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Five new species of *Notosacantha* CHEVROLAT from the Philippines (Coleoptera: Chrysomelidae: Cassidinae)

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ABSTRACT. *Notosacantha rubripennis* (N Luzon), *N. quadrimaculata* (C Luzon), *N. minutissima* (Siargao Is., Bucas Grande Is.), *N. octomaculata* (Mindanao), and *N. multimaculata* (S Luzon), new to the science, are described from the Philippine Islands.

Key words: entomology, taxonomy, new species, *Coleoptera*, *Chrysomelidae*, *Cassidinae*, *Notosacantha*, Philippines.

Notosacantha CHEVROLAT with 239 described species is one of the most speciose genera within the subfamily *Cassidinae* (BOROWIEC 1999, BOROWIEC & ŚWIĘTOJAŃSKA 1999, ŚWIĘTOJAŃSKA & BOROWIEC 1999). Most species have small distribution areas limited to insular part of Paleotropics (Madagascar, Sunda Is., Nova Guinea and Philippines). They were mostly keyed in a series of papers by SPAETH (1931 a, 1931 b, 1932, 1933 a, 1933 b). Philippine members are distinct, all the 26 described species are endemic to the islands (SPAETH 1933 a). In the material borrowed from the Bishop Museum (Honolulu, USA) and bought at an entomological fair in Prague I found specimens from the Philippines, representing new species. Their descriptions are given below.

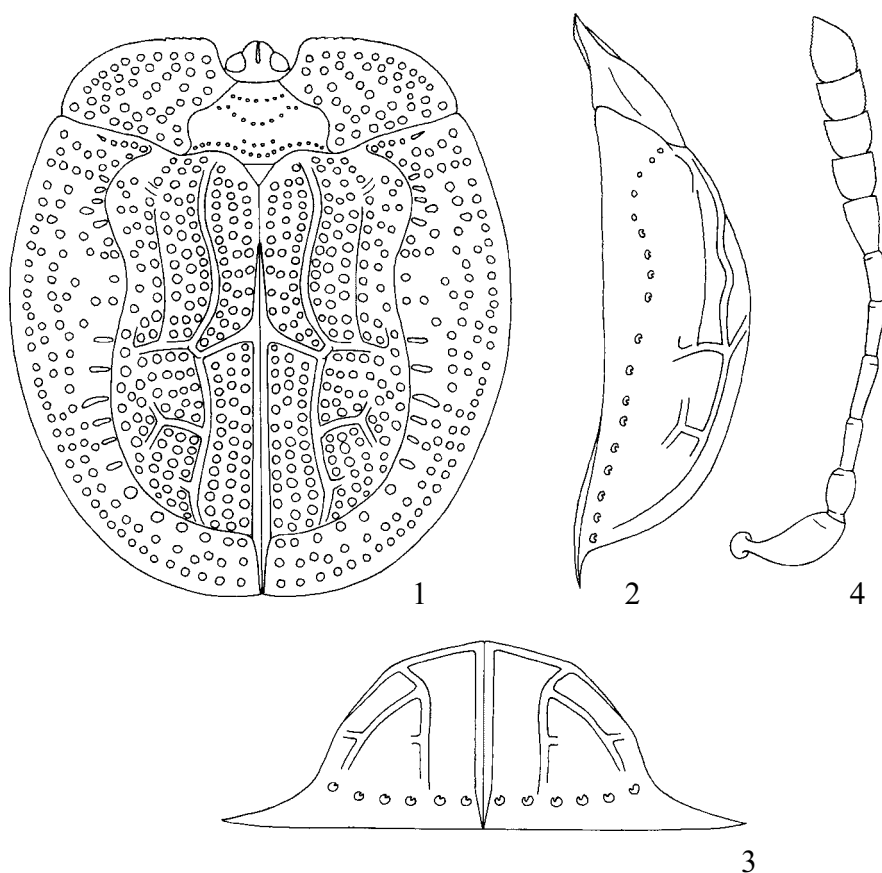
***Notosacantha rubripennis* n. sp.**

ETYMOLOGY

Named after mostly reddish-brown elytral disc.

DIAGNOSIS

It belongs to a group of species characterized by the presence of principal tubercle, dorsal costa, furca interna, anterior and posterior branch of dorsal costa in principal tubercle converging in different points and the absence of furca interna. The group comprises also *N. formosa* (Sp.), *N. modesta* (WAG.) and *N. quadrimaculata* n. sp. The new species distinctly differs from both relatives in brownish-black pronotal disc (yellow to yellowish-brown in relatives) and red-



1-4. *Notosacantha rubripennis*: 1 - dorsal view, 2 - lateral view, 3 - hind view, 4 - antenna

dish-brown central part of elytral disc and dark lateral band (disc yellow to yellowish-brown, immaculate or with dark spots in relatives).

DESCRIPTION

Length: 6.0-6.3 mm, width: 5.3-5.6 mm, width of pronotum: 4.4-4.5 mm, length/width ratio: 1.09-1.13. Body short-oval, sides regularly rounded (fig. 1).

Head from above brownish-black, except yellow frontal plate. Explanate margin of pronotum yellow, disc brownish-black. Scutellum yellow. Explanate margin of elytra yellow with reddish-brown posterolateral spot. Elytral disc reddish-brown with brownish-black band around borders of disc occupying humerus, area between rows 8 and 9, and row 10 below humerus and at base of posterolateral spot (fig. 9). Ventries, clypeus and frontal plate, legs and antennae yellow.

Head with short frontal plate, converging in triangle with shallow apical cleft.

Pronotum broad, with maximum width at base. Disc before middle with oblique row of small punctures and along base also with double row of punctures. Explanate margin of pronotum with large pores.

Base of elytra as wide as base of pronotum. Elytral disc with almost complete set of costae but without tubercles (fig. 1). Dorsal costa complete, anterior branch slightly curved to suture, posterior branch in the middle and at the apex slightly curved to suture. Anterior and posterior branch of dorsal costa in principal tubercle converging in different points. Sutural branch of principal tubercle run obliquely anterad, extending to suture. Lateral branch of principal tubercle complete, extending to submarginal row (fig. 2). Apicosutural costa absent or very short, hardly marked, apicolateral costa complete, bifurcate apically with short costa ultima and costa terminalis with no furca interna (fig. 4). Humeral costa indistinct, in shape of very low elevation. Puncturation between costae moderate, distance between punctures as long as puncture diameter, on sides of disc punctures more dense, with distance between punctures slightly shorter than puncture diameter. Puncturation of margin coarser than on disc especially in area along border of disc, disposed mostly regularly, no impunctate "window". Punctures below humerus and area along border of disc beyond the middle of explanate margin have tendency to form short transverse grooves.

Antennae slim with distinct 5-segmented club. Pedicle, c. 1.3 times longer than club. Second antennal segment elongate, c. 1.5 times longer than wide, segment 8 as long as wide, segments 9 and 10 slightly wider than long (fig. 4).

TYPES

Holotype: "Philippines, N Luzon, Dalbalasan, III 1998"; two paratypes: the same data (preserved at the Department of Systematic Zoology and Zoogeography, Wrocław University, Wrocław, Poland).

Notosacantha quadrimaculata n. sp.

ETYMOLOGY

Named after four spots of elytra.

DIAGNOSIS

It belongs to a group of species characterized by the presence of principal tubercle, dorsal costa and the absence of furca interna. The group comprises also *N. formosa* (Sp.), *N. modesta* (Wag.) and *N. rubripennis* n. sp. All differ distinctly from *N. quadrimaculata* in very short or obsolete furca externa (in *N. quadrimaculata* it is long, extending for a distance of two punctures from lateral branch of principal tubercle). *N. formosa* differs also in the presence of short posterolateral spot of explanate margin (no spot in *N. quadrimaculata*), and sutural branch of principal tubercle strongly protruding anterad, forming with the suture an angle of 45° (c. 60° in *N. quadrimaculata*). *N. modesta* differs also in usually present posterolateral spot of explanate margin; specimens without the spot differ also in higher postscutellar tubercle, less marked humeral costa, more obtuse posterior part of dorsal costa and slimmer antennal club. *N. rubripennis* differs also in the presence of posterolateral spot of explanate margin and brownish-black pronotal disc (yellow in *N. quadrimaculata*).

DESCRIPTION

Length: 6.2 mm, width: 5.2 mm, width of pronotum: 4.4 mm, length/width ratio: 1.19. Body short-oval, sides only slightly rounded (fig. 5).

Pronotum and scutellum yellowish. Explanate margin of elytra yellowish. Each elytral disc yellowish with two dark brown spots: at humeral tubercle and at principal tubercle extending to connection of lateral branch with humeral costa (fig. 10). Ventrites, head, legs and antennae yellow.

Head with quite large frontal plate, converging in triangle with shallow apical cleft.

Pronotum broad, with maximum width slightly anterior to base. Disc before middle with oblique row of small punctures and along base also with row of punctures. Explanate margin with large pores, disposed regularly.

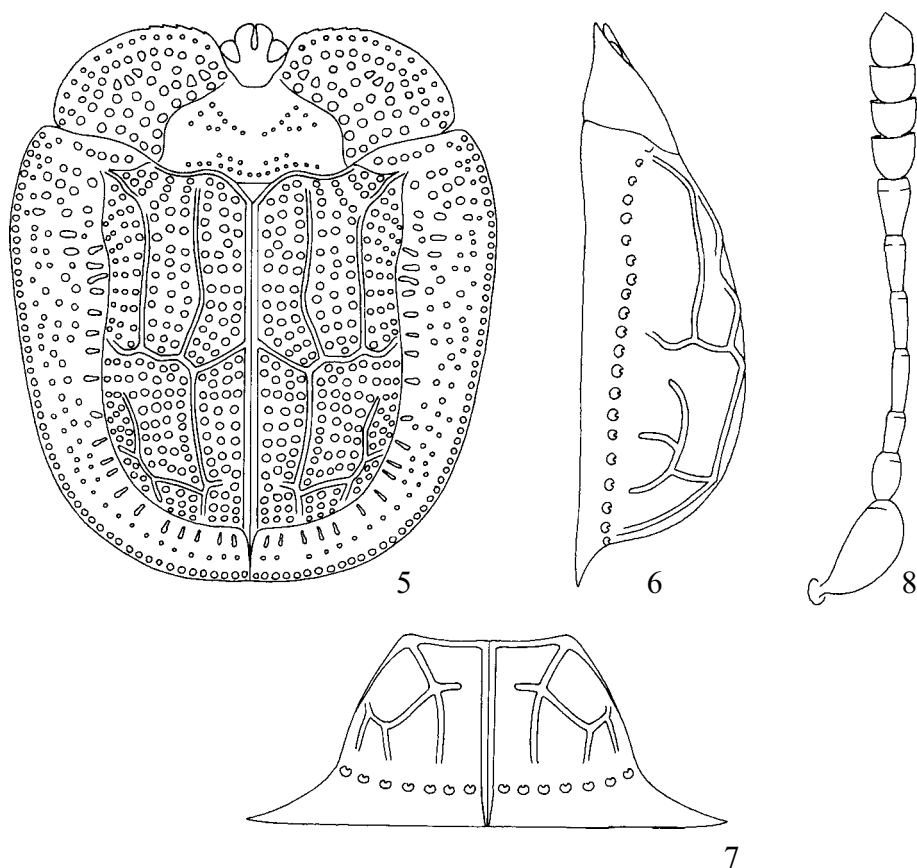
Base of elytra slightly wider than base of pronotum. Elytral disc with almost complete set of costae, with low tubercles (fig. 5). Dorsal costa complete, anterior branch slightly curved to suture, posterior branch between principal tubercle and apical tubercle runs slightly towards suture, beyond apical tubercle straight. Anterior and posterior branch of dorsal costa in principal tubercle converging in different points. Sutural branch of principal tubercle runs obliquely anterad, extending to suture. Lateral branch of principal tubercle complete extending to submarginal row (fig. 6). Apicosutural costa hardly marked, apicolateral costa complete. Costa ultima and costa terminalis distinct (fig. 7). Furca externa very long, no furca interna. Humeral costa distinct. Punctuation

between costae large, distance between punctures smaller than puncture diameter. Puncturation of explanate margin as coarse as on disc, disposed regularly, along border of disc with tendency to form transverse grooves, no impunctate "window".

Antennae slim with small 5-segmented club. Pedicle, c. 1.7 times longer than club. Second antennal segment elongate, c. 1.6 times longer than wide, segment 7 slimmer than remaining segments of club but wider than segments of pedicle, segment 8 as wide as long, segments 9 and 10 slightly wider than long (fig. 8).

TYPES

Holotype: "Philippines, Luzon, env. Manila, IV 1998" (preserved at the Department of Systematic Zoology and Zoogeography, Wrocław University, Wrocław, Poland).



5-8. *Notosacantha quadrimaculata*: 5 - dorsal view, 6 - lateral view, 7 - hind view, 8 - antenna

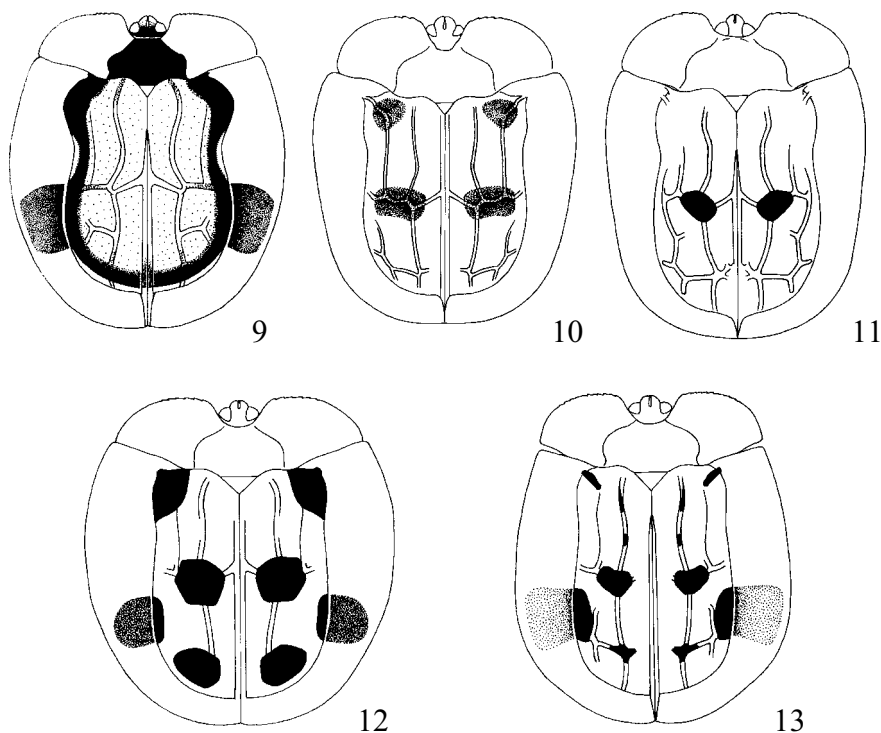
Notosacantha minutissima n. sp.

ETYMOLOGY

Named after its small size. It is the smallest species from the Philippine Islands.

DIAGNOSIS

It belongs to a group of species characterized by the presence of principal tubercle, dorsal costa, furca interna, anterior and posterior branch of dorsal costa in principal tubercle converging in different points, furca interna not parallel to dorsal costa and elytra with dark spots. The group comprises also *N. corpulenta* (SP.), *N. delicatula* (SP.) and *N. undulata* (WAG.). All are distinctly larger than *N. minutissima* (length above 5.3 mm, in *minutissima* below 5.0 mm). *N. delicatula* and *N. undulata* differ also in each elytron with two (*delicatula*) or three (*undulata*) dark spots. *N. corpulenta*, like *N. minutissima*, has only one spot on each elytron, but it is placed more laterally, on lateral branch of principal tubercle, while in *N. minutissima* the spot is placed at the top of principal tubercle.



9-13. Dorsal pattern: 9 - *Notosacantha rubripennis*, 10 - *N. quadrimaculata*, 11 - *N. minutissima*, 12 - *N. octomaculata*, 13 - *N. multimaculata*

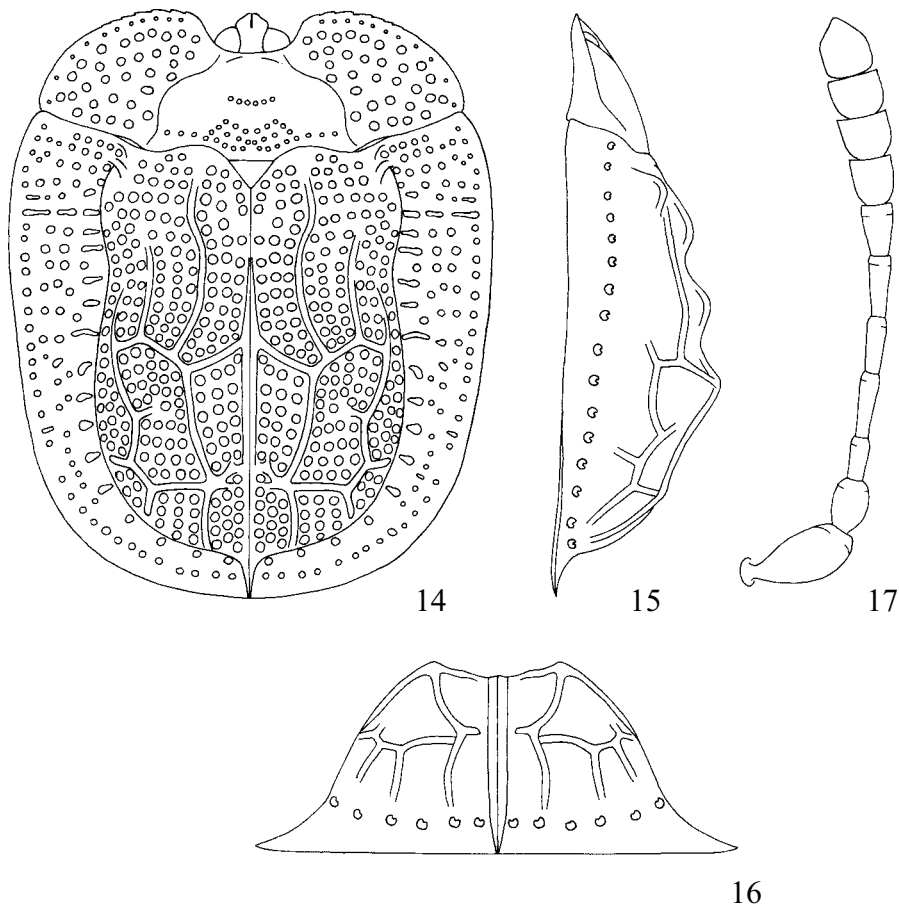
DESCRIPTION

Length: 4.3-4.7 mm, width: 3.5-3.8 mm, width of pronotum: 3.1-3.4 mm, length/width ratio: 1.23. Body short-oval, sides only slightly rounded (fig. 14).

Pronotum and scutellum yellow. Explanate margin of elytra yellow, disc yellow with small, round, brownish-black spot at principal tubercle (fig. 11). Ventries, head, legs and antennae yellow.

Head with short frontal plate, converging in triangle with deep apical cleft.

Pronotum broad, with maximum width at base. Disc before middle with oblique row of small punctures and along base also with row of punctures, and several additional punctures in prescutellar area. Explanate margin with large pores, disposed regularly.



14-17. *Notosacantha minutissima*: 14 - dorsal view, 15 - lateral view, 16 - hind view, 17 - antenna

Base of elytra as wide as base of pronotum. Elytral disc with almost complete set of costae with distinct basal, subbasal, principal and indistinct apical tubercles (fig. 14). Dorsal costa almost complete, broken between basal and subbasal tubercle, anterior branch slightly curved to suture, posterior branches from principal to apical tubercle converging posterad, beyond apical tubercle slightly arched externally. Anterior and posterior branch of dorsal costa in principal tubercle converging in different points. Sutural branch of principal tubercle runs obliquely anterad, extending to suture. Lateral branch of principal tubercle complete, extending to 8th row (fig. 15). Apicosutural costa incomplete, extending to first row. Apicolateral costa complete, costa ultima and terminalis distinct (fig. 16). Furca externa low or hardly marked but elongate, extending to lateral branch of principal tubercle, furca interna extremely short. Humeral costa distinct, in 3/5 distal length slightly curved outwards, on humerus short elevation. Punctuation between costae coarse, distance between punctures smaller than puncture diameter. Punctuation of explanate margin as large as on disc, disposed regularly, along border of disc with tendency to form transverse grooves, no impunctate "window".

Antennae slim with 5-segmented club. Pedicle c. 1.7 times longer than club. Second antennal segment elongate, c. 1.6 times longer than wide, segment 7 slimmer than remaining segments of club but wider than segments of pedicle, segment 8 as long as wide, segments 9 and 10 slightly wider than long (fig. 17).

Types

Holotype: "PHILIPPINES, Siargao Is., coast, IV 1998"; paratype: "PHILIPPINES, Bucas Grande Is., Socorro, IV 1998" (preserved at the Department of Systematic Zoology and Zoogeography, Wrocław University, Wrocław, Poland).

Notosacantha octomaculata n. sp.

ETYMOLOGY

Named after eight large spots on elytra.

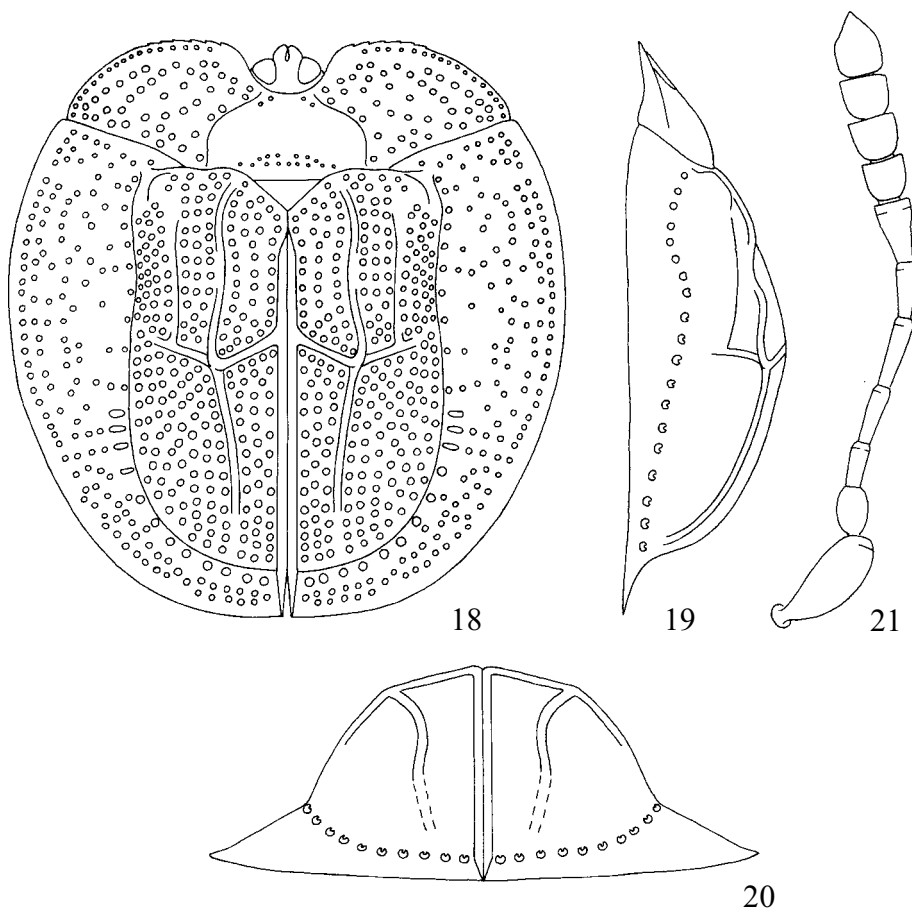
DIAGNOSIS

It is a unique species, the only one with having a principal tubercle, dorsal costa, anterior and posterior branch of dorsal costa in principal tubercle converging in the same point, and obsolete apical costa and furca interna. At first glance *N. sexnota* (WEISE) is the most similar, especially in the presence of dark elytral spots, but differs in the slope without spots (with large spot in *N. octomaculata*), and apical point of dorsal costa with very short but distinct sutural branch (no sutural branch in *N. octomaculata*). Other maculate species e.g. *N. undulata* (WAG.) and *N. delicatula* (SP.) differ in distinct apical costa.

DESCRIPTION

Length: 6.2-6.7 mm, width: 5.6-6.0 mm, width of pronotum: 4.4-4.8 mm, length/width ratio: 1.08-1.16. Body almost circular, sides regularly rounded (fig. 18).

Pronotum and scutellum yellow, sometimes pronotal disc in the middle with indistinct brown spot. Explanate margin of elytra yellow with brown posterolateral spot extending to 1/2-3/4 width of the margin. Elytral disc yellow, each elytron with four large, dark brown spots: at humerus, extending slightly to subhumeral part of explanate margin, at principal tubercle, on slope, extending to marginal row, and on side of disc close to base of posterolateral spot of explanate margin (fig. 12). Ventrites, head, legs and antennae yellow.



18-21. *Notosacantha octomaculata*: 18 - dorsal view, 19 - lateral view, 20 - hind view, 21 - antenna

Head with short frontal plate, converging in triangle with deep apical cleft.

Pronotum broad, with maximum width at base. Disc before middle with oblique impunctate furrow, and along base with row of small punctures. Explanate margin of pronotum with large pores, disposed regularly.

Base of elytra as wide as base of pronotum. Elytral disc with almost complete dorsal costa with very low basal and principal tubercles, without subbasal and apical tubercles (fig. 18). Anterior branch of dorsal costa broken in the middle, slightly curved to suture anteriorly, posterior branch runs slightly obliquely to suture. Anterior and posterior branch of dorsal costa in principal tubercle converging in the same point (in one specimen end of anterior branch is placed slightly more externally). Sutural branch of principal tubercle runs obliquely anterad, extending to suture. Lateral branch of principal tubercle complete extending to 7th row (fig. 19). No apicosutural and apicolateral costa, or a hardly marked elevation in apicolateral area (fig. 20). Humeral costa hardly marked. Punctuation between costae moderate, but dense. Distance between punctures as long as or slightly shorter than puncture diameter. Punctuation of explanate margin as coarse as on disc, only in inner half of margin, especially in posterolateral part, punctuation coarser than that of disc and with a tendency to form transverse grooves, the largest on posterolateral spot. Slightly before middle of inner half of explanate margin a small impunctate "window".

Antennae slim with 5-segmented club. Pedicle c. 1.5 times longer than club. Second antennal segment elongate, c. 1.4 times longer than wide, segment 8 as wide as long, segments 9 and 10 slightly wider than long (fig. 21).

TYPES

Holotype: [Philippines] "E slope Mt. McKinley, Davao Province, Mindanao, IX:46" "CNHM Philippine Zool. Exped. (1946-47), H. HOOGSTRAAL & F.G. WERNER leg." "Elevation 3500 ft."; two paratypes: the same data; paratype: the same data but elevation 3100 ft.; paratype: the same data but date VIII:29:46 + "second growth forest"; paratype: "P.I., Mindanao, Zamboanga d. Norte Masawan, 1250-1400 m, 15.VII.1958" "H.E. MILLIRON Collector" (holotype preserved at the Bishop Museum, Honolulu, USA; paratypes at the Bishop Museum, Honolulu, USA and at the Department of Systematic Zoology and Zoogeography, Wrocław University, Wrocław, Poland).

Notosacantha multimaculata n. sp.

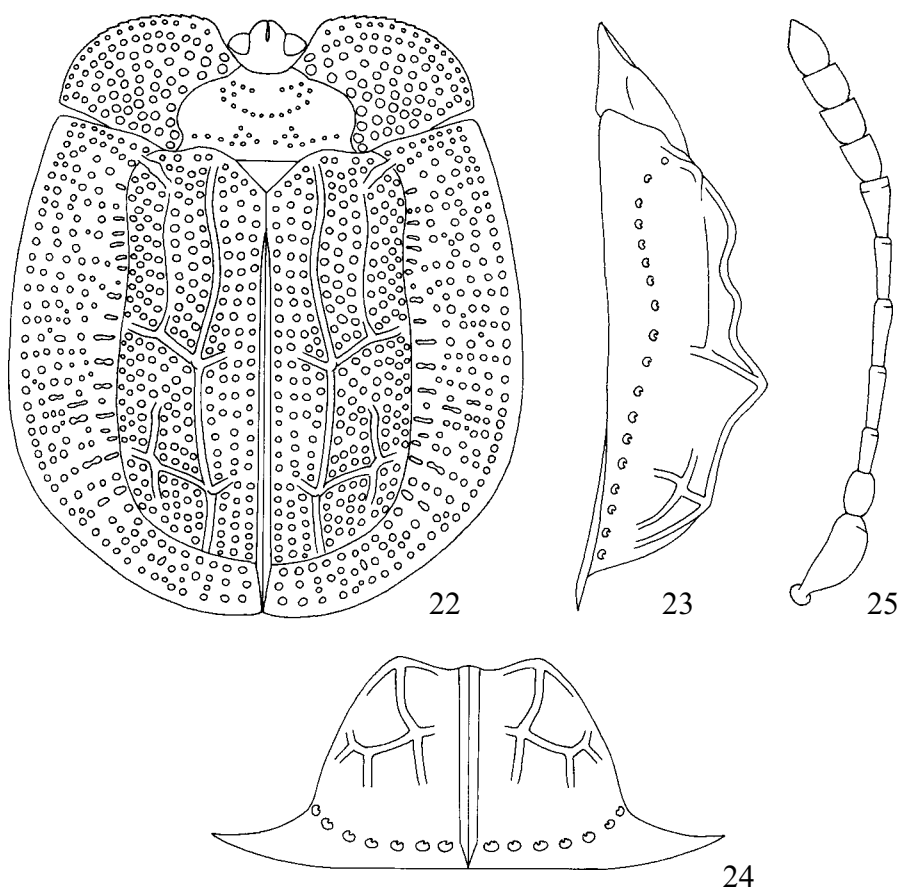
ETYMOLOGY

Named after its maculate elytra.

DIAGNOSIS

It belongs to a group of species characterized by the presence of principal tubercle, dorsal costa, furca interna, anterior and posterior branch of dorsal costa

in principal tubercle converging in the same point, the presence of apical costa, humeral costa at humeral callus curved outwards, and explanate margin of elytra without humeral spot. The group comprises also *N. surigaoensis* (Sp.), *N. bipunctata* (Sp.), *N. demutata* (Sp.), *N. butuana* (Sp.) and *N. taeniata* (F.). *N. surigaoensis* differs in elytral tubercles very small, reduced to costae (distinct in *N. multimaculata*), and a smaller size (length below 5.5 mm, in *multimaculata* above 6.0 mm). *N. demutata* and *N. butuana* differ in immaculate elytra and length below 6 mm (maculate elytra and size above 6 mm in *N. multimaculata*). *N. taeniata* has usually a more or less distinct posterolateral spot of explanate margin but differs in tubercles without dark brown or black spots (maculate in *N. multimaculata*), longer and sharper sutural branch of apical tubercle and furca interna, stouter club of antennae, and length below 6 mm. *N. bipunctata* has a



22-25. *Notosacantha multimaculata*: 22 - dorsal view, 23 - lateral view, 24 - hind view, 25 - antenna

black spot close to principal tubercle but differs in explanate margin without spots (with posterolateral spot in *N. multimaculata*), size below 6 mm, and body widest in posthumeral part (in posterior 1/3 in *N. multimaculata*).

DESCRIPTION

Length: 6.0-6.8 mm, width: 5.4-6.1 mm, width of pronotum: 4.2-4.8 mm, length/width ratio: 1.06-1.14. Body oval the widest in 2/3 length (fig. 22).

Explanate margin of pronotum pale yellow, disc of pronotum slightly darker, yellow. Scutellum yellow, disc of elytra yellow, each elytron with six black or brown spots: small at humeral, basal, subbasal and apical tubercles, and large at principal tubercle and on side of disc close to base of posterolateral spot of explanate margin (fig. 13). Sometimes spot on subbasal tubercle absent. Explanate margin pale yellow with reddish or reddish-brown posterolateral spot extending to 2/3-3/4 width of the margin. Ventrites, head, legs and antennae yellowish.

Head with short frontal plate, converging in triangle with deep apical cleft.

Pronotum broad with maximum width at base. Disc before base with rows of small punctures. Explanate margin with large pores, disposed regularly.

Base of elytra as wide as or slightly wider than base of pronotum. Elytral discs with almost complete set of costae with distinct basal, subbasal, principal and apical tubercles (fig. 22). Dorsal costa complete, anterior branch slightly curved to suture, between basal and subbasal tubercle lower than between subbasal and principal tubercle, posterior branch between principal tubercle and apical tubercle slightly arched externally, beyond apical tubercle runs straight. Anterior and posterior branch of dorsal costa in principal tubercle converging at the same point. Sutural branch of principal tubercle incomplete, runs obliquely anterad to suture extending to first row. Lateral branch of principal tubercle complete, extending to 8th row (fig. 23). Apicosutural costa incomplete, runs obliquely anterad to suture extending to second row. Apicolateral costa complete, costa ultima and terminalis distinct (fig. 24). Furca interna distinct only in basal half length, not extending to lateral branch of principal tubercle, runs slightly outwards of principal point. Humeral costa distinctly lower than dorsal, but usually visible on whole length, in some specimens in the middle quite sharp and distinct.

Punctuation between costae moderate, distance between punctures as long as puncture diameter. Punctuation of explanate margin as coarse as on disc, disposed regularly, along border of disc with tendency to form transverse grooves, no inpunctate "window".

Antennae slim with 5-segmented club. Pedicle c. 1.6 times longer than club. Second antennal segment elongate, c. 1.5 times longer than wide, segment 8 slightly longer than wide, segments 9 and 10 slightly wider than long (fig. 25).

TYPES

Holotype: "PHILIPPINES, Camarines Sur: Mt. Isarog, 20 km E. of Naga, 500-600 m, 9.IV.1963" "H.M. TORREVILLAS, Light Trap, Bishop"; two paratypes:

the same data; paratype: the same data but elevation 3100 ft.; paratype: the same data but date 23.IV.1963 and elevation 1000-1500 m; paratype: "PHILIPPINES, Naga City, BGY, Panicuason, March 1992, D. GENERAL" (holotype preserved at the Bishop Museum, Honolulu, USA; paratypes at the Bishop Museum, Honolulu, USA and at the Department of Systematic Zoology and Zoogeography, Wrocław University, Wrocław, Poland).

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REFERENCES

- BOROWIEC, L., 1999. A world catalogue of the *Cassidinae* (Coleoptera: *Chrysomelidae*). Biologica Silesiae, Wrocław, 476 pp.
- BOROWIEC, L., ŚWIĘTOJAŃSKA, J., 1999. A new species of *Notosacantha* CHEVROLAT from Sabah, Malaysia (Coleoptera: *Chrysomelidae*: *Cassidinae*). Serangga, **4**: 185-188.
- SPAETH, F., 1931 a. Neue Beiträge zur Kenntnis der afrikanischen Cassidinen. (Col. *Chrys.*). Rev. Zool. Bot. Afr., **21**: 100-112.
- , 1931 b. Bestimmungstabelle der *Hoplionota*-Arten (Col. *Chrysom.*) von Madagascar und Nachbarinseln. I. Teil. Wien. Entomol. Ztg., **48**: 150-174.
- , 1932. Bestimmungstabelle der *Hoplionota*-Arten (Col. *Chrysom.*) von Madagascar und Nachbarinseln. II. Teil. Wien. Entomol. Ztg., **49**: 1-15.
- , 1933 a. Die *Hoplionota*-Arten von den Philippinen-Inseln (Coleoptera; *Chrysomelidae*). Philipp. Journ. Scien., **50**: 311-323.
- , 1933 b. Bestimmungstabelle der *Hoplionota*-Arten (Col. *Chrys. Cass.*) von Australien, Asien und den dazugehörigen Inseln. Wien. Entomol. Ztg., **50**: 117-141.
- ŚWIĘTOJAŃSKA, J., BOROWIEC, L., 1999. Two new species of *Notosacantha* CHEVROLAT from the Oriental region (Coleoptera: *Chrysomelidae*: *Cassidinae*). Genus, **10**: 421-426.