

ACARINA: ASTIGMATA: ANALGOIDEA: FEATHER MITES OF SOUTH GEORGIA AND HEARD ISLANDS¹

By Warren T. Atyeo² and Paul C. Peterson³

Abstract: Subantarctic birds from South Georgia and Heard I. and associated feather mites have been identified as follows: Diomedidae: *Diomedea chrysostoma* Forster with *Brephosceles diomedei*, n. sp., *B. gressitti*, n. sp. (Proctophyllodidae), *Promegninia pedimana* (Trouessart) (Avenzoariidae); *Diomedea melanophris* Temminck with *B. diomedei*, n. sp., *Echinacarus rubidus* (Trouessart) (Proctophyllodidae), *Diomedacarus gigas* (Trouessart) (Freyanidae); Procellariidae: *Macronectes giganteus* (Gmelin) with *Brephosceles marginiventris* (Trouessart) (Proctophyllodidae), *Zachvatkinia* sp. nr. *hydrobatidii* Dubinin (Avenzoariidae); *Pachyptila desolata* (Gmelin) with *Oxyalges cardiurus* Gaud & Atyeo (Proctophyllodidae); Hydrobatidae: *Oceanites oceanicus* (Kuhl) with *Zachvatkinia hydrobatidii* Dubinin (Avenzoariidae); Phalacrocoracidae: *Phalacrocorax atriceps georgianus* Lönnberg with *Scutomegninia phalacrocoracis* (Dubinin & Dubinina) (Avenzoariidae); Laridae: *Larus dominicanus* Lichtenstein with *Alloptes obtusolobus* Dubinin (Proctophyllodidae); Chionidae: *Chionis alba* (Gmelin) with *Alloptes aschizurus* Gaud (Proctophyllodidae); *Chionis minor* (Hartlaub) with *Alloptes aschizurus* Gaud, *A. chionis* Atyeo & Peterson (Proctophyllodidae). Feather mite species known from birds recorded from these islands but not collected are listed and figured.

The feather mite genus *Promegninia* Gaud & Atyeo, 1966, is transferred from the family Analgidae to the Avenzoariidae; the genera *Connivelobus* Dubinin, 1949, and *Microspalax* Mégnin & Trouessart, 1884, are transferred from the family Freyanidae to the Proctophyllodidae, subfamily Alloptinae. Within the Alloptinae, the variety *Echinacarus rubidus petaliferus* (Trouessart), 1898, is raised to species; 2 new species from the South Georgia Is. are described: *Brephosceles gressitti* from *Diomedea chrysostoma* and *B. diomedei* from *Diomedea chrysostoma* and *D. melanophris*. The species *Megninia antarctica* Gaud, 1952, is reassigned to the genus *Leptosphyra* Hull, 1934 (Analgidae: Xolalginiae).

Feather mites from South Georgia and Heard Islands have been collected from approximately 25% of the avian species recorded from these islands. The mite species included in the collection represent an even lesser percentage of species known or suspected to occur on these birds. To represent the probable host-parasite associations and to make this work more usable for identifying the subantarctic fauna, mite species reported from the same or closely related species of birds from other localities are included.

Table I illustrates the birds known to occur on the islands under investigation, the mites actually collected from these birds, and mite species that have been collected on the same or closely related hosts from adjacent areas. Penguins are excluded from the table; feather mites have never been collected or recorded from these birds.

The acarine superfamily Analgoidea contains more than 200 genera. The 21 genera included in the following key are representative of the ectoparasitic fauna which will be collected from South Georgia and Heard Islands.

¹Research supported in part by the National Science Foundation (GB-7943). Results of fieldwork supported by grants (G-23720, GA-166) to Bishop Museum from the Office of Antarctic Programs, U.S. National Science Foundation.

²Department of Entomology, University of Georgia, Athens, Georgia 30601.

³Department of Biology, Youngstown State University, Youngstown, Ohio 44503.

Table 1. Birds from South Georgia and Heard Islands and associated feather mite species.

Bird species and associated mite species	Ectoparasite collections	
	South Georgia	Heard
PROCELLARIIFORMES: Diomedidae		
<i>Diomedea chrysostoma</i> Forster, 1785	×	
<i>Brephosceles diomedei</i> , n. sp.	+	
<i>B. gressitti</i> , n. sp.	+	
<i>Promegnia pedimana</i>	+	
<i>Diomedea exulans</i> L., 1758	0	
<i>Diomedacarus gigas</i>		
<i>Promegnia pedimana</i>		
<i>Diomedea melanophris</i> Temminck, 1828	×	0
<i>Brephosceles diomedei</i> , n. sp.	+	
<i>Diomedacarus gigas</i>	+	
<i>Echinacarus rubidus</i>	+	
<i>Diomedea</i> species (other)		
<i>Echinacarus petaliferus</i>		
<i>Phoebetria palpebrata</i> (Forster, 1785)	0	0
none reported		
PROCELLARIIFORMES: Procellariidae		
<i>Daption capensis</i> (L., 1758)	0	0
<i>Connivelobus brevipes</i>		
<i>C. major</i>		
<i>Fulmarus glacialisoides</i> (Smith)	0	0
none reported		
<i>Garrodia nereis</i> (Gould, 1841)	0	
none reported		
<i>Halobaena caerulea</i> (Gmelin, 1789)	0	0
none reported		
<i>Macronectes giganteus</i> (Gmelin, 1789)	×	0
<i>Brephosceles marginiventris</i>	+	
<i>Zachvatkinia</i> species	+	
<i>Pachyptila belcheri</i> (Mathews, 1912)	0	
none reported		
<i>P. crassirostris</i> (Mathews, 1912)		0
none reported		
<i>P. desolata</i> (Gmelin, 1789)	0	×
<i>Brephosceles</i> sp. (♀ only)		+
<i>Oxyalges cardiurus</i>		+
<i>Pagodroma nivea</i> (Forster, 1777)	0	0
<i>Zachvatkinia hydrobatidii</i>		
<i>Procellaria aequinoctialis</i> L., 1758	0	0
none reported		
<i>Thalassoica</i> (= <i>Priocella</i>) <i>antarctica</i> (Gmelin, 1789)		0
<i>Microspalax minicata</i>		
PROCELLARIIFORMES: Hydrobatidae		
<i>Oceanites oceanicus</i> (Kuhl, 1820)	×	0
<i>Zachvatkinia hydrobatidii</i>	+	
<i>Fregetta tropica</i> (Gould, 1844)	0	
<i>Zachvatkinia hydrobatidii</i>		
Other species (Hydrobatidae)		
<i>Brephosceles decapus</i>		
<i>Leptosphyra falcifera</i>		
PROCELLARIIFORMES: Pelecanoididae		
<i>Pelecanoides georgica</i> Murphy & Harper, 1916	0	0
<i>Leptosphyra antarctica</i>		

Birds species and associated mite species	Ectoparasite collections	
	South Georgia	Heard
<i>Oxyalges incertus</i>		
<i>P. urinatrix exsul</i> Salvin, 1896	0	0
none reported		
PELECANIFORMES: Phalacrocoracidae		
<i>Phalacrocorax atriceps nivalis</i> Falla,		
none reported		
<i>P. a. georgianus</i> Lönnberg, 1906	×	
<i>Scutomegninia phalacrocoracis</i>	+	
Other species (Phalacrocoracidae)		
<i>Michaelia heteropus</i>		
<i>M. microcarbonis</i>		
<i>M. urile</i>		
<i>Scutomegninia serrulata</i>		
CICONIIFORMES: Ardeidae		
<i>Casmerodius albus</i> (L., 1758)	0	
none reported		
Other species (Ardeidae)		
<i>Ardeacarus ardeae</i> .		
ANSERIFORMES: Anatidae		
<i>Anas georgica</i> Gmelin, 1789	×	
<i>Freyana</i> sp. (immatures)	+	
Other species (Anatidae)		
<i>Freyana a. anatina</i>		
<i>F. l. largifolia</i>		
<i>Bdellorhynchus polymorphus</i>		
CHARADRIIFORMES: Stercorariidae		
<i>Catharacta loembergi</i> Mathews, 1912	0	0
<i>Alloptes stercorarii</i>		
<i>Zachvatkinia stercorarii</i>		
CHARADRIIFORMES: Laridae (inc. Sternidae)		
<i>Larus dominicanus</i> Lichtenstein, 1823	×	0
<i>Alloptes obtusolobus</i>	+	
<i>Sterna macrura</i> Naumann		0
none reported		
<i>Sterna v. vittata</i> Gmelin, 1789		0
none reported		
<i>Sterna v. georgiae</i> Reichenow, 1904	0	
none reported		
Other species (Laridae)		
<i>Laronyssus marinus</i>		
<i>L. martini</i>		
<i>Thecarthra theca</i>		
CHARADRIIFORMES: Chionididae		
<i>Chionis alba</i> (Gmelin, 1789)	×	
<i>Alloptes aschizurus</i>		
<i>A. chionis</i>		
<i>Trouessartia chionidis</i>		
<i>Chionis minor</i> (Hartlaub, 1841)		×
<i>Alloptes aschizurus</i>		+
<i>A. chionis</i>		+
CHARADRIIFORMES: Scolopacidae		
<i>Calidris fuscicollis</i> (Vieillot, 1819)	0	
<i>Avenzoaria calidridis</i>		

Bird species and associated mite species	Ectoparasite collections South Georgia Heard Is.
PASSERIFORMES: Motacillidae	
<i>Anthus antarcticus</i> Cabanis, 1884	0
none reported	
Other species (Passeriformes)	
<i>Proctophyllodes</i> species	
<i>Pterodectes</i> species	
<i>Trouessartia</i> species	

0 = Bird occurs but collections not made
 × = Bird occurs, collections available
 + = Parasite named was recovered from collections

KEY TO GENERA OF FEATHER MITES FROM ANTARCTIC AND
 SUBANTARCTIC BIRDS

1. All tarsi with 1 pair of setae inserted ventrolateral to ambulacra (setae *p* and *q*); family Pterolichidae2
- Tarsi lacking setae *p* and *q*.....3
- 2 (1). Both sexes with idiosomal terminus rounded (entire) and epimerites I free; from Ardeidae **Ardeacarus**
- Terminus of ♀ rounded; terminus of ♂ strongly bilobed; epimerites I Y-shaped; from Laridae **Thecarthra**
- 3 (1). Two lateral setae anterior to legs III arranged with longest (humeral seta, *h*) inserted anterior to shorter, often bladelike seta (subhumeral seta, *sh*); family Proctophyllodidae.....4
- Humeral seta inserted posterior to subhumeral seta.....11
- 4 (3). Genus II lacking solenidion *sigma*₁; subfamily Proctophyllodinae.....5
- Genus II with solenidion *sigma*₁.....6
- 5 (4). Males with leaflike terminal lamellae; ♀ with pregenital sclerite not connected to epimerites of legs III; from *Anthus*.....**Proctophyllodes**
- Males without leaflike terminal lamellae; ♀ with pregenital sclerite connected to epimerites of legs III; from *Anthus*.....**Pterodectes**
- 6 (4). Legs with 5 distinct (movable) segments; from *Anthus* and *Chionis*; subfamily Trouessartinae **Trouessartia**
- Legs with 4 movable segments, genua and femora fused; subfamily Alloptinae (in part).....7
- 7 (6). Both sexes with hysterosoma rounded and supporting marginal row of leaflike setae alternating with membranous expansions; from *Diomedea*.....**Echinacarus**
- Both sexes lacking marginal row of leaflike setae; hysterosoma may be rounded or truncated.....8
- 8 (7). Broad, rounded mites; fused genua and femora of legs III with heavily sclerotized ridges on dorsal and ventral surfaces; ♀ rounded posterior margin.....9
- Elongated mites; legs without ridges; ♀ usually with terminal lobes.....10
- 9 (8). Male with posterolateral lobes widely separated and connected by a narrow and shallowly arched lamella; ♀ with pregenital sclerite united with epimerites of legs I and II; from Procellariidae **Microspalax**
- Male with lobes approximate; ♀ rarely with pregenital sclerite connected to anterior epimerites; from Procellariidae.....**Connivelobus**
- 10 (8). Male with posterior lobes pronounced and widely separated at apices; from Procellariiformes **Brephosceles**
- Male with posterior lobes fused; idiosoma triangular; from Charadriiformes.....**Alloptes**
- 11 (3). Legs with 4 movable segments, genua and femora fused.....12
- Legs with 5 movable segments.....13
- 12(11). Male with posterior legs short, conical; seta *kT* small; from Procellariidae, Pelecanoididae;

- subfamily Alloptinae (in part).....**Oxyalges**
 Male with posterior legs cylindrical, thin; seta *kT* of tibia III well developed, often very long; from Hydrobatidae, Pelecanoididae; family Analgidae, subfamily Xolalgininae
-**Leptosphyra**
 13(11). Female without pregenital sclerite; ♂ with asymmetrical development, especially of anterior legs; from Phalacrocoracidae; family Freyanidae, subfamily Michaelichinae
**Michaelia**
 Female with pregenital sclerite; ♂ symmetrically developed.....14
- 14(13). Legs III and IV inserted more or less submarginally; legs III of ♂ never hypertrophied; family Freyanidae, subfamily Freyaninae15
 Legs III and IV inserted marginally (except legs IV when legs III hypertrophied); family Avenzoariidae16
- 15(14). Marginal idiosomal setae setiform; from *Diomedea*.....**Diomedecarus**
 Marginal idiosomal setae leaflike; from Anatidae.....**Freyana**
- 16(14). Female with 1 pair of long terminal setae; both sexes with 1 or 2 vertical setae (on anterior margin of propodosomal shield).....17
 Female with 2 pairs of long terminal setae; vertical setae absent.....20
- 17(16). Female with dorsal hysterosomal shield well developed.....18
 Female with hysterosomal shield reduced to 2 lateral bands.....19
- 18(17). Polymorphic ♂♂, all forms with tarsus IV normally developed; heteromorphic ♂ with chelicerae and anterior legs hypertrophied; from Anatidae.....**Bdellorhynchus**
 Polymorphism absent; ♂ with tarsus IV 1/2 length of tibia IV; from *Diomedea*.....**Promegninia** (in part)
- 19(17). Male with tarsus IV normally developed and without subterminal discs; ♀ with pregenital sclerite not extending to genital discs; from Procellariidae, Hydrobatidae, Stercorariidae**Zachvatkinia**
 Male with tarsus IV 1/2 length of tibia IV and with subterminal discs; ♀ with pregenital sclerite extending to or beyond atrophied genital discs; from *Diomedea*...**Promegninia** (in part)
- 20(16). Epimerites I fused medially; legs III of ♂ hypertrophied; from Phalacrocoracidae...**Scutomegninia**
 Epimerites I free; legs III and IV of ♂ subequal.....21
- 21(20). Adanal discs of ♂ with external ring smooth (edentate); ♀ with membranous marginal flange behind legs IV; from Laridae.....**Laronyssus**
 Adanal discs of ♂ with external ring regularly dentate; ♀ without marginal flange; from Scolopacidae**Avenzoaria**

Family PTEROLICHIDAE

Subfamily PTEROLICHINAE

Genus **Ardeacarus** Dubinin

Ardeacarus Dub., 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **18**: 124; 1956, *Fauna S.S.S.R.* **6**(7): 124.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* **9**(1): 280.

Type species: *Dermaleichus ardeae* Canestrini, 1878, from *Ixobrychus minutus* (L.) (= *Ardea minuta* L.), Europe.

Ardeacarus ardeae (Canestrini) Fig. 1–3.

Dermaleichus ardeae Can., 1878, *Atti R. Ist. Veneto Sci. Let. Art.* ser 5, **5**: 51.

Ardeacarus ardeae: Dubinin, 1956, *Fauna S.S.S.R.* **6**(7): 127, fig. 38.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* **11**(L): 280, fig. 174.

This species has been reported from many species of Ardeidae from the genera *Ardea* L., *Ardeola* Boie, *Botaurus* Stephens, *Bubulcus* Bonaparte, *Butorides* Blyth, *Egretta* Forster, *Florida* Baird, *Ixobrychus* Billberg, and *Nycticorax* Sharpe. The mite has not been collected from the great white heron,

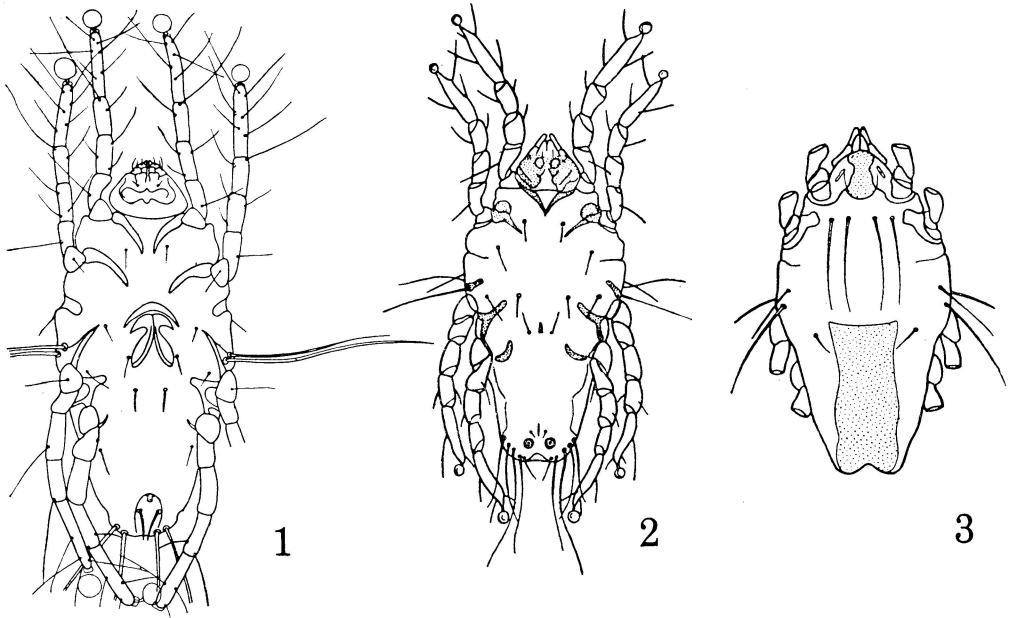


Fig. 1-3. *Ardeacarus ardeae* (Canestrini), ventral aspect of ♀ (1), ventral and dorsal aspects of ♂ (2, 3). (After Dubinin 1956)

Casmerodius albus (= *Egretta alba*) which has been reported from South Georgia; however, it is probable that *C. albus* supports populations of *Ardeacarus ardeae*.

Subfamily SYRINGOBIIINAE

Genus *Thecarthra* Trouessart

Thecarthra Trst., 1896, *Bull. Soc. Ent. France* **20**: 420.—Dubinin, 1956, *Fauna S.S.S.R.* **6**(7): 610-8.

Type-species: *Pterolichus theca* Mégnin & Trouessart, 1884, from *Sterna sandvicensis*, Europe.

Dubinin (1956) divided the genus *Thecarthra* into subgenera and included only 2 species in the nominate subgenus: *Thecarthra* (*T.*) *theca* from various species of the Sterninae (Laridae) and *T.* (*T.*) *stercorarii* from *Stercorarius* species.

Thecarthra theca (Mégnin and Trouessart) Fig. 4-6.

Pterolichus (*P.*) *theca* Mégnin & Trouessart, 1884, *J. Micrograph.* **8**(8): 434.

Thecarthra theca: Berlese, 1896, *A.M.S.*, fasc. **81**(2).—Dubinin, 1956, *Fauna S.S.S.R.* **6**(7): 648, fig. 314-323.

This mite species has been reported from numerous species of the following genera of the Sterninae (Laridae): *Chlidonias* Rafinesq., *Gelochelidon* Brehm, *Hydroprogne* Kaup and *Sterna* L. Among the recorded hosts is *Sterna paradiseae* which may be conspecific with *S. macrura*, a regular migrant at Heard I. *Thecarthra theca* has not been reported from any of the subspecies of *Sterna vitatta*.

Family PROCTOPHYLLODIDAE

Subfamily PROCTOPHYLLODINAE

Species of the genera *Proctophyllodes* Mégnin & Trouessart and/or *Pterodectes* Robin should occur

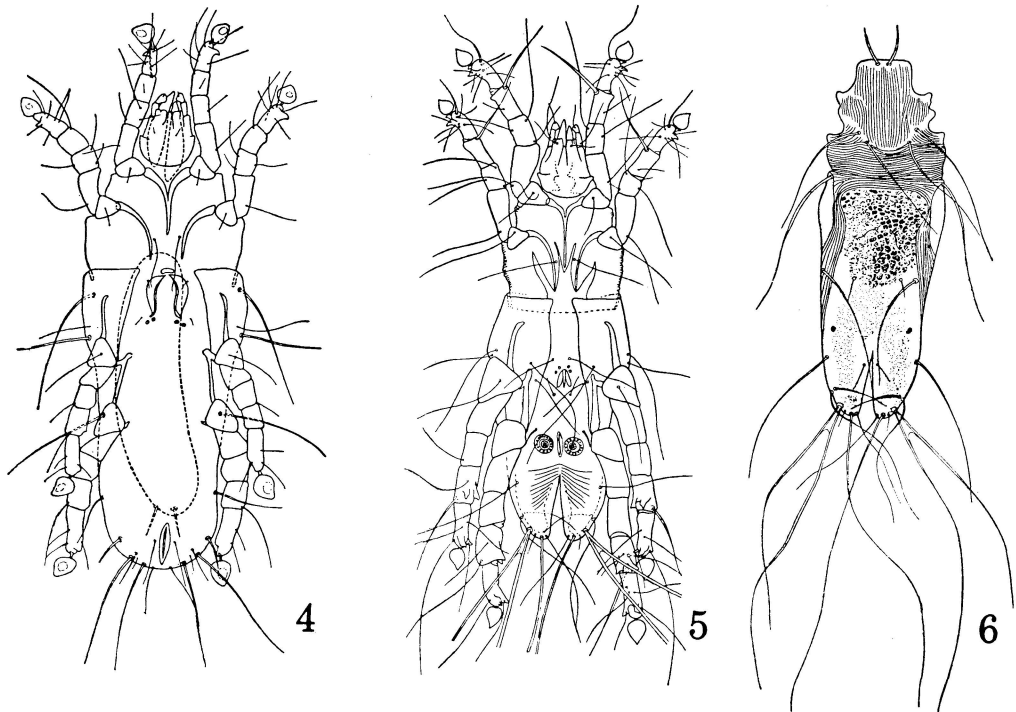


Fig. 4-6. *Thecarthra theca* (Mégnin & Trouessart), ventral aspect of ♀ (4), ventral and dorsal aspects of ♂ (5, 6). (After Dubinin 1956)

on the South Georgian pipit, *Anthus antarcticus* and on *Passer domesticus*. As members of these mite genera usually have restricted host ranges, illustrations of typical forms are included to aid in generic determinations. *Proctophyllodes* (fig. 7-9) has been monographed (Atyeo & Braasch, 1966) and *Pterodectes* (fig. 10-12) is being revised at the University of Georgia.

Subfamily TROUSSERTIINAE

Genus **Trouessartia** Canestrini

Trouessartia Can., 1899, In Canestrini & Kramer, 1899, *Tierreich* 7: 119.—Gaud & Mouchet, 1958, *Ann. Parasitol. hum. comp.* 33: 36.

Type-species: *Dermaleichus corvinus* Koch, 1840, from *Corvus corone*, Europe.

The 75 named species of the genus *Trouessartia* are primarily ectoparasites of the Passeriformes. From reports in the literature and from our preliminary studies, each *Trouessartia* species appears to occur on 1 host or on a limited number of closely related species.

Trouessartia chionidis Trouessart Figs. 13-14.

Trouessartia chionidis Trst., 1914, *Charcot Expéd., Sci. Nat.: Doc. Sci.*, 16, fig. 10, 11.

Trouessart (1914) reported on the mites collected by Dr Jean Charcot's Deuxième Expédition antarctique française (1908-1910). The only feather mites were taken from *Chionis alba* on Petermann I.; these mites included 1 new species of *Trouessartia*.

Normally, *Trouessartia* species would not be expected to occur on *Chionis alba*, but as the other

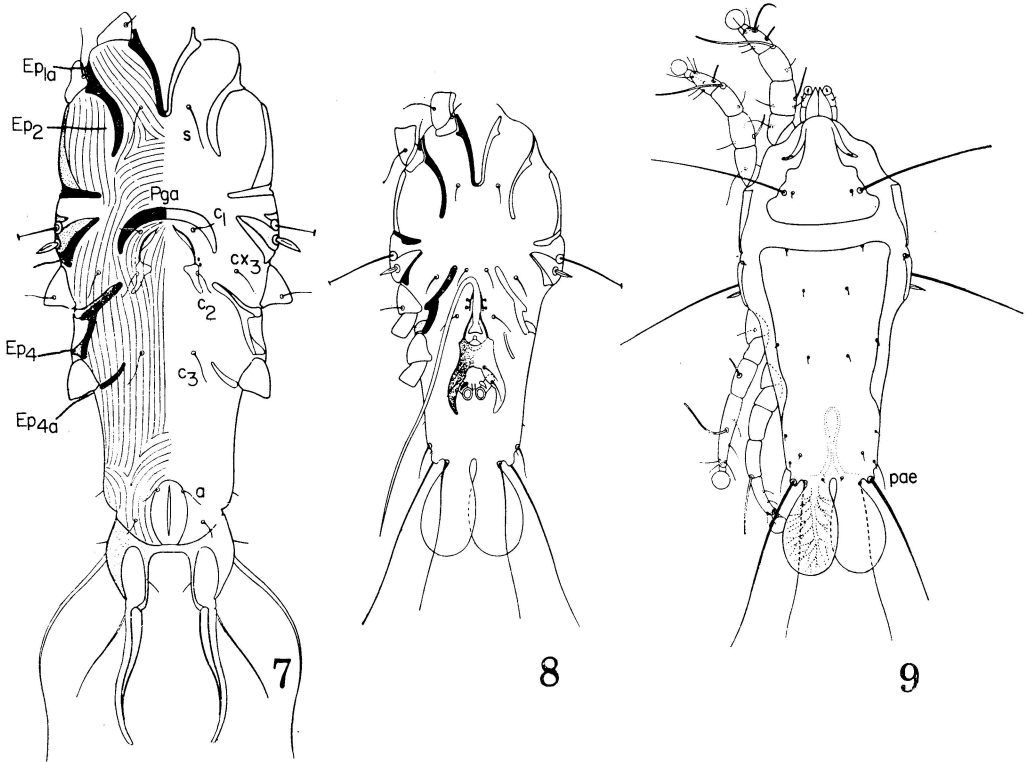


Fig. 7-9. *Proctophyllodes glandarinus* (Koch): ventral aspect of ♀ (7), ventral and dorsal aspects of ♂ (8, 9); c_{1-3} , central setae; cx_3 , s , coxal setae; Ep_{1a-4a} , epimerites of coxae I-IV; pae , external postanal setae; Pga , pregenital apodeme. (After Atyeo & Brasch 1966)

mites reported by Trouessart do occur on this bird, the record must be assumed to be valid. The species has never been recollected; Trouessart's original figures are included.

Subfamily ALLOPTINAE

Genus *Alloptes* Canestrini

Alloptes Can., 1879, *Atti Soc. Veneto-Trent. Sci. Nat.* **6**: 34.—Dubinin, 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 230.—Gaud, 1952, *Mém. Inst. sci. Madagascar Sér. A* **7**: 87; 1957, *Bull. Soc. Sci. Nat. Phys. Maroc* **37**: 108.—Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 98.

Type-species: *Dermaleichus crassipes* Canestrini, 1879, from *Limosa limosa*, Europe.

The 50 or more named species and subspecies are easily collected from birds of the Procellariiformes, Pelecaniformes, Ciconiiformes, Anseriformes, Gruiformes, and especially the Charadriiformes. The genus should be revised.

KEY TO SPECIES OF ALLOPTES

1. Both sexes under 500 μ m long, lightly sclerotized; ♀ with terminus cleft.....2
- Both sexes large, heavily sclerotized; ♂ idiosoma over 625 μ m long, terminal lamellae extending beyond bases of tibiae IV; ♀ with terminus rounded (entire); from *Chionis*.....**aschizurus**

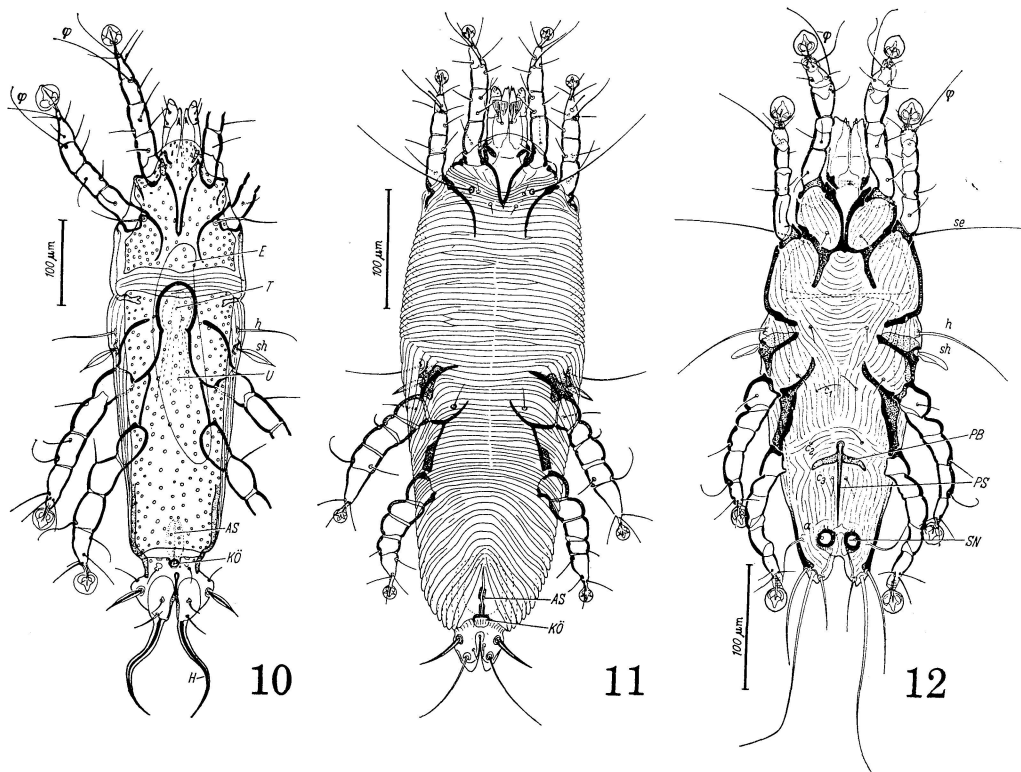


Fig. 10–12. *Pterodectes* species: Dorsal (and ventral) aspects of ♀ (10) and tritonymph (11), ventral aspect of ♂ (12); *a*, anal setae; *AS*, anus; *c*₁₋₃, central setae (ventral); *E*, egg; *h*, humeral setae; *H.*, terminal processes; *KÖ*, copulatory opening; *Φ*, solenidia of tibiae I-II; *PB*, genital arch; *PS*, genital organ *se*, external scapular setae; *sh*, subhumeral setae; *SN*, adanal discs; *T*, genital opening (tostostome); *U*, ovary (uterus). (After Popp 1967)

2. Male with terminal lamellae extending well beyond bases of tibiae IV; idiosomal length about 430 µm3
 Male with terminal lamellae not extending to bases of tibiae IV; idiosomal length about 375 µm; from *Chionis*.....**chionis**
3. Male with terminal lamellae extending to midlength of tibiae IV; segments of legs IV progressively shorter toward tarsi measuring from external (dorsal) surfaces; from *Larus*..**obtusolobus**
 Male with terminal lamellae extending to bases of tarsi IV, legs IV with trochanters and tarsi longer than middle 2 segments; from *Catharacta*.....**stercorarii**

Alloptes aschizurus Gaud

Alloptes aschizurus Gaud, 1952, *Mém. Inst. sci. Madagascar* (Sér. A) **8**: 164, fig. 2.—Atyéo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 98.

Gaud's *Alloptes* species has been collected from *Chionis minor* from the Kerguelen Is., Tower I. and Heard I. (7.II.1965) and from *Chionis alba* from the Gaston and South Shetland Is. (Prat Base, Greenwich I., 27.XII.1960, R. E. Leech).

Alloptes chionis Atyeo and Peterson Fig. 15–17.

Alloptes chionis Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 98, fig. 1–4.

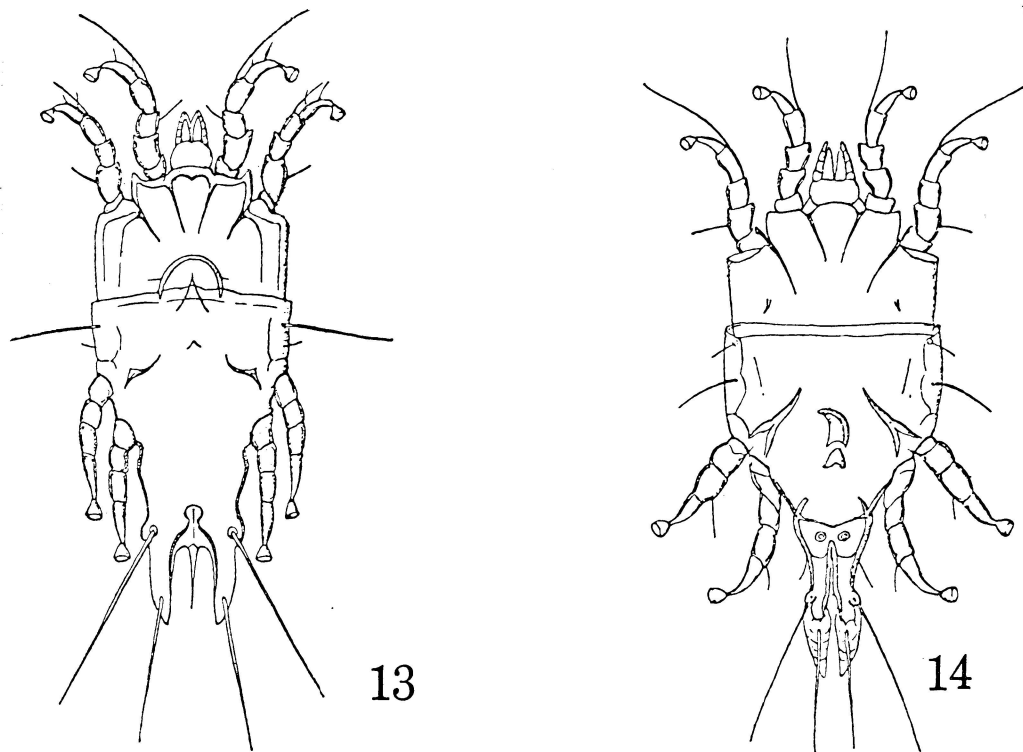


Fig. 13, 14. *Trouessartia chionidis* Trouessart: ventral aspects of ♀ (13) and ♂ (14). (After Trouessart 1914).

The type series of this species was collected from *Chionis minor*, Heard Island (7 Feb. 1965, P. Temple); the species has also been recovered from *Chionis alba* from the Gaston Islands.

***Alloptes obtusolobus* Dubinin**

Alloptes obtusolobus Dub., 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 249, fig. 70; 1952, *Akad. Nauk S.S.S.R., Zool. Inst., Trudy* **12**: 265, 266.—Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 98.

Dubinin (1951, 1952) lists numerous host species for *Alloptes obtusolobus* in the genera *Larus*, *Pagophila*, *Rhodostethia*, *Rissa*, and *Xema*. The mite has been collected from *Larus dominicanus* in Antarctica (Gonzales Videla Base) and from the South Georgia I (Bird I., 4.IX.1963, H. B. Clagg).

***Alloptes stercorarii* Dubinin**

Alloptes stercorarii Dub., 1952, *Akad. Nauk S.S.S.R., Zool. Inst., Trudy* **12**: 265, fig. 8.—Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 100.

Originally described from *Stercorarius pomarinus*, this mite is often collected from the Stercorariidae. Known hosts from Antarctica include *Catharacta skua maccormacki* (Haswell I., Ross I., Victoria Land) and *C. loennbergi* (Adelaide I., Maipo I.). *Alloptes stercorarii* is often found in association with *Zachvatkinia stercorarii*.

Genus *Echinacarus* Dubinin

Echinacarus Dub., 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 214; 1953, *Fauna S.S.S.R.* **6**(6):

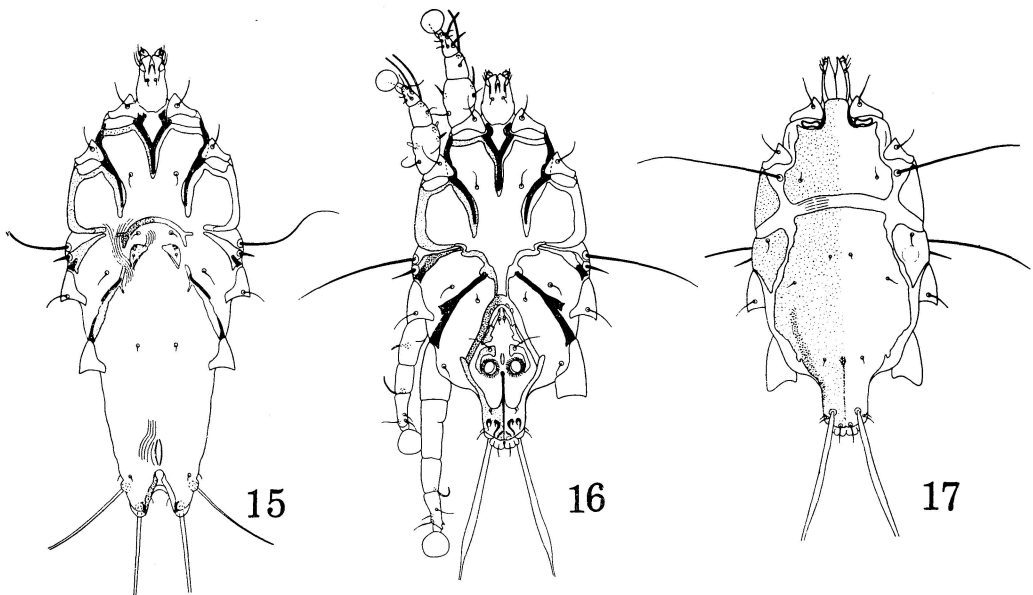


Fig. 15-17. *Alloptes chionis* Atyeo & Peterson: ventral aspect of ♀ (15), ventral and dorsal aspects of ♂ (16, 17). (After Atyeo & Peterson 1967)

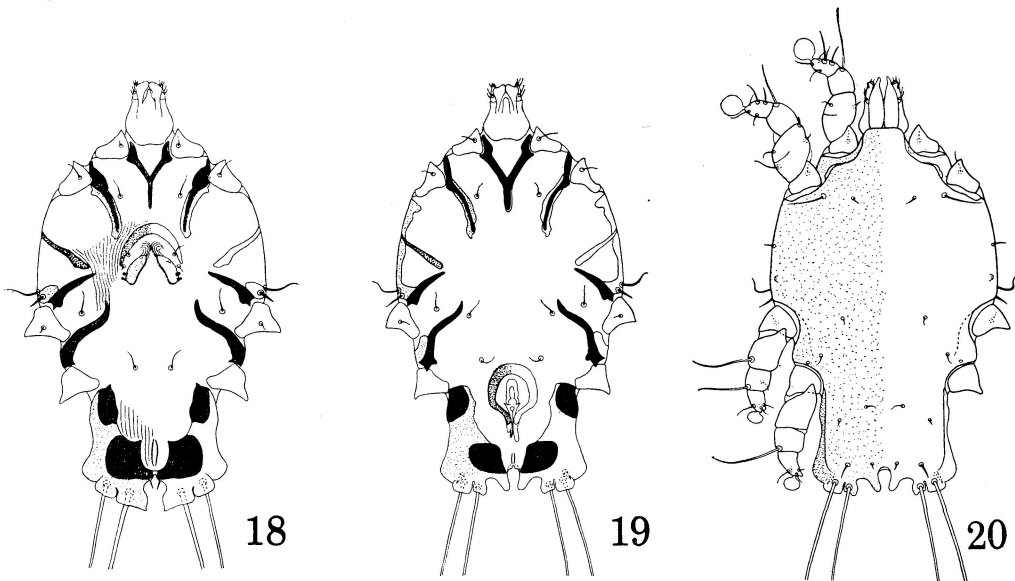


Fig. 18-20. *Echinacarus rubidus* (Trouessart): ventral aspect of ♀ (18), ventral and dorsal aspects of ♂ (19, 20).

367.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* **11**(L): 243.

Type-species: *Pterolichus rubidus* Trouessart, 1886, from *Diomedea chlororhyncha*, St. Paul I.

Trouessart (1886, 1898) described the 2 forms of *Echinacarus* from specimens taken from 1

species of *Diomedea*, St. Paul I. Subsequently Dubinin (1949) stated that the characters used by Trouessart to distinguish the species, *i.e.*, terminal setae, was not sufficient for species differentiation and furthermore, both occur on the same bird. Dubinin concluded that there was 1 heteromorphic species. We are convinced that 2 species are involved—there are 2 male and 2 female forms which can be easily associated. *Echinacarus rubidus* is not the species shown by Dubinin (1949, 1953), but an excellent illustration of *E. petaliferus*.

Echinacarus rubidus (Trouessart) Fig. 18–20.

Pterolichus rubidus Trst., 1886, *Bull. Soc. Etud. Sci. Angers* **16**: 110.

Echinacarus rubidus: Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 214; 1953, *Fauna*

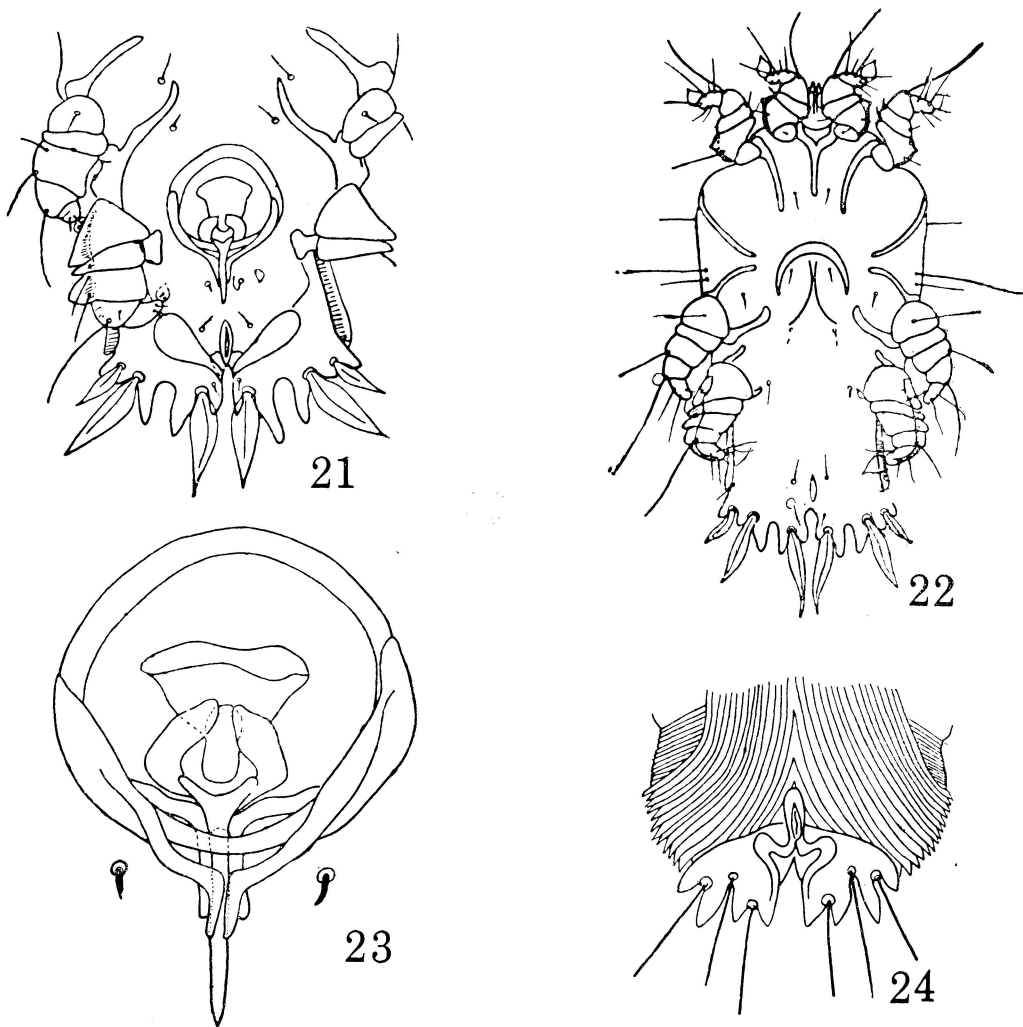


Fig. 21–24. *Echinacarus petaliferus* (Trouessart): ventral aspect of ♂ hysterosoma (21), ventral aspect of ♀ (22), ♂ genital organ and supporting structures (23), dorsal aspect of tritonymph terminus (24). (After Dubinin 1949)

S.S.S.R. 6(6): 367.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* 9(1): 244, fig. 151.

Numerous species of *Diomedea* are reported hosts for this mite. In the present study, specimens were examined from *D. melanophris*, South Georgia I (Bird I., 25.X.1963, H. B. Clagg).

Echinacarus petaliferus (Trouessart), new status Fig. 21–24.

Pterolichus rubidus petaliferus Trst., 1898, *Bull. Soc. ent. France* 22: 291.

Echinacarus rubidus (in part): Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* 11: 214, fig. 8; 1953, *Fauna S.S.S.R.* 6(6): 367, fig. 158.

We have examined South Georgian (Bird I.) collections from 7 *Diomedea chrysostoma* and 3 *D. melanophris*; 1 sample contained specimens of *Echinacarus rubidus*, none contained *E. petaliferus*, even though in other collections it is the common species. Literature records are obscured due to the synonymizing of the 2 species, but it is probable that both occur on most or all species of *Diomedea* and possibly on *Phoebetria* species.

Genus **Brephosceles** Hull

Brephosceles Hull, 1934, *Trans. North. Nat. Union*, 1: 205—Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.*, 11: 221; 1951, *Akad. Nauk. S.S.S.R., Zool. Inst., Parasitol. Sborn.* 13: 220; 1952, *Akad. Nauk. S.S.S.R., Zool. Inst., Trudy*, 12: 262.—Gaud, 1959, *Bull. Soc. Sci. nat. Phys. Maroc*, 37(2): 114.—Gaud & Mouchet, 1957, *Ann. Parasitol. hum. comp.*, 32(5–6): 497–500—Gaud & Till, 1961, *Publ. So. Afr. Inst. Med. Res.*, 11(L): 239.—Peterson & Atyeo, 1968, *Bull. Univ. Nebraska St. Mus.*, 8(4): 217.

Type-species: *Pterolichus forciger* Mégnin & Trouessart, 1884, from *Gavia immer immer* (= *Colymbus glacialis*), N. Europe.

In 1934, Hull erected the genus *Brephosceles* for 2 species of feather mites characterized primarily by ♂♂ having well-developed terminal lobes bearing lamellae on their free margins. Prior to this description, Trouessart (1885, 1886) had placed all species with the above characters in 1 of 5 subgenera of *Proctophyllodes* (*s.l.*). The subgenera included *Alloptes*, *Trouessartia* (= *Pterocolus*), *Proctophyllodes*, *Pterodectes*, and *Pterophagus*. Diagnostic characters were given for each species group. *Alloptes* and *Pterocolus* were further subdivided into 4 subgroups based on the conformation of the ♂ hysterosomal terminus and the length of the 4th pair of legs, and in the ♀, the presence or absence of lobes and/or gladiform appendages.

Dubinin (1951) essentially redefined the genus *Brephosceles*. Four named and 3 new species were included and keys for the identification of ♂♂ and ♀♀ were provided. Subsequently, numerous related genera have been erected from new and described species of *Brephosceles* (*s.l.*) and *Alloptes* (*s.l.*).

Further restrictions were placed on the genus *Brephosceles* by Peterson & Atyeo (1968) on the basis of the relative development, positions, and absence of specific setae, the structures of the ♂ terminus and genital region, and the conditions of epimerites I. Fourteen species were retained in the genus *Brephosceles* (*s.s.*); these species were listed with their pertinent synonymies.

The following species of *Brephosceles* are recorded as ectoparasites of birds from Heard and South Georgia.

KEY TO SPECIES OF BREPHOSCELES

1. Male with legs IV extending beyond terminus of hysterosomal lobes.....2
Male with legs IV not extending beyond terminus of lobes.....**diomedei**, n. sp.
2. Pregenital apodeme of ♂ in shape of inverted Y; postlobar lamellae smoothly rounded...**gressitti**, n. sp.
Pregenital apodeme of ♂ in shape of an inverted V; postlobar lamellae serrate.....**marginiventris**

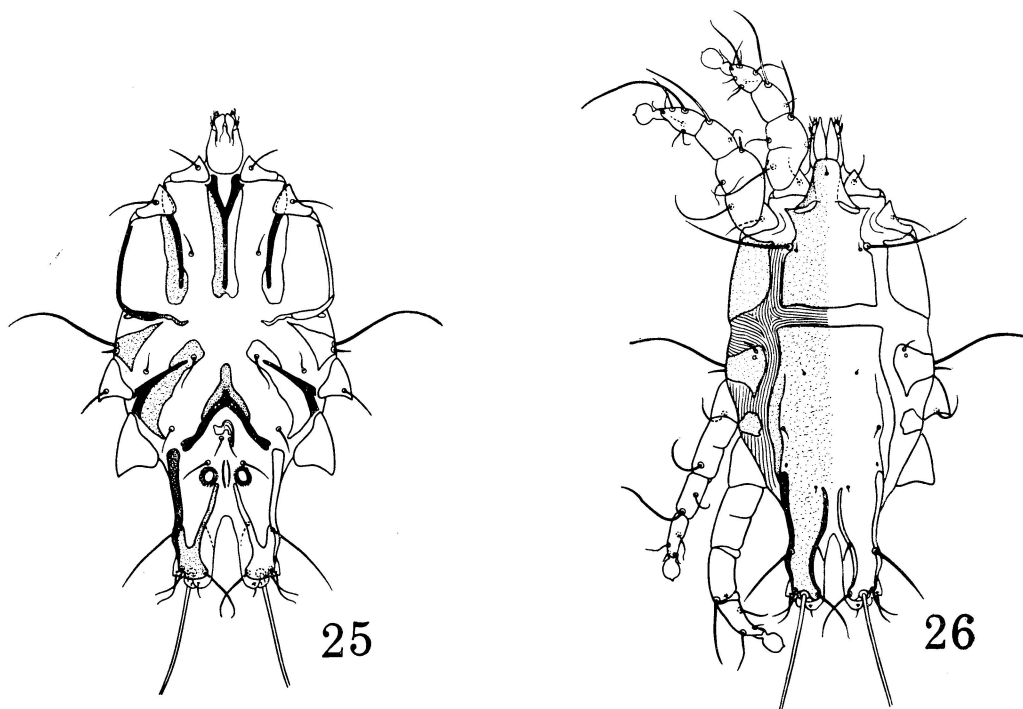


Fig. 25, 26. *Brephosceles gressitti*, new species: ventral and dorsal aspects of ♂.

Brephosceles gressitti Atyeo and Peterson, new species Fig. 25–26.

The new species is tentatively placed in the genus *Brephosceles*. The conformation of the hysterosomal terminus, the positioning of the terminal setae, and the shape of the pregenital apodeme are different than is evidenced in “typical” *Brephosceles* species. For example, *gressitti* has only 2 setae (d_4 , pai) located on the inner margin of the lobes; setae d_3 has shifted to a point on the hysterosomal shield at approximately the level of trochanter IV. Also distinct is the absence of the supranal cleft and the extralobar lamellae; characters known to be unique to *Brephosceles*.

♂ (holotype). Length excluding postlamellae, 378 μm ; width, 167 μm . *Dorsal idiosoma*: Propodosomal shield 109 μm in length, 73 μm in width; without lacunae; without external vertical setae; distance between external scapular setae, 61 μm . Setae l_1 setiform, 11 μm in length, positioned on well developed humeral shield; setae sh spiculiform 12 μm in length, posterior to seta h . Hysterosomal shield 123 μm in length, 111 μm in width; anterior margin straight. Hysterosomal lobes 97 μm in length; setae d_3 not positioned on inner margin of lobe. Setae d_4 at midlength of lobe slightly anterior to setae l_3 ; distance between setae d_4 and pai 66 μm . Interlobar and postlobar lamellae well developed. Extralobar lamellae absent. Legs IV supassing terminus of lobes by length of tarsus. *Ventral idiosoma*: Epimerites I fused in a Y; surface fields weakly developed. Pregenital apodeme formed as an inverted Y; coxal fields III and IV open. Genital organ 12 μm in length, extending slightly beyond the origins of setae c_2 . Adanal shields absent.

Type material. Holotype ♂ (BISHOP 8841), 2 ♂ paratypes, Bird I., South Georgia, 17.IX. 1963, ex. *Diomedea chrysostoma* (Diomedeidae), 1963, H. B. Clagg. The primary type is deposited at the Bishop Museum; the secondary types at the University of Georgia.

Remarks. This species is known from 3 ♂ specimens. Until the acquisition of additional material

from the same or related host species, *B. gressitti* is provisionally retained in the genus *Brephosceles*. The drawings are from the holotype ♂. The species is named in honor of Dr J. Linsley Gressitt.

Brephosceles marginiventris (Trouessart) Fig. 27-29.

Proctophyllodes (Alloptes) marginiventris Trst., 1899, *Bull. Soc. Etud. Sci. Etud. Sci. Angers* **28**: 58.

Brephosceles marginiventris: Peterson & Atyeo, 1968, *Bull. Univ. Nebraska St. Mus.* **3**(4): 217.

This species is closely related to the following species, *B. diomedei*. The ♂♂ are characterized in part by the absence of a ventral shield, surface fields of epimerites III being well developed and legs IV which surpass the hysterosomal terminus by the length of the tarsus. The ♀♀ are distinguished by the absence of the preanal apodeme and the weakly bilobate condition of the hysterosomal terminus.

Trouessart reported this species from *Diomedea chlororhynchos*. Numerous attempts to recollect *B. marginiventris* from the type host have proven futile. However, the species is here reported from 2 specimens of *Macronectes giganteus* (Procellariidae), Bird I., South Georgia, 25.VII.1963, H. B. Clagg.

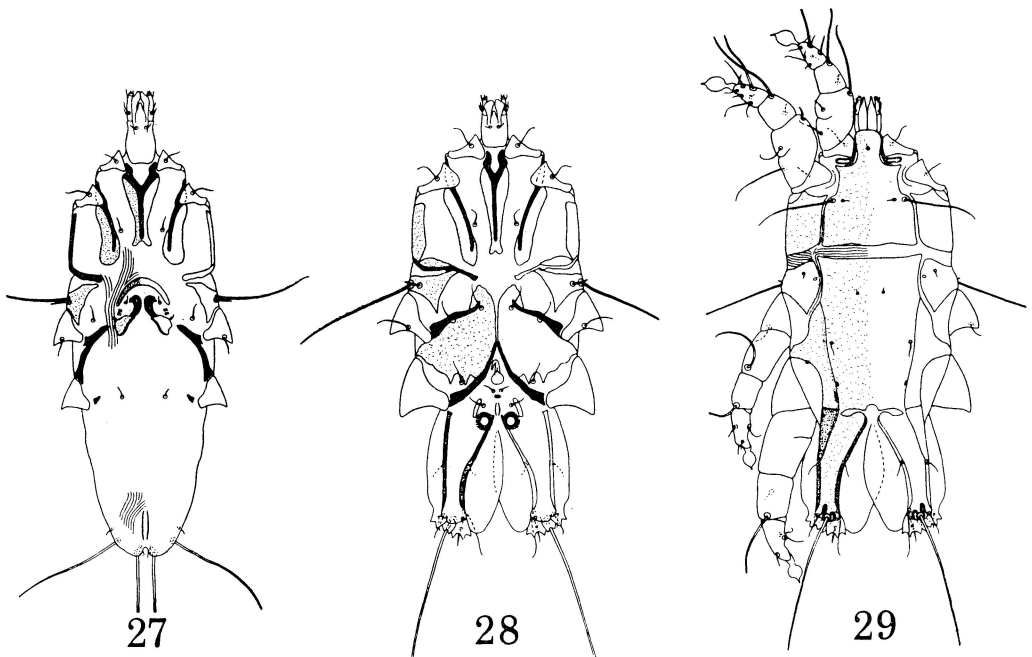


Fig. 27-29. *Brephosceles marginiventris* (Trouessart): ventral aspect of ♀ (27), ventral and dorsal aspects of ♂ (28, 29).

Brephosceles diomedei Atyeo and Peterson, new species Fig. 30-32.

Closely related to *Brephosceles marginiventris*, the ♂♂ of this new species can be distinguished by legs IV not surpassing the hysterosomal lobes and by the smoothly rounded interlobar lamellae. In contrast to *B. marginiventris* the ♀♀ of *B. diomedei* possess a well-developed preanal apodeme.

♂ (holotype). Length, excluding postlamellae, 363 μm ; width, 116 μm . *Dorsal idiosoma*: Propodosomal shield 88 μm in length, 62 μm in width; without lacunae; without external vertical setae; distance between external scapular setae, 57 μm . Scapular shields well developed. Setae l_1 setiform, 5 μm in length, positioned

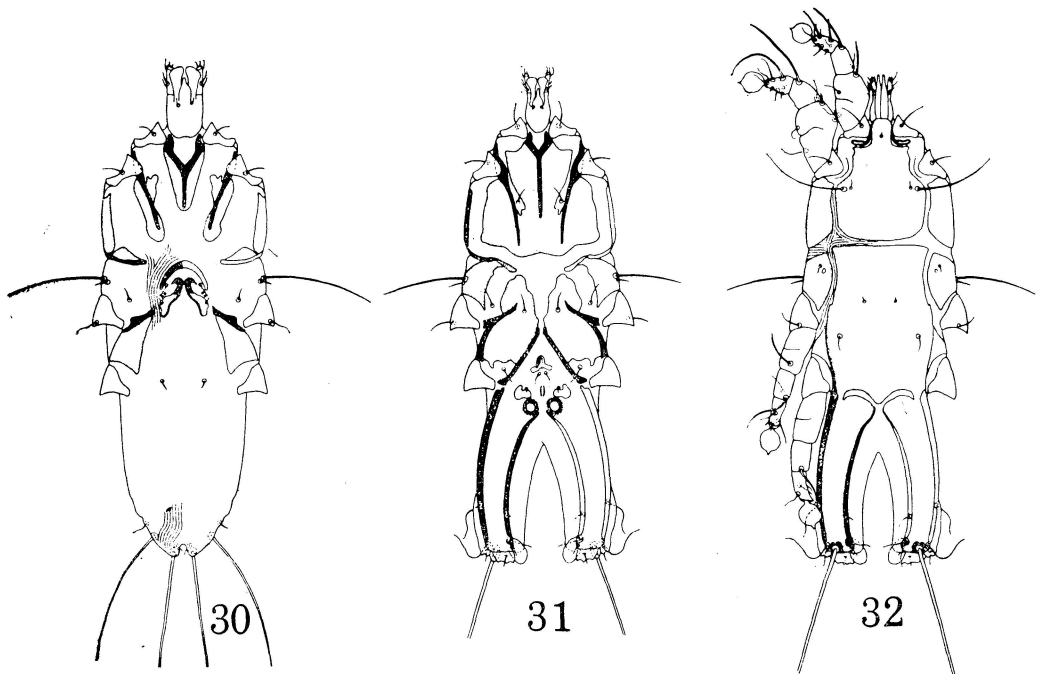


Fig. 30-32. *Brephosceles diomedei*, new species: ventral aspect of ♀ (30), ventral and dorsal aspects of ♂ (31, 32).

on well-developed humeral shield; setae *sh* 10 μ m in length, approximate to setae *h*. Hysterosomal shield 220 μ m in length, 62 μ m in width; anterior margin straight. Hysterosomal lobes 119 μ m in length; setae *d*₃ positioned at posterior 1/3 of lobe, posterior to setae *l*₃; setae *d*₄ and *pai* approximate. Interlobar, extralobar and postlobar lamellae well developed. All legs subequal. *Ventral idiosoma*: Epimerites I fused in a Y; surface fields of epimerites I and II fused to form a ventral shield. Coxal field IV heavily sclerotized. Pregenital apodeme free, fused to epimerites IVa. Genital organ 8 μ m in length, not extending beyond setae *c*₂; subgenital shield apparently absent. Adanal shield weakly developed; without setae *a*.

♀ (paratype). Length, 384 μ m; width 119 μ m. *Dorsal idiosoma*: Propodosomal shield 99 μ m in length, 67 μ m in width; without lacunae; without external vertical setae; distance between scapular setae, 62 μ m. Setae *l*₁ setiform, 8 μ m in length, positioned on well-developed humeral shield; setae *sh* 10 μ m in length, approximate to setae *h*. Hysterosomal shield 220 μ m in length, 67 μ m in width; anterior margin straight. Hysterosomal terminus entire, without terminal lamellae. *Ventral idiosoma*: Surface fields separate, well developed. Preanal apodeme crescentric.

Type material. Holotype ♂ (BISHOP 8842), 10 ♂ and 8 ♀ paratypes, Bird I., South Georgia, 17.IX.1963. From 4 specimens of *Diomedea chrysostoma* (Diomedidae); H. B. Clagg. The primary type is deposited in the Bishop Museum. Secondary types are deposited at the American Museum of Natural History, University of Georgia, and the U. S. National Museum.

ADDITIONAL MATERIAL. Ex. *Diomedea melanophris* (Diomedidae), Bird I. 7 ♂♂, 13 ♀♀, 9.X.1963, H. B. Clagg; 5 ♀♀, 25.X.1963, H. B. Clagg.

Remarks. The drawings of the ♂ and ♀ are from the holotype and a paratype respectively. The species is named for the type host.

Genus **Connivelobus** Dubinin, new status

Microspalax (*Connivelobus*) Dub., 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 207.

Connivelobus: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 350–55.

Microspalax (in part): Gaud & Till, 1961, *Publ. So. African. Inst. Med. Res.* **11**(L): 236.

Type-species: *Freyana* (*Microspalax*) *manicata* var. *brevipes* Mégnin & Trouessart, 1884, from *Puffinus obscurus*, France.

The genus *Connivelobus* has variously been considered as a genus, as a subgenus, or as a synonym of *Microspalax*, and has always been placed in the family Freyanidae. We, in collaboration with Dr Jean Gaud (*in litt.*), believe that *Connivelobus* and *Microspalax* should be recognized as genera and both should be placed in the family Proctophyllodidae, subfamily Alloptinae.

The ♂♂ of the genus *Connivelobus* are broadly truncated (except *C. bulweriae*) with short, narrow terminal clefts. This condition has been thought to represent a secondary fusion of the 2 opisthosomal lobes (compare with *Microspalax*). The pregenital sclerite of the ♀♀ is not connected to the epimerites of the anterior legs (except *C. longipennis*). These mites occur on birds of the families Procellariidae and Hydrobatidae.

The two species that probably occur in the study areas are *Connivelobus brevipes* Mégnin & Trouessart and *C. major* Trouessart & Neumann. Both are known from *Daption capensis*, but the latter species is poorly known and has never been figured. According to Dubinin (1949), the 2 species should be distinguishable on size, the ♂♂ of *C. brevipes* are 370–390 µm in length and the ♀♀ are 380–400 µm; the ♂♂ of *C. major* are about 650 µm and the ♀♀ are 550 µm in length.

Connivelobus brevipes (Mégnin and Trouessart) Fig. 33–35.

Freyana (*Microspalax*) *manicata* var. *brevipes* Még. & Trst., 1884, *J. Micrograph.* **8**(3): 154–55, fig. 26(3).—Berlese, 1898, *A.M.S. fasc.* **85**(3):—

Microspalax (*Connivelobus*) *brevipes*: Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 207, fig. 5, 6.

Connivelobus brevipes: Dub., 1953, *Fauna S.S.S.R.* **6**(6): 355–57, fig. 152–154.

This species has been reported from *Daption capensis* (Cape Horn) and from various species of *Puffinus* (Dubinin, 1949).

Connivelobus major (Trouessart and Neumann)

Freyana (*Microspalax*) *manicata* var. *major* Trst. & Nmn., 1888, *Bull. Sci. France Belg.* **19**: 336.

Microspalax (*Connivelobus*) *major*: Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 208.

Connivelobus major: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 357.

Trouessart & Neumann described the variety *major* from *Daption capensis*, Atlantic Ocean and Dubinin (1949) records that same host-parasite association from Cape Horn. Dubinin also recovered the mite from *Fulmarus g. glacialis*, Novaya Zemlya.

Genus **Microspalax** Mégnin and Trouessart

Freyana (*Microspalax*) Még. & Trst., 1884, *J. Micrograph.* **8**(3): 152–53.

Microspalax: Trst., 1915, *Bull. Soc. zool. France* **40**: 215—Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 341–43.

Microspalax (*Microspalax*): Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 201–2.

Type-species: *Freyana* (*Microspalax*) *manicata* Mégnin & Trouessart, 1884, from *Adamastor cinereus* (= *Puffinus cinereus*), France.

Typically the ♂ terminus is formed by 2 short widely separated lobes connected by a broad interlobar membrane and the ♀ pregenital sclerite is connected to the epimerites of the anterior legs. These mites are known to occur only on birds of the Procellariidae (including Puffinidae).

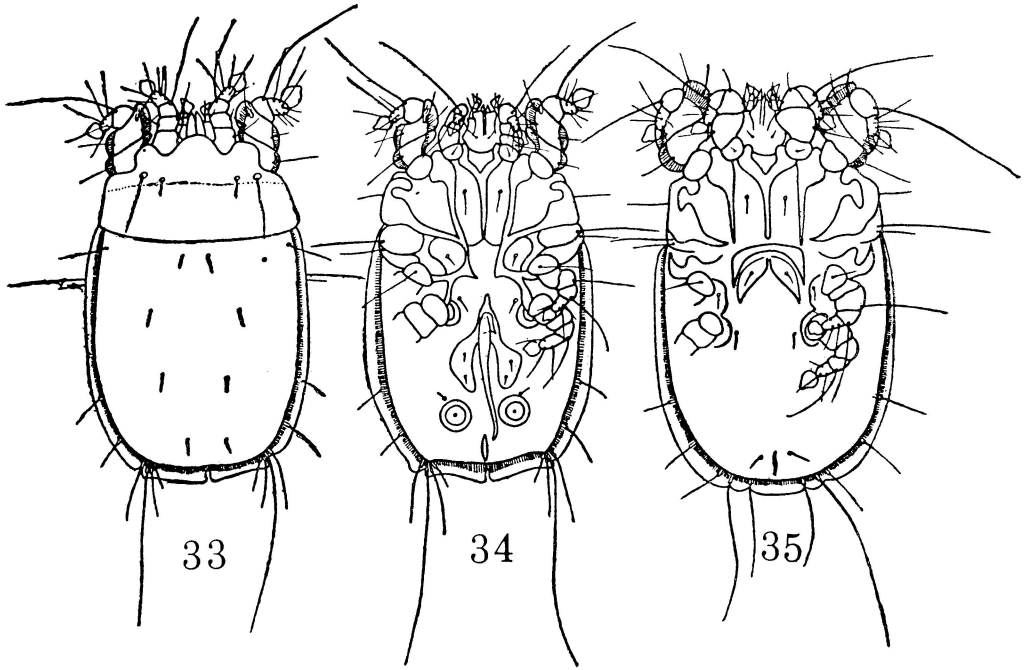


Fig. 33–35. *Connivelobus brevipes* (Méglin & Trouessart): dorsal and ventral aspects of ♂ (33, 34), ventral aspect of ♀ (35). (After Dubinin 1953)

Microspalax manicata Méglin and Trouessart Fig. 36–38.

Freyana (Microspalax) manicata Még. & Trst., 1884, *J. Micrograph.* **8**(3): 153–54, fig. 26(1–2).—Berlese, 1897, *A.M.S. fasc.* **82**(5).

Microspalax (M.) manicata: Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 202–04, fig. 1.

Microspalax manicata: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 343–45, fig. 148.

This mite species has been collected from numerous species of *Puffinus* from various localities and from *Thalassoica (=Priocella) antarctica* at Cape Horn. The latter species is known to be a rare visitor on Heard I.

Genus **Oxyalges** Gaud and Mouchet

Oxyalges Gaud & Mouchet, 1959, *Ann. Parasitol. hum. comp.* **33**(4): 480–81—Gaud, 1961, *Acarologia* **3**(1): 95—Gaud & Atyeo, 1966, *Acarologia* **8**(3): 465–66.

Type-species: *Thecarthra incerta* Gaud, 1952, from *Pelecanoides georgicus*, Kerguelen Is.

These long, cylindrical mites are atypical for the family Proctophyllodidae in that the sub-humeral setae are inserted anterior to the long humeral setae. The ♂♂ of both included species are heavily sclerotized and have attenuate hysterosomal termini. The relationship of the anterior epimerites and the pregenital apodemes of the ♀♀ is similar to the ♀♀ of *Microspalax* and *Connivelobus* species.

Oxyalges incertus (Gaud)

Thecarthra incerta Gaud, 1952, *Mém. Inst. sci. Madagascar (Sér. A)* **7**(2): 164–66, fig. 3.

Oxyalges incertus: Gaud & Mouchet, 1959, *Ann. Parasitol. hum. comp.* **33**(4): 480–81.

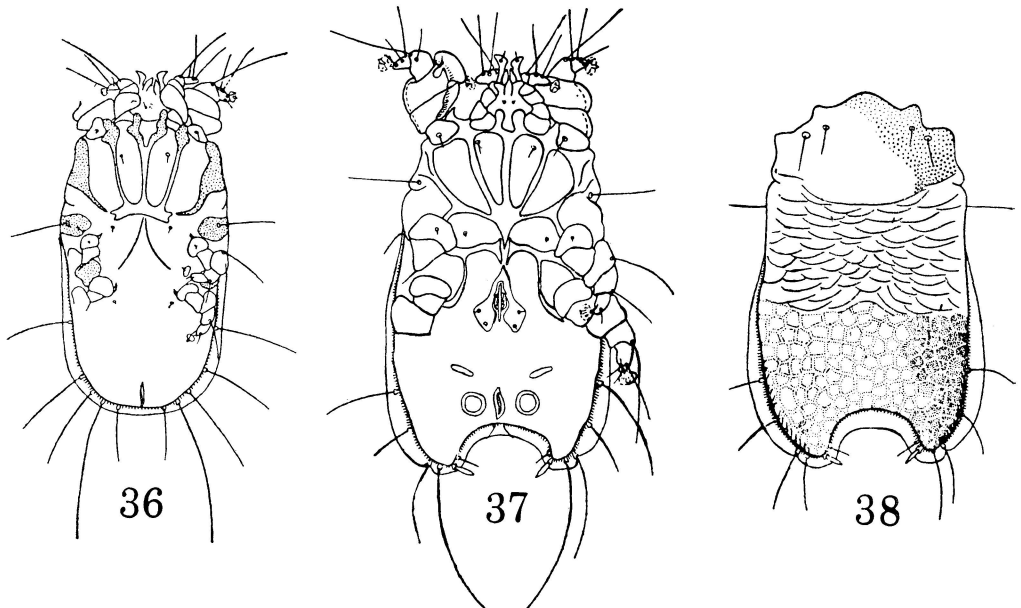


Fig. 36–38. *Microspalax manicata* Mégnin & Trouessart: ventral aspect of ♀ (36), ventral and dorsal aspects of ♂ (37, 38). (After Dubinin 1953)

This species, described originally from a single ♂ from *Pelecanoides georgicus*, Kerguelen Is., has subsequently been recovered from the same host in other geographic areas. Presumably *O. incertus* will be discovered on both South Georgia and Heard Islands from *P. georgicus* and possibly from *P. exsul*.

Oxyalges cardiurus Gaud and Atyeo Fig. 39–40.

Oxyalges cardiurus Gaud & Atyeo, 1966, *Acarologia* **8**(3): 466–69, fig. 1.

Pachyptila desolata, the type host of *Oxyalges cardiurus*, is known to support this mite in the Falkland Is., South Orkney Is., and Heard I. (Spit Bay, 1.II.1965, P. Temple). In the latter collection, a *Brephosceles* species was also found. It will be interesting to determine whether or not these mites occur on other species of *Pachyptila*, namely *P. belcheri* from South Georgia and *P. crassirostris* from Heard I.; *P. desolata* occurs in both areas.

Family ANALGIDAE

Subfamily XOLALGINAE

Genus **Leptosphyra** Hull

Leptosphyra Hull, 1934, *Trans. North. Nat. Un.* **1**(3): 203.—Gaud, 1958 *Bull. Soc. Sci. Nat. Phys. Maroc.* **38**(1): 43.—Gaud & Mouchet, 1959, *Ann. Parasitol. hum. comp.* **34**(1–2): 190.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* **11**(L): 206.

Type-species: *Analges centropodus* Mégnin, 1877, from *Vanellus vanellus*, Europe.

The ♂♂ of these lightly sclerotized mites are easily recognizable: legs IV are long and thin and the opisthosomal lobes support extensive membranes that terminate as 2 triangular lobes posterior to the terminal setae. The numerous species, primarily parasites of the Charadriiformes and Anseriformes, should be studied in detail.

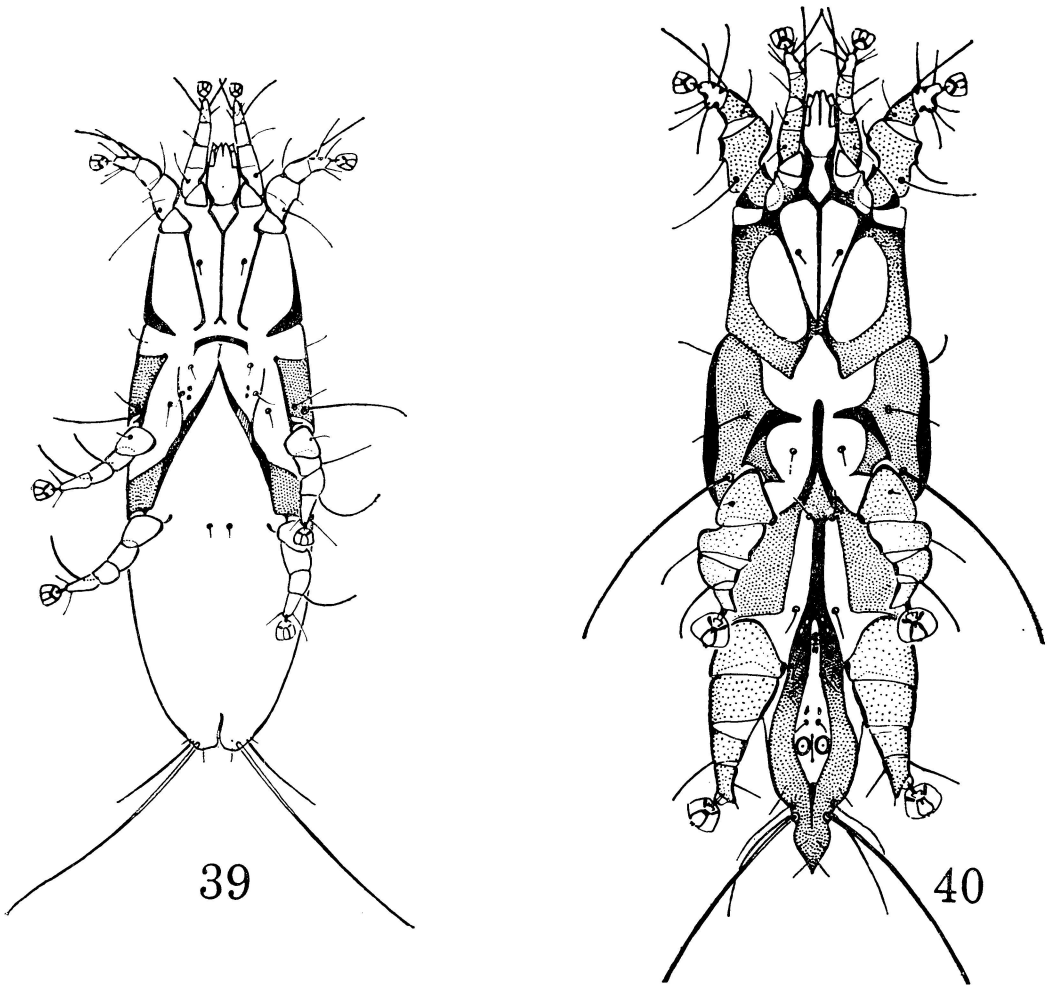


Fig. 39, 40. *Oxalges cardiurus* Gaud & Atyeo: ventral aspects of ♀ (39) and ♂ (40). (After Gaud & Atyeo 1966)

Leptosphyra antarctica (Gaud), n. comb. Fig. 41.

Megninia antarctica Gaud, 1952, *Mém. Inst. sci. Madagascar* (Sér. A) 7(2): 161-62, fig. 1.

The ♂ of this and the following species are characterized in part by the extreme lengths of the setae inserted on the medial extremities of epimerites III. These setae (c_1) extend to the opisthosomal terminus, a condition rarely observed in known species of *Leptosphyra*. The 2 species can be differentiated by their hosts: *L. antarctica* from *Pelecanoides georgicus* (collected from Kerguelen Is.) and *Leptosphyra* species from *Chionis alba*.

Leptosphyra species

Megninia centropodos forcipata: Trouessart, 1914, *Expéd. Charcot. Sci. Nat., Doc. Sci.*, 15. (Misidentification)

Trouessart (1914) reported *Leptosphyra forcipata* from *Chionis alba* (Petermann I.), however, the

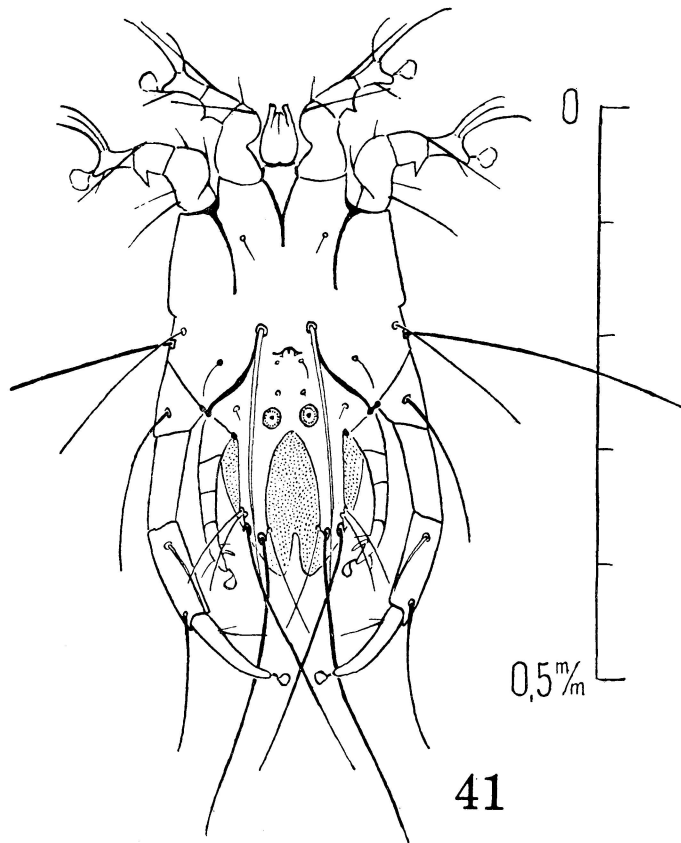


Fig. 41. *Leptosphyra antarctica* (Gaud): ventral aspect of ♂. (After Gaud 1952)

mite is a European form occurring on *Limosa limosa*. We have a small series from *C. alba* (Falkland Is.) and although similar to Berlese's species, it probably represents a new species.

Family FREYANIDAE

Subfamily FREYANINAE

Genus **Freyana** Haller

Freyana Hall., 1877, *Zeitschr. wiss. Zool* **30**: 81.—Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 220–48.

Type-species: *Dermaleichus anatinus* Koch, 1844, from *Anas platyrhynchos*, Europe.

Dubinin (1953) restricts the genus *Freyana* to less than 10 species that are ectoparasites of the Anatidae. Two species are almost cosmopolitan, *F. anatina* and *F. largifolia*, and each has been divided into numerous subspecies; most subspecies are specific to single anamid genera. The 2 subspecies that may occur on *Anas georgicus* are cited and figured below.

Freyana a. anatina (Koch) Fig. 42.

Dermaleichus anatinus Koch, 1844, *Deutsch. C.M.A.* fasc. **38**: fig. 23.

Freyana a. anatina: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 251–53, fig. 12, 85, 89–91, 94, 97–100.

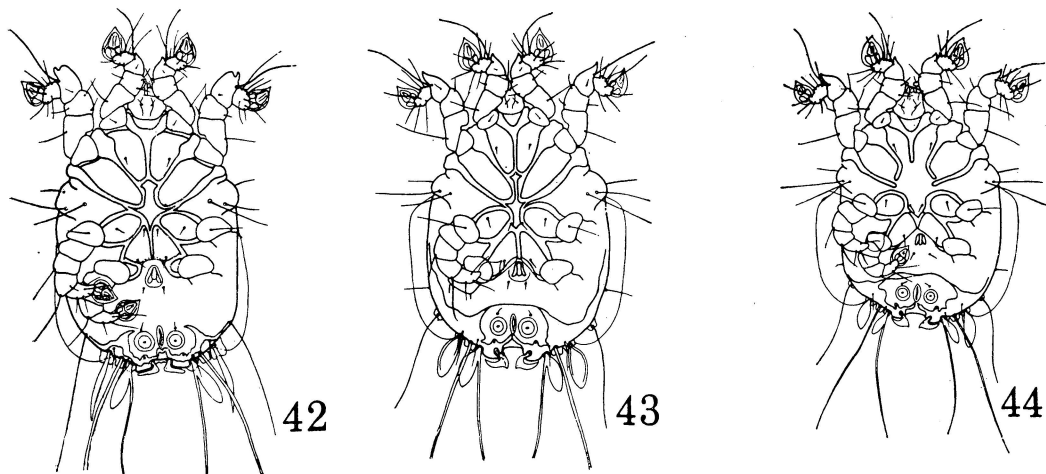


Fig. 42–44. Ventral aspects of ♂♂: *Freyana a. anatina* (Koch), heteromorphic ♂ (42); *Freyana l. largifolia* (Mégnin & Trouessart), heteromorphic ♂ (43), homomorphic ♂ (44). (After Dubinin 1953)

Freyana l. largifolia (Mégnin and Trouessart) Fig. 43–44.

Freyana anatina var. *largifolia* Még. & Trst., 1884, *J. Micrograph.* **8**: 100.

Freyana l. largifolia: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 264–67, fig. 17, 85, 87, 90, 91, 99, 107–109.

Genus ***Diomedacarus*** Dubinin

Diomedacarus: Dub., 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 212; 1953, *Fauna S.S.S.R.* **6**(6): 363.—Gaud & Mouchet, 1959, *Ann. Parasitol. hum. comp.* **34**(4): 485.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* **11**(1): 229.

Type-species: *Freyana (Microspalax) gigas* Trouessart, 1895, from *Diomedea* species, Pacific Ocean.

Diomedacarus gigas (Trouessart) Fig. 45–46.

Freyana (Microspalax) gigas Trst., 1895, *Bull. Soc. ent. France* **64**: CCCXI.—Canestrini & Kramer, 1899, *Tierreich* **7**: 35.

Diomedacarus gigas: Dubinin, 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 212–14, fig. 7; 1951, *Fauna S.S.S.R.* **6**(5): 8, 33, fig. 9 (2); 1953, *Fauna S.S.S.R.* **6**(6): 363–66, fig. 156, 157.

This unique species has been collected from: *Diomedea melanophris*, South Georgia (Bird I., 25.X.1963, H. B. Clagg) and from Cape Horn; *Diomedea albatrus*, St. Paul I., Sakhalin I., Commodore Is., Aleutian Is., Japan; *D. nigripes*, Midway Is., Sakhalin I., West Indies, Japan; *D. exulans*, Cape Horn, Atlantic Ocean; and *D. immutabilis*, Siberia.

Subfamily MICHAELICHINAE

Genus ***Michaelia*** Trouessart

Michaelia Trst., 1884, *J. Micrograph.* **8**: 527.—Gaud & Till, 1961, *Publ. So. African Inst. Med. Res.* **11**(L): 237.

Michaelichus: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 318–22.

According to Dubinin (1953), each of the 3 species of *Michaelia* are restricted to one of the subgenera of *Phalacrocorax*: *M. heteropus* on the subgenus *Phalacrocorax*, *M. urile* on the subgenus

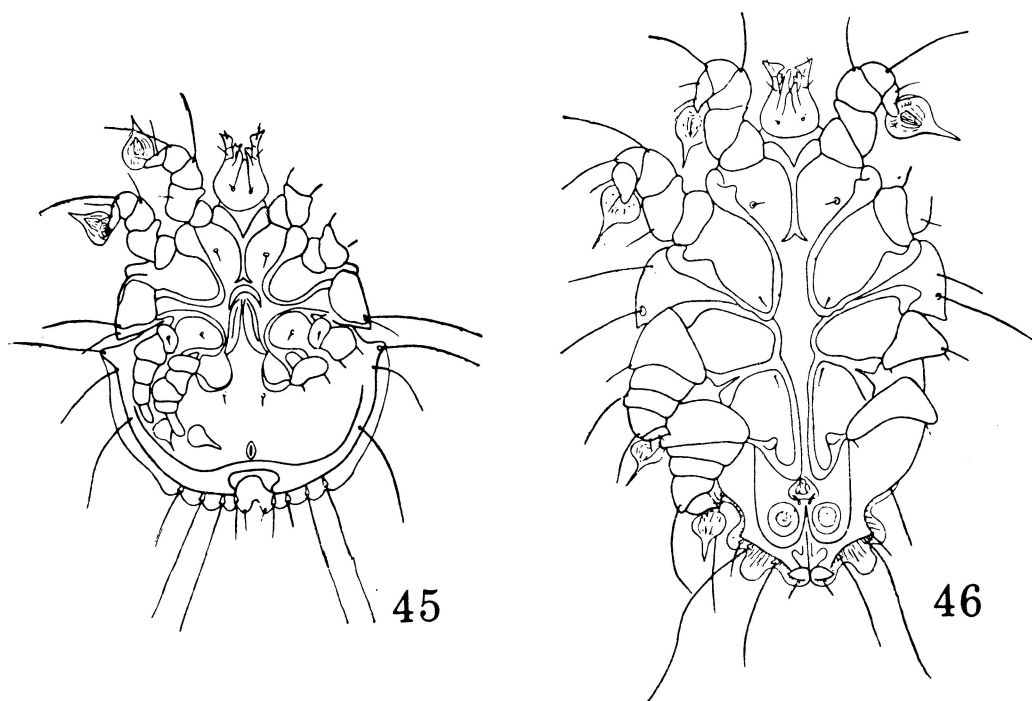


Fig. 45, 46. *Diomedacarus gigas* (Trouessart): ventral aspects of ♀ (45) and ♂ (46). (After Dubinin 1949)

Urile and *M. microcarbonis* on the subgenus *Microcarbo*. Dubinin's assumptions were based on very limited collections therefore we are including illustrations of each of the 3 species.

The genus needs revising, but it will be difficult as the males exhibit polymorphism and asymmetry as illustrated in the figures of mites that could occur on *Phalacrocorax atriceps*.

Michaelia heteropus (Michael) Fig. 47-48.

Dermaleichus heteropus Mchl., 1881, *J. R. Microscop. Soc. Lond.* ser 2, **1**: 212, pl. 4.

Michaelichus heteropus: Dubinin, 1953, *Fauna S.S.S.R.* **6**(6): 323-32, fig. 12, 80, 83, 135-141.

Dubinin (1953) reports this species from various subspecies of *Phalacrocorax carbo* and *P. filamentosus*.

Michaelia microcarbonis (Dubinin) Fig. 49-50.

Michaelichus microcarbonis Dub., 1953, *Fauna S.S.S.R.* **6**(6): 332-36, fig. 80, 82, 142-144.

This species has been collected from *Phalacrocorax pygmaeus* and *P. africanus*.

Michaelia urile (Dubinin) Fig. 51-52.

Michaelichus urile Dub., 1953, *Fauna S.S.S.R.* **6**(6): 336-41, fig. 80, 84, 145.

This Dubinin species has been recorded from *Phalacrocorax a. aristotelis* and *P. urile*.

Family AVENZOARIIDAE

Genus **Avenzoaria** Oudemans

Avenzoaria Oudemans, 1905, *Ent. Ber.* **1**(21): 209.—Dubinin, 1951, *Akad. Nauk S.S.S.R., Zool Inst., Parasitol. Sborn.* **13**: 184; 1956, *Fauna S.S.S.R.* **6**(7): 327.

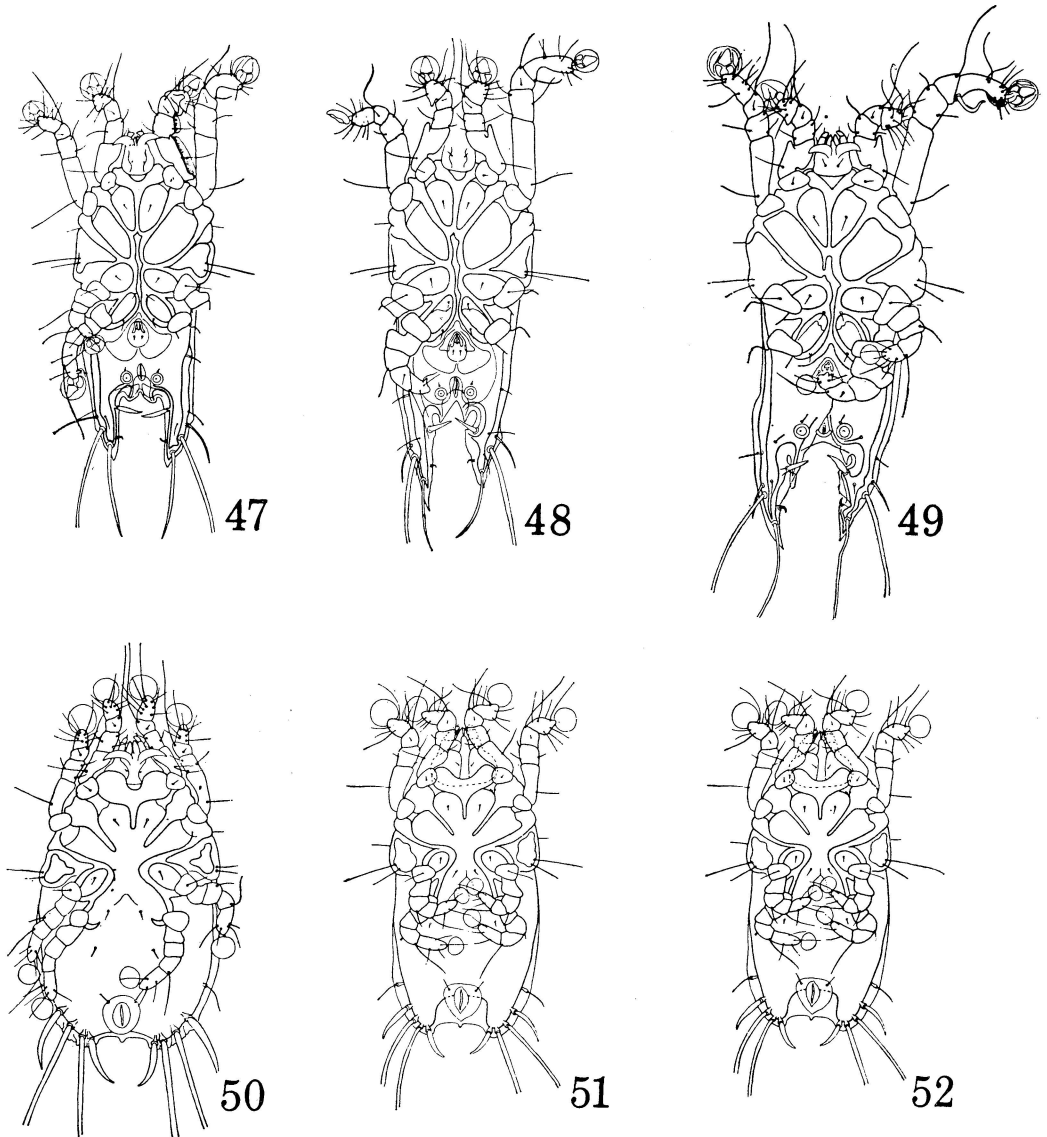


Fig. 47-52. Ventral aspects of *Michaelia heteropus* (Michael), homomorphic ♂ (47), heteromorphic ♂ (48); *M. microcarbonis* (Dubinin), heteromorphic ♂ (49), ♀ (50); *M. urile* (Dubinin), homomorphic ♂ (51), ♀ (52). (After Dubinin 1953)

Type-species: *Dermaleichus totani* Canestrini, 1878, from *Tringa totanus*, Europe.

This genus was revised by Dubinin (1951, 1956). As defined, the genus contains less than 20 species, most of which are from Europe and Asia and from species of the genera *Tringa*, *Calidris*, *Philomachus*, *Limosa*, and *Squatarola*.

Avenzoaria calidridis (Oudemans) Fig. 53-54.
Pterolichus calidridis Oud., 1904, *Ent. Ber.* 1(19): 172.

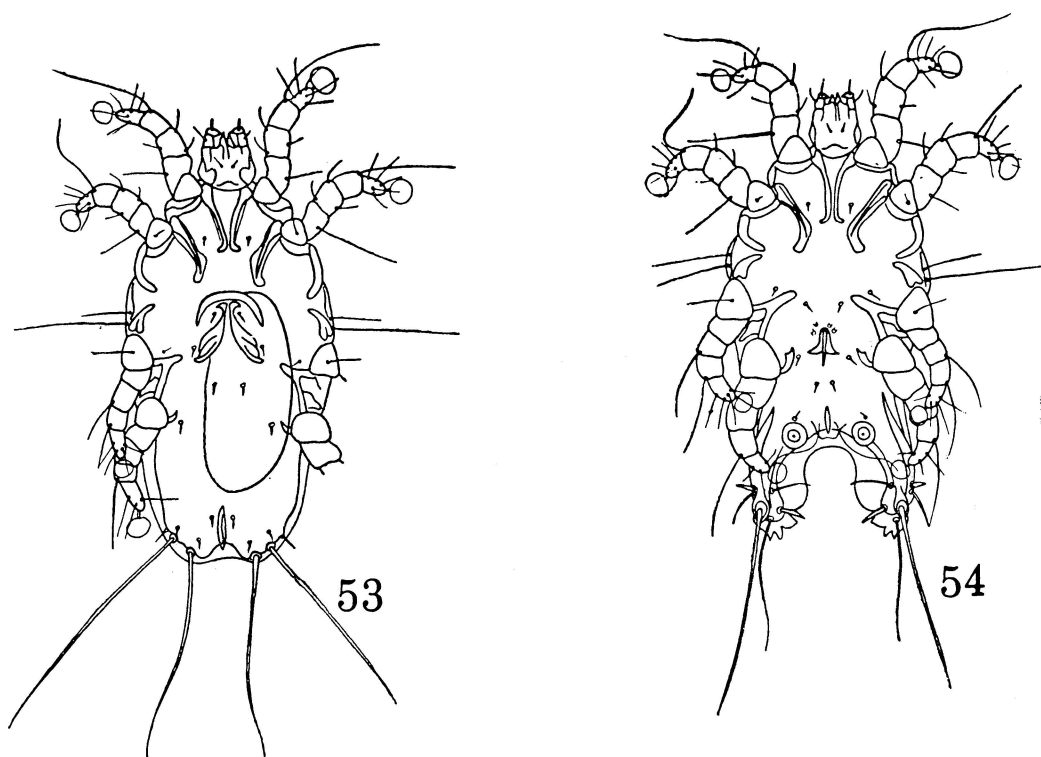


Fig. 53, 54. *Avenzoaria calidris* (Oudemans): ventral aspects of ♀ (53) and ♂ (54). (After Dubinin 1956)

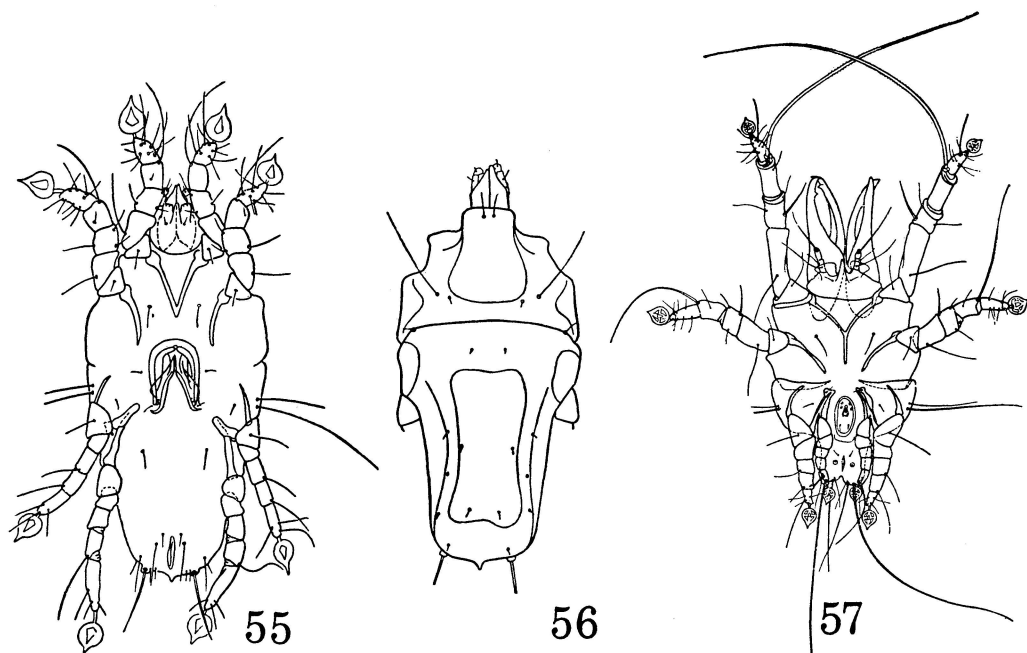


Fig. 55-57. *Bdellorhynchus polymorphus* Trouessart: ventral and dorsal aspects of ♀ (55, 56), ventral aspect of heteromorphic ♂ (57). (After Dubinin 1956)

Avenzoaria calidridis: Dubinin, 1956, *Fauna S.S.S.R.* **6**(7): 346–49, fig. 162, 163.

The mite has been found on 2 species of *Crocethia* and 10 species of *Calidris*, including *Calidris fuscicollis*. The named *Calidris* species occurs on South Georgia but collections of ectoparasites have not been made.

Genus **Bdellorhynchus** Trouessart and Mégnin

Bdellorhynchus Trst. & Még., 1883, *Comp. rend. Acad. Sci. Paris*, **97**: 1319, 1321.—Dubinin, 1956, *Fauna S.S.S.R.* **6**(7): 734 fig. 366.

Type-species: *Bdellorhynchus polymorphus* Trouessart from *Anas crecca* (= *Querquedula c.*).

The species assigned to the genus *Bdellorhynchus* are ectoparasites of the Anseriformes. Dubinin (1956) described and illustrated the polymorphism exhibited in the species.

Bdellorhynchus polymorphus Trouessart Fig. 55–57.

Bdellorhynchus polymorphus Trst., 1885, *J. Micrograph.* **9**: 110–12, fig. 7.—Dubinin, 1956, *Fauna S.S.S.R.* **6**(7): 751–62, fig. 366–379.

Found on many species of Merginae, Anatinae and Nyrociniae, this mite species can be considered as cosmopolitan; it should be eventually collected from *Anas georgicus* on South Georgia.

Genus **Promegninia** Gaud and Atyeo

Promegninia Gaud & Atyeo, 1967, *Acarologia* **9**(2): 440.

Type-species: *Megninia pedimana* Trouessart, 1889, from *Diomedea exulans*, South Seas.

In general appearance, this monobasic genus is similar to *Zachvatkinia*, especially the ♀♀ which have the hysterosomal shield reduced to 2 lateral bands and only 1 pair of long posterior setae. One feature is unique: distal to solenidion ω_1 of tarsus I there is a small attenuated spine that has no homolog among the known species of feather mites.

Promegninia pedimana (Trouessart) Fig. 58–60.

Megninia pedimana Trst., 1889, *Bull. Soc. Etud. Sci. Angers* **28**: 191.

Promegninia pedimana: Gaud & Atyeo, 1967, *Acarologia* **9**(2): 440, fig. 2.

The ♀ from *Diomedea nigripes* illustrated by Gaud & Atyeo (1967) has a well-developed hysterosomal shield; the females collected from 3 specimens of *D. chrysostoma* (Bird I., South Georgia, 17. IX.1963, H. B. Clagg) have the hysterosomal shield reduced to 2 lateral bands (as in *Zachvatkinia*, Fig. 62).

Genus **Zachvatkinia** Dubinin

Zachvatkinia Dub., 1949, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **11**: 216; 1952, *Akad. Nauk S.S.S.R., Zool. Inst., Trudy* **12**: 254.—Aty eo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 100.

Type-species: *Dermaleichus puffini* Buchholz, 1869, from *Puffinus cinereus*.

Zachvatkinia species are common on the Procellariiformes, Pelecaniformes and Charadriiformes, but the species are poorly known. Dubinin (1952) believed that each mite species of this genus was associated with a wide range of hosts and necessarily Dubinin made broad species diagnoses. The genus is currently being revised.

Zachvatkinia hydrobatidii Dubinin Fig. 61–63.

Zachvatkinia hydrobatidii Dub., 1949, *Akad. Nauk S.S.S.R. Zool. Inst., Parasitol. Sborn.* **11**: 219, fig. 9, 10, 12; 1952, *Akad. Nauk S.S.S.R., Zool. Inst. Trudy* **12**: 256.—Aty eo & Peterson 1967, *Antarctic Res. Ser.* **10**: 101, fig. 9–12.

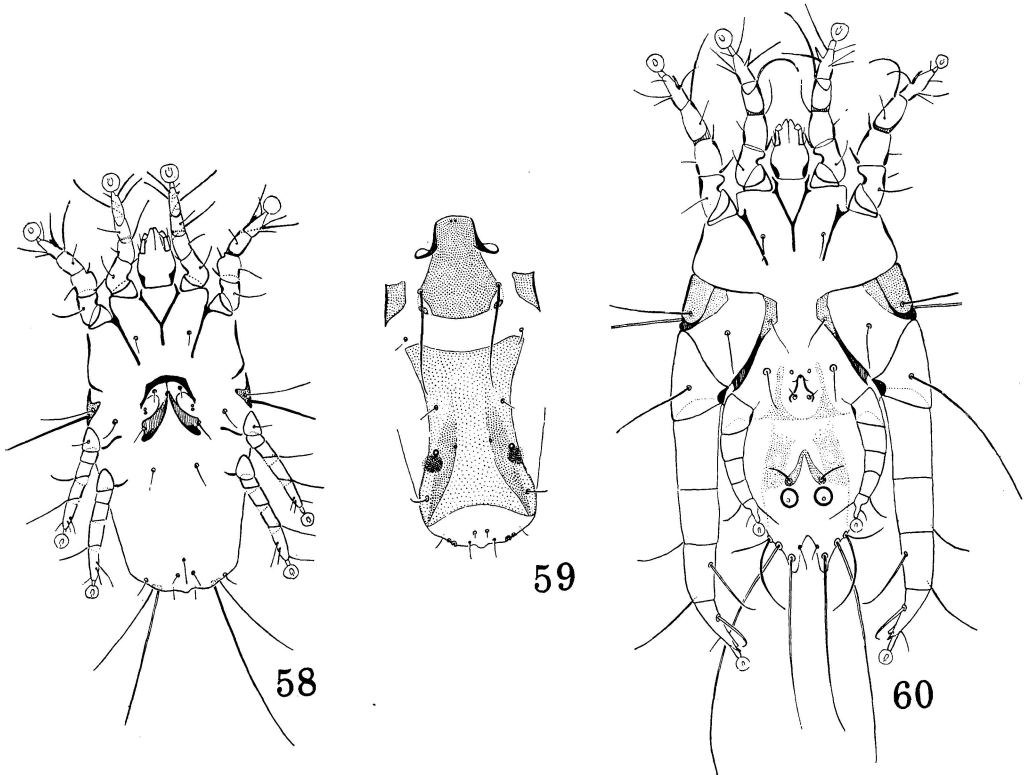


Fig. 58-60. *Promegnina pedimana* (Trouessart): ventral and dorsal aspects of ♀ (58, 59), ventral aspect of ♂ (70). (Modified from Gaud & Atyeo, 1967)

This species has been collected from *Oceanites o. oceanicus*, the type host, from the following islands or island groups: Anvers, Haswell, Deception (20.I.1961, R. E. Leech), Litchfield, Maipo and the South Orkneys, from *Pagadroma nivea*, Haswell I., and from *Fregetta tropica*, Deception I. (2.II.1966).

Zachvatkinia species (near *hydrobatidii*)

A common form from *Macronectes giganteus* may be conspecific with *Zachvatkinia hydrobatidii*, but until the genus is revised, we believe that the data should be maintained separately. The mite has been collected from the cited host on Bird I., South Georgia, by H. B. Clagg: 25.VI.1963 (2 birds), 13.VII.1963, and 1.VIII.1963.

Zachvatkinia stercorarii Dubinin

Zachvatkinia stercorarii Dub., 1949, *Akad. Nauk S.S.S.R., Zool Inst., Parasitol. Sborn.* **11**: 227, fig. 12 (*nomen nudum*); 1952, *Akad. Nauk S.S.S.R., Zool. Inst., Trudy* **12**: 255, fig. 1, 2—Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 103.

Zachvatkinia stercorarii, as well as *Alloptes stercorarii*, was originally described from *Stercorarius pomarinus* on Wrangel I. Both species have been reported from the Antarctic (Atyeo & Peterson, 1967), but neither has been collected from the subantarctic islands. The known host-parasite associations are: *Catharacta loembergi*, Maipo I., Adelaide I. and *C. skua maccormacki*, Cape Hallett, Haswell I., Ross I. and Victoria Land.

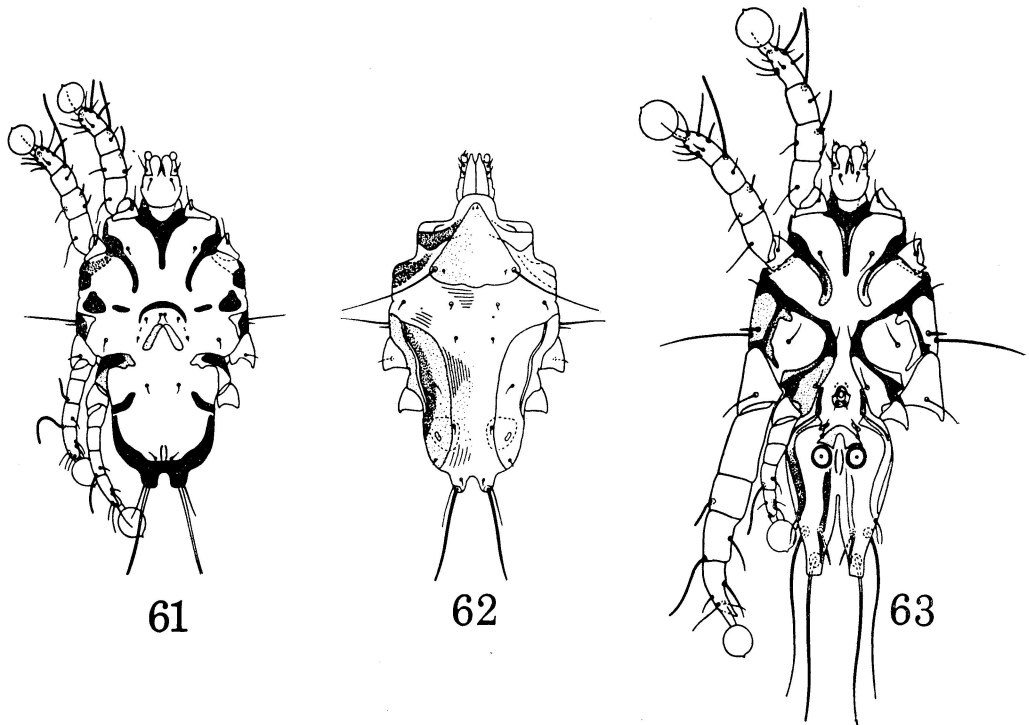


Fig. 61-63. *Zachvatkinia hydrobatidii* Dubinin: ventral & dorsal aspects of ♀ (61, 62), ventral aspect of ♂ (63). (After Atyeo & Peterson 1967)

Genus *Laronyssus* Dubinin

Laronyssus Dub., 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 128; 1956, *Fauna S.S.S.R.* **6**(7): 247.

Type-species: *Pterolichus marinus* Trouessart, 1885, from *Sterna hirundo*.

Either of the 2 included species could be associated with the Laridae of Heard and/or South Georgia Is. *Larus dominicanus* occurs on Heard I. and on South Georgia, *Sterna macrura* on Heard I., *Sterna v. vittata* on Heard I. and *S. v. georgiae* occurs on the South Georgia Islands.

Laronyssus marinus (Trouessart) Fig. 64-65.

Pterolichus marinus Trouessart, 1886, *Bull. Soc. Etud. Sci. Angers* **16**: 107.

Laronyssus marinus: Dubinin, 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 131, fig. 4; 1956, *Fauna S.S.S.R.* **6**(7): 253-56, fig. 112, 113.

The type-species of the genus *Laronyssus* has been collected from species of *Larus*, *Rissa* and *Pagophila*.

Laronyssus martini (Trouessart) Fig. 66-67.

Pterolichus martini Trst., 1885, *J. Micrograph.* **9**: 116.

Laronyssus martini: Dubinin, 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 129, fig. 3; 1956, *Fauna S.S.S.R.* **6**(7): 251, fig. 111.

The species of mite has been collected from numerous locales from species of *Larus*, *Rissa* (Larinae) and *Sterna* (Sterninae).

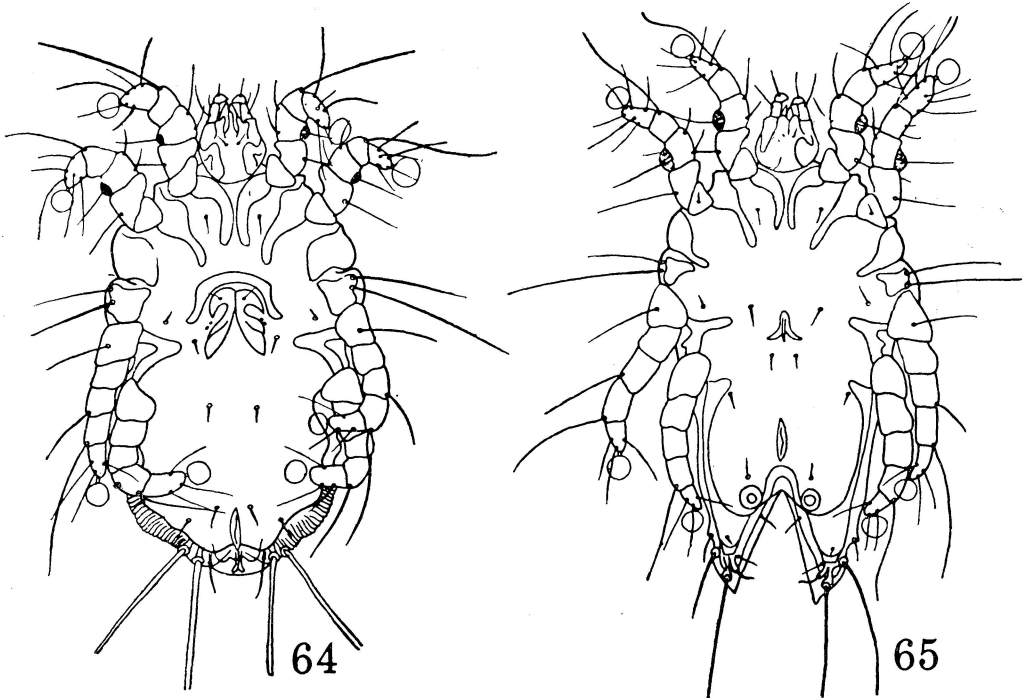


Fig. 64, 65. *Laronyssus marinus* (Trouessart): ventral aspects of ♀ (64) and ♂ (65). (After Dubinin 1956)

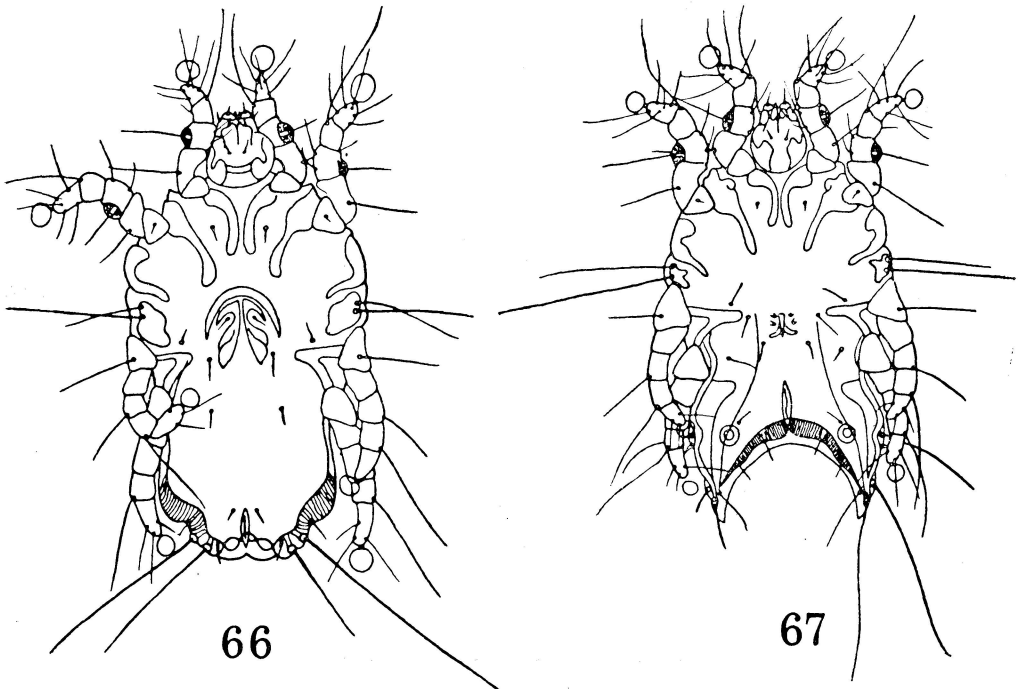


Fig. 66, 67. *Laronyssus martini* (Trouessart): ventral aspects of ♀ (66) and ♂ (67). (After Dubinin 1956)

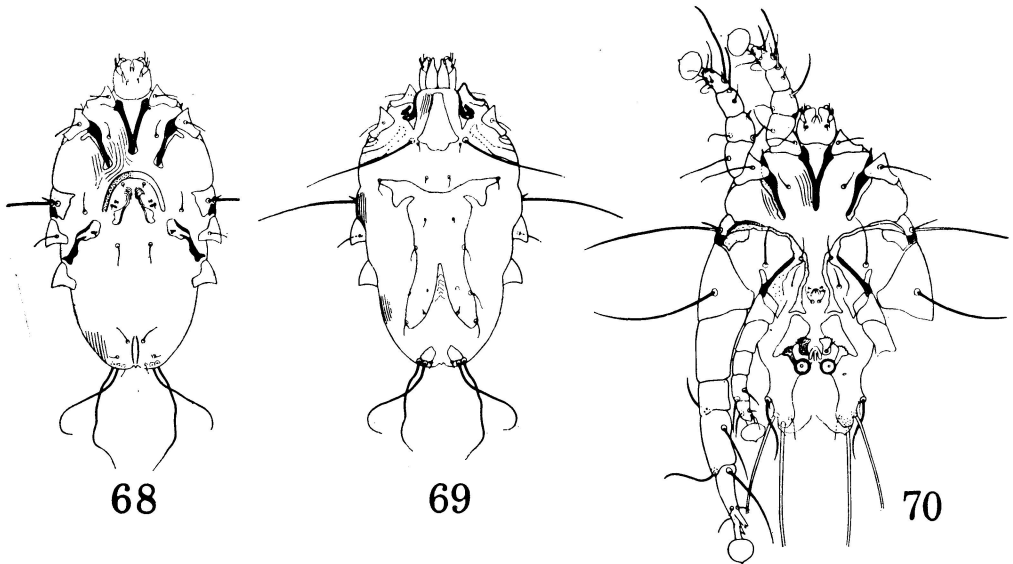


Fig. 68–70. *Scutomegninia phalacrocoracis* (Dubinin & Dubinina): ventral and dorsal aspects of ♀ (68, 69), ventral aspect of ♂ (70). (After Atyeo & Peterson, 1967)

Genus *Scutomegninia* Dubinin

Scutomegninia Dub., 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 218.—Gaud, 1961, *Nat. Hist. Rennell I., Brit. Sol.* **4**: 50.—Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 100.

Type-species: *Megninia phalacrocoracis* Dubinin & Dubinina, 1940, from *Phalacrocorax carbo*.

The ♂♂ of *Scutomegninia*, *Promegninia*, and *Zachvatkinia* have similar modifications and can be confused, however of the 3 listed genera, only *Scutomegninia* ♀♀ have a complete hysterosomal shield and 2 pairs of long terminal setae.

Scutomegninia phalacrocoracis (Dubinin and Dubinina) Fig. 68–70.

Megninia phalacrocoracis Dub. & Dubna., 1940, *Trudy Astrakh. Gos. Zapovednika* **3**: 262, fig. 14.—Dub., 1947, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **9**: 294.

Scutomegninia phalacrocoracis: Dub., 1951, *Akad. Nauk S.S.S.R., Zool. Inst., Parasitol. Sborn.* **13**: 220, fig. 50.—Atyeo & Peterson, 1967, *Antarctic Res. Ser.* **10**: 100, fig. 5–8.

Atyeo & Peterson (1967) reported this species from *Phalacrocorax atriceps* collected on a small islet at the tip of Maipo Island. Additional records are from *P. atriceps georgicus* (2 birds) collected on Bird I., South Georgia, 28.V.1963 by H. B. Clagg.

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