Sammonica sp. Sammonica very similar to S. willgeri, and Sammonica

Several specimens of this unidentified species were collected from the greater yellowlegs of Florida.

Syringobia sp.

This mite species was different from that found on Tringa solitaria. Mite material was examined from Franklin County, Florida.

Tringa flavipes (Gmelin) 1789 Lesser YellowlegsAlloptes sp.

Alloptes gambettae was reported by Cerny (1967) from Cuba. A species of Alloptes occurred on birds from Virginia, Alaska, Florida, Argentina, Columbia, Peru, and Thailand.

Avenzoaria sp.

Cerny (1967) listed Avenzoaria gambettae from Cuba. A species of Avenzoaria was collected from the lesser yellowlegs of Alaska, Texas, and Florida.

Bregatovia americana (Oudemans) 1904

Cerny (1967) listed this mite from Cuba.

Ingrassia sp.

In this study Ingrassia was identified from this host from Virginia. The species examined here had two irregular elliptical thinnings in the opisthosomal shield just posterior of the adanal discs. The anterior edge of tibiae III presented a sawtooth appearance. Cerny (1967) listed Ingrassia veliger from Cuba. Gaud (1972) recollected I. forcipata from Africa and noted that it is very similar to I. veliger, and possibly conspecific.

Pilochaeta sp.

Mite material was examined from a host collected in Columbia.

Sammonica ovalis (Trouessart) 1898

Cerny (1967) listed this mite from Cuba and Gaud (1972) discussed this mite.

Sammonica doryphora Oudemans, 1904

Cerny (1967) also reported this mite from Cuba.

Tringa solitaria Wilson, 1813 Solitary SandpiperBregatovia n. sp.

This species, possibly new, occurred on solitary sandpipers from Nebraska, Mississippi, Minnesota, and Idaho.

Syringobia sp.

Mite material was examined from Idaho. Of the four known species of this mite genus, these specimens most closely resemble Syringobia chelopus.

Catoptrophorus semipalmatus (Gmelin) 1789 WilletAlloptes sp.

Alloptes was found on Willets collected in Newfoundland, Virginia, Mississippi, and Florida.

Bregatovia sp.

Cerny (1967) reported Bregatovia selenura from Cuba.

In this study a species of Bregatovia was identified from willets of Newfoundland, Virginia, North Carolina, and Mississippi.

Montchadskiana sp.

One male of this mite genus was found on a willet from Mississippi.

Actitus macularia (Linnaeus) 1766 Spotted sandpiperAlloptes sp.

Specimens of Alloptes were obtained from hosts collected in Rhode Island, Newfoundland, and North Carolina.

Dichobrephosceles actitidis (Canestrini) 1878

The species was recollected from Actitis macularia of Newfoundland. Peterson and Atyeo (1968) discussed this mite.

Bychovskiata sp.

Mite specimens were collected from hosts in Newfoundland, Pennsylvania, and North Carolina.

Phyllochaeta interfolia (Megnin and Trouessart) 1884

Dubinín (1956) discussed this species and recorded it from this host. The species has been recollected from a bird from Newfoundland.

Ingrassia forcipata (Haller) 1882

Gaud (1972) reported this mite as occurring on

Tringoides (=Actitus) macularia from Canada.

Heterosceles incanus (Gmelin) 1789 Wandering TattlerAlloptes sp.

Mite material was examined from a California bird.

Arenaria interpres (Linnaeus) 1758 Ruddy TurnstoneAlloptes sp.

In this study a species of Alloptes occurred on hosts collected in New York, Virginia, England and Seychelles. Two species of Alloptes are known from this host; A. dolichotrichus collected by Gaud (1957) from Morocco and by Cerny (1967) from Cuba, and A. arenarii listed from the U.S.S.R. by Gaud (1972) and from Cuba by Cerny (1967).

Avenzoaria sp.

Our mite material was obtained from the ruddy turnstone of England and Formosa. Avenzoaria arenarii was listed by Gaud (1967) from Cuba.

Bychovskiata subcharadrii Dubinin, 1951

Gaud (1972) reported this mite from Africa.

Freyanomorpha sp.

A species of Freyanomorpha was collected from this bird from England.

Ingrassia arenarii Gaud, 1958

This mite was collected by Gaud (1958) from Tanzania and by Cerny (1967) from Cuba.

Tectingrassis pilosa (Gaud) 1958

This mite was recollected from Cuba by Cerny (1967)

Montchadskiana sp.

Montchadskiana fascigera was reported from Africa by Gaud (1972) and from Cuba by Cerny (1967). In this

study a species of Montchadskiana occurred on ruddy turnstones collected in New York, Virginia and Formosa.

Phyllochaeta trouessarti (Berlese) 1897

Cerny (1967) listed this mite from Cuba.

Arenaria melanocephala (Vigors) 1828 Black Turnstone

Alloptes sp.

Mite material was examined from Washington, Alaska and California.

Avenzoaria sp.

This parasite was found on hosts from Alaska, Washington and California.

Phalaropus tricolor Vieillot, 1819 Wilson's Phalarope

Alloptes sp.

One female was examined from a phalarope collected in Nebraska.

Phalaropus lobatus (Linnaeus) 1758 Northern Phalarope

Alloptes sp.

Female specimens of Alloptes were examined from a host collected in California.

Phalaropus fulicarius (Linnaeus) 1758 Red Phalarope

Analges sp.

Material was examined from St. David, Bermuda.

Ingrassia phalaropi Gaud, 1972

Avenzoaria sp.

Gaud (1972) collected Avenzoaria phalaropi from the type host in Morocco.

Scolopax minor (Gmelin) 1789 Woodcock

Proctophyllodes scolopacinus (Koch) 1842

In this study the mite species was identified from hosts from Maine, Louisiana, and Virginia. Atyeo and Braasch (1966) previously recollected this species from woodcocks of the United States.

Avenzoaria sp.

Material was examined from Louisiana.

Gallinago gallinago (Linnaeus) 1758 Common Snipe

Alloptes sp.

Material was examined from England and India.

Ingrassia fissitarsa (Gaud) 1958

This mite was reported by Cerny from G. gallinago in Cuba (1967).

Microlichus avus charadricola Fain, 1965

This mite was listed by Cerny (1967) from Cuba.

Limnodromus griseus (Gmelin) 1789 Short-billed Dowitcher

Alloptes sp.

Mite material was examined from birds collected in Rhode Island, Maryland, Virginia, Mississippi, Alabama, Iowa, Arizona, Idaho, and Malaya.

Avenzoaria sp.

Mite material was examined from birds of Maryland, Iowa, Arizona, and Idaho.

Pseudoavenzoaria n. sp.

A possibly new species of Pseudoavenzoaria was collected from the short-billed dowitcher of Idaho.

Phyllochaeta n. sp.

A species of Phyllochaeta, probably a new one, was recovered from Limnodromus griseus of Virginia, Texas, and Idaho.

Ingrassia sp.

Material was examined from Iowa.

Aphriza virgata (Gmelin) 1789 SurfbirdAlloptes sp. 1

An unidentified species of Alloptes, here designated number one to distinguish it from another species of Alloptes collected from this host, occurred on a surfbird from Admiralty Island, Alaska.

Alloptes sp. 2

This species of Alloptes was collected from the same bird species as the previous one from Admiralty Island and also California.

Zachvatkinia sp.

One female was examined from Admiralty Island, Alaska. This may be an accidental occurrence on this host.

Calidris canutus (Linnaeus) 1758 KnotAlloptes sp.

Mite material was examined from Denmark.

Proctophyllodes megaphyllus Trouessart, 1885

This mite species has been recollected from Europe but Atyeo and Braasch (1966) regarded this as a

questionable record because only females were found.

Avenzoaria sp.

Mite specimens were examined from knots collected in Texas.

Gaud (1972) recollected Montchadskiana fascigera from Africa and also reported M. calidris from this host in the U.S.S.R.

Calidris alba (Pallas) 1764 Sanderling

Avenzoaria sp.

Avenzoaria was identified from Calidris alba of North Carolina and Guerrero, Mexico.

Zachvatkinia sp.

One female was examined from Carteret County, North Carolina.

Ingrassia sp.

In this study a species of Ingrassia was identified from a sanderling collected in Rhode Island. Cerny (1967) reported Ingrassia centropoda from Cuba.

Cerny also listed the following mites from this host in Cuba:

Montchadskiana fascigera minuta Dubinin, 1951;

M. s. securicata (Megnin and Trouessart) 1884;

Phyllochaeta bouveti (Megnin and Trouessart) 1884; and

Syringobia chelopus Trouessart and Neumann, 1888.

Calidris pusilla (Linnaeus) 1766 Semipalmated Sandpiper

Alloptes sp.

Alloptes occurred on Calidris pusilla from Brunswick, and the Northwest Territories, Canada.

Avenzoaria sp.

Avenzoaria was identified from Calidris pusilla collected in North Carolina and Brunswick, Canada.

Montchadskiana nr. securicata (Megnin and Trouessart) 1884

This species was identified from a bird collected in Brunswick, Canada.

Pilochaeta nr. pilosetae

Mite material was identified from hosts collected in Brunswick and the Northwest Territories, Canada.

Calidris mauri Cabanis, 1856 Western SandpiperAlloptes sp. 1

Mite material was examined from Utah, Mexico, and California.

Alloptes sp. 2

This species of Alloptes was also recovered from the western sandpiper of California.

Avenzoaria sp.

This species occurred on hosts from Virginia; Washington, D.C.; Mexico; and California.

Pilochaeta sp.

This mite genus was recovered from this host collected in Washington, D.C.

Syringobia sp.

This mite species was recovered from hosts collected in California and Washington, D.C.

Calidris ruficollis (Pallas) 1776 Rufous-necked SandpiperAlloptes sp.

A species of Alloptes was collected from Calidris ruficollis of the Palau Islands.

Montchadskiana sp.

Mite material was examined from Thailand, Palau Islands, and Bering Island.

Calidris minutilla (Vieillot) 1819 Least SandpiperAlloptes sp.

Specimens of a species of Alloptes were recovered from least sandpipers collected in Rhode Island, South Carolina, Brunswick, Kansas, Texas, Utah, and Alaska.

Dichobrephosceles nr. actidis (Canestrini) 1878

This species was identified from the least sandpiper of Rhode Island.

Bychovskiata sp.

This species was collected from Calidris minutilla from South Carolina.

Avenzoaria sp.

This parasite occurred on hosts collected from Alaska, Kansas, and Florida.

Calidris fuscicollis (Vieillot) 1819 White-rumped SandpiperAlloptes sp.

This mite genus was examined from hosts collected in Newfoundland, New York, North Dakota, Mississippi, and

Calidris melanotos Louisiana.

Avenzoaria sp.

Cerny (1967) listed Avenzoaria calidris from this host in Cuba. In this study a species of Avenzoaria was collected from Long Island, New York.

Ingrassia sp.

A species of Ingrassia occurred on a white-rumped sandpiper collected from Mississippi.

Calidris bairdii (Coues) 1861 Baird's Sandpiper

Avenzoaria sp.

Mite material was examined from Point Barrow, Alaska.

Calidris melanotos (Vieillot) 1819 Pectoral Sandpiper

Alloptes sp.

A species of Alloptes was collected from this host from Texas.

Pterodectes sp.

The subfamily Pterodectinae usually occurs on the avian orders Passeriformes and Apodiformes (Park and Atyeo 1972) and this unusual host record may be an accident. A species of a genus similar to Pterodectes was found on a pectoral sandpiper from Texas.

Species of the following mite genera were collected from

Calidris melanotos from Brownsville, Texas:

Avenzoaria sp.;

Montchadskiana sp.; and

Plutarchusia sp.

Calidris acuminata (Horsfield) 1821 Sharp-tailed Sandpiper

Avenzoaria nr. tringae (Oudemans) 1904

This mite species was identified from Calidris acuminata
from the Palau Islands.

Calidris maritima (Brunnich) 1764 Purple Sandpiper

Species of the following mite genera were collected from the
purple sandpiper of Rhode Island:

Alloptes sp.; and

Ingrassia sp.

Calidris ptilocnemis (Coues) 1873 Rock Sandpiper

Alloptes sp.

Mite material was examined from birds of Alaska and
British Columbia.

Calidris alpina (Linnaeus) 1758 Dunlin

Alloptes sp.

Gaud (1972) recollected Alloptes crassipes and also
A. calidris from the dunlin in Morocco. In this study
a species of Alloptes was collected from this host
from Wisconsin, England, India, and Formosa.

Dichobrephosceles eroliae Peterson and Atyeo, 1968

Peterson and Atyeo (1968) collected this mite species
from England.

Avenzoaria sp.

McClure and Ratanaworabhan (1971) listed Avenzoaria
tringae (Oudemans) 1904 from this host in Asia. In
this study mite material was examined from Wisconsin.

Montchadskiana hastigera (Megnin and Trouessart) 1884

The type material for this mite species was collected from this host (Gaud 1972).

Sikyonimus diplectrum Trouessart (in Berlese 1896)

Calidris alpina is the type host for this mite species.

S. diplectrum originally was described from Europe and has not been collected in North America.

Calidris ferruginea (Pontoppidan) 1763 Curlew Sandpiper

Gaud (1972) recollected the following mite species from this host:

Anomalges amphibolus Gaud, 1972 from Cameroon;

Montchadskiana securicata (Megnin and Trouessart) 1884

from Europe; and

Sikyonimus diplectrum Trouessart (in Berlese 1896) from

Europe. Feather mites have not been collected from the North American Curlew sandpiper.

Micropalama himantopus (Bonaparte) 1826 Stilt Sandpiper

Alloptes sp.

Mite material was examined from Cobb Island, Virginia.

Philomachus pugnax (Linnaeus) 1758 Ruff

Alloptes sp.

McClure and Ratanaworabhan (1971) listed an unidentified species of Alloptes from Asia. In this study

Alloptes occurred on ruffs collected in New Brunswick,

Italy, and Holland. This is the only feather mite

that was collected from the North American ruff.

Avenzoaria sp.

Avenzoaria philomachi was reported by Gaud (1972) from the U.S.S.R. and Africa, and by McClure and Ratanaworabhan (1971) from Asia. In this study a species of Avenzoaria was recovered from a bird collected in Holland.

Ingrassia philomachi Gaud, 1972

Gaud (1972) collected this mite species from Philomachus pugnax in the Congo, Rwanda, Southwest Africa, and Zululand.

Ingrassia lativelata Gaud, 1972

Gaud (1972) also collected this species from the ruff of Cameroon, Zululand, and Ovamboland. McClure and Ratanaworabhan (1971) recorded an unidentified species of Ingrassia from Asia.

Pilochaeta pilosetae Dubinin, 1951

Gaud (1972) recollected this mite species from Africa.

Species of the following Stercorariidae

Catharacta skua (Brunnich) 1764 Skua

Species of the following genera were collected from skuas at Bul's Island and Avian Island, Antarctica.

Alloptes sp.; andZachvatkinia sp.Stercorarius pomarinus (Temminck) 1815 Pomerine JaegerAlloptes sp.

Cerny (1967) listed Alloptes stercorarii from Cuba and Atyeo and Peterson (1967) reported it from Wrangell

Island. In this study only female mite material was examined from a host collected in Nova Scotia.

Brephosceles n. sp.

Only males of this mite species were collected. They appeared to be of Peterson's (1971) species group VI which is restricted to the Charadriiformes; most being host species specific. This species occurred on hosts collected from Nova Scotia and Arizona.

Thecarthra stercorarii Dubinin, 1956

Cerny (1967) listed this mite species from Cuba.

Zachvatkinia sp.

Atyeo and Peterson (1967) reported Zachvatkinia stercorarii from Wrangell Island and Cerny (1967) listed it from Cuba. In this study a species of Zachvatkinia was collected from Stercorarius pomarinus of Nova Scotia, Alaska, Arizona, and Japan.

Stercorarius parasiticus (Linnaeus) 1758 Parasitic Jaeger

Species of the following mite genera occurred on this host from Massachusetts, Arctic America, Norway, and Argentina:

Alloptes sp.; and

Zachvatkinia sp.

Stercorarius longicaudus (Vieillot) 1819 Long-tailed Jaeger

Alloptes sp.

Cerny (1967) listed Alloptes stercorarii from this host in Cuba. In this study mite material was examined from Greenland and Lapland.

Thecarthra stercorarii Dubinin, 1956

Larus Cerny (1967) listed this mite from Cuba.

Zachvatkinia sp.

Cerny (1967) reported Zachvatkinia stercorarii from Cuba. In this study a species of Zachvatkinia occurred on Stercorarius longicaudus collected from Canada, Greenland, and Lapland.

Laridae

The mite genus Laronyssus is restricted to the avian family Laridae.

Larus heermanni Cassin, 1852 Heermann's Gull

Species of the following mite genera occurred on this host collected from California and Mexico:

Alloptes sp.; and

Zachvatkinia sp.

Larus delawarensis Ord, 1815 Ring-billed Gull

Zachvatkinia sp.

Mite material was examined from Nebraska, California, and Illinois.

Larus canus (Linnaeus) 1758 Mew Gull

Alloptes sp.

A species of Alloptes occurred on this host from California.

Freyana sp.

One female specimen of this mite genus was found on a bird from St. Michael Island, Alaska. This record is questionable and probably not a valid host-parasite

association.

Laronyssus sp.

A species of Laronyssus was obtained from a mew gull collected on St. Michael Island, Alaska.

Zachvatkinia sp.

Zachvatkinia was identified from birds collected in Alaska and California.

Pomeranzevia nr. numenii (Canestrini) 1878

This species was tentatively identified from birds collected on St. Michael Island, Alaska.

Montchadskiana sp.

Mite material was examined from St. Michael Island, Alaska.

Larus argentatus (Pontoppidan) 1763 Herring Gull

Cerny (1967) listed the following mites from Cuba;

Alloptes lari (Gaud) 1957;

Alloptes obtusolobus Dubinin) 1951;

Laronyssus marinus (Trouessart) 1886; and

Zachvatkinia sterna (Canestrini) 1876.

Larus californicus (Lawrence) 1854 California Gull

Species of the following mite genera occurred on L.

californicus collected from California and Lower California;

Alloptes sp.;

Zachvatkinia sp; and

Ingrassia sp.

Larus occidentalis (Audubon) 1839 Western Gull

The following mite genera occurred on this bird species collected from Monterey, California:

Alloptes sp.; and

Zachvatkinia sp.

Larus glaucescens (Neumann) 1840 Glaucous-winged Gull

This gull collected from Los Angeles County, California was parasitized by the following mite species:

Alloptes sp.; and

Laronyssus marinus (Trouessart) 1886.

Larus atricilla (Linnaeus) 1758 Laughing Gull

Alloptes sp.

Mite material was examined from Royal Shoal, North Carolina and Yucatan, Mexico.

Larus pipixcan (Wagler) 1831 Franklin's Gull

Alloptes sp.

Alloptes was identified from this host from Idaho.

Zachvatkinia sp.

A species of Zachvatkinia was collected from this host from Illinois and Idaho.

Larus ridibundus (Linnaeus) 1766 Black-headed Gull

Zachvatkinia sp.

Mite material was examined from this host collected in the Philippine Islands and Thailand. The black-headed gull of North America was not examined for feather parasites.

Larus philadelphia (Ord) 1815 Bonaparte's GullAlloptes sp.

Only female Alloptes specimens were collected from birds of California and Washington.

Laronyssus nr. martini (Trouessart) 1885

This mite species was identified from hosts collected in Florida, California, and Washington.

Larus minutus (Pallas) 1766 Little GullAlloptes sp.

Mite material was examined from New Jersey and Cyprus.

Rhodostethis rosea (Macgillivray) 1824 Ross' GullLaronyssus nr. marinus (Trouessart) 1886

This mite species was identified from gulls collected in the Pribilof Islands and Point Barrow, Alaska.

Rissa tridactyla (Linnaeus) 1758 KitiwakeAlloptes sp.

Cerny (1967) listed Alloptes obtusolobus from Cuba.

In this study a species of Alloptes was found on birds collected in the Davis Strait area.

Laronyssus nr. martini (Trouessart) 1885

Cerny (1967) listed both Laronyssus martini and L. marinus (Trouessart) 1886 from this host in Cuba. In this study a species of Laronyssus was identified from birds collected at the Davis Strait and Witless Bay, Newfoundland.

Zachvatkinia sterna (Canestrini) 1876

Cerny (1967) reported this mite from Cuba.

Xema sabina (J. Sabine) 1819 Sabine's GullAlloptes sp.

Alloptes was collected from gulls of St. Lawrence Island.

Zachvatkinia sp.

A species of Zachvatkinia occurred on birds collected in Alaska, Greenland, and St. Lawrence Island.

Chlidonias nigra (Linnaeus) 1758 Black TernGreniera simplex (Trouessart) 1886

Zumpt (1961) listed this mite species from Europe and Senegal and Cerny (1967) reported it from Cuba.

Cerny (1967) also listed the following mites from Cuba:

Psoroptoides bothrioplax Gaud, 1958;

Thecarthra theca (Megnin and Trouessart) 1884;

Alloptes bisetatus (Haller) 1881; and

Zachvatkinia sterna (Canestrini) 1876.

Gelochelidon nilotica (Gmelin) 1789 Gull-billed TernAlloptes sp.

Cerny (1967) listed Alloptes bisetatus (Haller) 1881 from Cuba. In this study a species of Alloptes was examined from Assateague Island and Panama.

Zachvatkinia sp.

Cerny (1967) listed Zachvatkinia sterna from Cuba.

In this study Zachvatkinia was collected from Gelochelidon nilotica of Assateague Island.

Hydroprogne caspia (Lepechin) 1770 Caspian TernAlloptes sp.

Alloptes was examined from Ontario, Michigan, and Kenya.

Thecarthra theca (Megnin and Trouessart) 1884

Cerny (1967) reported this mite from Cuba.

Zachvatkinia sp.

Zachvatkinia sternae was reported by Cerny (1967)

from Cuba. We collected Zachvatkinia from the

Caspian tern of Ontario, Michigan, and Kenya.

Sterna hirundo (Linnaeus) 1758 Common TernAlloptes sp.

Cerny (1967) reported Alloptes bisetatus from Cuba.

In this study a species of Alloptes was found on Sterna hirundo collected in Maryland, Rhode Island, and Thailand.

Plutarchusia nr. simplex (Trouessart) 1886

A species tentatively identified as P. simplex was found on birds from Rhode Island and the U.S.S.R.

Plutarchusia pseudocheilopus Dubinin, 1956

Cerny (1967) reported this mite from Cuba. In this study mite material was examined from birds of the Volga and Danube deltas.

Inermodorsus semaphorus (Trouessart) 1886

This is the only mite species in the genus. It has been reported from Cuba (Cerny 1967), Europe (Zumpt 1961), and Senegal (Zumpt 1961).

Sterna zachvatkinia sp. 1885 Aleutian Tern

Alloptes Zachvatkinia sternae was reported from this host in Cuba by Cerny (1967).

Cerny (1967) also listed the following mites from this host in Cuba:

Greniera simplex (Trouessart) 1886;

Thecarthra theca (Megnin and Trouessart) 1884; and

Sterna Laronyssus martini (Trouessart) 1885.

Sterna forsteri (Nuttall) 1834 Forster's Tern Sterna fuscata

Alloptes sp. Alloptes and the Philippine Islands:

Alloptes was examined from birds of North Dakota, and Texas.

Sterna Analges sp. Analges 1764 Least Tern

Alloptes One male of a species of Analges was examined from North Dakota. In this entire study only a few specimens of Analges were found and these were probably not valid records.

Zachvatkinia sp.

Zachvatkinia was collected from birds of North Dakota, Louisiana and Texas.

Sterna dougallii (Montagu) 1813 Roseate Tern Sterna dougallii

These mite genera occurred on birds collected from New

Thalassidroma Jersey, Dominican Republic, Tobago, and British West Indies:

Alloptes sp.; and Alloptes sp. and Zachvatkinia sp.

Zachvatkinia sp.

Alloptes sp.; and

Zachvatkinia sp.

Sterna aleutica (Baird) 1869 Aleutian TernAlloptes sp.

Specimens of Alloptes were found on terns from Alaska and the Commander Islands.

Zachvatkinia sp.

A species of Zachvatkinia was collected from birds of the Commander Islands and U.S.S.R.

Sterna fuscata (Linnaeus) 1766 Sooty Tern

The following genera were collected from Sterna fuscata of Alaska, Panama, and the Philippine Islands:

Alloptes sp.; andZachvatkinia sp.Sterna albifrons (Pallas) 1764 Least TernAlloptes sp.

Alloptes bisetatus was reported from Cuba by Cerny (1967). In this study a species of Alloptes was collected from Sterna albifrons from Rhode Island and India.

Zachvatkinia sp.

Zachvatkinia sterna was reported from Cuba by Cerny (1967). In this study a species was collected from Sterna albifrons of Rhode Island and India.

Thalasseus maximus (Boddaert) 1783 Royal Tern

The following mite genera occurred on the royal tern from North Carolina and Maryland:

Alloptes sp.; andZachvatkinia sp.

Thalasseus sandvicensis (Latham) 1787 Cabot's TernAlloptes sp. (collected in Louisiana and Texas)

Alloptes was identified from this host from Florida, Texas, and Mexico.

Plutarchusia brachytarsa Atyeo and Peterson (in press)

This is the first record of this mite genus on Thalasseus. The mite specimens were obtained from Thalasseus sandvicensis collected in Yucatan, Mexico.

Zachvatkinia sp. (Parrot-billed Auk)

Zachvatkinia was recovered from hosts collected in Texas and Florida.

Anous stolidus (Linnaeus) 1758 NoddyAlloptes sp. (Common Noddy)

A species of Alloptes was collected from the noddy of Antigua, British West Indies.

Brephosceles n. sp. (Grey County, California)

One female was examined from Antigua, British West Indies. This is undoubtedly an undescribed species of Brephosceles.

Zachvatkinia sp. (in Canada, Greenland, Norway, and the

Specimens of Zachvatkinia occurred on birds from the British West Indies, Columbia and Brazil.

Rynchops niger (Linnaeus) 1758 Black SkimmerHemifreyana nr. grandiloba (Trouessart and Neumann) 1888

Cerny (1967) reported this mite from this host in Cuba. In this study the mite species was collected from birds of North Carolina, Mississippi and Louisiana.

The following mite genera were identified from black
skimmers collected in Louisiana and Texas:

Alloptes sp.; and

Zachvatkinia sp.

Alcidae

Mite material from the bird family Alcidae was of the genus
Alloptes with the exception of a single specimen of Zachvatkinia
and Sokoloviana.

Alca torda (Linnaeus) 1758 Razor-billed Auk

Alloptes sp.

Mite material was examined from the Magdalen Islands,
Quebec.

Uria aalge (Bryant) 1861 Common Murre

Alloptes sp.

Mite material was examined from Witless Bay, Newfound-
land and Monterey County, California.

Cephus grylle (Linnaeus) 1758 Black Guillemot

Alloptes sp.

Alloptes was identified from Cephus grylle
collected in Canada, Greenland, Norway, and the
Farow Islands.

Zachvatkinia sp.

One female of this mite species was examined from a
bird collected in Bergen, Norway.

Cephus columba (Pallas) 1811 Pigeon Guillemot

Alloptes sp.

Mite material was identified from birds collected
in California, British Columbia and Burma.

Ptychoramphus aleuticus (Pallas) 1811 Cassin's AukletAlloptes sp.

This Mite material was examined from this host from
California.

Cyclorhynchus psittacula (Pallas) 1769 Parakeet AukletAlloptes sp.

Alloptes occurred on this host collected from the
Commander Islands.

Aethia pygmaea (Gmelin) 1789 Whiskered AukletAlloptes sp.

Mite material was examined from Bering Island.

Fratercula arctica (Linnaeus) 1758 Atlantic PuffinAlloptes sp.

Alloptes was collected from birds of Witless Bay,
Newfoundland.

Fratercula corniculata (Naumann) 1821 Horned PuffinAlloptes sp.

Mite material was examined from Siberia and
Alaska.

Lunda cirrhata (Pallas) 1769 Tufted PuffinAlloptes sp.

A species of Alloptes occurred on this host from
Washington.

Columba sokoloviana sp. (Mason 1958) White-crowned Pigeon

Pterolichus One male was examined from Lunda cirrhata collected in Washington.

Cayman Island. COLUMBIFORMES

Protolichus sp. Columbidae

This order is assigned 322 species of birds, 11 of which occur in North America and one of these, the passenger pigeon, is extinct. Feather mites were found on ten species, including the passenger pigeon. Four genera of the mite family Falculiferidae occurred on the hosts which were examined, all of which appeared to be restricted to the columbiformes. The mite families Analgidae, Pterolichidae, and Proctophyllodidae were each represented by the presence of one genus.

Columba livia (Gmelin) 1789 Domestic Pigeon

Columba pterophagus n. sp. (Mason 1958) Red-billed Pigeon

Falculifer Cerny (1970) reported Pterophagus strictus from this host and McClure and Ratanaworabhan (1971) listed it from Asia. In this study a species of Pterophagus, possible a new one, was collected from the Midway Atoll.

Diplaegidia columbae (Buchholz) 1869

Cerny (1970) reported this species from Cuba and McClure and Ratanaworabhan (1971) listed it from Asia.

Falculifer sp. was collected from Cayman, British

Falculifer McClure and Ratanaworabhan (1971) reported this mite species from Asia.

Falculifer was collected from this host.

Columba leucocephala (Linnaeus) 1758 White-crowned PigeonPterophagoides sp.

A species of Pterophagoides was collected from Grand Cayman Island.

Protolichus sp.

One male and female were examined. No geographical data was available.

Falculifer sp.

Falculifer was identified from the British West Indies and Grand Cayman Island.

Columba fasciata (Say) 1823 Band-tailed PigeonFalculifer sp.

Mite material was examined from birds of British Columbia, Canada, Mexico and Guatemala.

Columba flavirostris (Wagler) 1831 Red-billed PigeonFalculifer sp.

A species of Falculifer occurred on this host collected from Texas.

Pterodectes sp.

This mite does not conform well to any of the genera described by Park and Atyeo (1971). Species of the subfamily Pterodectinae are usually restricted to the avian orders Passeriformes and Apodiformes. This material was collected from Campeche, Mexico.

Megninia sp.

One female, tentatively identified as a species of Megninia, was collected from this host from Texas.

Ectopistes migratorius (Linnaeus) 1766 Passenger PigeonFalculifer sp. (Gaud and Mouchet 1959)

A species of Falculifer was found on passenger pigeons collected from Erie, Pennsylvania and Canadian River, Indian Territory.

Zenaida macroura (Linnaeus) 1758 Mourning DoveFalculifer sp. (Social was examined from Nayarit, Mexico)

Material was examined from Cuba.

Megninia sp.

Hanson (1957) recollected Megninia nr. columbae from Illinois. In this study material was examined from Michigan.

Falculifer nr. rostratus (Macdonald)

Hanson (1957) reported this mite from Cuba.

Zenaida asiatica (Linnaeus) 1758 White-winged DoveFalculifer sp. (and one of Zenaida sp. were found to have been

hosted by the Mite material was examined from birds of Arizona and Mexico.

Columbina passerina (Linnaeus) 1758 Eastern Ground DovePterophagoides n. sp. (collected from Florida)

Only one species of this mite genus, Pterophagoides bathmourus has been described (Gaud and Mouchet 1959). Ventura (1968) reported a mite not conforming exactly to the genus Pterophagoides, and with some characteristics of Rhipiurus, off this host from Jamaica. No description was given but it is probable that this is the same mite species. In this study the species was collected

from Columbina passerina from Florida and Jamaica.

Triainacarus sp. (Gaud unpublished)

This or In this study the mite genus was identified from

occur in North Columbina passerina collected in Seven Oaks, Florida.

Scardafella inca (Lesson) 1847 Inca Dove birds, one of which is

probably Pterophagoides sp. and another, Anallachus, is an under-

cribed Pterolichus Mite material was examined from Nayarit, Mexico.

Leptotila verreauxi (Bonaparte) 1855 White-fronted Dove

Coccyzus Falculifer sp. (Linnaeus) 1758 Yellow-billed Cuckoo

Caracul Mite material was examined from doves of Texas and

Mexico. was collected from birds of Florida

and Georgia. PSITTACIFORMES

Crotophaga ani (Linnaeus) 1758 Psittacidae

Of the 344 bird species assigned to this order only one occurred in North America and it is thought to be extinct. Three genera of Pterolichidae and one of Xolalgidae were found to have been hosted by the Carolina Parakeet.

Conuropsis carolinensis (Linnaeus) 1758 Carolina Parakeet

Species of the following mite genera were found on Carolina parakeets collected from Florida:

Aralichus sp.; (is still being a taxonomically difficult

Protolichus sp.; material was examined from Kingston

Protonyssus sp.; and

Crotophaga Rhytedelasma sp. (Swainson) 1827 Groove-billed Ani

Pterolichus sp.

Pterolichus was identified from mite material

from Texas and Mexico.

CUCULIFORMES

Cuculidae

This order is assigned 152 species of birds, six of which occur in North America. Mites have been collected from three of these. Four mite genera were found on these birds, one of which is probably an accidental record, and another, Analichus, is an undescribed Pterolichid. Feather mites of the family Gabuciniidae appear to be most common.

Coccyzus americanus (Linnaeus) 1758 Yellow-billed Cuckoo

Coraciacarus nr. cuculi (Megnin and Trouessart) 1884

This species was collected from birds of Florida and Georgia.

Crotophaga ani (Linnaeus) 1758 Smooth-billed ani

Anilichus n. sp.

Mite material was examined from Trinidad.

Coraciacarus sp.

Ventura (1968) reported this mite-bird association from Jamaica.

Piciformobia sp.

This is tentative identification, the mite family Gabuciniidae still being a taxonomically difficult group. Mite material was examined from Kingston, Jamaica.

Crotophaga sulcirostris (Swainson) 1827 Groove-billed Ani

Piciformobia sp.

Piciformobia was identified from anis collected in Texas and Mexico.

Zachvatkinia sp.

Zachvatkinia was collected from Vera Cruz, Mexico.

This would seem an unusual parasite for birds of this family and the validity of this record is suspect.

STRIGIFORMES

This order is assigned 146 bird species 18 of which occur in North America. Feather mites have been collected from nine of these. Mites of the families Kramerellidae (2 genera), Analgidae (2 genera) and Proctophyllodidae (1 genus) have been collected from these birds. One mite species, Proctophyllodes polyxenus, occurs on the Passeriformes and is not a usual parasite of the Strigiformes (Atyeo and Braasch 1966). Kramerella and Protalges also occurred on the Falconiformes. Dermonoton appears to be restricted to the Strigiformes

Tytonidae

Tyto alba (Scopoli) 1769 Barn Owl

Kramerella sp.

Cerny (1967) listed Kramerella lunulata from Cuba.

A species of Kramerella was collected from Tyto alba from Texas.

Dermonoton sp.

McClure and Ratanaworabhan (1971) reported this species from Asia.

Protalges sp.

McClure and Ratanaworabhan (1971) reported a species from Asia and Cerny (1967) reported Protalges attenuatus

(Buchholz) 1869 from Cuba. In this study Protalges
was collected from a barn owl of England.

Pandalura strigisoti (Buchholz) 1869

This species has been reported from Cuba (Cerny 1967),
Europe (Zumpt 1961) and Senegal (Zumpt 1961).

Strigidae

Otus asiø (Linnaeus) 1758 Screech Owl

Dermonoton sp.

Mite material was examined from Texas.

Otus trichopsis (Wagler) 1832 Whiskered Owl

Dermonoton sp.

Mite material was examined from a bird collected in
Guerrero, Mexico.

Bubo virginianus (Gmelin) 1788 Great Horned Owl

Dermonoton sp.

A species of Dermonoton was collected from Texas.

Proctophyllodes polyxenus Atyeo and Braasch, 1966

Aty eo and Braasch (1966) collected this mite species
from the great horned owl of Texas but believed it to
be a questionable record.

Glaucidium gnoma (Wagler) 1832 Pygmy Owl

Kramerella sp.

Mite material was examined from Mexico.

Speotyto cunicularia (Molina) 1782 Burrowing Owl

Dermonoton sp.

This genus was identified from hosts collected in
Texas and Nebraska.

Proctophyllodes polyxenus Atyeo and Braasch, 1966

Aty eo and Braasch (1966) collected this mite species from a burrowing owl in Texas but believed it to be a questionable record.

Strix varia (Barton) 1799 Barred Owl

Dermonoton sp.

Dermonoton was identified from this host from Texas and Florida.

Kramerella sp.

Kramerella was collected from Strix varia from Florida.

Asio otus (Linnaeus) 1758 Long-eared Owl

Kramerella sp.

Niethammer (1938) reported Kramerella lunulata from this host. In this study a species of Kramerella was collected from this host from Kansas.

Pandalura nr. strigisoti (Buchholz) 1869

In this study a species of Pandalura was collected from Asio otus from Kansas.

Protalges attenuatus was reported from this host by

Niethammer (1938).

Asio flammeus (Pontoppidan) 1763 Short-eared Owl

Kramerella sp.

Niethammer (1938) reported Kramerella lunulata from this host. A species of Kramerella was collected from birds of Texas and India.

Proctophyllodes polyxenus Atyeo and Braasch, 1966

Atyeo and Braasch (1966) collected this mite in Texas from this host but believed it to be a questionable record.

CAPRIMULGIFORMES

Aegothelidae

This order is assigned 103 bird species, six of these occur in North America. Feather mites have been examined from five of these. Mites of the family Gabuciniidae were most common of these birds.

Chordeiles acutipennis (Hermann) 1783 Lesser NighthawkParagabucinia sp.

Mite material was collected from Venezuela and Brazil.

Nyctidromus albicollis (Gmelin) 1789 PauraqueParagabucinia sp.

Paragabucinia was tentatively identified from this host from Texas and Brazil.

Piciformobia sp.

Only one male of this mite species, tentatively identified as Piciformobia, was examined from Brazil.

Pterodectes sp.

Only one male of this mite species was collected from this host from Brazil and this record may not be valid.

Phalaenoptilus nuttallii (Audubon) 1844 Nuttall's Poor-will

Species of the following genera were collected from this host from Texas:

Paragabucinia sp.; and

Piciformobia sp.

Caprimulgus carolinensis (Gmelin) 1789 Chuck-will's-widow

Paragabucinia sp.

Mite material was examined from South Carolina and

Cuba.

Caprimulgus vociferus (Wilson) 1812 Whip-poor-will

Paragabucinia sp.

A species of this mite genus was collected from this host from Mexico.

APODIFORMES

Apodidae

This order is assigned 425 species of birds, 17 of which occur in North America. Feather mites have been collected from 13 species. The two bird families which compose this order, Apodidae and Trochilidae, appear to have quite distinct feather mite faunas. The Apodidae were found to host six genera of the mite family Eustathiidae and one genus of Alloptidae. The Trochilidae hosted three genera of Proctophylloidae and one genus of Dermationidae. The mite family Eustathiidae is restricted to the Apodidae and Hemiprocnidae (Puntipa 1973). Park and Atyeo (1971) found that the following mites of the subfamily Pterodectinae were restricted

to the Trochilidae; Trochilodectes, Xynonodectes, Toxerodectes, and Syntomodectes.

Cypseloides niger (Gmelin) 1789 Black Swift

Neochauliacia transversa Puntipa, 1973 (unpublished)

This mite was collected from South America.

Rhynchocaulus paradoxus Gaud and Berla, 1963

This mite was reported from Central America

(Puntipa 1973).

Streptoprocne zonaris (Shaw) 1796

Cerny (1967) reported the following mite species from this host in Cuba:

Thysanocernus cypseli (Trouessart) 1899;

Chauliacia variens (Trouessart) 1898; and

Rhynchocaulus paradoxus Gaud and Berla, 1963.

Radford (1958) listed the following mites from this host collected in unspecified locales:

Megninia longipes Trouessart, 1899;

Mesalges pici-majoris (Buchholz) 1870;

Pterolichus variens Trouessart, 1898; and

Alloptes cypseli Trouessart, 1899.

Chaetura pelagica (Linnaeus) 1758 Chimney Swift

Neochauliacia ornamenta Puntipa, 1973 (unpublished)

This species was collected from this host from South America (Puntipa 1973).

Echineustathia tricapitoseosa Gaud and McDaniel, 1969

This species was reported from South America by Puntipa (1973).

Chaeteustathia chapmani Puntipa, 1973 (unpublished)

This species occurred on this host from Trinidad
(Puntipa 1973).

Chauliacia tricapito-seta Puntipa, 1973 (unpublished)

This mite was collected from the chimney swift of
Texas (Puntipa 1973).

Radford (1958) reported Berlesella olata from an unidentified species of Chaetura.

Aeronautes saxatalis (Woodhouse) 1853 White-throated Swift

Mimeustathia aeronautii Puntipa, 1973 (unpublished)

Puntipa (1973) collected this mite from the U.S.
and Mexico.

Trochilidae

Cyananthus latirostris Swainson 1827 Broad-billed Hummingbird

Proctophyllodes huitzilopochtlii Atyeo and Braasch, 1966

Aty eo and Braasch (1966) collected this species from
Mexico.

Trochilodectes buconvexus Park and Atyeo, 1975

This species was collected from this host from
Mexico (Park and Atyeo 1975).

Hylocharis leucotis (Vieillot) 1818 White-eared Hummingbird

Proctophyllodes huitzilopochtlii Atyeo and Braasch, 1966

Aty eo and Braasch (1966) reported this species from
H. leucotis collected in Mexico.

Amazilia yucatanensis (Gould) 1856 Buff-bellied Hummingbird

Trochilodectes buconvexus Park and Atyeo, 1975

Park and Atyeo (1975) collected this species from Veracruz, Mexico.

Lampornis clemenciae (Lesson) 1829 Blue-throated Hummingbird

Proctophyllodes huitzilopochtlii Atyeo and Braasch, 1966

Atyeo and Braasch (1966) collected this species from the U.S. and Mexico.

Toxerodectes lecrovae Park and Atyeo, 1975

Park and Atyeo (1975) reported this mite from this host of Texas and Mexico.

Eugenes fulgens (Swainson) 1827 Rivolis Hummingbird

Proctophyllodes huitzilopochtlii Atyeo and Braasch, 1966

This species was collected from Mexico (Atyeo and Braasch 1966).

Archilochus colubris (Linnaeus) 1758 Ruby-throated Hummingbird

Passeroptes johnstoni Fain, 1965

Cerny (1967) listed this species from Archilochus colubris of Cuba.

Selasphorus platycercus (Swainson) 1827 Broad-tailed Hummingbird

Proctophyllodes huitzilopochtlii Atyeo and Braasch, 1966

Atyeo and Braasch (1966) collected this mite species from Mexico.

Selasphorus sasin (Lesson) 1829 Allen's Hummingbird

Proctophyllodes huitzilopochtlii Atyeo and Braasch, 1966

Atyeo and Braasch (1966) reported this mite species from Selasphorus sasin of Mexico.

TROGONIFORMES

Trogonidae

This order is assigned 37 species, only one of which occurs in North America. Three feather mite families were represented by the presence of one species each; the Proctophyllodidae, Avenzoariidae, and Gabuciniidae. The Gabuciniidae could not be positively identified, even to genus.

Trogon elegans (Gould) 1834 Coppery-tailed Trogon

Bychovskiata sp.

This genus was collected from a trogon from Jalisco, Mexico.

Gabuciniidae (unidentified)

Three females of this mite family were examined from this host collected in Jalisco, Mexico.

Proctophyllodes sp.

Only females of this species were examined from Sinaloa, Mexico.

CORACIIFORMES

Alcedinidae

This order is assigned 198 species, only two of which occur in North America. Feather mites were collected from only one of these, Megaceryle alcyon, and a species of Proterothrix was the only mite species found.

Megaceryle alcyon (Linnaeus) 1758 Belted Kingfisher

Proterothrix sp.

Mite material was examined from British Honduras.

PICIFORMES

Picidae

The order Piciformes is assigned 400 species of birds, 24 of which occur in North America. Feather mites have been examined from ten of these. Three genera of feather mites were found representing the Avenzoariidae (2) and the Gabuciniidae (1).

Melanerpes erythrocephalus (Linnaeus) 1758 Red-headed Woodpecker

Pterotrogus sp.

Specimens of Pterotrogus were obtained from this host collected in Michigan.

Pteronyssus sp.

One female of this mite genus was identified from Michigan.

Melanerpes formicivorus (Swainson) 1827 Acorn Woodpecker

Pterotrogus sp.

One female of a species Pterotrogus was collected from Coahuilo, Mexico.

Sphyrapicus varius (Linnaeus) 1766 Red-breasted Sapsucker

Pteronyssus sp.

Mite material was examined from Texas.

Sphyrapicus thyroideus (Cassin) 1851 Williamson's Sapsucker

Pteronyssus sp.

A species of Pteronyssus was collected from this sapsucker from Colorado.

Picoides scalaris (Wagler) 1829 Ladder-backed Woodpecker

Pterotrogus sp.

Pterotrogus occurred on this bird from Texas.

Picoides borealis (Vieillot) 1807 Red-cockaded Woodpecker

Pterotrogus sp.

Mite material was identified from Picoides borealis of Georgia.

Picoides tridactylus (Linnaeus) 1758 Northern Three-toed Woodpecker

Pteronyssus sp.

Cerny and Schumilo (1973) collected and described Pteronyssus picoides from the Chernovitsky Region of the U.S.S.R. In a chart they also give P. brevipes and P. monoplax as occurring on this host. In this study a species of Pteronyssus was collected from a host from Washington.

Picoides arcticus (Swainson) 1831 Arctic Three-toed Woodpecker

Pteronyssus sp.

Mite material was examined from Washington.

Colaptes cafer (Gmelin) 1788 Red-shafted Flicker

Capitolichus n. sp.

A species of Capitolichus, possibly a new one, was collected from Colaptes cafer from Mexico.

Dryocopus pileatus (Linnaeus) 1758 Pileated Woodpecker

These mite genera were found on this host collected in Texas:

Capitolichus n. sp.; and

Pterotrogus sp.

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