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LAELAPTID MITES FROM AUCKLAND AND MACQUARIE ISLANDS (Acarina: Laelaptidae)[1]

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Abstract: Six species—3 new—of laelaptid mites representing 4 genera are recorded from the subantarctic Islands of Auckland and Macquarie Islands. The following species were represented: *Ayersacarus plumapilus* Hunter: *A. gelidus* n. sp.; *A. strandtmanni* n. sp.; *Leptolaelaps reticulatus* Evans *campbellensis* Hunter; *Hypoaspis evansi* n. sp.; and *Androlaelaps* (=*Haemolaelaps*) *pachyptilae* (Zumpt & Till) of which the ♂ is described for the first time. Collections were made from soil samples, ground litter, and bird nests.

The material included in this study was collected from sub-Antarctic Macquarie and Auckland Islands from 1960–1963. Collections were made by personnel from Bishop Museum, Hawaii, and the Australian National Antarctic Research Expedition (ANARE), Australia. The Macquarie Island collection was made by J. H. Calaby and K. C. Watson of ANARE and by Dr. J. L. Gressitt of Bishop Museum. The Auckland Island material was collected by Dr. Gressitt and K. A. J. Wise of Bishop Museum.

The present paper records 6 species—3 new species and 1♂ not previously known—of laelaptid mites representing 4 genera from Auckland and Macquarie Islands. Primary types are deposited with the Australian National Insect Collection (ANIC), Canberra, Australia, or with the Bernice P. Bishop Museum (BISHOP), Honolulu, Hawaii. Paratypes, when available, are deposited in the United States National Museum (USNM), Washington, D. C.; British Museum (Nat. Hist.) (BMNH), London; and Dept. of Entomology, University of Georgia (UG), Athens, Georgia.

I would like to express my appreciation to Mr. Carl Mitchell, Bishop Museum, and Mr. J. H. Calaby (ANARE) for sending me the Laelaptidae material from Auckland and Macquarie Islands.

Genus **Ayersacarus** Hunter, 1964

Ayersacarus plumapilus Hunter

A. plumapilus was represented from both Auckland and Macquarie and was previously recorded from Campbell I. (Hunter, 1964). Eighteen ♀♀, 9♂♂, and 13 nymphs were recorded from one or more of the following habitats from Auckland Island: rabbit burrow,

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8. I. 1963; nest of *Pelecanoides* 5.I.1963; white-headed petrel (*Pterodroma lessoni*), 2.I.1963; leaf mold and humus, 8.I.1963; and from *Dracophyllum*, 2.I.1963. All Macquarie specimens (22♀♀ and 4♂♂) of this species were collected from nest material of the dove prion (*Pachyptila desolata*), 28. II. 1961.

This species appears to represent a complex of 3 types consisting of a "Campbell Island" type (type series), a "Macquarie Island" type and an "Auckland Island" type. The Macquarie I. type ♀ and ♂ have the humeral seta only slightly longer than the adjacent dorsal setae, and in addition the ♂ has a long simple seta arising from near the base of the spur on femur IV. The Auckland I. type has the peritremal plate separated from or only weakly fused to the parapodal plate. The Campbell I. type has the humeral seta distinctly longer than the adjacent dorsal setae, the peritremal plate strongly joined to the parapodal plate, and the ♂ has a spoon-like seta arising from near the base of the spur on femur IV. In the Auckland I. material 4 of the 9♂♂ had a simple seta near the spur on femur IV (Macquarie I. type), whereas the other 5 specimens had a spoon-like seta (Campbell I. type). Otherwise the different types were restricted to the island indicated by their name.

Ayersacarus gelidus Hunter, n. sp. Figs. 1–2.

Both sexes of *A. gelidus* may be distinguished by one or more of the following characteristics: dorsal plate with fringed setae on posterior portion only; peritremal plate separate from or at most weakly joined to parapodal plate. In the ♀ the 2nd pair of setae on the genito-ventral plate and 2 pairs of ventral setae arising from the integument are simple. The ♂ has simple setae on the holoventral plate and a long simple seta arising near the base of the spur on femur IV.

In the descriptions for this species all measurements are the average of 10 specimens.

♀. Body 1121 μ long, 707 μ wide, rounded anteriorly and posteriorly. *Dorsum.* Dorsal plate covering dorsum except for a strip at posterior and lateral margins of body; surface of plate marked by scale-like striae and many small granular spots; 40 pairs of dorsal plate setae (few specimens had 1 or 2 unpaired setae between the J rows—see Costa, 1961, for setal notations), posterior setae up to 50 μ long; some setae, especially on anterior 1/2 of plate, split at tip; fringed setae (split seta with one side of inner margin fringed, fig. 1D) on posterior of dorsal plate and on integument around plate. (See Hunter, 1964, for full description of fringed setae.) Fringed humeral seta, 82 μ long, arising from integument above coxa II. *Ventrum.* Sternal plate 265 μ long on midline, 176 μ at narrowest width; striations as illustrated, ornamented by many small granules; 3 pairs of setae and 2 pairs of pores as figured. Two well sclerotized presternal plates. Tritosternum consisting of a base and 2 feathery lacinae. Metasternal seta and pore on small metasternal plate. Two small platelets behind sternal, and between metasternal plates. Strong endopodal plate medial of coxae III & IV, plate with distinct medial projection posteriorly. Three parapodal plates, a large plate partially encircling coxae IV, a small plate between coxae II & III, and the 3rd between coxae I & II weakly articulating with corner of sternal plate. Peritremal plate well developed, extending anteriorly to join dorsal plate above coxae I, posteriorly free in integument or at most weakly joined to parapodal plate behind coxa IV; peritreme extending above coxa I. Genito-ventral plate slightly widened behind coxae IV, not overlapping sternal plate anteriorly; greatest width 245 μ, 406 μ long on midline from end of sternal plate to end of genito-ventral plate; 2 pairs of setae arising from sur-

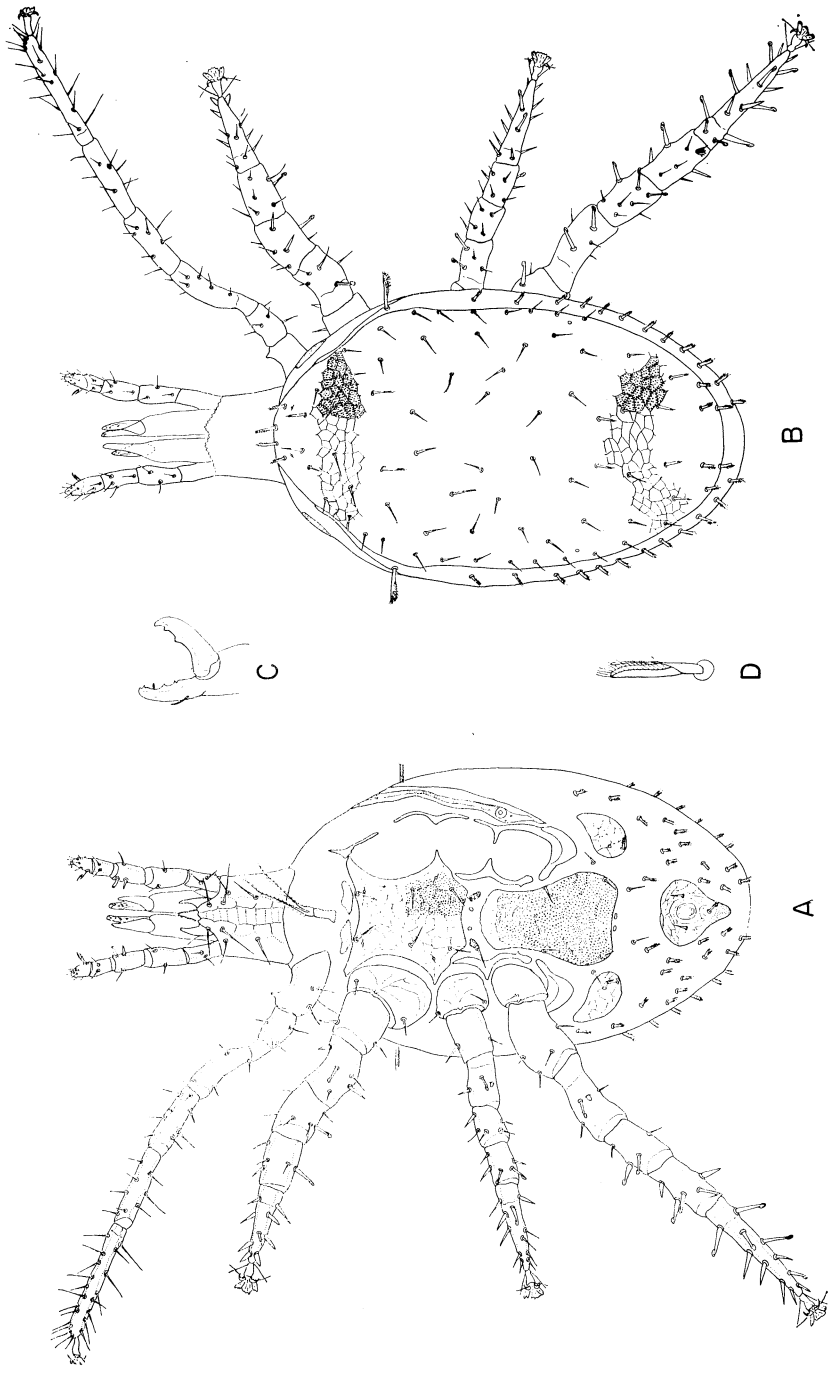

Fig. 1. *Ayersacarus gelidus*, n. sp. ♀. A, ventrum; B, dorsum; C, chelicera; D, fringed seta.

face of plate, genital setae at level of posterior margin of coxae IV, 2nd pair arising from posterolateral corners of plate (this pair simple in most specimens, but split at the tip in some); striations as shown; granular spots thickly scattered over plate. Two small rectangular platelets posterior to genital plate. Metapodal plate large, 166μ long, 83μ wide; a fringed seta (a few specimens with simple or split seta) arising from posteromedial margin; a pore-like opening on plate, other striations and shape of plate as illustrated. Ventral body setae up to 30 μ in length; one pair lateral of and one pair just posterior to genito-ventral plate simple, remaining setae fringed; position as shown. Anal plate 192 μ long, 169 μ wide; markings as shown; unpaired seta fringed, paired setae simple. *Gnathosoma.* Deutosternal groove with several rows of teeth, many teeth per row. Relative length of setae as shown. Palps with a blunt, slightly bifid seta arising from medial surface of genu; tarsus with a 2-tined seta. Chelicerae chelate, movable digit with 2 teeth, fixed digit with small spine-like pilus dentilis, several small and 2 larger teeth. Small anteriorly directed spine-like projection arising from posterior lateral margin of fixed chela. *Legs.* Legs I slender, setae simple; coxae with spine on distal margin. Legs II–IV with some setae ending in a spoon-like hyaline process; tarsi II with heavy spine-like setae; femurs III & IV with short spur-like process on ventral surface. Dorsum of femur IV with distal seta spoon-like and not distinctly longer than basal seta. All tarsi with well developed claws, distinct seta-like laterodistal elements associated with claws II–IV. Legs, including claws and coxae, measured as follows: I, 1220 μ; II, 942 μ; III, 895 μ; and IV, 1290 μ long.

♂. Body 1101 μ long, 635 μ wide. *Dorsum.* Dorsal plate covering dorsum, surface marked with striations and small granular spots; setae as in ♀, posterior setae up to 47 μ long. *Ventrum.* Ventral surface covered by a single holoventral plate 836 μ long, width 146μ at narrowest point between coxae II, 444 μ at widest point behind coxae IV; bearing 10 pairs of simple setae plus 3 anal setae, unpaired anal seta fringed; surface of plate marked by striations and granular spots. Two presternal plates between base of tritosternum and holoventral plate. Parapodal plate lateral of coxae I & II, extending medially to articulate with anterior corner of holoventral plate. Peritremal plate extends back to, but not fused to, holoventral plate lateral of coxa IV, joins dorsal plate above coxa I. Ventral body setae short, fringed. *Legs.* Leg I long, slender; coxa with spine on distal margin; tarsus with long slender setae. Leg II distinctly heavier than others; femur with a heavy spur and boss on ventral surface. Leg III with blunt spur on ventral surface of femur; some lateral and dorsal setae ending in a hyaline spoon-shaped structure. Leg IV long, with many spoon-shaped setae; trochanter with 2 bosses ventrally, proximal one with seta arising from surface; femur with a large ventral spur, strongly sclerotized at tip, a long simple seta arises from near base of spur; tibia with boss from which simple seta arises. Claws II–IV with lateral distal elements well developed. Legs, including claws and coxae, measured as follows: I, 1216 μ; II, 956 μ; III, 838 μ; and IV, 1223 μ long. *Gnathosoma.* Many deutosternal teeth per row; corniculi well sclerotized. Palpal genu with a median seta slightly bifid at tip. Chelicera chelate, long posteriorly directed spermatodactyl process arising from lateral margin of movable chela.

This species was described from a series of over 75♀♀ and over 25♂♂, all taken from Macquarie I. Specimens were collected from the following habitats: *Stilbocarpa polaris* (Araliaceae) litter; sheep dung; gentoo penguin (*Pygoscelis papua*) rookery soil; moss and soil; and nest material of dove prion (*Pachyptila desolata*), wandering albatross (*Diomedea exulans*), light-mantled sooty albatross (*Phoebetria palpebrata*), and sooty shearwater (*Puffinus*

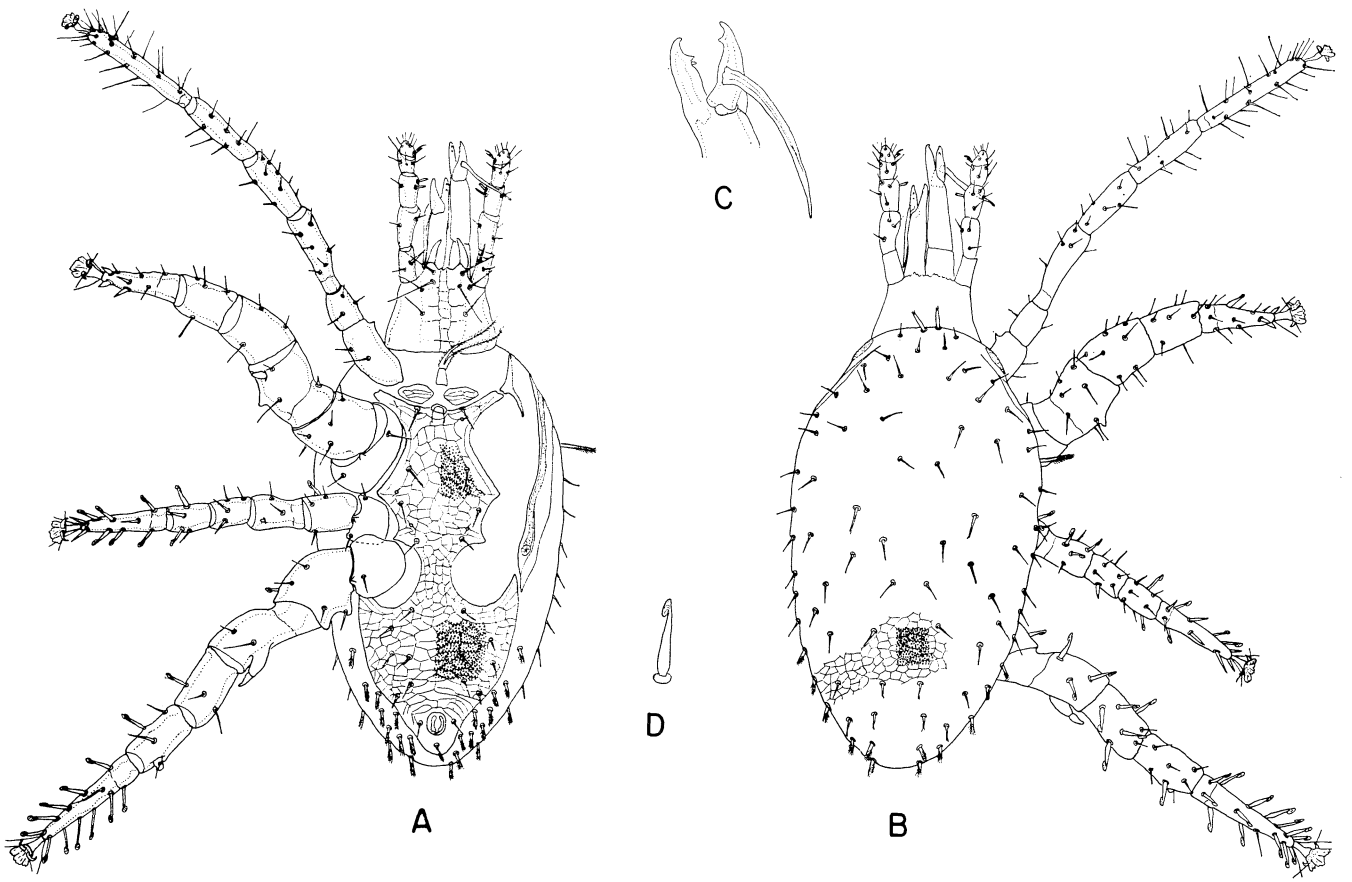

Fig. 2. *Ayersacarus gelidus*, n. sp. ♂. A, ventrum; B, dorsum; C, chelicera; D, spoon-shaped leg seta.

griseus). Specimens were collected from all months of the year.

Holotype ♀ (ANIC), Lambing Gully, Macquarie I., ex *Stilbocarpa polaris* litter, 30. IX. 1961, J. Calaby & K. Watson. Allotype ♂ (ANIC), Gadget Gully, Macquarie Island, ex litter nr. light-mantled sooty albatross, *Phoebetria palpebrata*, nest, 7. III. 1961, Calaby & Watson. Paratypes: 10♂♂♀♀ (ANIC); 4♀♀, 2♂♂ (USNM, BMNH); 6♀♀, 4♂♂ (BISHOP, UG).

Ayersacarus strandtmanni Hunter, n. sp. Fig. 3.

Both sexes of this species may be differentiated by their long simple dorsal plate setae, peritremal plate not fused to parapodal plate, and dorsum of femur IV with distal setae simple and 2× as long as other dorsal femoral setae. The ♀ has long simple setae on the metapodal and genito-ventral plates. The ♂ has the paired setae on the holoventral plate simple and a long simple seta arising near the base of the spur on femur IV.

♀. Body rounded anteriorly and posteriorly, 1031 μ long, 592 μ wide (all measurements are the average of 6 specimens). *Dorsum.* Dorsal plate covering most of dorsum; dorsal setae simple, up to 80 μ long; humeral seta simple, 98 μ long; surface of plate marked by scale-like striations and few scattered granular spots. Posteriorly, some long fringed setae arising from integument. *Ventrum.* Sternal plate similar to *gelidus* except sternal setae longer and granular spots thinly scattered or absent. Sternal plate 228μ long, width 143 μ at narrowest point between coxae II. Two very small platelets in integument behind sternal plate. Sclerotized presternal plates present. Metasternal plate with pore and seta. Genito-ventral plate bearing 2 pairs of simple setae; plate 180μ at greatest width, 334 μ from end of sternal plate to posterior of genito-ventral plate; striations as shown. Two small platelets in integument behind genito-ventral plate. Metapodal plate 128 μ long, 73 μ wide; seta long, simple; striations and pore-like structure as shown. Anal plate 163 μ long, 148 μ wide; unpaired seta fringed, paired setae simple. Endopodal plate well developed, free in integument between coxae III & IV. One parapodal plate surrounding coxa IV and posterior part of III, a 2nd smaller plate between coxa I & II abutting on corner of sternal plate. Peritremal plate not fused to parapodal plate. Ventral body setae up to 66 μ long, of type and position as illustrated. *Legs.* Leg I slender, coxa with anterior distal spine; proximal coxal seta long. Leg II heaviest, tarsus with some spine-like setae; femur, and trochanter with some long setae; posterior coxal seta about 2× length of anterior seta. Leg III with spine-like setae on ventrum of tibia and genu, femur with 1 long ventral seta. Leg IV with small, round boss-like structure on femur; spoon-like setae on femur, genu, and tibia; tarsus with long heavy setae. Claws II–IV with lateral distal elements. Legs including claws and coxae, measured as follows: I, 913 μ; II, 770 μ; III, 717 μ; and IV, 1045μ long. *Gnathosoma.* Palpal genu with a medial seta slightly divided at tip. Relative lengths of setae of gnathosoma and palps as illustrated. Chelicerae chelate, dentate; fixed digit with small pilus dentilis and spine-like lateral process; movable digit bidentate.

♂. Idiosoma 880 μ long, 460 μ wide. *Dorsum.* Dorsal setae up to 70 μ long, type of setae and striations of dorsal plate as in ♀. *Ventrum.* Holoventral plate 670 μ long, width 135 μ at narrowest point between coxae II, 340 μ at widest point behind coxae IV; bearing 11 pairs of simple setae including paired anal setae, unpaired anal seta fringed; surface of plate with striations as shown. Sclerotized presternal plates present. A single free parapodal plate articulating with anterior corner of holoventral plate. Peritremal plate

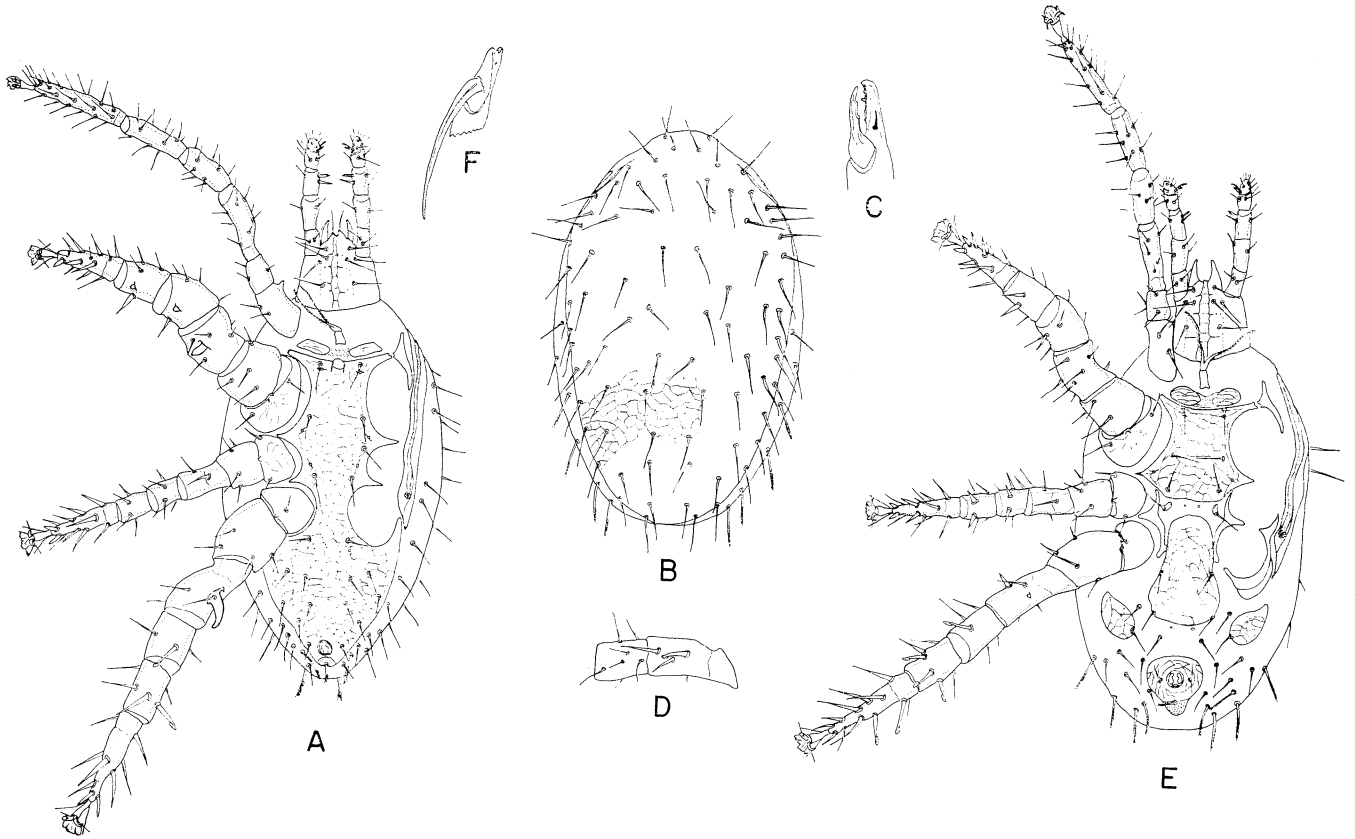

Fig. 3. *Ayersacarus strandtmanni*, n. sp. A, ventrum of ♂ ; B, dorsum of ♀ ; C, ♀ chelicera ; D, dorsum of genu and femur IV, ♀ ; E, ventrum of ♀ ; F, ♂ chelicera.

wide, not fused to holoventral plate, fused to dorsal plate above coxa I. Some ventral body setae fringed. *Legs.* Leg I slender, coxa with spine as in ♀. Leg II heavy, strong spur on femur, boss-like structure on genu and tibia; tarsus with heavy spine-like setae. Leg III as in ♀ except tarsal setae appear to be slightly longer. Leg IV with strong curved spur on femur, a simple seta arising from base of spur; some spoon-like setae on tibia and genu; tarsal setae spine-like; trochanter without boss-like process on margin. Legs, including claws and coxae, measured as follows: I, 870 μ; II, 680 μ; III, 620 μ; and IV, 890 μ long. *Gnathosoma.* Palps as in ♀, genu with slightly divided medial seta. Chelicera chelate; spermatodactyl process 165 μ long, arising from lateral surface of movable digit.

This species was described from 6♀♀ and 1♂. All specimens have the following collection data: Mt. Elder, Macquarie Island; from dove prion (*Pachyptila desolata*) nest material, 28. II. 1961, colls. J. Calaby & K. Watson.

Holotype ♀, allotype, 2 ♀ paratypes (ANIC); 1♀ paratype (USNM, BMNH, UG).

In addition to the 3 species of *Ayersacarus* listed above, a 4th species, *A. gressitti* Hunter, has been described in this genus. These species are quite similar morphologically and apparently occur in much the same general type of habitat. The similarities and differences for some of the more easily seen characters that appear most distinctive for these 4 species are given in Table 1.

Table 1. Comparison of specific characteristics of *Ayersacarus* species.

Characteristic	Species of *Ayersacarus*			
	plumapilus	*gressitti*	*gelidus*	*strandtmanni*
Body shape	ovate	elongate	elongate	elongate
Dorsal plate setae	all fringed	all fringed	fringed posteriorly	all simple
Fusion of peritremal and parapodal plates	strongly fused	moderate fusion	not fused	not fused
Type and length of distal seta on dorsum femur IV	spoon-like; all equal	spoon-like; all equal	spoon-like; all equal	simple; 2× length of other setae
Metapodal plate	fringed seta and pore	seta and pore absent	fringed seta and pore	simple seta and pore
2nd pair of setae on genito-ventral plate	fringed	simple	simple	simple
Setae on holoventral plate	2–5 pairs fringed	2 pairs fringed	paired setae simple	paired setae simple
Type seta near base of spur, femur IV, ♂	spoon-like	simple	simple	simple
Collected from	Campbell I. Auckland Is. Macquarie I.	Campbell I.	Macquarie I.	Macquarie I.

Genus **Leptolaps** Berlese, 1918

Leptolaps reticulatus Evans **campbellensis** Hunter

This subspecies was originally collected from Campbell Island (Hunter, 1964). In the present material, 2♀♀ of this subspecies were taken from Auckland I., one from leaf mold, 8. I. 1963, and one from the nest of *Pelecanoides*, 5. I. 1963. Both specimens were collected by Dr. Gressitt. This species was not represented in the Macquarie I. material.

Genus **Hypoaspis** Canestrini, 1885

Hypoaspis evansi Hunter, n. sp. Fig. 4.

This species is described from a single ♀ which is distinct in having 1 pair of lance-shaped setae on the anterior margin of the dorsal plate and a 2nd pair arising from the integument above coxae II, remaining dorsal setae simple; metasternal setae arise from well developed plates; and anteriorly the hypostome is divided into 2 deeply serrated, sclerotized spoon-like structures.

♀. Idiosoma 1070 μ long, 600 μ wide. *Dorsum.* Dorsal plate narrowing posteriorly, not extending to lateral margins of body; surface with striations and stippling. Dorsal

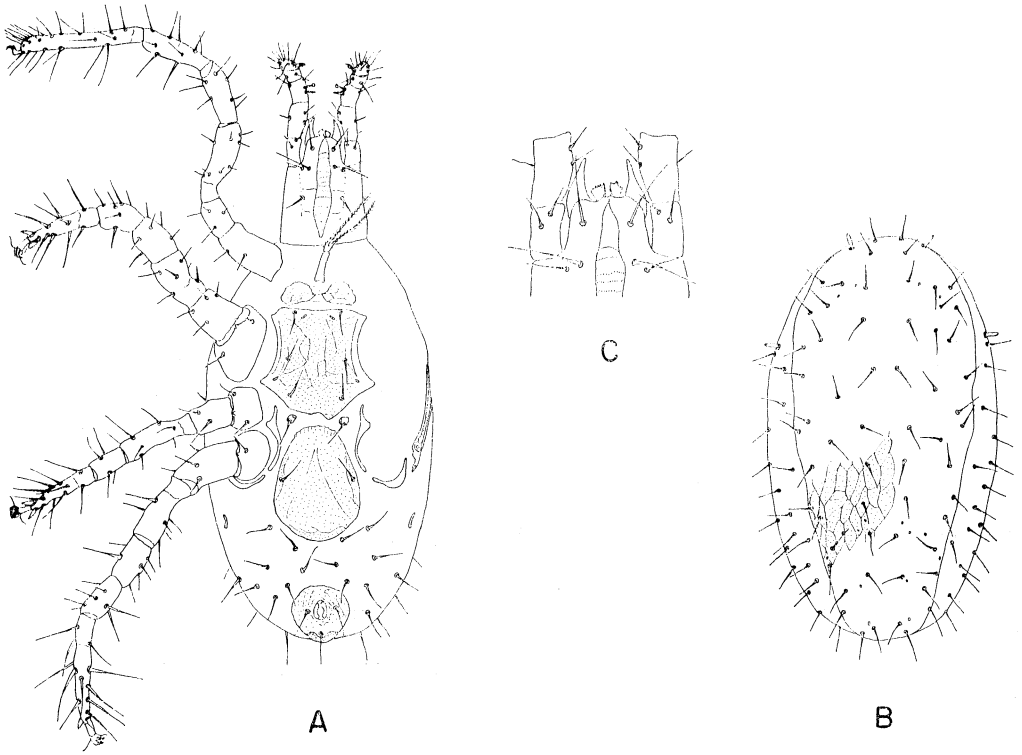

Fig. 4. *Hypoaspis evansi*, n. sp. ♀. A, ventrum; B, dorsum; C, ventrum of gnathosoma.

setae simple, up to 60 μ long except for 2 pairs of lance-shaped setae 30 μ long in positions as indicated above. *Ventrum.* Two well developed presternal plates. Sternal plate 290 μ long on midline, 220 μ at narrowest point between coxae II; without anterolateral projection between coxa I & II; setal length and position as indicated; surface with relatively sparse striations and stippling. Metasternal setae arise from small, distinct plates. Genito-ventral plate 300 μ long, 230 μ at greatest width; not reaching sternal plate, ending well short of anal plate; shape as shown; genital setae arise from weakly differentiated lateral sclerites at margin of genito-ventral plate; striations and stippling as shown. Anal plate round, 150 μ long, 110 μ wide; margins of plate slightly irregular in outline; setae slightly longer than ventral body setae; markings on plate as shown. Peritremal plate narrow, extending dorsally to join dorsal plate; peritreme extending dorsally to area above coxa I. Single parapodal plate posterolateral of coxa IV. Metapodal plates bacilliform. Eight pairs of ventral body setae, 3 pairs between genito-ventral and anal plates. Ventral integument strongly striated. *Gnathosoma.* Palps with chisel-like seta arising from median surface of genu. Chelicerae chelate, both digits with teeth (from position of chelicerae it was not possible to determine exact number). Hypostome divided anteriorly between corniculi to form 2 sclerotized, serrated spoon-like structures. *Legs.* Legs II–IV with distinct lateral distal elements associated with claws; tarsal setae long, spine-like. Legs I without lateral distal elements, setae slender. Legs, including claws and coxae, measured as follows: I, 1050 μ; II, 850 μ; III, 720 μ; and IV, 1000 μ long.

Holotype ♀ (ANIC), Green Gorge, Macquarie I., 4. XII. 1960, Calaby.

This species would probably have been placed in the genus *Gaeolaelaps*; however, Till (1963) recently synonymized *Gaeolaelaps* with *Hypoaspis* on the similarities of the ♂ chelae and the ♀ sternal plate and pilus dentilis.

Genus **Androlaelaps** (=**Haemolaelaps**) Berlese, 1903

Androlaelaps pachyptilae (Zumpt and Till)

The Auckland I. material contained 25♀♀, 4♂♂, and 3 immatures of this species. The Macquarie I. collection contained a single ♀ specimen. Previously only the ♀ of this species was known and the ♂ is described and recorded here for the first time.

♂. Shape as in ♀; idiosoma 525 μ long, 317 μ wide (all measurements the mean of 4 spp.). *Dorsum.* Covered by dorsal plate. Dorsal setae much longer than in ♀, of about equal length over entire dorsum, up to 70μ long; position of setae as in ♀; 2–3 accessory setae between J setae (the number of accessory setae ranged from 2–4; few ♀♀ taken with these ♂♂ also showed accessory setae); surface of plate marked by reticulation pattern; setae J_5 with 2–3 minute spines. *Ventrum.* Holoventral plate strongly enlarged behind coxae IV, bearing 10 pairs of setae plus 3 anal setae; all setae simple; reticulations of plate and position of setae and pores as shown; plate measured 417 μ long, 105 μ at narrowest width between coxae II and 217 μ wide behind coxae IV. Presternal plates present (presternal plates also present in the ♀♀). Ventral body setae as shown, 2 pairs nearest anal area with 2–3 minute spines per seta. Two small, rounded metapodal plates in integument behind coxa IV. *Legs.* Legs II heavy. Ventral setae on all legs heavier than dorsal setae (some legs in a lateroventral view in illustration); claws well developed. *Gnathosoma.* Similar to ♀. Movable digit of chelicera with a strongly curved spermato-

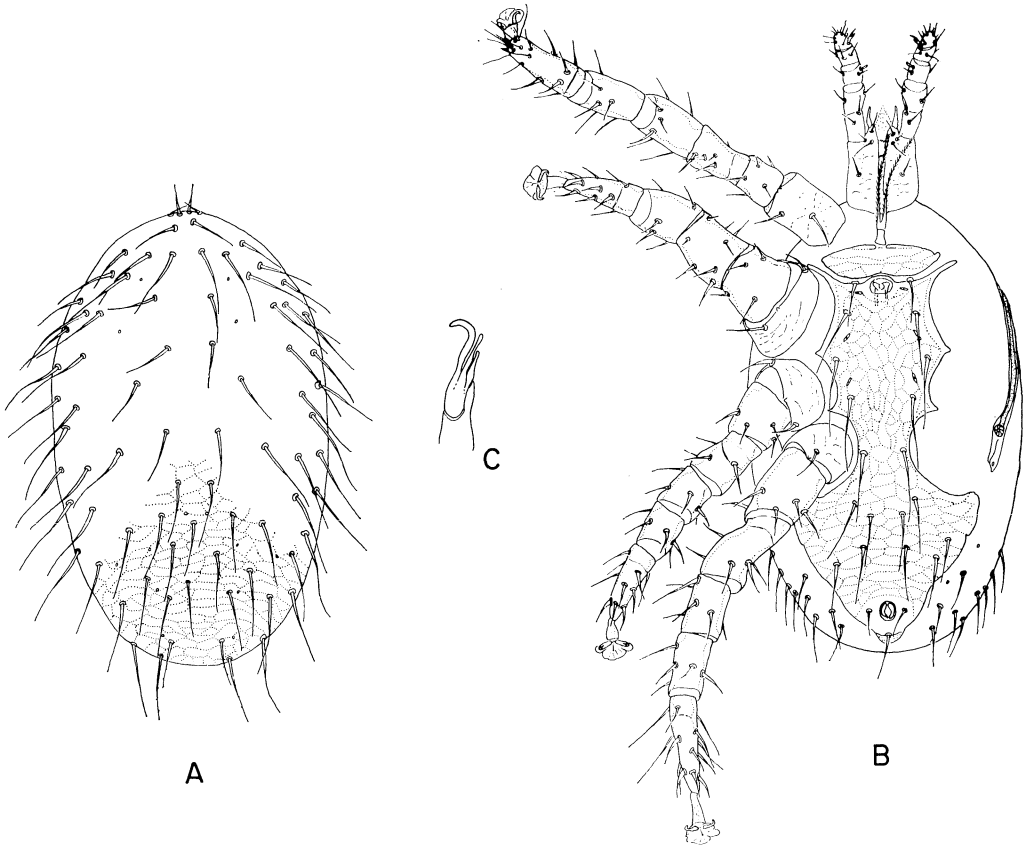

Fig. 5. *Androlaelaps pachyptilae* (Zumpt & Till). ♂. A, dorsum; B, ventrum; C, chelicera.

dactyl process and an inflated pilus dentilis; pilus dentilis does not appear as pointed as in ♀; fixed digit reduced, about 1/2 length of movable digit.

Allotype ♂ (BISHOP), Auckland I., from nest of *Pelecanoides*, 5. I. 1963, J. L. Gressitt. Paratypes: 2, same data; 1, same data but from white-headed petrel, 2.I.1963, Gressitt (BISHOP, BMNH).

Females were collected from Auckland I. from the following habitats: burrow of diving petrel, *Pelecanoides*, 24.XII.1962; *Pterodroma lessoni*, 29. XII. 1962; shag nest, 31. XII. 1962; and white-headed petrel, 2. II. 1963. The Macquarie I. specimen was taken from sooty shearwater nest material, 7.III.1961. The immature stages were collected from the burrow of diving petrel, 24.XII.1962 on Auckland I. Female specimens are deposited as follows: 2 (BMNH, USNM, UG); 3 (ANIC); remaining material in Bishop Mus.

Androlaelaps pachyptilae has been previously recorded from two islands in the Antarctic area. The species, originally described as *Haemolaelaps pachyptilae* (Zumpt & Till, 1956), was first collected from Heard I. (Zumpt & Till. 1956) and later from Campbell I. (Hunter, 1964).

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