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DESCRIPTIONS OF TWO NEW COCCINELLA- SPECIES OF JAPAN*

(COLEOPTERA : COCCINELLIDAE)

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In this paper will be given descriptions of two new species of the genus *Coccinella*, which have hitherto been misidentified by previous authors with certain other Holarctic species.

Coccinella explanata, sp. nov. (Figs. 1-8)

Coccinella Sedakovii Mulsant: Motschulsky, 1857, Etudes ent. 6: 40; Motschulsky, 1861, *ibid.* 9: 27; Motschulsky, 1866, Bull. Hist. Nat. Moscou, 39: 178.

Coccinella transversoguttata Faldermann: Lewis, 1873, Ent. Mon. Mag. 55; Crotch, 1874, Revis. Cocc. 116 (part.); Lewis, 1896, Ann. Mag. Nat. Hist. (6) 17: 26 (Niigata, Hakodate & Sapporo); Matsu-mura, 1908, Cat. benif. Ins. Jap. 57; Miwa & Yoshida, 1935, Ent. World, 3 (22): 48 [Cat. Jap. Ins. fasc. 9, Cocc. 16]; Hirayama, 1940, Genshoku Kôchû Zufu, 172, pl. 52, f. 43 (Sapporo).

Coccinella transversoguttata Faldermann var. *Sedakovii* Mulsant: Lewis, 1873, Ent. Mon. Mag. 55.

Coccinella transversoguttata Faldermann var. *nugatoria* Mulsant: Yuasa, 1950, in Icon. Ins. Jap. ed. 2, reformata, 1096, f. 3138.

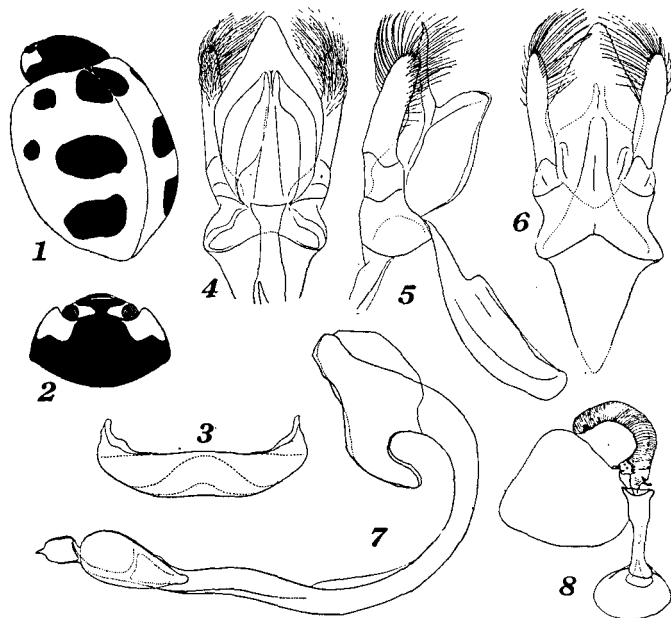
Coccinella novemnotata Herbst: Nawa, 1899, Ins. World, 3 (8): 284, pl. 8, f. 7; Kurisaki, 1915, *ibid.* 19: 66; Kurisaki, 1915, *ibid.* 19: 229, 1 f.; Kurisaki, 1922, Zool. Mag. Tokyo, 34: 537 (Aomori, Iwate & Sendai).

Length 5.5-7.0 mm; width 4.5-5.5 mm. Body of rounded oval, rather strongly convex, somewhat compressed on sides; integuments very finely alutaceous but moderately shiny. Head black with a subquadrate spot in contact with eye and a small spot on the emarginate area of eye, all of which are whitish-luteous, the two spots being connected usually; anterior margin of labrum more or less yellowish; anterior margin of clypeus and outer surfaces of mandibles fulvous or whitish-luteous. Antennae reddish-brown, the basal and apical segments being somewhat infusate. Maxillary and labial palpi somewhat piceous. Pronotum black with two large subquadrate luteous spots in the anterior corners. Scutellum black. Elytra deep orange-yellow with nine black spots: scutellar spot (1/2+1/2) moderately large, subcordiform and wider than long; humeral spot (1) at the callus, relatively small and subquadrate, about as long as wide; lateral spot (2) at about one-third the length of elytron, always smaller than the humeral spot and variable in shape and size, usually longer than wide; discal spot (3) a little before the middle, rather large, transverse-oval; apico-marginal

* Studies on the Family Coccinellidae (Coleoptera) of Japan and her adjacent territories, IX.

or apical spot (4+5 or 5) nearly as large as or somewhat larger than the discal spot, slightly closer to side than to suture. Underside black except the anterior corners of propleura, mes- and met-epimera, all of which are more or less whitish-luteous. Elytral epipleura orange-yellow. Legs black with claws reddish-brown; in male fore coxae with a small whitish spot at the internal end and fore femora with a whitish band on the anterior excavation into which the tibia is received.

Head covered with a mixture of very fine and coarse punctures, which are closely and irregularly arranged, the coarser punctures being closer on vertex and near eyes. Pronotum finely, closely, and somewhat evenly punctured, the punctures being more distinct than the finer punctures on head and becoming coarser and closer towards the lateral and basal



Figs. 1-8. *Coccinella explanata*, sp. nov.

1, Dorsal pattern. 2, Head and pronotum. 3, Last visible sternite of male. 4, Tegmen of male genitalia, ventral view. 5, Do., lateral view. 6, Do., dorsal view. 7, Siphon. 8, Female genitalia.

areas, the anterior corners being rather acute, the lateral margins not or very slightly arcuate, comparatively broadly explanate-reflex and coarsely ridged, and the posterior corners obtuse but not rounded. Scutellum moderately small, more or less depressed on the middle and obscurely punctulate. Elytra closely covered with finer and less distinct punctures than those on pronotum, becoming much coarser and closer towards sides, which are rather broadly explanate-reflex, especially so on the basal halves. Prosternal carinae distinct and parallel or slightly convergent anteriorly. Femoral lines of 1st visible sternite of abdomen moderate. Last sternite of male broadly and somewhat triangularly depressed on the middle and truncate on the posterior margin.

Male genitalia: tegmen robust; median lobe of tegmen, as seen from above, pentagonal

in outline, wider at middle than at base, and then rapidly convergent apically, forming an acute angle of 45° , the tip being not sharply pointed but slightly rounded; lateral lobes of tegmen distinctly shorter than the median lobe, rather robust and fingerlike; basal piece wider than long, with a large triangular membraneous plate; trabes moderately thick; siphon relatively short and thick, strongly curved at the basal third and slightly sinuous at the apical third, where it is distinctly swollen as seen from above.

Female genitalia: spermatheca relatively thick throughout; cornu rounded at the end; ramus short and truncate; nodulus conic in shape; infundibulum relatively long, with a slender stalk, the anterior end with a narrow bell-shaped dilatation, and the posterior end with a small dilatation, of which the diameter is distinctly narrower than that of the anterior one; accessory plate rather large.

Holotype: ♂, Hachinohe, Aomori Pref., Honshu, 26. vii. 1942, S. Fukuda leg. Paratypes: 2 ♂♂, 4 ♀♀, same data as holotype; ♀, Kuzukawa, Hiraka-machi, Aomori Pref., Honshu, 6. vii. 1960, K. Shimoyama leg. (in coll. Dr. M. Chûjô); ♂, Asahi-mura, Higashi-Chikuma-gun, Nagano Pref., Honshu, 15. ix. 1952, H. Hasegawa leg.; ♀, Mt. Kiso-koma, Nagano Pref., Honshu, 20. vii. 1939, K. Kurosa leg.

Distribution: Japan (Hokkaido and Honshu).

Remarks: This species has hitherto been recorded under the names of *C. Sedakovii* Mulsant (now a variety of *C. divaricata* Olivier), *C. transversoguttata* Faldermann and its variety, *nugatoria* Mulsant, or *C. novemnotata* Herbst in Japan. Although similar to those species in the elytral maculation, it may be easily distinguished by the peculiar structure of the male genitalia, the external borders of the pronotum and of the elytra which are widely explanate-reflex, and the comparatively invariable characters of the elytral markings, especially of the discal and apical spots which are always transverse and exceedingly large.

***Coccinella hasegawai*, sp. nov.** (Figs. 9-17)

Coccinella nivicola Eschscholtz: Doi, 1928, Zool. Mag. Tokyo, 40: 375-376, f. 3 (Kuriles: Etofu & Uruppu).

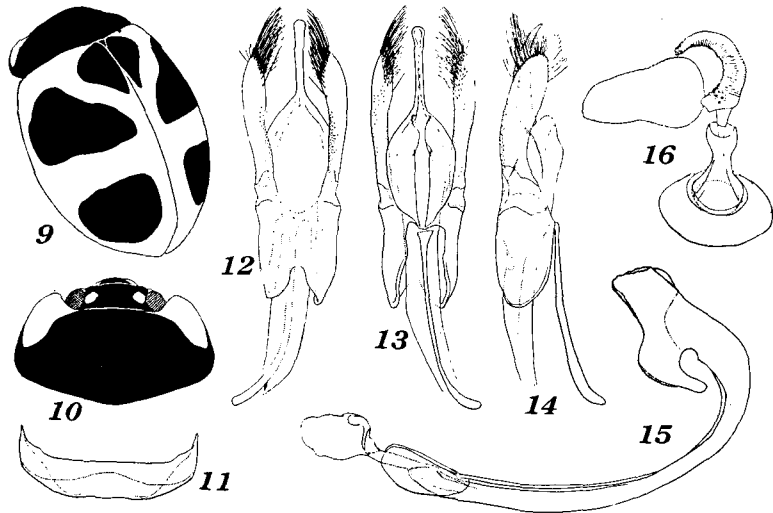
Coccinella nivicola Mulsant: Ohta, 1928, Ins. Mats. 3 (2/3): 57 (Kuriles: Uruppu); Matsumura, 1931, 6000 Ill. Ins. Jap. 152, f. 252; Miwa & Yoshida, 1935, Ent. World, 3 (22): 47 [Cat. Jap. Ins. fasc. 9, Cocc., 15]; Hirayama, 1940, Genshoku Kôchû Zufu, 172, pl. 52, f. 43 (Honshu: Toyoshina); Ebato, 1941, Mushi no Sekai, 4 (7/8): 129.

Coccinella nivicola Mulsant ab. *eboshiana* Ebato, 1941, loc. cit. (Honshu: Mt. Eboshi-dake in the North Japan Alps).

Length 6.0-7.0 mm; width 4.5-5.5 mm. Body oval, rather gently convex; integuments finely alutaceous and less shiny, especially so in female. Head black with two subquadrate fulvous spots near the inner margins of eyes and two small fulvous spots behind the antennal insertions; anterior margin of clypeus more or less yellowish; mandibles clearly luteous on the outer surface and pitchy-brown at the tip. Antennae deep yellowish-brown, the 1st segment and the apex of last segment being more or less infusate. Pronotum black with two large subtriangular fulvous spots in the anterior corners. Scutellum black. Elytra more or less orange-yellow with five large black markings: scutellar spot (1/2+1/2) rather large and subcordiform; a very large triangular patch (spots 1+2+3) on the basal

half of elytron, the tip extending to humeral callus; a subcordiform patch (spots 4+5) on the apical half of elytron, smaller than the anterior patch. Underside black except the tips of anterior corners of propleura and mes-epimera which are luteous. Elytral epipleura orange-yellow. Legs black with claws reddish-brown in both sexes.

Head covered with a mixture of coarse and fine punctures which are closely but irregularly arranged and with short hairs. Pronotum finely, closely but unevenly punctured, sometimes with an obscure impunctate median line, the anterior corners being acutely rounded, the lateral margins gently arcuate and the posterior corners obtusely rounded. Scutellum relatively large, covered with fine and close punctures nearly same as on pronotum. Elytra rather evenly covered with finer and somewhat sparser punctures than those on pronotum, but becoming coarser and less even towards the external borders, which are



Figs. 9-16. *Coccinella hasegawai*, sp. nov.

9, Dorsal pattern. 10, Head and pronotum. 11, Last visible sternite of male. 12, Tegmen of male genitalia, dorsal view. 13, Do., ventral view. 14, Do., lateral view. 15, Siphon. 16, Female genitalia.

rather broadly ridged but not explanate. Prosternal carinae very obsolete in usual and slightly convergent anteriorly. Femoral line of 1st visible sternite of abdomen incomplete as a rule, sometimes contiguous with an oblique line, which extends towards the anterior corner of the sternite, before attaining the posterior margin of the sternite, its remaining part being reduced to an obsolescent line. Last sternite of male transversely concave along the middle of the posterior margin, which is truncate or slightly bisinuous.

Male genitalia: median lobe of tegmen consisting of two parts, a robust basal body and an abruptly narrowed apical prolongation, distinctly longer than the lateral lobes of tegmen, as seen from above, the basal body oval in outline, widest at the basal three-fifths, and then quickly narrowed apically and produced into a very slender prolongation which is rounded at apex, as seen from side, the basal body thick and the apical prolongation

narrowing to apex, and there slightly curved; lateral lobes of tegmen rather broad and long, densely hairy on the apical portion, slightly curved near base as seen from side; basal piece somewhat longer than wide; traves exceedingly slender; siphon rather moderate, similar to that of *C. whitii* Mulsant (= *C. nivicola* Ménériés sensu Dobzhansky, 1926 & 1931).

Female genitalia: genital plates robust, strongly rounded and rather densely hairy on the apical margin; styli distinct; spermatheca relatively thick on the basal portion, and strongly curved, gradually narrowing distally; cornu almost pointed at the end; ramus short and truncate; infundibulum short and thick, with a somewhat narrow stalk, the opening towards nodus being more or less bell-shaped, and the posterior end with a funnel-shaped dilatation, of which the diameter is nearly twice as much as the diameter of the anterior one; accessory plate large.

Holotype: ♂, Mt. Jōnen-dake (alt. 2857 m) in the North Japan Alps, Nagano Pref., Honshu, 12. ix. 1953, H. Hasegawa leg. Paratypes: 2 ♂♂, 1 ♀, same data as holotype (1 ♂ in coll. Dr. T. Nakane); ♀, Mt. Ootaki (alt. 2615 m) in the North Japan Alps, Nagano Pref., Honshu, 28. vii. 1959, T. Saitoo leg. (in coll. Mr. T. Shibata).

Besides the type series, I have examined the following specimens preserved in the collection of the Entomological Institute, Hokkaido University (Sapporo), which are identified by Y. Ohta and H. Kōno with *C. nivicola* Mulsant.

1 ♀, Tokotan, Uruppu Is., Kuriles, 3. ix. 1927, K. Doi leg.; 11 exs., same locality, 9–23. viii. 1936, Y. Sugihara leg.; 1 ♀, Nakabusa, Nagano Pref., Honshu, vii. 19–?, S. Minowa leg. [Fig. 17].

Distribution: Japan (the mountainous region of Central Honshu); South Kuriles (Uruppu & Etrofū).

Remarks: This new species is closely related to *C. whitii* Mulsant (= *C. nivicola* Ménériés sensu Dobzhansky, 1926 & 1931), but differs from the latter in the shape and size of elytral markings, the shape of luteous spots of the anterior corners of pronotum, and definitely in the structures of the male and female genitalia.

The type specimens dealt with in this paper are preserved in the collection of the Entomological Laboratory, College of Agriculture, Ehime University (Matsuyama), unless otherwise indicated.

In conclusion, I wish to express my sincere gratitude to Prof. T. Ishihara for his constant guidance, and also to Prof. M. Chūjō, Mr. A. Fukuda, Mr. H. Hasegawa, Dr. K. Kurosa, Dr. T. Nakane, and Mr. T. Shibata for the offer or loan of valuable material. I must thank Prof. T. Uchida and Prof. C. Watanabe of the Entomological Institute, Hokkaido University, for their kindness in examining the specimens preserved in the institute.

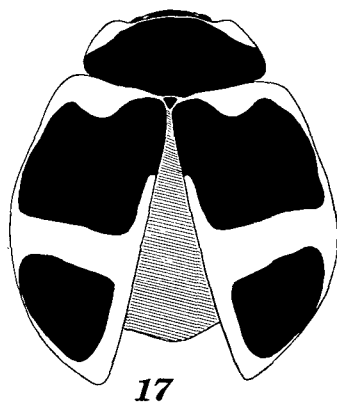


Fig. 17. An aberrant form of *Coccinella hasegawai*, sp. nov., ♀, from Nakabusa.