

PYEMOTIDAE (Acarina : Tarsonemoidea)

FROM MACQUARIE ISLAND

By Earle A. Cross

NORTHWESTERN STATE COLLEGE, NATCHITOCHES, LOUISIANA

The material upon which this paper is based was collected by Mr. K. C. Watson during a 1961 survey of the terrestrial arthropods of Macquarie Island. The survey was made under the auspices of the Australian National Antarctic Research Expeditions.

The collection consisted of 12 samples taken largely from a variety of plants and plant litter, soil, and penguin debris. Five species of the pyemotine genus *Neopygmephorus* (see below) were found to be present, only one of which was new. The presence of the four remaining species, all known previously only from temperate regions, indicates the amazing vagility of at least some of the mites of this family.

Terminology throughout is that used by Cross in a previous publication (Univ. Kansas Sci. Bull., *in press*). All measurements are in microns. Except where noted elsewhere, all specimens were returned to the Australian National Insect Collection, C. S. I. R. O., Canberra.

In the above paper, I divided the tribe Neopygmephorini into four new genera: *Acinogaster*, *Parapygmephorus*, *Pseudopygmephorus*, and *Neopygmephorus*. Acquisition of new material since then indicates that this grouping is probably unjustified, and that it is more realistic to join at least *Pseudopygmephorus* and *Neopygmephorus*. This course is followed herein, with other modifications dependent upon further study.

KEY TO THE MACQUARIE ISLAND SPECIES OF NEOPYGMEPHORUS

1. Hind margin of posterior ventral plate tripartite, the 3 lobes large and distinct (fig. 1)...2
Hind margin of posterior ventral plate entire..... 3
2. Apodemes III curving posteriorly at sides to meet margin of coxal foramina III;
tarsi II & III each with a stout spine **sellnicki**
Apodemes III straight, not distinctly developed at sides, not meeting margins of coxal
foramina III **tripartitus**, n. sp.
3. Internal caudal setae of segment V greatly enlarged, at least 2× length and 3×
basal width of either of other 2 caudal pairs; claw I stout, with basal enlargement;
small thumb opposite claw I **pannonicus**
Internal caudal setae of segment V less than 2× as long and 3× as wide, basally,
as 2 remaining pairs; claw I simple, without basal enlargement or thumb..... 4
4. With 2 pairs of caudal setae; trochanter IV long and thin, about 3× as long as
wide; external ventrals II elongate, spiniform..... **arvorum**
With 3 pairs of caudal setae; trochanter IV only slightly more than 2× as long as

wide; external ventrals II short, setiform **togatus**

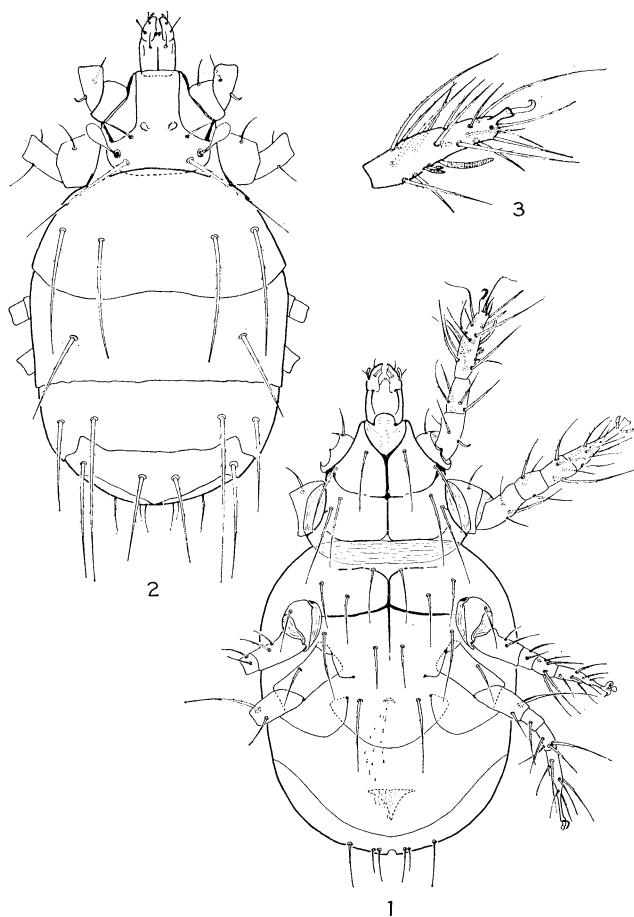
Neopygmephorus tripartitus Cross, n. sp. Figs. 1-3.

This was the most common form collected, being present in 9 of 12 samples and constituting about 90 % of all specimens examined. Especially abundant in 3 samples of litter of *Stilbocarpa* sp. (Araliaceae) which also contained penguin feathers.

Diagnosis. Separable from all other members of the genus by the following combination of characters: hind margin of posterior ventral plate tripartite; apodemes III indistinct laterally, not joining margins of coxal foramina III; areoli of external caudals I contiguous with those of internal caudals and well separated from those of external caudals II; solenidium 3 of tibiotarsus I small, arising only slightly distad to origin of solenidium 4; palpal solenidium 2 elongate, subcylindrical, palpal solenidium 1 enlarged, subequal in length to 2 and much thicker than it.

Non-gravid ♀. Length, 258 (255-315, \bar{x} =280); width between anterior sternocoxal condyles III, 85 (81-102, \bar{x} =86); body moderately sclerotized, punctate throughout, other integumental markings lacking. **Gnathosoma.** Length¹, (\bar{x} =31); width, 22 (19-22, \bar{x} =20); internal dorsals stout, arising barely behind line drawn between palpal bases; external dorsal indistinct, if present, areoli not visible; palpal solenidium 1 thin, elongate, slightly attenuate; palpal solenidium 2 well behind and laterad of 1, large, subequal in length but much thicker than 1 (fig. 1). **Propodosoma. Dorsum:** Distance between internal pseudostigmatal sockets, 39 (34-44, \bar{x} =38); peritremes guttate, distance between their centers, 21 (19-22, \bar{x} =20). **Venter:** All setae similarly elongate and sparsely plumose, 28-50 long; margins of circumgnathosomal foramen not greatly thickened to form collar; apodemes II broadly recurved; secondary transverse apodemes present only laterally behind areoli of external ventrals II (or lacking entirely). **Hysterosoma. Dorsum:** All dorsal setae stout, elongate, sparsely plumose; dorsals I posterior to line drawn through laterals I by about 1 areolar diameter; dorsals I 72 (58-77, \bar{x} =68) long, 57 (52-69, \bar{x} =59) apart; laterals I subequal to dorsals I in length and width; hind margin of segment I weakly emarginate medially; dorsals II 50 (42-54, \bar{x} =49) long, 75 (70-81, \bar{x} =78) apart; dorsals III 78 (69-88, \bar{x} =80) long, 62 (57-72, \bar{x} =63) apart; laterals III, 48 (39-55, \bar{x} =49) long, on a line with dorsals and well laterad of them; posterior margin of segment III with pronounced, linear, median excavation which deepens (sometimes abruptly) at sides; dorsals IV 41-52 long, 22 (20-26, \bar{x} =23) apart; laterals IV 62 (48-67, \bar{x} =58) long, 75 (67-89, \bar{x} =77) apart, arising well in front of dorsals; setae of segment V much shorter and thinner than those of other segments, sparsely plumose, arising along ventral margin of segment; internal caudal 19 (15-24, \bar{x} =20) long, distinctly longer than external caudal I, areoli of these 2 contiguous; external caudal II longest of caudals, 25 (22-31, \bar{x} =26), arising well laterad of external caudal I; posterior genital sclerite triangular, flap-like. **Venter:** All setae of posterior ventral plate stout, sparsely plumose, about 22-43 long, internal poststernals shortest, external poststernals longest; external presternals arising well in front of apodemes IV and distinctly laterad of internal presternals; internal presternals about as far apart as internal poststernals (or poststernals slightly farther apart); distance between external

1. Measurement not obtainable from holotype.



Figs. 1-3. Holotype ♀ of *Neopygmephorus tripartitus*, n. sp. 1, ventral aspect; 2, dorsal aspect; 3, left tibiotarsus I, ventral aspect.

presternals distinctly greater than that between external poststernals; apodemes III not bending posteriorly at sides to meet margins of coxal foramina III; apodemes IV complete (or nearly so), joining coxal foramina III anterior to their centers; hind margin of posterior ventral plate distinctly tripartite; opisthosomal venter entire. *Legs. Length*: Leg I, 90 (80-100, \bar{x} =88); leg II, 90 (88-93, \bar{x} =90); leg III, 88 (80-92, \bar{x} =87); leg IV, 130 (114-148, \bar{x} =131). *Width*: Leg I, 13 (12-14, \bar{x} =13); leg II, 14 (13-17, \bar{x} =15); leg III, 14 (13-16, \bar{x} =14); leg IV, 10 (10-14, \bar{x} =13). *Segment lengths*: Tita I, 41 (38-47, \bar{x} =42); fege III, 11 (10-12, \bar{x} =11); ta III², 30 (28-33, \bar{x} =30); cx IV, 40 (37-49, \bar{x} =42); tr IV, 32 (27-36, \bar{x} =31); fege IV, 11 (10-13, \bar{x} =11); ta² IV, 42 (37-46, \bar{x} =41). *Setation*:

2. Measurement includes pretarsus.

Leg I: cx 1T; tr 2T+1 modified; fege 4T; tita, 10T+10S³. Leg II: cx 1T; tr 3T; fege 3T; ti 4T+1S; ta 6T+1S. Leg III: cx 1T; tr 2T; fege 2T; ti 4T+1S; ta 6T. Leg IV: cx 1T; tr 2T; fege 1T; ti 4T; ta 6T.

Tip of modified seta *c* of trochanter I sharply proflexed; solenidium 4 of tibiotarsus I stout, elongate, gradually attenuate, not reaching base of elongate sense rod *l*; solenidium 3 tiny, clavate, well median of but only slightly apical to 4; solenidia 1 & 2 small, clavate, similar to 3 in size, solenidium 2 ventrad of 1 and distinctly larger than it; claw I slender, simple, hook-like, thumb lacking; distinct pinnaculum lacking; tibiotarsus I elongate, slender, about 3.4× as long as wide, its width subequal to that of femurogenu I; tibial solenidia of legs II & III clavate, arising about 1/4 distance to apex of segment; solenidium of tarsus II thick, bullet-shaped, 10–12 long; coxa IV subrectangulate, ratio of length to width about 1.8–2.1, basal constriction poorly developed; lateral seta of trochanter IV not nearly reaching claw IV; ratio of length of femurogenu IV to tarsus IV, 3.4–4.0.

Habits: Nothing is known of the habits of this species.

DISTRIBUTION. Known only from type locality.

Holotype ♀, 8♀ paratypes from Macquarie I., Antarctica, K. C. Watson. Further details as follows: Holotype, paratypes 1–2, 5, 7–8, all collected at Nuggets Point, ex *Stilbocarpa* litter, 15. IX. 1961. Paratypes 3–4 collected Scoble Lake, ex *Stilbocarpa* litter and soil, 9. VI. 1961. Paratype 6 collected Wireless Hill, ex *Puccinella macquariensis* (Graminae) and *Cotula plumosa* (Compositae) on coastal rocks, 5. VI. 1961. Holotype and paratypes 1–4 to be deposited in the Australian National Insect Collection, Canberra; paratype 5 in Bishop Mus., Honolulu; paratype 6 in U. S. National Mus., Washington; paratype 7 in British Museum (Nat. Hist.), London; paratype 8 in Zoological Institute, Univ. of Erlangen, Germany.

SPECIMENS EXAMINED: 29♀ ♀, Nuggets Point, ex *Stilbocarpa* litter, 15. X. 1961; 7♀ ♀, same, 13. X. 1961; 6♀ ♀, Wireless Hill, ex *Stilbocarpa polaris* litter, 5. VI. 1961; 3♀ ♀, Nuggets Point, ex *Stilbocarpa* litter, 26. XI. 1961; 1♀, Camp Hill, ex *Colobanthus muscoides* (Caryophyllaceae), 12. X. 1961; 1♀, Mt. Hamilton, ex *Azorella selago* (Umbelliferae), mosses, soil 27. X. 1961; 1♀, North Head, ex *Poa hamiltoni* (Graminae) from penguin rookery, 16. X. 1961. I have retained 3 of the above specimens.

***Neopygmephorus sellnicki* (Krczal)**

Pygmephorus sellnicki Krczal, 1958, Stat. Växtsklt.-Meddn. 11: 69, figs. 23–26.

One of the most cosmopolitan of all pyemotids, this species was reported by Krczal (1958, 1959) from western and northern Europe and Japan. I (*op. cit.*, in press) found it in much of the United States as well. Its habitats are many, including lily bulbs, commercial mushroom beds, various other plant situations, and from the nests and fur of a variety of small mammals. The single Macquarie I. specimen falls well within the range of variability mentioned by Krczal (1959) and is more typical of his description and drawings than many North American specimens presumed to be conspecific.

SPECIMENS EXAMINED: 1♀, First Gulley, ex *Stellaria media* (Caryophyllaceae), 4. IV. 1961.

3. Setae designated as sensory include solenidia 1–4 and rod-like setae *c*, *k*, *l*, *m*, *n*, and *j* (nomenclature after Krczal, 1959).

Neopygmephorus arvorum (Jacot)

Pygmephorus arvorum Jacot, 1936, Canadian Ent. **68**: 82.

Originally described from eastern United States, was reported by Krczal (1959) in western Europe. In these localities, the species is usually found in the soil. The 2 Macquarie I. specimens agree well with a German specimen kindly loaned to me by Dr. Krczal.

SPECIMENS EXAMINED: 1 ♀, Scoble Lake, ex *Stilbocarpa* litter and soil, 9. VI. 1961; 1 ♀, Mt. Hamilton, ex *Azorella selago*, mosses, and soil, 27. X. 1961.

Neopygmephorus togatus (Willman)

Pygmephorus togatus Willm., 1942, Abh. Nat. Ver. Bremen **32**: 175.

This form has been reported previously only from western Europe, where it was taken from wet moss and from mole tunnels.

SPECIMENS EXAMINED: 1 ♀, Mt. Hamilton, ex *Azorella selago*, mosses, and soil, 27. X. 1961.

Neopygmephorus pannonicus (Willmann)

Pygmephorus pannonicus Willm., 1951, SB. Öster. Akad. Wissftn., Mathem.-Naturw. Kl., Abt. 1, Bd. **160**: 132.

The two Macquarie specimens seen by me agree in most respects with the sketches of Willmann. Their determination must be regarded as tentative. *N. pannonicus* is known previously only from marsh meadow soil in Austria.

SPECIMEN EXAMINED: 1 ♀, Mt. Hamilton, ex *Azorella selago*, mosses, and soil, 27. X. 1961; 1 ♀, no data.

LITERATURE CITED

- Cross, E. A. The generic relationships of the mites of the family Pyemotidae (Acarina: Trombidiformes). Univ. Kansas Sci. Bull., *in press*.
- Krczal, H. 1959. Systematik und Ökologie der Pyemotiden. Beiträge zur Systematik und Ökologie mitteleuropäischer Acarina, Bd. I: Tyroglyphidae und Tarsonemini, Teil 2: 385–625. Akademische Verlagsgesellschaft, Leipzig.