Arthropoda of the subantarctic islands of New Zealand *8. Coleoptera: Ptiliidae

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Ptiliidae from New Zealand's subantarctic islands (Campbell I., The Snares, and the Auckland and Antipodes Is) are discussed. Keys are given to genera and species, and the following new species are described: *Ptinella octopunctata* (Auckland Is; North I., New Zealand); *P. atrata* (Antipodes Is, Auckland Is); *P. snarensis* (The Snares, Auckland Is); *Acrotrichis subcognata* (Auckland Is; South I., New Zealand; Oregon, U.S.A.). *Acrotrichis subantarctica* Gress. & Sam., originally described from Campbell I., is shown to be identical with the Holarctic *insularis* (Makl.).

The ptiliid fauna of New Zealand's subantarctic islands, like that of most parts of the world beyond Europe, has received scant attention up to the present. Only one species has been recorded, *Acrotrichis subantarctica*, described as new by Gressitt & Samuelson (1964) from Campbell I. It was thus with very great interest that I had the opportunity to study 200 specimens of Ptiliidae, collected recently on The Snares and the Auckland and Antipodes Is, and made available through the kindness of Dr G. Kuschel, DSIR, Auckland. This material includes a further four species, three being new species of *Ptinella* and one of *Acrotrichis*.

KEY TO GENERA OF NEW ZEALAND SUBANTARCTIC PTILIIDAE

1. Pronotum with hind angles at least right-angled, not produced rearwards. Hind angles of mesosternum rounded off, not distinct, as hind margin of mesosternum bends forward a short distance from sides of body; mesosternal disc raised, but never carinate. Metacoxae widely separated. Tergites 9 and 10 completely separate, last tergite (10) with at most a median tooth at apex. Aedeagus an asymmetrical tube without ventral hooks. Species usually dimorphic..... ***Ptinella***

—Pronotum with hind angles acute and produced rearwards. Hind angles of mesosternum slightly obtuse and distinct, as hind margin of mesosternum reaches sides of body; mesosternal disc with an elevated median carina extending to between mesocoxae. Metacoxae moderately separated. Tergites 9 and 10 completely fused, so that abdomen terminates in a large, triangular pygidium, which is tridentate. Aedeagus symmetrical, with a pair of ventral hooks. Species not dimorphic..... ***Acrotrichis***

Genus *Ptinella* Motschulsky

Members of this genus normally occur in two forms. The dominant one in virtually all species is f. **aptera,** characterised by the eyes being absent or reduced, the body often depigmented, the elytra often short, and the wings (if present) non-functional. When wings are present, they consist of a reduced membrane without, or with very few, hairs. In the f. **alata,** eyes and wings are well developed, the body is usually pigmented, and the elytra

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are often longer. Although most species are lignicolous, some (including all the subantarctic species) inhabit vegetable debris, and at least one European species is associated with mammal lairs.

The genus seems to be worldwide in distribution, though only the Palaearctic species are at all reasonably known. There are endemic species (many not yet described) on a number of islands.

KEY TO *Ptinella* FROM NEW ZEALAND'S SUBANTARCTIC ISLANDS

1. Brownish-black species, upper surface shining. Head indistinctly reticulate. Pronotum very strongly sinuate before right-angled and very well developed hind angles (Fig. 1), punctulate and obscurely reticulate, with four small foveae close to both apical and basal margins. Elytra densely and coarsely puncto-punctulate, shining, without distinct reticulation. Aedeagus as in Fig. 2. Auckland Is ..... ***octopunctata*** n.sp.

—Upper surface duller. Pronotum feebly sinuate before obtuse and less well developed hind angles, with coarse, leather-like reticulation, without punctulation or apical and basal foveae. Elytra more finely punctulate, dull because of strong reticulation 2

2. Blackish species. Pronotum broader and more transverse, sides more curved apically than basally, more distinctly constricted basally (Fig. 3); pronotal reticulation very coarse. Elytra closely punctulate. Aedeagus as in Fig. 4. Spermatheca as in Fig. 5. Auckland Is, Antipodes Is ..... ***atrata*** n.sp

—Brown species. Pronotum narrower and less transverse, sides more-or-less evenly curved, barely constricted basally (Fig. 6); pronotal reticulation rather finer. Elytra more sparsely punctulate. Aedeagus as in Fig. 7. Spermatheca as in Fig. 8. The Snares, Auckland Is ..... ***snarensis*** n.sp.

Ptinella octopunctata n.sp. (Figs. 1, 2)

Length (dry) from front of retracted head to apex of elytra 0.88 mm, to apex of abdomen 1.12–1.20 mm, depending on extent of abdominal contraction; antennal length 0.43 mm; head breadth 0.29–0.30 mm; pronotal breadth 0.40–0.42 mm; elytral breadth 0.46–0.48 mm. Pubescent, brownish-black; legs and antennae yellowish-brown. Upper surface shining.

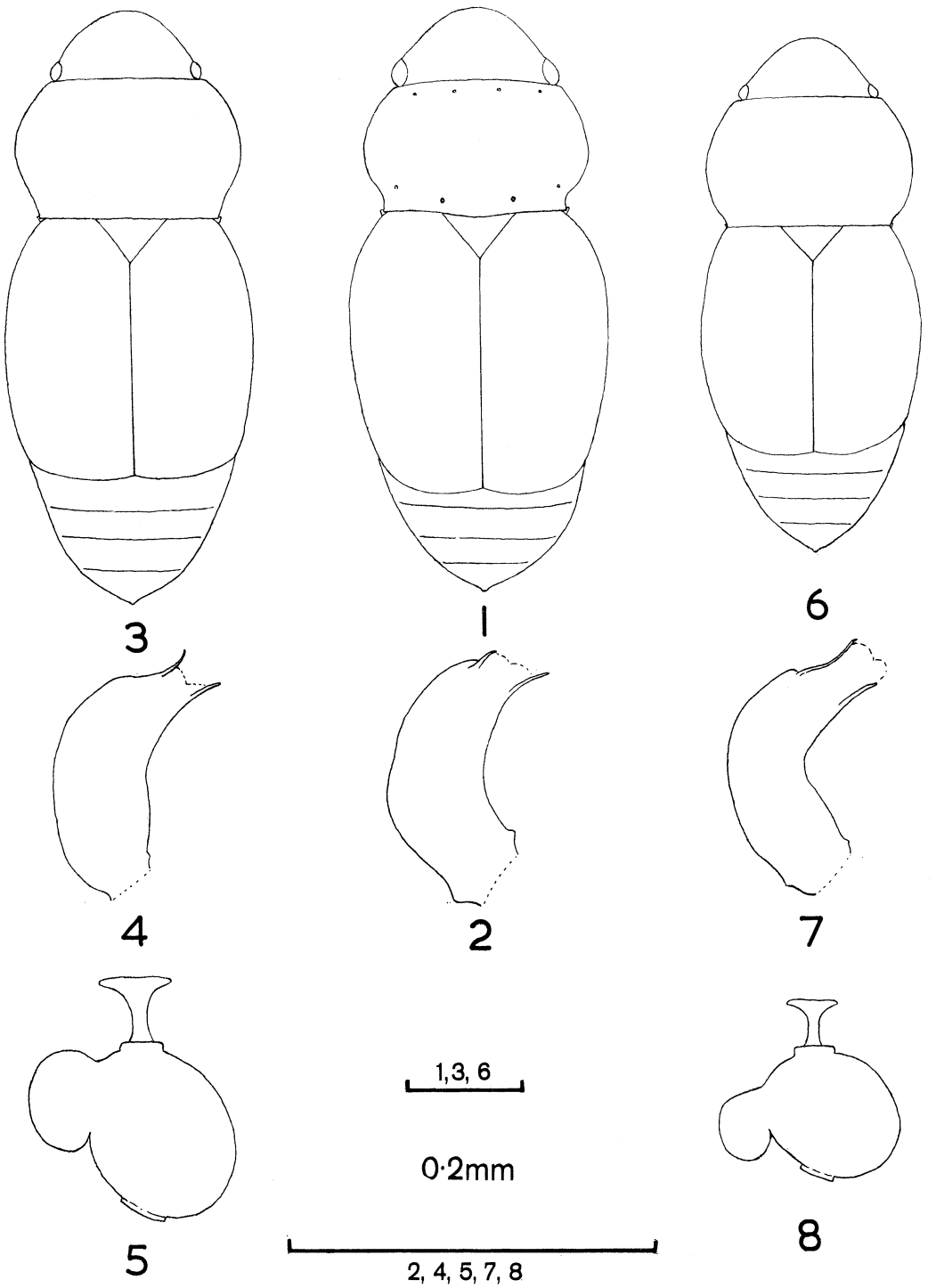
Head with indistinct reticulation. Pronotum obscurely reticulate, and with somewhat sparse punctulation/puncto-punctulation; a row of four small foveae close to apical margin, and a further four near basal margin, the outer ones set a little more forward than the better-defined internal pair; greatest breadth approximately at middle; sides curved, strongly sinuate in basal half; hind angles very well developed, right-angled; lateral margin well developed. Elytra with a fine epipleural carina, just visible near base in dorsal view; sculpture closely puncto-punctulate, i.e., consisting of pustules with superimposed punctures to a greater or lesser extent, without distinct reticulation; elytral pubescence not as flat as in its congeners. Apex of pygidium with a conspicuous median tooth. Front angles of the mesosternum toothed. Male: aedeagus as in Fig. 2. Female: unknown.

Form **alata** (Fig. 1): eyes and wings well developed. Form **aptera**: unknown.

DISTRIBUTION. Auckland Is; New Zealand (North I. mainland).

TYPE MATERIAL. HOLOTYPE ♂: Auckland Is – Fleming Plateau, Carnley Harbour, in litter, 7.ii.1973, J. S. Dugdale (Ent. Divn, DSIR, Auckland). PARATYPE ♂: New Zealand (North I.) – Western Hills, Whangarei, from dead tree-fern, 2.xi.1956, R. A. Crowson (Manchester Mus.).

REMARKS. A very distinctive species, which should be easily recognised. How closely related it is to the other species described here cannot be ascertained at present, in the absence of a female. The dentate pygidium and size suggest affinity, however.



FIGS 1–8—*Ptinella* spp: (1) *octopunctata*, habitus; (2) same, aedeagus; (3) *atrata*, habitus; (4) same, aedeagus; (5) same, spermatheca; (6) *snarensis*, habitus; (7) same, aedeagus; (8) same, spermatheca.

Ptinella atrata n.sp. (Figs 3–5)

Length (dry) from front of retracted head to apex of elytra 0.82–0.88 mm, to apex of abdomen 1.0–1.2 mm depending on extent of abdominal contraction; antennal length 0.41–0.43 mm; head breadth 0.27–0.29 mm; pronotal breadth 0.38–0.42 mm; elytral breadth 0.43–0.46 mm. Body pubescent, entirely black or nearly so; legs and antennae yellowish-brown, the two basal antennal segments of a darker hue. Upper surface slightly dull owing to reticulation.

Head and pronotum covered with coarse, leather-like reticulation, but without punctulation. Pronotum broadest somewhat before middle; sides more curved apically than basally, weakly sinuate but distinctly constricted before slightly obtuse hind angles; lateral margins moderate. Elytra with a fine epipleural carina visible for greater part of length in dorsal view; with fine and close punctulation amongst the strong reticulation; elytral pubescence more-or-less depressed. Apex of pygidium with a median tooth. Front angles of mesosternum toothed. Male: aedeagus as in Fig. 4. Female: spermatheca as in Fig. 5.

Form **aptera** (Fig. 3): eyes rather small; elytra more-or-less soldered together; wings non-functional, with a reduced membrane and no, or very few, hairs. Form **alata:** unknown.

DISTRIBUTION. Auckland Is, Antipodes Is.

TYPE MATERIAL. HOLOTYPE ♀: Antipodes Is – Mt. Galloway, 380 m, litter, 23.ii.1969, G. Kuschel (Ent. Divn, DSIR, Auckland). PARATYPES (73): **Antipodes Is** – 39, Mt. Galloway, 350–380 m, litter, 23.ii.1969, G. Kuschel; 3, same loc., mat plants, ii.1969, G. K.; 2, North Plain, 100 m, litter, 7/22.ii.1969, G. K.; 1, North Cape, 230 m, unid. nest, 4.ii.1969, B. Bell & G. K.; 2, Central Valley, 300 m, litter, 25.ii.1969, G. K.; 1, Mt. Waterhouse, 380 m, litter, 23.ii.1969, B. B. & G. K.; 1, Reef Point, 80 m, *Cyanoramphus* sp. nest, 8.ii.1969, G. K.; 1, same loc., litter 69/40, 31.i.1969, G. K.; 1, Anchorage Bay, litter, 26.ii.1969, G. K. **Auckland Is** – 16, Breaksea Point, Carnley Harbour, litter and swards, 2.ii.1973, J. S. Dugdale; 6, Disappointment Island, plants, 15.ii.1973, D. S. Horning.

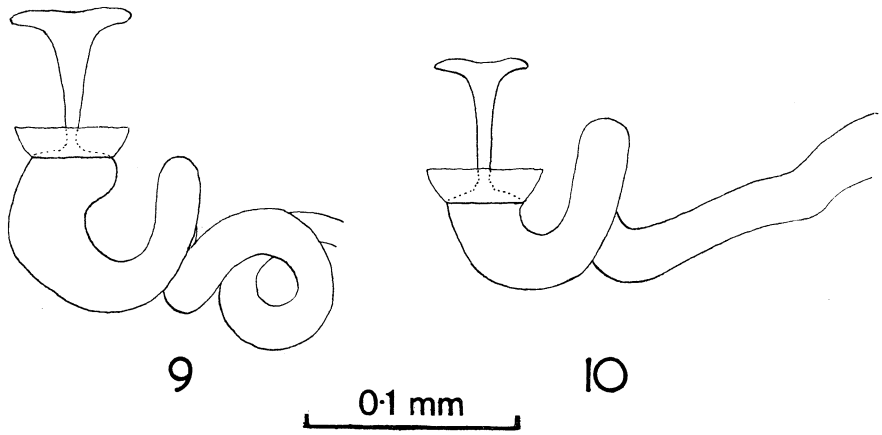
REMARKS. This seems to be the only black species known in the genus, and is thus quite distinctive. The size, dentate pygidium, and spermathecal structure show *atrata* to be a member of the New Zealand *cavelli* species-group (*see* Johnson, in press), along with *snarensis* n.sp., *fauveli* Matthews, possibly *octopunctata* n.sp., and at least one undescribed species, as well as *cavelli* (Broun).

Ptinella snarensis n.sp. (Figs 6–8)

Length (dry) from front of retracted head to apex of elytra 0.72–0.80 mm, to apex of abdomen 0.96–1.20 mm, depending on extent of abdominal contraction; antennal length 0.40 mm; head breadth 0.27–0.29 mm; pronotal breadth 0.35–0.38 mm; elytral breadth 0.38–0.42 mm. Pubescent, dark brown species; legs and antennae pale yellowish-brown. Upper surface slightly dull, owing to reticulation.

Head and pronotum covered with somewhat coarse, leather-like reticulation, but without distinct punctulation. Pronotum broadest usually at, rarely behind, middle; sides more-or-less evenly curved, very feebly sinuate before hind angles, hence barely constricted basally; hind angles obtuse; lateral margin moderate. Elytra with a fine epipleural carina, more-or-less visible in the basal half in dorsal view, with fine and somewhat sparse punctulation amongst the strong reticulation; elytral pubescence depressed. Apex of pygidium with a median tooth. Front angles of mesosternum toothed. Male: aedeagus as in Fig. 7. Female: spermatheca as in Fig. 8.

Form **aptera** (Fig. 6): eyes rather small; elytra more-or-less soldered together; wings non-functional, i.e., with a reduced membrane of various lengths, and no, or very few, hairs. Form **alata:** unknown.



FIGS 9–10—Spermathecae of *Acrotrichis* spp: (9) *insularis*; (10) *subcognata*.

DISTRIBUTION. The Snares, Auckland Is.

TYPE MATERIAL. HOLOTYPE ♀: The Snares – Sinkhole Flat, litter 71/47, 11.iii.1971, C. J. Horning (Ent. Divn, DSIR, Auckland). PARATYPES (123): **The Snares** – 65, Sinkhole Flat, litter 71/47 (47), 71/42 (18), 11.iii.1971, C. J. H.; 15, same loc., entire plant of *Poa tennantiana*, 26.ii (2), 26.iii (8), 26.iv (1), 26.xi.1972 (4), D. S. Horning; 1, Sinkhole area, *Stilbocarpa robusta* foliage, 24.i.1971, D. S. H.; 1, biological station, under bark of *Senecio stewartiae*, 11.iii.1972, C. J. H.; 2, west coast, in dry litter of *Olearia lyalli*, 26.vi, 26.vii.1972, D. S. H.; 5, Penguin Creek, in wet litter of *Olearia lyalli*, 26.ii (1), 26.vi.1972 (4), D. S. H.; 3, same loc., litter 71/30,34, 11.iii.1971, D. S. H.; 1, south side of Ho Ho Bay, among dead leaves of living tussock of *Poa tennantiana*, 21.xii.1972; 12, Signpost Hill, litter of *Stilbocarpa robusta*, 26.iv (1), 26.vi (2), 26.xi.1972 (9), D. S. H.; 10, same loc., litter 71/40, 11.iii.1971, D. S. H.; 3, no precise locality, from tussock, roots, and debris, xi.1947, R. A. Falla (in A. E. Brookes Coll.); 4, Broughton I., *Stilbocarpa robusta* litter, 18.ii.1972, D. S. H. **Auckland Is** – 1, Deas Head, in green alga-covered seepage at forest/supralittoral margin, 26.ii.1973, D. S. H.

REMARKS. The spermatheca seems not to differ structurally from that of certain other members of the New Zealand *cavelli*-group. However, all these species differ in various external characters.

Genus *Acrotrichis* Motschulsky

Acrotrichis is known from a wide range of habitats offering damp, mouldy conditions, in marked contrast with the primarily lignicolous (rarely litter-dwelling) genus *Ptinella*. The genus is worldwide in distribution—although only the Palaearctic and Ethiopian species are at all reasonably known—and is by far the largest genus in the family, approximately 160 species being known. Both subantarctic species are undoubtedly introduced.

KEY TO *Acrotrichis* FROM NEW ZEALAND'S SUBANTARCTIC ISLANDS

1. Spermatheca as in Fig. 9 ..... ***insularis*** (Maklin)

—Spermatheca as in Fig. 10 ..... ***subcognata*** n.sp.

Acrotrichis insularis (Mäklin) (Fig. 9)

Maklin, 1852, *Bull. Soc. Nat. Moscou 25:* 339 (*Trichopteryx*). –Johnson, 1966, *Entomologist 99:* 152–4 (*Acrotrichis*). –Sundt, 1968, *Norsk ent. Tidsskr. 15*: 75–7; –1971, Die Kafer Mitteleuropas *3:* 338, 340.
sitkaense Motschulsky, 1845, *Bull. Soc. Nat. Moscou 18:* 51 (*Ptilium*). –Matthews, 1872, Trichopterygia Illustrata: 136 (*Trichopteryx*). –Sundt, 1968, ibid. (nomen dubium).
subantarctica Gressitt & Samuelson, 1964, *Pacif. Ins. Monogr. 7*: 379–80 (new synonymy).

Good descriptions of this species have recently been given by Gressitt & Samuelson (1964) and Sundt (1968). The shape of the spermatheca will distinguish *insularis* from all other known species.

SYNONYMY. The excellent description of *subantarctica* shows the species to be identical with *insularis*. This synonymy was confirmed when Dr Gressitt kindly supplied me with a paratype of his species from Campbell I. (same data as holotype).

DISTRIBUTION. Campbell I.; western parts of the U.S.A. (from Alaska to California); a very recent immigrant into western Europe (British Isles, Norway, Sweden); also Madeira.

MATERIAL EXAMINED*. **Campbell I.** – 4, loc. unspec., misc. Berlese, xii.1961, J. L. Gressitt; 2, Beeman Hill, 100–200 m, 2.xii.1961, J. L. G.; 23, Beeman Camp, 2–50 m, chicken-yard debris, 26–30.xi.1961 (5), 6–11.xii.1961 (18), J. L. G.; 23, Rocky Bay, rock-hopper penguin nest Berlese, 28.xi.1961, J. L. G. & K. P. Rennell; 1, Tucker Cove, 1–50 m, under *Poa* tussock, 21–25.xi.1961, J. L. G.; 1, same loc., 4 m, tussock leaf-mould Berlese, 3.iii.1963, K. A. J. Wise. *(Data after Gressitt & Samuelson 1964: 380.)

Acrotrichis subcognata n.sp. (Fig. 10)

In characters of size, shape, pronotal side-edge, and antennal form *subcognata* resembles *insularis* (Mäklin), from which it differs primarily in the form of the spermatheca. More subtle differences are the less shining upper surface, and the pronotum being a trifle less strongly narrowed apically. On account of the spermathecal structure, *subcognata* is most closely related to *cognata* (Matthews) (=*platonoffi* Renkonen), which occurs in North America and western Europe. Compared with *cognata*, *subcognata* may be distinguished as follows: elytra without a blue-grey iridescent sheen; head more shining, more diffusely punctulate; pronotum a trifle less strongly narrowed apically; spermatheca slightly coarser, the single whorl perhaps a little closer to the pump (mushroom-shaped part). Aedeagus apically truncate, without any other special features.

DISTRIBUTION. Auckland Is; New Zealand (South I. mainland); U.S.A. (Oregon).

TYPE MATERIAL. HOLOTYPE ♀: Auckland Is – loc. unspec., leaf mould, 19.iv.1947, J. H. Sorensen (A. E. Brookes Coll., Ent. Divn, DSIR, Auckland). PARATYPES (23): **New Zealand (South I.)** – 1♀, Nelson, Ent. Divn, DSIR, sifted straw, 14.iv.1965, C. J. H. **U.S.A.** – 14, Oregon, Charlston, grass compost No. 699, 15.viii.1947, I. M. Newell; 8, same loc., wet leaves from bog and moss from trees No. 694, vii.1947, I. M. N. (Manchester Mus.; D. C. Miller Coll., New York).

REMARKS. It is possible that this Nearctic species has already been described, but this cannot be ascertained at present. The Nearctic species have not yet been revised in the light of current knowledge, i.e., with attention being paid to characters of the genitalia.

REFERENCES

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———— 1968. *Acrotrichis insularis* (Mäklin, 1852) (Col., Ptiliidae); designation of lectotype and redescription. *Norsk entomologisk Tidsskrift 15*: 75–7.