

CONTRIBUTION TO THE KNOWLEDGE OF GENUS *NOTODOMA* LACORDAIRE (COLEOPTERA: HISTERIDAE)

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ABSTRACT

Contribution to the knowledge of the genus *Notodoma* Lacordaire (Coleoptera: Histeridae).

Notodoma bullatum Marseul, 1870 is transferred to the genus *Epitoxus* Lewis, 1900 and *Notodoma nigrum* Lewis, 1902 is transferred to the genus *Epitoxasia* Cooman, 1932. *N. saturum* Lewis, 1902, *N. orientale* Lewis, 1903 and *N. formosarum* Bickhardt, 1912 are proposed as synonyms of *N. fungorum* Lewis, 1884. The lectotype and paralectotypes are designated for *N. lewisi* Reitter, 1910, *N. formosarum* Bickhardt, 1912, *N. fungorum* Lewis, 1884, *N. orientale* Lewis, 1903, *N. saturum* Lewis, 1902 and *N. rufulum* Lewis, 1892. All the species are redescribed. The key to species is also included

Key words: Coleoptera, Histeridae, *Notodoma*, *Epitoxasia*, *Epitoxus*, taxonomy, Asia.

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RESUMEN

Los últimos años hemos venido realizando un amplio estudio de los *Epitoxus* afrotropicales y asiáticos. Al revisar el material típico ubicado en los diferentes Museos, hemos coincidido en hallar especies que estaban erróneamente situadas entre los géneros *Epitoxus*, *Notodoma* y *Epitoxasia*. Por este motivo decidimos llevar a cabo el presente estudio del género *Notodoma* que también afecta a algunas especies de los otros géneros mencionados. El género *Notodoma* habita entre los hongos de la madera de los bosques húmedos de la región Oriental (Borneo, Malasia, Birmania, Vietnam) y Paleártica (Taiwán, Japón, China, Corea y Líbano), alimentándose de las larvas de los insectos que se encuentran en este ambiente.

Notodoma bullatum Marseul, 1870 es transferida al género *Epitoxus* Lewis, 1900 y *Notodoma nigrum* Lewis, 1902 es también transferida al género *Epitoxasia* Cooman, 1932. Las especies *N. saturum* Lewis, 1902, *N. orientale* Lewis, 1903 y *N. formosarum* Bickhardt, 1912 son propuestas como sinonimias de *N. fungorum* Lewis, 1884. Son designados el lectotipo y paralectotipos de *N. lewisi* Reitter, 1910, *N. formosarum* Bickhardt, 1912, *N. fungorum* Lewis, 1884, *N. orientale* Lewis, 1903, *N. saturum* Lewis, 1902 y *N. rufulum* Lewis, 1892.

También se acompaña de la redescipción de todas las especies de *Notodoma*, debido a que las descripciones originales son muy incompletas y se incluyen claves de determinación.

INTRODUCTION

When we were studying the Asian *Epitoxus* Lewis, 1900, by chance we studied some specimens of *Notodoma* Lacordaire, 1854. We verified that both genera had been confused.

Therefore we thought to study all the *Notodoma* hoping to find some *Epitoxus* formerly described as *Notodoma*. In fact, we also discovered confusion with the genus *Epitoxasia* Cooman, 1932.

In this work we attempt to clarify the genus *Notodoma* which contain several confused species, both at the generic and specific levels.

The maximum length of body is measured excluding head, propygidium and pygidium. The maximum width is measured between both elytral bases in the humeral areas. The complete original data of labels are included for each species (separated off by oblique strokes /.../). The labels of O.N. Kabakov (ZIN) were written in Russian.

Abbreviations

BSU: Zoological Museum, Belarussian State University, Minsk, Belarus.

DEI: Deutsches Entomologisches Institut, Eberswalde, Germany.

FIMK: Forschungsinstitut und Zoologische Museum A. König, Bonn, Germany.

MNHN: Muséum National d'Histoire Naturelle, Paris, France.

MTMA: Magyar Természettudományi Múzeum Allatára, Budapest, Hungary.

NHML: Natural History Museum, London, United Kingdom.

NMHUB: Naturkunde Museum der Humboldt-Universität, Berlin, Germany.

TY: Tomás Yélamos collection, Barcelona, Catalonia, Spain.

ZIN: Zoological Institute, Russian Science Academy, St. Petersburg, Russia.

Epitoxus bullatus (Marseul, 1870) new combination

Notodoma bullatum Marseul, 1870: 108.

There is no doubt that this species belongs to the genus *Epitoxus* Lewis, 1900 mainly due to the morphology of the male genitalia (very different between both genera). This species will be included in another paper dealing with Asian *Epitoxus* (YÉLAMOS & TISHECKIN, in press).

Epitoxasia nigra (Lewis, 1902) new combination

Notodoma nigrum Lewis, 1902: 268.

After the study of the male holotype of *Notodoma nigrum* Lewis, 1902 it was verified that this species had been erroneously included in the genus *Notodoma*. This species should be transferred to the genus *Epitoxasia* Cooman, 1932. This genus is well distinguished by having a deep transverse and crenulate stria, parallel to the anterior margin of the pronotum. The remaining generic characteristics are similar to those of *Epitoxus* and *Notodoma*.

The morphology of mesosternum, metasternum, legs and aedeagus relate both genera *Epitoxasia* and *Notodoma*. On the contrary they clearly differ by the colour of the body and the morphology of head, pronotum and elytra.

Lewis (1902) described *Notodoma nigrum* (a single specimen, in NHML) from Palembang (Sumatra) stating his surprise by its dark colour, strong frontal stria and short tarsi.

Epitoxasia was described by Cooman (1932) for seven specimens from Hoabinh (Viet Nam) belonging to the species *E. nitens*. The present *E. nigra* (Lewis, 1902) seems to be closely related to *E. nitens*, differing mainly by the 5th dorsal stria almost complete, pronotal margins widely bisinuate and postocular impression of pronotum not reaching middle.

Genus *Notodoma* Lacordaire, 1854

Notodoma Lacordaire, 1854: 266.

Type species: *Notodoma globatum* Lacordaire, 1854: 266. Designation by monotypy.

Genus *Notodoma* was widely described by Marseul (1855). Lacordaire knew Marseul's work before its publication. As a consequence of that Lacordaire included in his work the genera and species of Marseul, but Lacordaire's work issued in 1854 and that of Marseul in 1855. So, the genus *Notodoma* should be considered as described for the first time by Lacordaire. This author did not describe species, but he wrote «Genre établi sur une petite espèce (*globatum*

Mars.) du Bengale, ayant le facies d'un HETAERIUS». This implies that this one is the type species designated by monotypy, being a combined description of the species (ICZN, Art. 12, b, 6). *Notodoma globatum* should be also considered as described by Lacordaire.

Colour usually reddish brown, with two yellow maculae on elytral base, near humeri, and between 2th and 4th striae; body wide oval, convex. Head long and narrow; frontal stria either obsolete on middle or strongly curved backwards. Pronotum with marginal stria complete. Elytra with 1st, 2nd, 4rd and sutural striae crenulate and complete; 3rd stria very reduced; outer subhumeral stria long, joined through the apical stria to the sutural stria; marginal stria complete; epipleurae usually unistriate. Propygidium very long and convex. Prosternal lobe prominent; inner prosternal striae distinct, sometimes joined together on apex; prosternal keel with base emarginate. Mesosternum with marginal stria complete or variably reduced, even lacking; lateral stria crenulate, normally complete. Meso-metasternal suture deeply impressed, crenulate; lateral metasternal stria without outer portion, reaching metacoxae; metasternal disc with two crenulate median striae going obliquely from metacoxae up to middle of longitudinal suture. First abdominal sternite with two post-metacoxal striae. Legs slender; protibiae with 9-10 teeth. Male eighth abdominal segment tubular, sclerotized, apically narrowed and setose; ninth tergite and spiculum gastrale weakly sclerotized; aedeagus with basal piece short; parameres subparallel up to the gonopore, then narrowed and setose, with apex ventrally hook-shaped.

They usually live in fungi, mainly on trees, in wet forests and rainforests, feeding on insect larvae living in the early stages of rotting fungi. They inhabit the Oriental (Borneo, Malaysia, Burma, Vietnam) and Palearctic (Taiwan, Japan, China, Korea and Lebanon) regions. Their occurrence in the Near East area, far away from the Far East is very surprising.

Key to species of *Notodoma*

- 1 Mesosternum without marginal stria 2
- Mesosternum with marginal stria 3
- 2 Meso-metasternal suture impressed, without a parallel crenulate stria; metasternum very long (longer than half of width between metacoxae) *N. solstitiale*
- Meso-metasternal suture not impressed, with a parallel crenulate stria; metasternum shorter (its length similar or lesser than half of width between metacoxae) *N. rufulum*
- 3 Metasternal disc without median stria, only with several aligned punctures with a fine and short stria opposite to metacoxae, not converging on the longitudinal suture
- Metasternal disc with a distinct, complete and crenulate median stria, converging on the longitudinal suture 4
- 4 Mesosternum with lateral stria interrupted at middle and marginal stria complete; third elytral stria composed by several distinct crenulate remnants *N. globatum*
- Mesosternum with lateral stria complete and marginal stria interrupted on middle; third elytral stria lacking or with shallow impressions 5
- 5 Elytral apex rugose and strigate; elytral surface deeply and densely punctured; sides of elytra with a marginal and two epipleural striae complete *N. strigosulum*
- Elytral apex neither rugose nor strigate; elytral surface finely and sparsely punctured; sides of elytra with a marginal and an epipleural striae complete *N. fungorum*

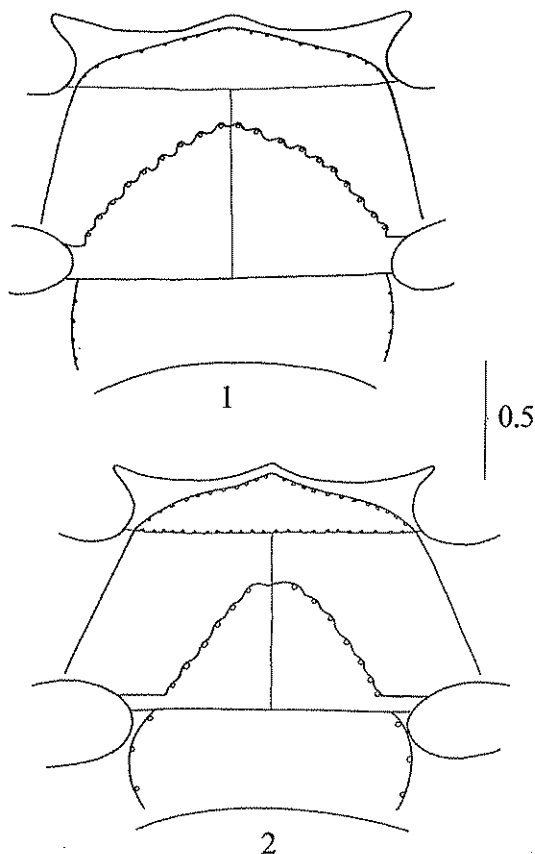
Notodoma solstitiale Lewis, 1892 Fig. 1

Notodoma solstitiale Lewis, 1892: 348.

Redescription

Colour light brown, reddish, with several yellowish areas; body wide oval, rather convex.

Head narrow; mandibles long and narrow, smooth; labrum convex and rounded in front;



Figures 1-2. Discs of mesosternum, metasternum and first abdominal sternite: *Notodoma solstitiale* (1) and *N. rufulum* (2). Scale in mm.

epistoma sparsely punctured; frontal stria distinct in front, with punctures, directed backward on middle, shortly interrupted; surface coarsely and sparsely punctured; antennal scape very long and recurved; antennal club very long, elongate oval; eyes very large.

Pronotum with marginal stria complete; sides bisinuate; surface regularly covered with large punctures; separation among punctures like 2-3 diameters; antescutellar area slightly impressed. Elytra smooth, only with several sparse punctules; 1st, 2nd, 4th and sutural striae complete and crenulate; fourth and sutural striae joined in arch; third stria lacking; outer subhumeral stria crenulate and reaching humeri, apically continued by the apical stria, also joined to the dorsal striae; marginal and epipleural striae complete and crenulate; epipleurae smooth.

Propygidium very long and convex, with fine and sparse puncturation. Pygidium more finely punctured.

Prosternum with lobe prominent and sparsely punctured; prosternal keel with two inner striae, distinct, crenulate, not joined apically; surface between the two striae slightly convex, finely and sparsely punctured; outer prosternal striae cariniform. Mesosternum convex, finely and sparsely punctured; lateral stria complete and densely crenulate, continued by the lateral metasternal stria, reaching metacoxae; meso-metasternal suture fine, distinct, impunctate,

without a parallel stria. Metasternum very long; metasternal disc convex, finely and sparsely punctured; longitudinal suture shallow; median stria oblique, arcuate, complete, crenulate, converging on middle; metasternal sides foveate.

First abdominal sternite convex, finely and sparsely punctured; post-metacoxal striae distinct, arcuate and incomplete.

Legs slender; protibiae with 8 teeth.

Male genitalia unknown.

Maximum length: 1.8 mm

Maximum width: 1.9 mm

Diagnosis

Clearly related to *N. rufulum*. These species may be distinguished by the structure of meso-metasternal suture and the length of metasternum (see key to species).

Type material

There is only one specimen, labelled «Type» (as mentioned in Lewis' description).

Holotype, ♀ labelled /*Notodoma solstitialis* Lewis, type/, /Type/, /Perak Mts./, /Doherty/, /Fry Coll. 1905-100/ [NHML].

Comments

It is only known from the type locality, Perak Mts (South Malaya, Malaysia).

Notodoma rufulum Lewis, 1892 Figs. 2 - 3

Notodoma rufulum Lewis, 1892: 349.

Redescription

Colour light brown, reddish, with two basal maculae on elytral base; body wide oval, rather convex.

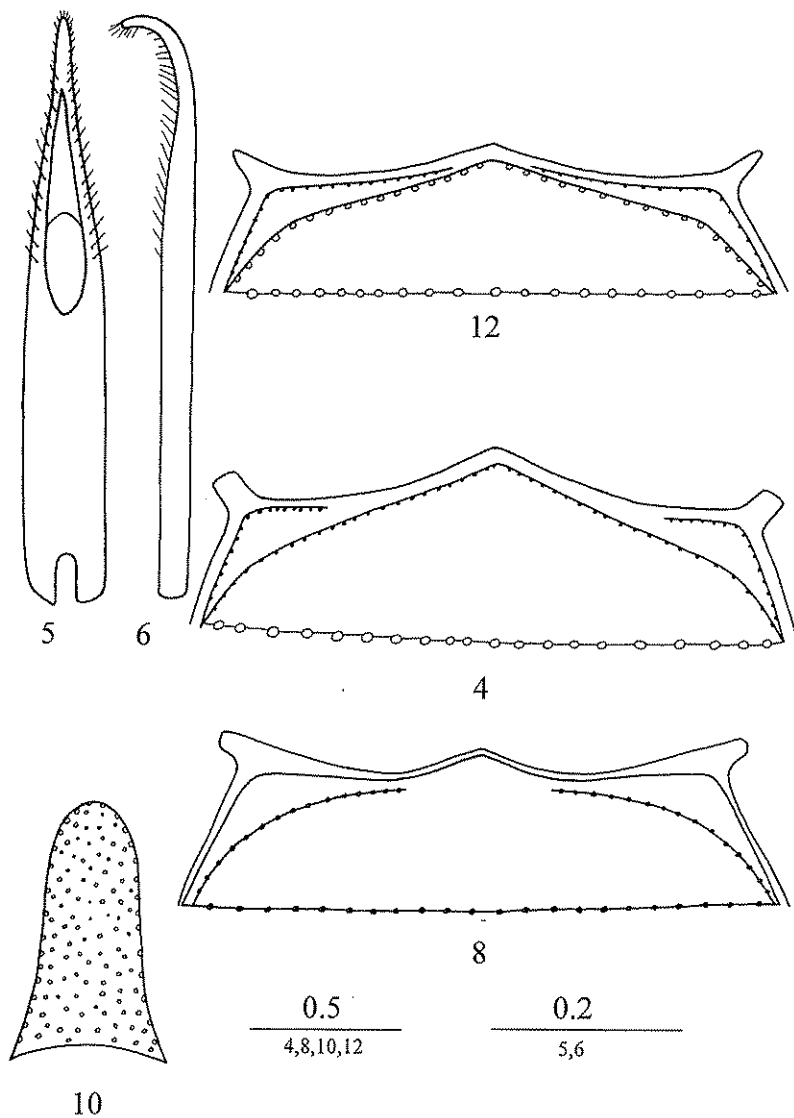
Head short and wide; mandibles long and narrow, smooth; labrum convex and rounded in front; epistoma sparsely punctured; frontal stria distinct in front, directed backward on middle, shortly interrupted; surface coarsely and sparsely punctured (fig. 3); antennal scape very long and recurved; antennal club very long, elongate oval; eyes very large.

Pronotum with marginal stria complete; sides bisinuate; surface regularly covered with large punctures; separation among punctures like 2-3 diameters; shallow antescutellar impression. Elytra smooth, only with several sparse punctures; 1st, 2nd, 4th and sutural striae complete and crenulate; fourth and sutural striae joined in an arch; third stria lacking or with shallow and short impressions; outer subhumeral stria crenulate and reaching humeri, apically continued by the apical stria, also joined to the dorsal striae; marginal and epipleural striae complete and crenulate; epipleurae smooth.

Propygidium very long and convex, with fine and sparse punctation. Pygidium with similar punctation.

Prosternum with lobe prominent and sparsely punctured; prosternal keel with two inner striae, distinct, crenulate and sometimes diverging basally (several specimens show both striae joined apically), surface between the two striae flat, finely and sparsely punctured; outer prosternal striae cariniform. Mesosternum convex, finely and sparsely punctured; lateral stria complete and densely crenulate, continued by the lateral metasternal stria, reaching metacoxae; meso-metasternal suture with a fine crenulate stria. Metasternal disc convex, variably punctured; longitudinal suture shallow; median stria oblique, slightly arcuate, complete, crenulate, converging on middle (several specimens show the surface between median and lateral metasternal striae covered with large and dense punctures); metasternal sides foveate.

First abdominal sternite convex, variably punctured; post-metacoxal striae distinct, arcuate and incomplete.



Figures 4, 5, 6, 8, 10 and 12. Mesosternal disc: *Notodoma lewisi* (4) *N. globatum* (8) and *N. strigosulum* (12). Parameres of *N. lewisi*: ventral view (5) and lateral view (6). Prosternal keel of *N. strigosulum* (10). Scales in mm.

Legs slender; protibiae with eight fine teeth.
 Male genitalia with the common morphology.
 Maximum length: 1.8 - 2.0 mm
 Maximum width: 1.5 - 1.7 mm

Diagnosis

It is related to *N. solstitiale*. The differences between the two species are mainly based on the morphology of the meso-metasternal suture and its stria, as well as the length of metasternum (see keys).

Type material

There is one specimen, labelled «Type» and another «Cotype» (not in the original publication). The lectotype and one paralectotype are now designated.

Lectotype, ♀ labelled /Co-type/, /*Notodoma rufulum* Co-type. Lewis/, /Martapura SE Borneo Doherty 1891/, /G.Lewis Coll. B.M. 1926-369/ [NHML].

Paralectotype, ♀ with the third and fourth same labels, as well as the two following labels /Type/, /*Notodoma rufulum* Type. Lewis/ [NHML].

Other material examined

MTMA, six specimens labelled /INDONESIA. Kalimantan Barat, Gunung Palung Nat. Park., Cabang Panti research site, 1°13' S, 110°7' E/, /lowland rainforest from bracket fungi No.10. 18-26.VII.1993 O. Merkl/.

NHML, ♀ labelled /*Notodoma rufulum* Lewis/, /SE Borneo Doherty 1892/, /G.Lewis Coll. B.M. 1926-369/.

NMHUB, one specimen labelled /SE Borneo, Doherty, 1892/.

Comments

The specimens from Kalimantan Barat have the surface more coarsely and densely punctured, moreover with slightly different morphology of the inner prosternal striae and the median metasternal striae. We think that these differences are not significant to describe them as a new species.

It is only known from Borneo.

Notodoma lewisi Reitter, 1910 Figs. 4 - 6

Notodoma lewisi Reitter, 1910: 164.

Redescription

Colour reddish brown, with two yellowish maculae on elytral base; body wide oval, slightly depressed.

Head narrow; mandibles long and finely punctured; labrum convex, finely punctured and weakly bisinuate; epistoma deeply and densely punctured; frons with stria somewhat effaced on middle; surface covered with coarse, deep and dense punctures; antennal scape long, recurved and enlarged; antennal club very long; eyes large.

Pronotum with a complete marginal stria; anterior angles very directed downward; sides clearly bisinuate; punctures very large, deep and very dense. Elytra similarly punctured as pronotum, smaller and sparser on base; 1st, 2nd, 4th and sutural striae complete and crenulate; 4th and sutural striae not joined in arch; 3rd stria as a short medial impression; 5th stria only formed by a basal arch, and a short basal impression; outer subhumeral stria reaching humeri, joined through the apical stria to the sutural stria; marginal and epipleural striae cariniform, crenulate and complete.

Propygidium very long and convex; propygidium and pygidium with puncturation similar to pronotum.

Pronotal lobe wide and prominent, densely punctured; prosternal keel short, with inner striae wide, crenulate and sinuose; surface between both inner striae flat, coarsely and densely punctured; outer prosternal striae short and cariniform. Mesosternum convex, sparsely punctured, superficially fitted to prosternum; marginal stria only distinct on anterior angles; lateral stria complete, crenulate, clearly directed in front on middle. Meso-metasternal suture crenulate (fig. 4), continued by the lateral metasternal stria, also crenulate and reaching metacoxae; metasternal disc convex, coarsely

and densely punctured, with several punctures obliquely aligned opposite to metacoxae, joined among them by a very fine and short stria; sides foveate.

First abdominal sternite covered with very large and very dense punctures; post-metacoxal striae incomplete.

Legs long and slightly expanded; protibiae with 10 large teeth.

Male genitalia with the usual morphology of the genus (figs. 5 - 6).

Maximum length: 3.5 - 3.7 mm

Maximum width: 3.1 - 3.3 mm

Diagnosis

It may be readily distinguished by lacking the median stria on metasternal disc.

Type material

The holotype and paratypes were not designated in the description. The lectotype and paralectotypes are here designated.

Lectotype, ♂ labelled /Holotypus *Notodoma Lewisi* Reitter 1910/, /Akbes Berchmanns/, /Syrien Reitter/, /Coll. Reitter/, /*Notodoma Lewisi* m. 1910 Akbes Syrien/ [MTMA].

Paralectotypes, 3 exx., 1 ♂ and 1 ♀ labelled as the holotype, but with *Paratypus* instead of *Holotypus* [MTMA]; another specimen labelled /Syria, Reitter/, /*Cotypus*, *Notodoma Lewisi* Reitter, coll. Reitter/ [ZIN].

Comments

Only known from the type locality in the mountainous areas of Lebanon.

Notodoma globatum Lacordaire, 1854 Figs. 7 - 8

Notodoma globatum Lacordaire, 1854: 266.

Redescription

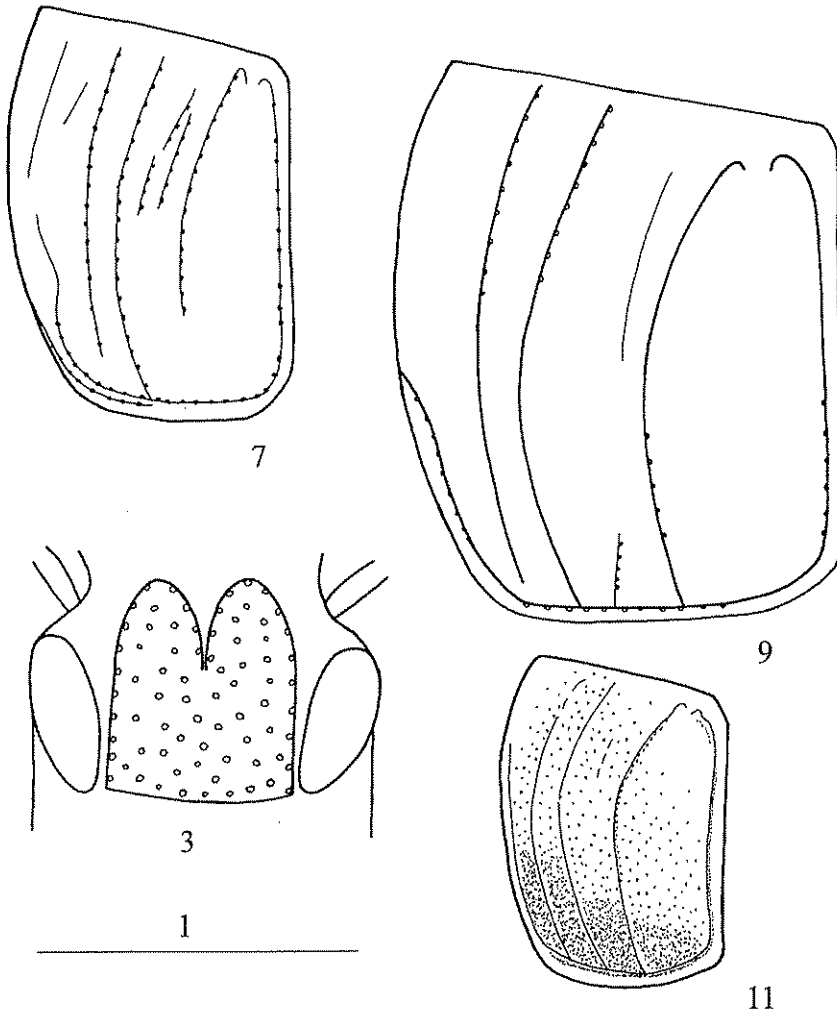
Colour reddish brown, with two yellow maculae on the base of each elytron, more distinct on middle; body wide oval, rather convex.

Head long and narrow; mandibles long and rounded; labrum long and narrow; epistoma wide and long, slightly depressed, covered with large and dense punctures; frons weakly produced near antennal base; surface slightly depressed, covered with large and dense puncturation; frontal stria only reaching antennal base; antennal scape very long, enlarged, recurved and setose; antennal club very large, elongate oval; eyes very large.

Pronotum very narrowed in front; marginal stria distinct; anterior angles directed downward; sides with a shallow impression parallel to margins, deeper on anterior third; surface regularly covered with large and dense punctures, larger on sides and denser on disc; shallow elongate antescutellar impression. Elytral striae wide and crenulate; first stria only shortened on apex; second stria complete; third stria only with some short medial traits; fourth stria not reaching the apical stria, with a deep basal impression, almost joined to the sutural stria; sutural stria complete, continued with the apical stria; outer subhumeral stria fine, not crenulate, interrupted on several traits, deep on apex, joined to the apical stria; marginal stria fine, crenulate, joined to the apical (fig. 7); epipleurae with a crenulate and complete stria, joined to the apical, as well as other shallow and fine stria; base almost smooth, with puncturation larger and denser towards apex.

Propygidium convex, very long; propygidium and pygidium covered with deep, large and dense punctures, like apex of elytra.

Prosternum with lobe wide and prominent, densely punctured, with complete marginal stria; keel short and wide, very convex, covered with deep and dense punctures; inner striae approaching gradually toward apex, very fine; outer striae short. Mesosternum short, convex, finely and sparsely punctured, superficially fitted to the prosternum; marginal stria complete; lateral stria interrupted on middle, crenulate and arcuate, continued by the lateral



Figures 3, 7, 9 and 11. Head of *Notodoma rufulum* in dorsal view (3). Left elytra: *N. globatum* (7), *N. fungorum* (9) and *N. strigosulum* (11). Scale in mm.

metasternal stria. Meso-metasternal suture with a deep and crenulate stria (fig. 8); lateral metasternal stria deep and crenulate, reaching metacoxae, without outer part; longitudinal suture distinct; disc sparsely punctured; sides foveate; median stria deep, crenulate, going from metacoxae up to middle of longitudinal suture.

First abdominal sternite with disc very convex, covered with large and dense puncturation; post-metacoxal striae crenulate and complete.

Legs slender; protibiae with deep tarsal grooves, and nine long teeth; tarsi long, reaching basal third of tibiae; meso- and metatibiae spinose.

Male unknown.

Maximum length: 2.6 mm

Maximum width: 2.4 mm

Diagnosis

This species is related to *N. strigosulum* and *N. fungorum*, but the lateral stria of mesosternum is interrupted in the middle and the marginal stria complete.

Type material

There is a single specimen.

Holotype, ♀ labelled /*Notodoma globatum* M., Ind. No., 63/, /MUSEUM PARIS COLL. DE MARSEUL 1890/, /TYPE/ [MNHN].

Comments

It lives in the Indian Peninsula. The original description only indicated «Indoustan».

Notodoma fungorum Lewis, 1884 Fig. 9

Notodoma fungorum Lewis, 1884: 136.

Notodoma saturum Lewis, 1902: 267 (**new synonym**)

Notodoma orientale Lewis, 1903: 425 (**new synonym**)

Notodoma formosarum Bickhardt, 1912: 126 (**new synonym**)

Redescription

Colour reddish brown, with elytra lighter, having two yellow maculae on the elytral base; body wide oval, rather convex.

Head long and narrow; mandibles strong and finely punctured; labrum long, convex, rounded in front and finely punctured; epistoma long, deeply and densely punctured; frontal stria distinct or lacking on middle, composed of abundant punctures; surface covered with large, deep and dense punctures; antennal scape long and recurved, weakly enlarged and setose; antennal club elongate oval and large; eyes very large.

Pronotum with complete marginal stria; sides sinuose, medially produced on sides; surface covered with very large, deep and dense punctures. Elytra with the first, second, fourth and sutural striae crenulate and complete; fourth and sutural striae sometimes joined at base; apical stria crenulate, joining the sutural and the outer subhumeral striae; outer subhumeral stria sometimes reaching humeri (fig. 9); marginal and epipleural striae cariniform, crenulate and complete; close to the marginal stria there is another finer and incomplete stria; surface covered with fine and sparse punctures, larger on apical half.

Propygidium very long; propygidium and pygidium covered with similar puncturation like pronotum, somewhat smaller on apical parts.

Prosternum with lobe very prominent, densely punctured; prosternal keel with two inner striae sinuose and crenulate, not joined apically; surface between the two striae flat, punctured as on lobe; outer prosternal striae short and cariniform. Mesosternum superficially fitted to prosternum; disc convex and finely punctured; marginal stria crenulate, complete or shortly interrupted on middle; lateral stria wide, crenulate and complete; meso-metasternal suture wide, deep and crenulate, continued by the lateral metasternal stria, crenulate, reaching metacoxae; meso-metasternal suture with a fine stria and large punctures. Median striae oblique, straight, with large punctures, converging on middle; disc covered with dense irregular punctures; sides with large foveae; longitudinal suture shallow.

First abdominal sternite coarsely and densely punctured; post-metacoxal striae crenulate and complete.

Legs long and fine; protibiae with ten large teeth.

Male genitalia with the usual morphology of the genus.

Maximum length: 2.2 - 4.3 mm

Maximum width: 2.0 - 4.1 mm

Diagnosis

It may be distinguished from the related species by the combination of characters given in the keys.

Type material

Notodoma fungorum Lewis, 1884

There are three specimens, labelled by Lewis as «Type» and another as «Cotype». The lectotype and three paralectotypes are now designated.

Lectotype, ♂ labelled /Type/, /*Notodoma fungorum* Lewis, Type/, /Japan G. Lewis 1910-320/ [NHML].

Paralectotypes, 3 exx., ♂ labelled /Cotype/, /*Notodoma fungorum* Lewis Cotype/, /Japan Lewis/, /G. Lewis Coll. B.M. 1926-369/ [NHML]. 1 ♂ and 1 ♀ labelled /Japan Lewis/, /Coll. Reitter/, /*Notodoma fungorum* Lewis Type/, /Paratypus 1884 *Notodoma fungorum* Lewis/ [MTMA].

Notodoma saturum Lewis, 1902 Fig. 9

There is a specimen, labelled «Type» and another «Cotype» (not in the original publication). The lectotype and one paralectotype are now designated.

Lectotype, ♀ labelled /Type/, /*Notodoma saturum* Lewis Type/, /Tonkin Montes Mauson April-Mai 2.3000' H.Fruhstorfer/, /G. Lewis Coll. B.M. 1926-369/ [NHML].

Paralectotype, ♀ with the second and the third same labels, as well as the two following labels /Cotype/, /*Notodoma saturum* Lewis Cotype/ [NHML].

Other material examined

DEI, four specimens labelled /Tonkin, Montes Mauson, April, Mai 2-3000', H. Fruhstorfer/, /Coll. Kraatz, Bickhardt/.

Notodoma orientale Lewis, 1903

There are three specimens in the type series (holotype not designated).

Lectotype, ♂ labelled /Co-type/, /*Notodoma orientale* Cotype Lewis/, /Burmah Ruby Mines/, /Doherty/, /G.Lewis Coll., B.M. 1926-369/ [NHML].

Paralectotypes, 2 exx., ♂ labelled like the preceding and another ♂ with the same labels, excepting /Type/ [NHML].

Notodoma formosarum Bickhardt, 1912

According to the description, in the NMHUB there are 3 specimens from «Fuhosho» labelled as «type», as well as another from «Taihorin» («Taihorinsho» in the description) and another specimen not included in the description. Holotype not designated. Other two specimens labelled as «syntypes» in the DEI.

Lectotype, ♂ labelled /Fuhosho, Formosa, Sauter. VIII.07.09/, /Type/, /formosarum n. sp. Bickh./, /formosarum Bickh./, /Zool. Mus. Berlin/ [NMHUB].

Paralectotypes, 2 exx., ♀ and ♂ labelled /Fuhosho, Formosa, Sauter VIII.07.09/, /Type/, /Zool. Mus. Berlin/ [NMHUB]. One specimen labelled /Taihorinsho, Formosa, Sauter, VIII.09/, /Syntypus/, /Bickhardt det./ and other two specimens /Fuhosho, Formosa, Sauter, VIII.09/, /Syntypus/, /Bickhardt det./ [DEI].

Other material examined

BSU, one specimen labelled /D.R. Vietnam, SW of Kun-tchau, 100-400 m, O. Kabakov, in mushrooms, 11-12.4.1962/. Another specimen with the same labels excepting the date «12.3.1962». One ♂ and 2 ♀ labelled / Kuantun, Fukien, 27.40' N 117.40' E, J. Klapperich, 8.5.-16.6.1938/. One ♂ labelled /Vietnam, Shon-suong, O. Kabakov, 22.3.962/. One ♀ labelled /D.R. Vietnam, Bak-shon, O.Kabakov, 19.1.1964/, /*Notodoma saturum* Lew. O. Kryzhanovskij det. 1970/, /*Notodoma saturum* Lewis, comp. type Dr. Pope det. 1971/. One ♂ labelled /Takao, Tokyo, Honshu, S.Kondo, 13.5.1963/, /*Notodoma fungorum* Lew. M. Ohara det./.

Five specimens labelled /Tonkin, Montes Mauson, April-Mai 2-3000', H. Fruhstorfer/. Two specimens labelled /Kiautschau, China/.

DEI, three specimens labelled /Hoozan, Formosa, H. Sauter, IX.10/, /Bickhardt det./. Two specimens labelled /Hoozan, Formosa, H. Sauter/, /Bickhardt det./, /7.IX/. One specimen labelled /Formosa, Hoozan, 08-10, Sauter/, /Bickhardt det./.

FIMK, three ♂ and 8 ♀ labelled /Kuatun, Fukien, 27.40' N 117.40' E, J. Klapperich, 8.5.-16.6.1938/.

MTMA, eight specimens labelled /KOREA Kangwon Prov. Kum gang-san, Onjong-ri, 400m/, /No. 1337 21.VI.1988, O. Merkl & Gy. Szél/. Two specimens labelled /Notodoma saturum Lewis det. Bickhardt/, /Tonkin Montes Mauson April-Mai 2.3000' H. Fruhstorfer/. Six specimens labelled /Formosa Sauter/, /Fuhosho 1909 VIII/, /Notodoma formosarum Bickh. det. Théron 1963/. One specimen labelled /VIETNAM: Cuc phuong Ninh binh, 11-17.V.1966 Exp. Gy. TOPAL/, /Nr. 353 extracted from mushroom/, /Notodoma saturum Lew. J. Théron 1976/ (Merkl & Szel, 1989).

NHML, fifteen specimens labelled /Notodoma saturum Lewis/, /Tonkin Montes Mauson April-Mai 2.3000' H. Fruhstorfer/. Fourteen specimens labelled /Japan Lewis/, /Notodoma fungorum Lewis/, /G. Lewis Coll. B.M. 1926-369/. One specimen labelled /Nikko Lewis/, /G. Lewis Coll. B.M. 1926-369/. Two specimens labelled /Notodoma fungorum Lew./, /Higo G. Lewis/, /G. Lewis Coll. B.M. 1926-369/. One specimen labelled /Sapporo 5.VIII.-16.VIII.80/, /Japan G. Lewis 1910-320/. One specimen labelled /JAPAN Mimasaka 20.VII.'13/, /Japan J.E.A. Lewis B.M. 1930-10/. One specimen labelled /Burmah Doherty/, /G.Lewis Coll. B. M. 1926-369/, /N. orientale 1903 Lewis/. Four specimens labelled /Ruby Mines Doherty/, /G.Lewis Coll. B.M. 1926-369/, /N. orientale 1903 Lewis/. Three specimens labelled /Ruby Mines Upper Burmah 5-7000 Doherty/, /George Lewis Coll. B.M. 1926-369/.

NMHUB, one specimen labelled /Kyushu) Mt. Hiko, Fukuoka, Japan 10.vii.1966 M.T. CHUJO leg./, /Notodoma fungorum Lewis Det. M.T. CHUJO 1968/, /Zool. Mus. Berlin/. One specimen labelled /Taihorin, Formosa, H. Sauter, 1911/, /7.VIII/, /Zool. Mus. Berlin/. One specimen labelled /Hoozan, Formosa, H. Sauter/, /I.IX/, /Zool. Mus. Berlin/.

Five specimens labelled /Kiautschau, China/. Seven specimens labelled /Formosa Fuhosho VIII.09 H. Sauter/. One specimen labelled /Formosa Taihorinsho, H. Sauter/. One specimen labelled /Ruby Mines, Burma/, /244/, /Notodoma globatum/. One specimen labelled /Tenasserim, M. Mooleyit, 1000-1900 m, Fea, Apr. 1887/, /Notodoma globatum/.

TY, one specimen labelled /Takao-san Tokyo 3.VII.1969 H. Takizawa/, /Notodoma fungorum Lew. 1884 Det. M. Ohara/.

ZIN, one ♂ labelled /Rimogan, Formosa, M. Chujo, 12.5.1933/. Two ♂ labelled / D.R. Vietnam, mountains near Laosian border, O. Kabakov, 24-25.3.963/. One ♂ and two ♀ labelled /D.R. Vietnam, Bak-shon, O.Kabakov, 19.1.964/. One ♀ labelled /Tonkin, Hoa binh, Coll. J. Clermont/, /Notodoma saturum Lewis (Clermont 1926)/. One ♀ labelled /Burmah, Ruby Mines/, /Doherty/, /Fry Coll 1905 - 100/, /Notodoma globatum Mars./, /Ex. B.M. (N.H.)/. Five specimens labelled /D.R. Vietnam, SW of Kun-tchau, 100-400 m, O.Kabakov, in mushrooms, 11-12.4.1962/. Two specimens labelled /Vietnam, Shon-suong, O. Kabakov, 22.3.1962/. One specimen labelled /D.R. Vietnam, Bak-shon, 400-600 m, O.Kabakov, 19.1.964/. One specimen labelled / D.R. Vietnam, mountains 60 km NW Vin-Lin, O. Kabakov, 20.3.1963/. Three specimens labelled /Japan, Mt. Kasuga, Mara, 30.5.1961, Tamanuki leg./, /One specimen labelled /Mimune (Mie), H. Ohira Coll., 1955.6.18-21/.

Comments

There are several species that should be considered as synonyms. The differences among them are not significant: general puncturation, length of third dorsal elytral and outer subhumeral striae, frontal stria variably impressed, length of body and colouration. These specimens cannot be reasonably placed into the former four species. These species show a wide range of variability.

Widely distributed, it is known from Burma, Vietnam, China (Fujian region), Taiwan, Korea and Japan.

This species lives in fungi infested by many insects, growing on living trunks.

Notodoma strigosulum Cooman, 1938 Figs. 10 -12

Notodoma strigosulum Cooman, 1938: 187.

Redescription

Colour reddish brown, with two yellow maculae on the base of each elytron, more distinct on middle; body wide, rounded, rather convex.

Head long and narrow; mandibles long and rounded, finely punctured; labrum long and rounded, finely punctulate; epistoma wide and long, covered with very large and dense punctures; frons covered with very large and dense punctures; frontal stria only distinct on sides; antennal scape very long, enlarged, recurved and setose; antennal club very large, elongate oval; eyes very large.

Pronotum very narrowed in front; marginal stria distinct; anterior margin directed in front; sides sinuate near apex; surface regularly covered with very large and dense punctures (fig. 10). Elytral striae wide and crenulate; first stria shortened on apex; second stria complete; third stria only with a shallow short basal impression; fourth stria shortened apically and joined to the sutural stria, complete; outer subhumeral stria reaching humeri and continued by the apical stria; marginal and two epipleural striae complete and cariniform; elytral apex strigate (fig. 11); elytra coarsely and densely punctured, only scarcely punctured on the yellow maculae; epipleurae punctate.

Propygidium very long and convex, covered with fine punctures and microsculpture. Pygidium with punctures denser and surface more densely microsculptured.

Prosternum with lobe prominent, punctured and with complete marginal stria; keel short and wide, densely punctured; inner striae distinct, crenulate and joined apically; outer striae cariniform. Mesosternum convex, coarsely and densely punctured; marginal stria fine, crenulate and complete; lateral stria crenulate, complete and continued by the lateral metasternal stria. Meso-metasternal suture with a deep and densely crenulate stria (fig. 12); lateral metasternal stria wide, crenulate and reaching metacoxae; longitudinal suture deep; median stria deep, crenulate, regularly arcuate and joining on basal third; disc covered with large and dense punctures; sides foveate.

First abdominal sternite punctured like metasternum; post-metacoxal striae crenulate, wide and incomplete.

Male genitalia with the common morphology of the genus.

Legs slender; protibiae with deep tarsal grooves and ten long teeth, tarsi long and narrow.

Maximum length: 2.2 - 2.4 mm

Maximum width: 2.15 - 2.25 mm

Diagnosis

It is closely related to *N. fungorum*, but it may be distinguished mainly by the elytral surface, deeply and densely punctured, apically rugose and epipleurae with two striae.

Type material

Holotype, ♀ labelled /Hoa-binh, Tonkin, 1935, de Cooman/, /TYPE/, /Muséum Paris Col. Générale/, /NOTODOMA strigosulum de Cooman descr./ [MNHN].

Paratypes, 1 ♂ and 1 ♀ labelled /Hoa-binh, Tonkin, 1932, de Cooman/, /PARATYPE/, /Muséum Paris Col. Générale/, /NOTODOMA strigosulum de Cooman descr./ [MNHN].

The original description says «Type et paratypes au Muséum de Paris». We think that the author distinguished between «Type/paratypes» as Holotype and Paratypes. In the description the author says that he had seen 15 specimens, but now there are only 3 specimens in his

collection, as well as other 3 specimens with the same data label in the collection of J. Théron [MNHN].

Other material examined

One ♀ labelled /VIETNAM: Cuc phuong Ninh binh, 3-10.V.1966 Exp. Gy. TOPAL/, /Nr. 260, sifted from mushroom/, /*Notodoma strigosulum* Coom., J. Théron det. 1976/ [MTMA].

One specimen labelled /D.R. Vietnam, Kin-Kuong, O.Kabakov, 29.3.1963, in mushrooms/ [ZIN]. Four specimens labelled /D.R. Vietnam, NW of Kun-tchau, ca. 500 m, O.Kabakov, 12.3.1962/ [three in ZIN and one BSU]. Two specimens with the same labels, excepting the date «7.3.1962» [ZIN].

Comments

It is only known from Vietnam, collected in fungi in March and May.

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REFERENCES

- BICKHARDT, H., 1912. Die Histeriden aus H. Sauters Formosaausbeute. *Entomologische Blätter*, 4-5: 122-127.
- COOMAN, A., 1932. Description d'un nouveau genre et d'une nouvelle espèce d'Histéride (Col. du Tonkin). *Bull. Soc. Ent. Fr.*, 37: 134-136.
- COOMAN, A., 1938. Trois Histérides nouveaux du Tonkin (Col.). *Revue Française d'Entomologie*, 5: 186-188.
- ICZN. 1985. *International Code of Zoological Nomenclature*. Third Edition, adopted by the XX General Assembly of the International Union of Biological Sciences. International Trust for Zoological Nomenclature, London, XX+338 pp.
- LACORDAIRE, M., 1854. *Histoire naturelle des insectes. Genera des Coléoptères ou exposé méthodique et critique de tous les genres proposés jusqu'ici de cet ordre d'insectes*. II, Paris, 548 pp.
- LEWIS, G., 1884. On some *Histeridae* new to the Japanese Fauna, and Notes of others. *Annals and Magazine of Natural History*, 13(3): 131-140.
- LEWIS, G., 1892. On some new Species of *Histeridae*. *Annals and Magazine of Natural History*, 9(6): 341-357.
- LEWIS, G., 1902. On new Species of *Histeridae* and Notices of others. *Annals and Magazine of Natural History*, 10(7): 265-278.
- LEWIS, G., 1903. On new Species of *Histeridae* and Notices of others. *Annals and Magazine of Natural History*, 12(7): 417-429.
- MARSEUL, S. A., 1855. Essai monographique sur la famille des Histérides (suite). *Annales de la Société Entomologique de France*, 3(3): 83-165.
- MARSEUL, S. A., 1870. Descriptions d'espèces nouvelles d'Histérides. *Annales de la Société Entomologique de Belgique*, 13(1869-1870): 55-158.
- MERKL, O. & SZEL, Gy., 1989. Zoological collectings by the Hungarian Natural History Museum in Korea. 91. A report on the collectings of the Twelfth Expedition. *Folia Entomologica Hungarica*, L: 87-93.
- REITTER, E., 1910. Ein neuer palaeartischer Vertreter der ostindisch-japanischen Histeridengattung *Notodoma* Mars. aus Hochsyrien. *Entomologische Blätter*, 6: 164-165.
- YÉLAMOS, T. & TISHECHKIN, A., in Press. Contribution to the knowledge of the Oriental *Epitoxus* Lewis.