# Supplement to the Collembolan Fauna of New Zealand.

## The Genus *Ceratrimeria* Borner in New Zealand and a New Genus *Novacerus* to Replace the Genus *Neocerus* (pre-occupied).

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Following the publication of my paper on The Collembolan Fauna of New Zealand in vol. 70, *Trans. Roy. Soc., N.Z.*, I have received a large number of collections of these insects from interested collectors in New Zealand. To all of these persons I take this opportunity of expressing my thanks and saying that the numerous new species they have brought to light will be recorded as soon as time and opportunity allow. The purpose of this paper is to deal principally with a very large collection recently sent to me by Mr. T. R. Harris, of Henderson, Auckland. This collection, which was made by Mr. Harris in 1918-1919 in the central districts of the North Island and at Otira in the South, contained, besides a large number of *Neanura neumani* Wom., numbers of specimens belonging to the genus *Ceratrimeria* Börner. There were many specimens of *C. spinosa* Lubb., *C. paucispinosa* Salm., *C. marplesi* Salm., *C. lata* Carp., and three species new to science.

In spite of their age the specimens were excellently preserved—in most cases, even to the colours. The postantennal organ always is difficult to detect in the genus *Ceratrimeria* owing to the fact that, usually, it is situated in a deep groove running round the anterior margin of the ocellar group. By dissecting away the dorsal surface of the head with the ocelli and postantennal organ intact and making a separate micro-slide mount of these parts, it is possible to open out this groove and display the postantennal organ and ocelli perfectly. With a number of specimens available to me, I have been enabled to prepare such mounts for all the New Zealand species of *Ceratrimeria* except *C. novae-zealandiae* Wom. The results of these observations have been extremely interesting, showing extraordinary variability in the structure of this organ even between the two sides of the same individual.

The genus *Ceratrimeria* Börner contains large Collembola measuring up to 14 mm. in length, and having the paratergal regions swollen and enlarged. Frequently, they are provided with spinelike processes of the cuticle or the cuticle has a hexagonal pattern. The sixth abdominal segment is hidden below the fifth. Ocelli eight or five to each side. Postantennal organ generally present and when present either elliptical or round with from eight to forty peripheral lobes. Furcula present or absent, sometimes reduced. Empodial appendage absent.

From a study of the specimens now before me I propose to divide the genus in New Zealand into two groups, being (a) the *spinosa* group including all those species with cuticular processes, and (b)

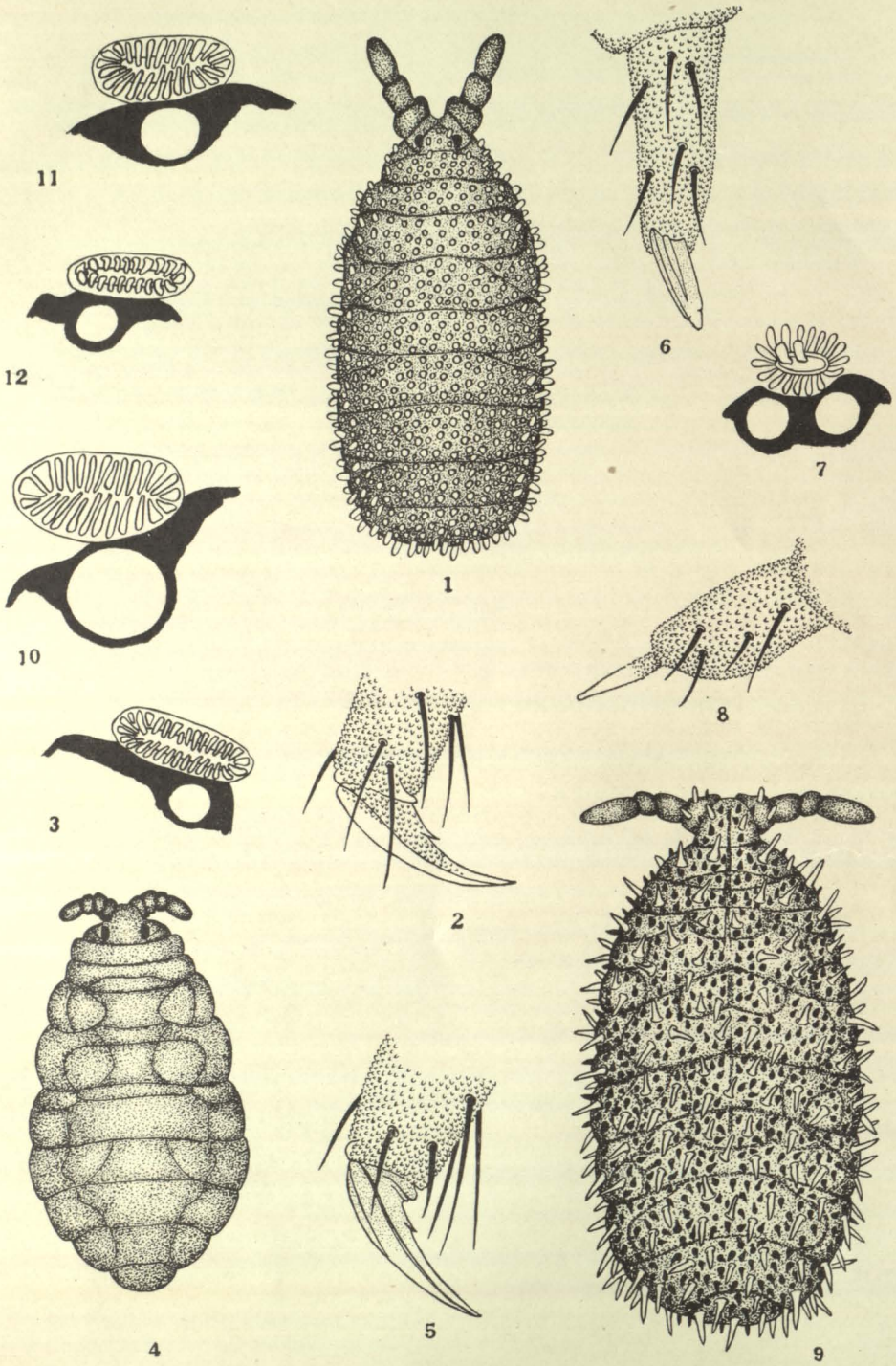


FIG. 1—*Ceratrimeria brevispinosa* sp. nov. Whole insect (dorsal) × 12. FIG. 2—*Ceratrimeria brevispinosa* sp. nov. Foot. FIG. 3—*Ceratrimeria brevispinosa* sp. nov. Postantennal organ and adjacent ocellus. FIG. 4—*Ceratrimeria harrisi* sp. nov. Whole insect (dorsal) × 18. FIG. 5—*Ceratrimeria harrisi* sp. nov. Foot. FIG. 6—*Ceratrimeria harrisi* sp. nov. dens and mucro. FIG. 7—*Ceratrimeria harrisi* sp. nov. Postantennal organ and anterior ocelli. FIG. 8—*Ceratrimeria marplesi* Salmon. Dens and mucro. FIG. 9—*Ceratrimeria duospinosa* sp. nov. Whole insect (dorsal) × 6. FIG. 10—*Ceratrimeria duospinosa* sp. nov. Postantennal organ and adjacent ocellus. FIG. 11—*Ceratrimeria spinosa* Lubbock. Postantennal organ and adjacent ocellus. FIG. 12—*Ceratrimeria paucispinosa* Salmon. Postantennal organ and adjacent ocellus.

—J. T. S. Del.

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the *lata* group including all those species without cuticular processes. Both groups now contain four species, making a total of eight species which may be separated according to the following key:—

| | |
|---|---|
| 1. Body dorsally and laterally with spinelike processes of the cuticle .. .. | *spinosa* group .. .. 2 |
| Body without such processes .. | *lata* group .. .. 4 |
| SPINOSA GROUP. | |
| 2. Body dorsally completely covered with spinelike processes which are pointed apically and lie in all directions obscuring the body segmentation; furcula absent; postantennal organ with 25–30 lobes; claw completely tuberculate and with one inner tooth .. .. .. .. | *C. spinosa* Lubbock |
| Body not completely covered with spinelike processes; segmentation distinct from above .. .. .. .. | 3 |
| 3. Spinelike processes dorsally shorter and blunter and widely spaced, laterally elongated and bright-red or orange in colour. Postantennal organ elliptical with 20–25 lobes. Claw completely tuberculate with inner teeth and outer lateral teeth .. | *C. paucispinosa* Salmon |
| Spinelike processes short, blunt, and apically-rounded, covering the dorsal surface evenly and closely but with the segmentation still clearly visible. Lateral processes not elongated or more highly coloured. Postantennal organ with 30–35 lobes. Claw tuberculate laterally only and with one inner tooth. Furcula absent .. | *C. brevispinosa* sp. nov. |
| Spinelike processes apically pointed, some short, some long, the short arranged in groups around the long, which are more highly coloured. Very large species. Postantennal organ elliptical with 25–30 lobes. Claw completely tuberculate and with generally one inner tooth .. .. | *C. duospinosa* sp. nov. |
| LATA GROUP. | |
| 4. Eight ocelli to each side .. .. | .. .. .. .. 5 |
| Five ocelli to each side .. .. | .. .. .. .. 7 |
| 5. Blue-black species of rather more plump build, claw with single inner tooth, furcula well developed .. .. .. | .. .. .. .. 6 |
| 6. Postantennal organ circular with 8–10 peripheral lobes, claw with inner tooth one-third down .. .. .. | *C. novae-zealandiae* Womersley |
| Postantennal organ elliptical with 15–20 lobes, claw with inner tooth one-fifth down | *C. harrisi* sp. nov. |
| 7. Furcula present and well developed .. | .. .. .. .. 8 |
| Furcula absent or much reduced .. | .. .. .. .. 9 |
| 8. Bluish-black covered all over with small bright reddish-orange spots. Cuticle with hexagonal pattern. Postantennal organ flat and circular with 9–12 peripheral lobes | *C. marplesi* Salmon |
| 9. Purplish-grey species with small yellow spots and yellowish pleural areas. Postantennal organ raised cone-like and circular with 13 peripheral lobes .. .. | *C. lata* Carpenter |

**Ceratrimeria spinosa** (Lubbock, 1899). Plate 43, fig. 11.

New locality: Ohakune, from in and under old logs. (Coll., T. R. Harris.) A number of specimens.

Remarks: The postantennal organ is elliptical and situated on the anterior margin of the ocellar field in a deep groove. It is about twice as long as broad, 2½–3 times as long as the diameter of an ocellus and contains 25–30 lobes. The number may vary between either side of the same individual. The ocellar fields are black and distinctly tuberculate. Claw completely tuberculate to the tip. Readily distinguished by the pointed nature of the cuticular processes and their obscuring of the dorsal segmentation.

**Ceratrimeria paucispinosa** Salmon, 1941. Plate 43, fig. 12.

New locality: Ohakune, from under old logs. (Coll., T. R. Harris.) A large number of specimens. This extends the distribution of this species to the North Island, as well as the South Island of New Zealand.

Remarks: The length of this species now can be given as up to 6 mm. Originally described as being without a postantennal organ, I now find by dissection that this species has a postantennal organ situated in a deep groove on the anterior lateral margin of each ocellar field. It is elliptical in form, three times as long as broad, three times as long as an ocellus, and with from 20–25 lobes. As in *spinosa,* the number may vary between the two sides of the same individual. The lobes appear to be in the form of thin plates which stand out from the surface of the groove. The ocellar fields are black and strongly tuberculate. Claw completely tuberculate to tip. Readily distinguished by the few dorsal spinelike processes and the elongated, highly-coloured lateral and posterior processes.

Further figured Paratype Slide 3/1139, Dominion Museum Collection.

**Ceratrimeria brevispinosa** n.sp. Plate 43, figs. 1–3.

Colour: In life pale buish-grey to slatey-blue or dark blackish-blue with the spinelike processes of the cuticle either the same colour or varying from an orange-red, dull-red, or yellowish to silvery-white. The common variety is a medium depth slatey-blue with the processes dull-red or yellowish; while a particularly fine variety is a very light-bluish-grey with the cuticular processes a bright silvery-white. Ventrally, all varieties are a greyish-blue with the basal segments of the legs and the cone of the mouth-parts greyish-white. The antennae and the extremities of the legs are a deep black-blue. In spirit and mounted, specimens tend to darken in colour and the ventral surface turns brownish. The red and yellow tints of the cuticular processes preserve well and do not appear to be appreciably affected by alcohol.

Clothing: Sparse, except on the ventral surface, where there is a thin clothing of delicate short silvery setae.

Body: Length from 2–6 mm. Approximately 2–2½ times as long as broad. The body with moderately well developed paratergal swellings and covered all over the dorsal and lateral surfaces with spinelike processes of the cuticle. These processes are shorter and blunter than are those of *spinosa,* being more or less parallel-sided and apically rounded. Generally, they are at right angles to the body

surface and are not so numerous as in *spinosa,* the body segmentation being clearly visible. They are, however, much more numerous than in *paucispinosa* and the lateral processes are not elongated as are those of that species. Cuticle strongly tuberculate all over. Ocelli eight to each side, equal, and situated on intensely black, strongly tuberculate fields. Postantennal organ situated on the anterior margin of each ocellar field in a deep groove, elliptical, three times as long as broad, four times as long as the diameter of an ocellus, and with from 30 to 35 lobes. Ant. III and IV fused. Ant. I : II : III + IV as 5. : 8 : 15.

Legs: Claw tuberculate on sides only, the tuberculation not reaching to the tip; a prominent lateral ridge on each side and a single large internal tooth a little less than one-third down from claw base.

Furcula: Absent.

Localities: Mr. Harris's Collection contained a number of specimens taken at Ohakune from old logs. Mr. R. Forster brought me eight specimens of this species obtained from old logs on Johnson's Hill, Karori, Wellington, at an altitude of about 650 ft. Subsequently, Forster and I visited the locality again and obtained a further 27 specimens from two logs. Further localities include:— Red Rocks, Cook Strait, from old log about 6 feet above high-water mark (Coll., R. Forster). Two specimens from Southland sent to me by Mr. J. H. Sorensen, Director of the Southland Museum, came, one from Longwood Range, Southland, in leaf mould 1000 ft., and the other from Curio Bay, amongst flax 100 ft altitude.

Type: Slide 3/1103 and Figured Paratype Slide 3/1131 Dominion Museum Collection.

Remarks: On Johnson's Hill this species appears to be confined to logs of hardwood trees only, which are a light-orange in colour. No specimens have so far been obtained from any other type of logs.

**Ceratrimeria duospinosa** n.sp. Plate 43, figs. 9–10.

Colour: Dark slatey-blue, paler on the underside with a tendency to brownish. Antennae dark-blue-black. The smaller cuticular processes dark blue-black, the longer ones yellow or reddish.

Clothing: A few short fine setae around the anterior region and on the antennae. Legs well clothed with long plain setae.

Body: Length from 10–14 mm. Body twice as long as broad. Cuticle strongly tuberculate. Paratergal swellings well developed and each bearing numerous spine-like processes of the cuticle. These processes are apically-pointed as in *spinosa,* but are of two kinds— short and long. Each long process forms the centre of an irregular group and is surrounded by a varying number of shorter dark-coloured processes. There may be one or several groups of processes on each paratergal swelling. All the processes taken together are not as numerous as are those of *spinosa* and the segmentation of the body and boundaries of the paratergal swellings are clearly visible. On account of the pronounced form of the paratergal swellings the processes face in all directions. Occasional lateral and posterior processes are elongated. Eight large equal ocelli to each side situated on bluish-black, slightly tuberculated fields. Postantennal organ

situated on the anterior lateral margin of each ocellar field, twice as long as broad, but not quite twice as long as the diameter of an ocellus and containing from 25–30 lobes. Antennae III and IV partially fused. Ant. I : II : III : IV as 8 : 15 : 5 : 19. There is a large oval-shaped sense organ on Ant. IV.

Legs: Claw strongly tuberculate basally and laterally, but not reaching to tip; a strong lateral ridge on each side and generally a large tooth at one-quarter down from claw base. The tooth appears to be always present on the hind feet, but may be absent from one or several of the other feet.

Furcula: Absent.

Localities: Taumarunui, from old logs. (T. R. Harris, Collection.) Two damaged and two perfect specimens.

Type: Slide 3/1135 and Slide 3/1136 (legs, ocelli and P.A.O. dissected off type specimen).

**Ceratrimeria marplesi** Salmon, 1941. Plate 43, fig. 8.

New locality: Otira, under rotten logs. (Coll., T. R. Harris.) Several specimens.

Remarks: The length of this species may now be given as up to 6 mm. The furcula is well developed. (In the type specimen from which the original description was taken the mucrones are broken off.) The dens is twice the length of the mucro, which is falciform and rather like a long narrow spike. Basally it is tuberculate. The number of lobes in the postantennal organ varies between 9 and 12. The specimen on Slide 3/1138 Dominion Museum Collection has 10 lobes on the left-hand side organ and 12 lobes on the right-hand side organ. The outer tooth of the claw is paired, one to each side.

Figured Paratype Slide 3/1138, Dominion Museum Collection.

**Ceratrimeria lata** (Carpenter, 1925).

New localities: Otira, under rotten logs. (Coll., T. R. Harris.) Several specimens. Days Bay, Wellington. In old logs. (Coll. R. Forster.) A number of specimens. This latter locality is extremely interesting, as it extends the range of this species to the North Island.

Remarks: The two swellings on the lower surface which may represent a reduced furcula are quite distinct on all specimens. Functionally, however, they would be useless, and the furcula may be regarded as very much reduced or even absent.

**Ceratrimeria harrisi** sp. nov. Plate 43, figs. 4–7.

Colour: Variable from bluish-black to more or less mottled with patches of ochreous. Specimens do occur in which a series of rectangular ochreous blotches occur around the sides, and angular ochreous spots across the body. Antennae deep blue-black. Ocellar fields intense black.

Clothing: Sparsely clothed with short, fine, plain setae.

Body: Length to 4 mm. The body is more plump than is usual in a *Ceratrimeria* but shows distinct, though not very prominent, paratergal areas. Abd. VI hidden below Abd. V. The cuticle is

finely tuberculate. Antennae four-segmented, with segments III and IV partly fused, each segment more or less telescoped into the preceding one. The relative lengths of the segments are as 5 : 6 : 4 : 12. Ant. IV around the apex with 5–7 sense rods. Ocelli eight to each side, large and equal and on strongly tuberculate fields. Postantennal organ broadly elliptical, situated on the anterior margin of each ocellar field and containing 15-20 lobes. The number of lobes may vary between two sides of the same individual and there may be 2-4 odd lobes in the centre of the organ.

Legs: Claw finely granulate with a prominent inner tooth at about one-fifth down from base. No outer teeth but several long setae invest the claw on the inner margin.

Furcula: Well developed, the dens twice as long as the mucro and with 6–7 strong setae on the ventral surface. Mucro straight and dish-like with a central rib or lamella reaching half-way down and a distinct sub-apical constriction. The mucro is finely granulate but there is no sign of lines of granulae as in *C. novae-zealandiae* Wom.

Localities: Ohakune, under old logs. (Coll., T. R. Harris, after whom I have much pleasure in naming it.) Several specimens. Tauherenikau Valley, Wellington, under bark of beech trees. (Coll., R. Forster.) In bush-clad gullies, Karori, in old rotten logs (Author's Collection).

Remarks: The dark form of this species is very similar to *C. novae-zealandiae* Wom. in general appearance, but is readily distinguished from that species by the more complex postantennal organ and slightly different claw and furcula.

Type: Slide 3/1140 and Figured Paratype Slide 3/1141, Dominion Museum Collection.

Tribe NOVACERINI nov.

Genus NOVACERUS nov.

Genotype *Novacerus (Neocerus) spinosus* Salmon.
Other species, *Novacerus (Neocerus) insolitatus* Salmon.

Since the publication of "The Collembolan Fauna of New Zealand" *(Trans. Roy. Soc. N.Z.,* vol. 70, p. 345) I find that the generic name *Neocerus* which I proposed as new was at that time pre-occupied *(Nomenclator Zoologicus,* Neave, vol. III, p. 291) having been used by Wasmann, in the Coleoptera, and by Melichar in the Hemiptera. I have, therefore, to propose the new name *Novacerus* for my genus *Neocerus* and *Novacerini* in place of the Tribe *Neocerini.* This correction should also be noted in connection with the key given on page 285 of the same paper.

I also take this opportunity of pointing out a printing error in the same key on page 285, viz:—

8 . . . Family ENTOMOBRYIDAE Schaeffer .. .. 15
should read Family ENTOMOBRYIDAE Schaeffer .. .. 16