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SOME OPPIID SPECIES (ACARI: ORIBATIDA)
FROM CHICHIJIMA ISLAND IN THE BONIN ISLANDS,
WITH NOTES ON MORPHOLOGICAL TERMS OF OPPIIDAE

by Norihide OHKUBO*

ABSTRACT: A list of oppiid species collected from the Bonin Islands in North Pacific Ocean is given. The new species included are Multioppia (Multioppia) bacilliseta, Arcoppia interrupta, Arcoppia curtispinosa, Ramusella (Insculptoppia) bicillata, Ramusella (Insculptoppia) flagellaris, Subiasella (Lalmoppia) boninensis and Graptoppia (Stenoppia) crista. Two new combinations are formed: Pseudoamerioppia flora/is (Ohkubo, 1990) and Subiasella (Lalmoppia) incurva (Aoki, 1983). Some morphological terms are defined for the description of oppiid mites.

Ogasawara or the Bonin Islands are subtropical, lying west of North Pacific Ocean. Though the oribatid fauna there arouses our zoogeographical interest, it has only been reported by Aoki (1978, 1980 and 1982). The present author collected many samples of oribatid mites from Chichijima, the largest island, in 1993. In this paper, he reports the species list with some descriptions restricted to the family Oppiidae. It is especially noted that seven species are new to science and two other species were first found from Tahiti and Java which are located in South Pacific Ocean and in the adjacent area to Pacific Ocean, respectively. All the type specimens will be deposited in National Science Museum, Tokyo.

TERMINOLOGY FOR OPPIIDAE

Some terms are defined here on the morphology of prodorsum, bothridium and podosoma of oppiid species (Fig. 1A-E). Descriptive terms of surface unevenness are also defined (Fig. 1F-G).

The terms frons, vertex and pleuron are introduced for the first time to describe the prodorsum. Frons is the anterior part of prodorsum, bordered posteriorly by a vertex and a pair of pleura; rostrum is its anterior and lateral border. Vertex is the area containing lamellar and interlamellar setae, being bounded anteriorly by, if present, either a groove or a sloped border, and laterally by a costula, a ridge, a carina or a groove; costula is

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FIG. 1: General terms for Oppiidae.


D: Cross section of sternal region; 43. apodeme, 44. base of apodeme, 45. network, 46. sternal groove.

E: Intermediate region and tectorial region; 47. anterior edge of lower corner of pleuron (= lower edge of anterior border of pleuron), 48. lower corner of pleuron, 49. posterior edge of lower corner of pleuron (= anterior edge of ventral border of pleuron), 50. lower lobe of acetabular tectum I, 51. acetabular tectum I, 52. acetabulum I, 53. upper ridge of acetabular tectum I, 54. mound of exobothridial seta, 55. cross ridge, 56. hypohumeral ridge, 57. pedotectum I, 58. anterior border of acetabular tectum II, 59. acetabular tectum II, 60. middle ridge of acetabular tectum II, 61. lower ridge of acetabular tectum II, 62. acetabulum I, 63. custodium, 64. acetabular tectum III, 65. acetabulum III, 66. tip of discidium, 67. acetabulum IV, 68. posterior corner of acetabular mound IV.

F: Classification of borders; 69. slightly sloped border, 70. gently sloped border, 71. steeply sloped border, 72. angular edge, 73. angular corner, 74. round edge, 75. round corner.

G: Classification of ridges and grooves; 76. ridge, 77. obscure ridge, 78. carina, 79. groove, 80. shallow groove, 81. linear groove, 82. suture.
restricted here to the longitudinal ridge where a lamellar seta is located. If the whole vertex is convex, its anterior and lateral borders would easily be mistaken for ridges. The posterior border of the vertex is the posterior border of prodorsum, usually grooved. Pleuron is the convex area with light internal spots of various sizes, enclosed by a dorsal, an anterior, and a ventral borders; the dorsal border is usually absent or coincides with a lateral border of vertex; the anterior border curved, expanded sideward; the ventral border is usually absent. Lower corner of pleuron is occasionally bordered by sharp edges anteriorly and posteriorly; the edges are the lower and the anterior part of the anterior and the ventral border, respectively.

General external features of bothridium are as follows. The aperture is surrounded by a rim. The rim is terminated posteriorly by an exterior and an interior ends which make a slit between them. A bothridial protuberance protrudes backwards near the interior end of the rim, while a posterior base develops downwards near the exterior end of the rim.

The podosoma is divided into two kinds of regions here; an epimeral region and a pairs of tectorial regions. Epimeral region seems to be so confusing, because it is difficult to distinguish external ridges and grooves on the epimeral plate from apodemes as internal structures on the reverse side of the plate. External structures of epimeral region contain epimera themselves, borders of epimera and grooves; a pair of anterior sternal pits and a pair of posterior sternal pits are often located at the posterior end of sternal grooves I and II, respectively. A central carina or groove of mentotectum is also external, often extending into sternal region I; mentotectum may not belong to podosoma, but is mentioned under the heading “Podosoma” in this paper for convenience. Internal structures of epimeral region are observed as apodemes and networks (in the following descriptions of species, apodemes are shown by broken lines in figures but scarcely mentioned in the text). Apodemes I and II develop triangular plates which are connected with the cotyloid walls. Sternal and sejugal apodemes as well as apodeme IV are ridges. Apodemes are widened at their bases.

The tectorial region contains acetabula and their peripheral structures such as acetabular tecta, pedotecta, hypohumeral expansion and discidium; “hypohumeral” is a newly formed word. Acetabular tectum I is usually accompanied by an upper ridge and sometimes by a lower lobe; the upper ridge is usually granulated. Pedotectum I is a protruding plate with smooth exterior wall and sometimes granulated interior wall; no border line is observed on the exterior wall posteriorly. Acetabular tectum II is often bifurcated at upper tip, sometimes restricted by an anterior border; lower part of the tectum is sometimes divided into a middle ridge and a lower ridge. Custodium is an anterior protrusion of acetabular tectum III, possessing epimeral seta 3c. The tip of the discidium is the posterior end of discidium as well as the hypohumeral expansion; the discidium is an expansion of acetabular tectum III; the hypohumeral expansion sometimes develops a hypohumeral ridge or carina on its anterior part. Acetabular mound IV sometimes possesses a posterior corner.

Intermediate region is a granulated area surrounded by pleuron, bothridium and tectorial region, involving exobothridial seta, cross ridge and podosomal constriction. The cross ridge is occasionally interrupted. Though the region is an intermediate zone between prodorsum and podosoma, it is mentioned under the heading “Podosoma” in this paper for convenience except the exobothridial seta.

Ridge is a prolonged narrow expansion on a flat area. An obscure ridge is so low that it is difficult to detect. If the ridge is so narrow that it is linear, it is called a carina. Groove is a prolonged narrow depression. A shallow groove may be difficult to detect unless it has a linear bottom. If the groove is so narrow that it is linear, it is called a suture. Border is a surrounding line of an expanded area, sloping down slightly, gently or steeply to the lower area. A slightly sloped border is difficult to detect. Edge and corner are the upper and lower lines of a bordering slope, respectively; a conspicuous border shows an edge and/or corner which are angular or round. Border between two expanded areas is exceptionally expressed as a groove; such examples are often observed between two epimera and between vertex and pleuron.
Arcoppia viperea (Aoki, 1959)  
(Fig. 2)

Measurements. Body length 393–543 μm, width 206–281 μm for 5 specimens.

Discussion. Some important features of this species were originally described in a wrong way. Examining specimens from Japan proper, the following features were observed: the rostrum is tripartite; the notogastral setae ti are present; four posterior pairs of notogastral setae about as long as the anterior pairs. The specimens from Chichijima seem to be different a little from the specimens of Japan proper in the position of notogastral setae. The author does not here establish a new taxon for the former population, because it is necessary to study geographical variations more in detail. Figure 2 shows the setal maps of ano-genital region and notogastral plate based on one specimen from Chichijima.

Arcoppia curtispinosa sp. nov.  
(Fig. 3)


Prodorsum. Three tips of incised rostrum acute. Vertex strongly convex to make a conspicuous, round anterior border with round edge; lateral border inconspicuous posteriorly, with a scattering of small granules. Three pairs of longitudinal ridges
crossing over the groove in front of dorsosejugal suture; the interiormost pair conspicuous; the exteriormost pair small. Pleuron fairly convex anteriorly to make a conspicuous anterior border with round edge; ventral border with a fairly sharp edge, undulating, continued from lower corner of pleuron to 2/3 way to exobothridial seta.

Bothridium slightly protruded from the prodorsal surface. Bothridial rim narrow, nearly round. Slit of rim shallow and fairly wide. Bothridial protuberance almost continuous to the internal end of the rim. A small swelling located opposite to bothridial protuberance, and two smaller swellings outside of it.

Sensillus capitate with one small and sometimes one or two minute spines. Prodorsal setae barbed; lamellar setae shorter than their mutual distance, as long as exobothridial setae; interlamellar setae as long as rostral setae.

**Podosoma.** Granulation of intermediate region dense. Mound of exobothridial seta smooth, located just in front of bothridium and fused with
vertex. Cross ridge smooth posteriorly, strongly curving upward to make an obscure ridge.

Acetabular tectum I kidney-shaped, relatively narrow; lower lobe large and round, continued to granulated area without suture; upper ridge fairly obscure. Pedotectum I pointed at the upper end. Border between pedotectum I and acetabular tectum II shallowly grooved without suture; upper contour between the two tecta excavated. Acetabular tectum III reaching cross ridge. Discidium indicated by a border with round edge; border almost straight in lateral view but slightly expanded in ventral view.

Central groove of mentotectum shallow. Epimeral groove II almost straight, shallow. Sternal groove I very narrow anteriorly, widened posteriorly; anterior sternal pits weakly developed. Sejugal groove crossed by a pair of ridges at mesal and lateral corner of epimeron II. Sternal groove II narrower than the posterior end of sternal groove I, widened posteriorly. Sternal groove III shallow, narrowed at anterior half. Epimeron IV bordered by round edge. Epimeral setae normal. Seta 4c located at the tip of discidium. Sternal apodemes very narrow.

Ano-genital region. Adanal and aggenital setae located as in Fig. 3D.

Notogaster. Dorsosejugal suture lying between setae C 2 . Notogastral setae rather short, slightly barbed, located as in Fig. 3E.

Remarks. The new species is almost the same as Arcoppia viperea, but the length of the notogastral setae and the branch of sensillus are different between them.

Arcoppia interrupta sp. nov.

(Fig. 4)


Prodorsum. Middle tip of incised rostrum wide, roundly pointed; lateral tips slightly shorter than the middle one, sharply pointed. Vertex not smoothly contoured in lateral view; anterior border disappearing; lateral border inconspicuous posteriorly, with a scattering of small granules. Three pairs of longitudinal ridges crossing over the groove in front of dorsosejugal suture; the interiormost pair conspicuous; the next pair inconspicuous. Anterior border of pleuron with angular edge, a little bent near lamellar seta; ventral border with angular edge, slightly curved, continued from the lower corner of pleuron to half way to exobothridial seta; lower corner sharply pointed.

Bothridium surrounded by a groove. Bothridial rim narrow. Slit of the rim as wide as the aperture, relatively deep. Bothridial protuberance almost continuous with the internal end of the rim. A small swelling located just behind the bothridial protuberance, and two holes outside of it.

Sensillus head depressed and widened usually with three, long to short branches; occasionally the branches bifurcated at tip. Prodorsal setae barbed; lamellar setae shorter than their mutual distance, as long as exobothridial setae; interlamellar setae far longer than rostral setae.


Acetabular tectum I kidney-shaped, relatively narrow; lower lobe large and round, continuing to granulated area without suture; upper ridge absent. Pedotectum I narrow. Border between pedotectum I and acetabular tectum II shallowly grooved without suture. Acetabular tectum III sharply pointed at the upper end. Acetabular tectum III reaching cross ridge. Border of discidium almost straight in lateral view but slightly expanded in ventral view.

Epimeral groove II curved, shallow. Sternal groove I narrow and fairly shallow, with obscure pits. Posterior border of epimeron I slightly grooved, curving forward at mesal part; posterior mesal corners of epimeron II located in front of anterior sternal pits. Sejugal groove crossed by a pair of obscure ridges at mesal and lateral corner of epimeron II. Sternal groove II wide, developed posteriorly. Sternal groove III fairly long but shallow, narrowed at the middle. Epimeron IV bordered by round edge; border weakly curved. Epimeral setae normal. Seta 4c located at the tip of discidium. Sternal apodemes very narrow.
**Ano-genital region.** Adanal and aggenital setae located as in Fig. 4D.

**Notogaster.** Dorsosejugal suture lying between setae c₂. Notogastral setae moderately long, slightly barbed, located as in Fig. 4E.

**Remarks.** The species of *Arcoppia* can be separated into two groups by the shape of sensillar head: one with spherical head and one with depressed head, each having more than one branch on it. The new species belongs to the latter group. *Arcoppia* species closely resemble one another, but the new species is distinguishable by the following combination of characters: 1) one long, one short and sometimes some minute branches on sensillar head, 2) branches of sensillus sometimes bifurcated near the tip, 3) moderately long interlamellar as well as notogastral setae, 4) middle part of the incised rostrum wide and round, and 5) sternal region III fairly long. *Arcoppia cronus* (Jacot, 1934) may be closely related to the new species, but
the latter differs in having apparent borders of vertex.

*Multioppia (Multioppia) gracilis* Hammer, 1972
(Fig. 5)


*Supplementary redescription.* Lamellar and inter-
lamellar setae slightly barbed. Carina extending in front of bothridium, ending 2/3 of way to lamellar seta. Bothridium somewhat triangular in dorsal view. Anterior border of pleuron with angular lower edge. Anterior lobe of acetabular tectum I round, large. Main acetabular tectum I nearly round, but somewhat angular near the lower lobe. A connected part between acetabular tectum I and upper ridge curved downward. Pedotectum I pos-
sessed a straight anterior edge; middle ridge present, short. Posterior corner of acetabular mound IV well developed; its posterior border slightly convex. Hypohumeral ridge well developed. Mound of exobothridial setae continued to cross ridge. Central carina of mentotectum long. Sternal groove II the narrowest. Genital plate protruding forward.

Discussion. The specimens from the Bonin Islands differ from the original description as follows: 1) costulae converging more weakly, 2) notogastral setae \( ps_2 \) nearer to \( ps_3 \) than to \( ps_7 \), 3) three epimeral setae \( la, lb \) and \( lc \) situated in a straight line, 4) three pairs of swellings at the posterior border of epimeral plate II. The author does not consider that these differences are enough to establish a new subspecies.

**Multioppia (Multioppia) bacilliseta** sp. nov.

(Fig. 6)

**Measurements.** Body length 281–294 \( \mu \text{m} \), width 151–165 \( \mu \text{m} \) for 4 specimens.
**Prodorsum.** Rostral setae located near each other; basal 2/3 barbed, diverging; distal 1/3 smooth, converging. Vertex anteriorly bordered by a straight linear groove, slightly longer than the mutual distance of lamellar setae. Costulae short. Lamellar setae slightly barbed, nearly as long as rostral setae. A longitudinal ridge present between interlamellar setae, narrowed at the middle. A pair of transverse ridge behind the setae. Interlamellar setae barbed, longer than lamellar setae. Pleuron weakly expanded; anterior border slightly sloped except at its lower part which is gently sloped.

Bothridium somewhat angular in dorsal view. Two swellings well observed posteriorly in dorsal view; the interior one is bothridial protuberance developed at the side of interior rim; the exterior one is posterior base of bothridium. Aperture circular in lateral view, but somewhat triangular in dorsal view; slit narrow. Sensillus pectinate with four thick branches, also having some rows of barbs on the main stem; the tip of the main stem very short compared to the four branches; the distalmost branches showing some spines.

**Podosoma.** Acetabular tectum I truncated in lateral view; anterior lobe round, large; upper ridge slightly curved; a connected part between acetabular tectum I and upper ridge curved downward. Pedotectum I round, relatively wide, with a round upper tip. The upper contour between pedotectum I and acetabular tectum II excavated. Lower ridge of acetabular tectum II protruding sideward; middle ridge of acetabular tectum II shortly developed. Discidium pointed backwards. Posterior corner of acetabular mound IV acutely angled; its posterior border relatively curved; its lower border weakly sigmoid. Hypohumeral ridge shortly developed. Cross ridge short, posteriorly directed upward.


**Ano-genital region.** Genital plate protruding forward. Adanal and aggenital setae located as in Fig. 6D.

**Notogaster.** Setae bacilliform, finely barbed. Setal map shown in Fig. 6E.

**Remarks.** The new species is readily characterized by the bacilliform notogastral setae and the thick branches of the sensillus.

**Neoamerioppia ventrosquamosa** (Hammer, 1979)  
(fig. 7)

**Measurements.** Body length 261–290 μm, width 141–159 μm for 5 specimens.

**Supplementary redescription.** Vertex bordered anteriorly by a very obscure linear groove in front of lamellar setae, laterally by a carina. A pair of transverse ridges in front of dorsosejugalis. Upper part of anterior border of pleuron more steeply sloped than the middle part of the border; in dorsal view, the upper part seems like a costula, but costula is absent. Bothridium possessing two corners anteriorly; rim becoming thin between the two corners; slit very shallow; bothridial protuberance curved upward. Lower corner of pleuron present, though its anterior and posterior edges separated; the anterior edge sharp, nearly straight; the posterior edge also sharp but slightly curved. Acetabular tectum I undulated at the anterior border; lower lobe incised; upper ridge narrow. Pedotectum I relatively narrow, roundly pointed at upper end. Acetabular tectum II narrow, having a lower ridge. A conspicuous border present behind acetabular mound IV and epimeron IV. Cross ridge short, continued by upward ridge posteriorly. Hypohumeral carina strongly developed. Central carina of mentotectum relatively long. Anterior sternal pits weakly developed. Notogastral setae finely barbed, located as in Fig. 7E.

**Discussion.** The specimens from the Bonin Island differ from the original description in having carinae and showing three pairs of light spots on prodorsum. These features might have been overlooked in the original description. In Japan, *Pseu-doamerioppia floralis* (Ohkubo, 1990) n. comb. was the only member of the group which lacks interla-
mellar setae. The present species resembles it, but is easily distinguished by the shape of the sensilli.

Ramusella (Ramusella) tokyoensis (Aoki, 1974)

Measurements. Body length 276–294 µm, width 133–142 µm for 7 specimens.

Discussion. The author did not find any difference between the specimens from the Bonin Islands and the specimens from Japan proper.

Ramusella (Insulptoppia) bicillata sp. nov.

(Fig. 8)


Anterior border of pleuron steeply sloped near the upper end.

Bothridium with two anterior corners near which prodorsal surface is concave a little. Slit very narrow. Interior end of rim expanded, paralleled by a bothridial protuberance. Sensillus lanceolate, with spines at both sides. Rostral, lamellar and exobothridial setae barbed, and interlamellar setae smooth. Lamellar setae a little shorter than rostral ones; interlamellar setae the shortest, nearly as long as exobothridial ones.

Podosoma. Acetabular tectum I rather wide; anterior lobe shortly incised; upper ridge wide, inclined upward. Pedotectum I pointed at its upper tip. The upper contour between pedotectum I and acetabular tectum II fairly excavated. Acetabular tectum II with straight anterior border; middle ridge fairly expanded sidewards; lower ridge posteriorly protruded sideward as well as downwards. Exterior acetabular orifice II angular at lower end. Discidium sharply pointed at tip. Hypohumeral carina strongly developed, long, bending at the
middle, with a pointed tip touching bothridium. Posterior corner of acetabular mound IV well developed. Mound of exobothridial setae small. Cross ridge widely developed.

Central groove of mentotectum short; a pit exists behind the groove. Epimeral groove II shallow. Sternal groove I wide, slightly widened posteriorly; anterior sternal pits present. Posterior mesal corner of epimeron II ridged and protruded, which makes posterior half of sternal groove II conspicuous. Sternal groove II narrower than sternal groove I. Sejugal groove moderately deep. Sternal groove III conspicuous, bounded by sharp-edged sternal border III; groove narrow. Posterior border of epimeron IV steeply sloped. Epimeral setae 1b, 3b and 4b moderately long; setae 1c short. Ratio of the lengths of sternal regions, \( a:b:c = 1:1:1.3 \).

**Ano-genital region.** Genital setae short. Aggenital and adanal setae arranged as in Fig. 8D.

**Notogastra.** Notogastral setae barbed. Setal map shown in Fig. 8E.

**Remarks.** The new species is closely related to *Ramusella clavipectinata* (Michael, 1885). Compared with the descriptions of Krivolutzky & Gattlova (1974), Weigmann (1976) and Beck & Wóas (1991), the present new species is distinguishable by 1) rostral setae separated more widely from each other and 2) notogastral setae \( p_3 \) located more posteriorly.

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### *Subiasella (Lalmoppia) boninensis* sp. nov.

(Fig. 10)

**Measurements.** Body length 201–228 \( \mu \text{m} \), width 107–119 \( \mu \text{m} \) for 9 specimens.


**Podosoma.** Acetabular tectum I sometimes undulating but always having a short protuberance; its anterior contour smoothly continued to lower lobe as well as to upper ridge; upper ridge finely granulated. Pedotectum I with an oval ridge at the upper end, concealing part of the upper ridge of acetabular tectum I. Acetabular tectum II wide, like an interrupted ring as a whole. Acetabular tectum III and discidium fused in a large expanded area; the upper border round or undulated, steeply sloped; apophysis of epimeral seta 4c fused to the expanded area. Mound of exobothridial seta and cross ridge fused in a conspicuous ridge, smooth; mound oval; cross ridge consisting of a large anterior expansion, a short median expansion and a branched posterior ridge. Hypohumeral ridge developed as a blunt protrusion opposite bothridium.

Central groove of mentotectum relatively wide, prolonged behind the level of epimeral setae 1a. Sternal grooves I scarcely developed. Two grooves between epimera I and II shallow. Sternal border II absent. Epimeron II almost triangular. Sejugal

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### *Ramusella (Insulptoppia) flagellaris* sp. nov.

(Fig. 9)

**Measurements.** Body length 256–271 \( \mu \text{m} \), width 141–145 \( \mu \text{m} \) for 4 specimens.

**Distinguishing characters.** Genital setae very long; length \( g_5 < g_1 < g_2 < g_4 < g_3 \). Genital setae \( g_2 \) and \( g_3 \) adjacent. Ratio of the lengths of sternal regions, \( a:b:c = 1:1:1 \).

**Remarks.** The new species greatly resembles the above species, *R. bicillata*. Differences are seen in the length of genital setae and in the ratio of the lengths of sternal regions.
groove medially deep. Sternal groove III narrowed at middle. Posterior border of epimeron IV only slightly sloped. Epimeral setae 1c at the lateral border of epimera I; setae 3a on a conspicuous apophysis, situated laterally; seta 3b on an apophysis.

**Ano-genital region.** Aggenital and adanal setae arranged as in Fig. 10D.

**Notogaster.** Dorsosejugal region protruding, becoming a dorsosejugal suture at middle 1/3 between humeral processes. Humeral processes weakly developed. Notogastral setae arranged as in Fig. 10E. Setae c₂ absent.

**Remarks.** The new species closely resembles *Subiasella (Lalmoppia) incurva* (Aoki, 1984) n. comb. The author collected specimens from the type locality of the latter species and examined them. Compared to the new species, *S. incurva* is characterized as follows: 1) Notogastral setae c₂ present, 2) humeral projections of notogaster more

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**Fig. 9.** *Ramusella (Insulptoppia) flagellaris* sp. nov.

A. — Dorsal aspect; B. — Ventral aspect; C. — Lateral aspect; D. — Setal map of ano-genital region; E. — Setal map of notogastral plate.
developed, 3) acetabular tectum I without a projection, 4) epimera II rectangular as a whole, and 5) posterior border of epimeron IV being a suture.

**Graptoppia (Stenoppia) crista** sp. nov.
(Fig. 11)

_Measurements._ Body length 196–206 μm, width 91–95 μm for 7 specimens.

_Prodorsum._ Rostral setae barbed, rather widely separated from each other. Vertex anteriorly bordered by a very steep slope; border slightly convex forward between lamellar setae and slightly concave backward outside of the setae; each end of border directed forward to form part of anterior border of pleuron; lamellar setae barbed, shorter than the mutual distance, located on the slope. Border between vertex and pleuron deeply grooved at anterior and posterior parts, and obscurely granulated at the middle part, which means that costulae are absent. A semicircular expanded area in front of dorsosejugalis, contains two pairs of large light spots; interlamellar setae short, located on lateral
FIG. 11. Graptoppia (Stenoppia) cristata sp. nov.
A. — Dorsal aspect; B. — Ventral aspect; C. — Lateral aspect; D. — Setal map of ano-genital region; E. — Setal map of notogastral plate.

Borders of the area; lateral borders of the area conspicuous in front of the setae; transverse grooves behind the setae. Anterior part of pleuron extremely expanded sideward in dorsal view; anterior border of pleuron steeply sloped.


Podosoma. Acetabular tectum I elongated; lower lobe absent; upper ridge elongated, attached to pedotectum I and acetabular tectum II. Pedotectum I strongly curved in lateral view, rather pointed at lower end. Acetabular tectum II narrow but fairly protruded sideward. Custodium fairly curved inward in ventral view. Discidium bluntly pointed. Hypohumeral ridge developed as a blunt protrusion opposite bothridium. Cross ridge possessing perpendicular ridge at anterior end.

Central groove of mentotectum prolonged behind the level of epimeral setae 1a, narrowed posteriorly. Sternal groove I wider posteriorly, with pits. Border between epimera I and II represented by two shallow grooves. Sternal groove II scarcely developed. Posterior border of epimeron II very steeply sloped, having small angular protrusion at

**Ano-genital region.** Genital setae 4 pairs. Aggenital and adanal setae barred distally. located as in Fig. 11D.

**Notogaster.** Dorsosejugal region rather pointed at the middle, making a very short dorsosejugal suture only near the pointed tip. A pair of obscure ridges developed outside of setae c2. Notogastral setae barred distally, located as in Fig. 11E.

**Remarks.** The new species most resembles *Graptoppia italica* Bernini, 1973 (= *Oppia heterotricha* Bernini, 1969), but distinguishable by 1) distally barred notogastral setae, 2) a pair of lines at the notogastral shoulders, and 3) more anterior location of epimeral setae 1c.

**Oppiella nova** (Oudemans, 1902)

**Measurements.** Body length 237–250 µm, width 131–138 µm for 4 specimens.

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