# Lech Borowiec, Jolanta Świętojańska

# The Tortoise beetles of Madagascar (Coleoptera: Chrysomelidae: Cassidinae)

# Part 2: Tribe Cassidini, the genus Cassida L.

Key words: entomology, taxonomy, zoogeography, morphology, Coleoptera, Chrysomelidae, Cassidinae, Madagascar. Authors address:

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Webmaster: Cassidinae of the world – an interactive manual (Coleoptera: Chrysomelidae) http://www.biol.uni.wroc.pl/cassidae/katalog%20internetowy/index.htm

#### Résumé

L'ouvrage contient la deuxième partie de "Coleoptera Chrysomelidae Cassidinae de Madagascar". Le genre *Cassida* L. de la tribu de Cassidini est examiné et illustré, ainsi q'une clé à determination est établie. Il comprend 99 espèces à Madagascar, 28 d'entre eux sont décrits comme nouveau: *Cassida andohahelana* n. sp., *angulicollis* n. sp., *anosyennesensis* n. sp., *atroannulus* n. sp., *atromarginata* n. sp., *atropunctata* n. sp., *beondrokana* n. sp., *bulirschi* n. sp., *densestriata* n. sp., *flavooculata* n. sp., *impressipennis* n. sp., *laccopteroides* n. sp., *lateritioides* n. sp., *liliputana* n. sp., *lukasi* n. sp., *multistrigata* n. sp., *multituberculata* n. sp., *nigropunctata* n. sp., *nosybeensis* n. sp., *sculpturipennis* n. sp., *trianguliformis* n. sp., *tryznai* n. sp., et *ultima* n. sp. *Coptocycla piceidorsis* FAIRMAIRE, 1904 est mis en synonymie avec Cassida auropustulata (FAIRMAIRE, 1899), *Cassida plicatula* FAIRMAIRE, 1904 est mis en synonymie avec *Cassida rugipennis* (BOHEMAN, 1855), et *Coptocycla vicinalis* SPAETH, 1915 est mis en synonymie avec *Cassida strumosa* (SPAETH, 1915). Les espèces malgaches du genre *Cassida* sont fortement endémiques et pour 99 espèces décrites une seule, *Cassida dorsovittata* BOH., est plus largement distribué dans les deux Madagascars et dans l'Afrique tropicale.

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#### INTRODUCTION

The second volume of the monograph of Malgasy Cassidinae (sensu stricto, including only "tortoise beetles") contains revision of the single genus *Cassida* Linnaeus. The genus, with 431 described species is the most speciose within tortoise beetles. Except one native species in North America all have been described from Old World, particularly from tropics and subtropics of Africa and Asia. Generally, number of species is decreasing from west to the east, Africa including Madagascar and the western Palaearctic regions are more abundant in species than Australian and the eastern Palaearctic regions.

Perhaps the most interesting and rich is the fauna of Madagascar with 99 described species while in whole Africa south of Sahara occur only 83 species (BOROWIEC, 1999; BOROWIEC and ŚWIĘTOJAŃSKA, 2002). Only one species, *Cassida dorsovittata* Boh., is common for both continental Africa and Madagascar. Madagascan species represents several groups, partly distinct with no close relatives in other regions. The study of African and Madagascan species showed that diversity of the genus *Cassida* L. is very high and subgenera proposed for Palaearctic and Oriental species are difficult to apply to many Afrotropical taxa. BOROWIEC (2007) reviewed all subgeneric names proposed within the genus Cassida and concluded that the best solution of the situation is given up of all proposed subgeneric names - this point of view was presented in "World Catalogue of Cassidinae" (BOROWIEC, 1999). More informative would be creation of narrow groups of related species based on the complex of morphological and biological characters, even if many species will stay in monotypic group of uncertain position.

With the first volume of the monograph of Tortoise beetles (sensu novo) of Madagascar (BOROWIEC and ŚWIĘTOJAŃSKA, 2011) the number of species known from the island increased to 159. The group is highly endemic at species level – of the 159 reviewed species 155 (97.5%) are restricted to Madagascar.

### ABBREVIATIONS USED IN THE TEXT

BMNH:	The Natural History Museum (ex British Museum of Natural History),
	London, United Kingdom.
DEI:	Deutsches Entomologisches Institut, Münchenberg, Germany.
DS:	coll. D. SASSI, Castelmarte, Italy.
DBET:	Department of Biodiversity and Evolutionary Taxonomy, University
	of Wroclaw, Wroclaw, Poland.
FK:	coll. F. KANTNER, Klatovy, Czech Republic.
FP:	coll. F. PAVEL, Hradec Králové, Czech Republic.
HNHM:	Hungarian Natural History Museum, Budapest, Hungary.
IRSN:	Institut Royal des Sciences naturelles, Bruxelles, Belgique.
ITZ:	Instituut voor Taxonomische Zoölogie, Amsterdam, The Netherlands.
JB:	coll. J. Bezděk, Brno, Czech Republic.
LM:	Luxembourg Museum, Luxembourg.
LS:	coll. L. SEKERKA, Liberec, Czech Republic.
MLBLSM:	Monte L. Bean Life Science Museum, Brigham University, Provo, USA;
MCSNG:	Museo Civico di Storia Naturale, Genova, Italy.
MCSNV:	Museo Civico di Storia Naturale, Verona, Italy.
MHNG:	Museum d'Hisoire Naturelle Gèneve, Gèneve, Switzerland.
MKB:	Museum Alexander König, Bonn, Germany.
MM:	The Manchester Museum, Manchester, United Kingdom.
MNHN:	Muséum national d'histoire naturelle, Paris, France.
MO:	coll. M. OUDA, Plasy, Czech Republic.
MRAC:	Musée royal d'Afrique centrale, Tervuren, Belgique.
MS:	coll. M. Snížek, České Budějovice, Czech Republic
MSCH:	coll. M. Schöller, Berlin, Germany.
MZUF:	Museo Zoologico dell'Universita, Firenze, Italy.
NMB :	Naturchistorisches Museum Basel, Basel, Switzerland.
NMP:	Narodní Muzeum, Prague, Czech Republic.
NMW:	Naturhistorisches Museum, Vienna, Austria.
NRS:	Naturhistoriska Riksmuseet, Stockholm, Sweden.
SD:	coll. S. DOGUET, Fontenay-sous-Bois, France.
SEMC:	Snow Entomological Museum, Lawrence, USA.
SMNS:	Staatliches Museum für Tierkunde, Stuttgart, Germany.
UH:	coll. U. HEINIG, Berlin, Germany.
USMB:	Upper Silesian Museum, Bytom, Poland.
ZMHU:	Museum für Naturkunde (former Zoologisches Museum zu Humboldt
	Universität), Berlin, Germany.

#### TAXONOMY

#### Chrysomelidae Cassidinae

Cassidinae GYLLENHAL, 1813, was proposed as group "cassidites" within Chrysomelidae. For many years it was treated as a sister group to the subfamily Hispinae GYL-LENHAL, 1813. Now cassids and hispids form an unite subfamily Cassidinae GYLLENHAL, 1813, but in this volume cassids have been treated as traditional group called "tortoise beetles" and concerning only tribes of "true" cassids *sensu* BOROWIEC (1995 a).

#### Catalogues

GEMMINGER and HAROLD, 1876: 3823 p. – SPAETH, 1914: 182 p. – BOROWIEC, 1999: 476 p. – BOROWIEC and ŚWIĘTOJAŃSKA (permanent internet catalogue: http://culex.biol. uni.wroc.pl/cassidae/katalog%20internetowy/index.htm)

#### Type genus

Cassida LINNAEUS, 1758.

For other general data see first volume of the monograph of Malgasy Tortoise beetles (Borowiec and Świętojańska, 2011).

#### DESCRIPTION OF THE GENUS CASSIDA L.

#### Genus Cassida LINNAEUS, 1758

- Cassida Linnaeus, 1758: 362 (type species: Cassida nebulosa Linnaeus, 1758, designated by Spaeth, 1914: 92). – Chapuis, 1875: 388; Spaeth, 1914: 92. – Gressitt, 1952: 484; Hincks, 1952: 339. – Gressitt and Kimoto, 1963: 963. – Seeno and Wilcox, 1982: 177. – Brovdii, 1983: 74. – Lopatin and Kulenova, 1986: 180. – Chen et al., 1986: 456, 472. – Gruev and Tomov, 1986: 344. – Riley, 1986: 102. – Borowiec, 1990: 4, 1999 a: 234. – Bordy, 2000: 72. – Borowiec and Sekerka, 2010: 372.
- Deloyala REDTENBACHER, 1858: 952 (homonym, type species: Cassida seraphina MÉNÉTRIES, 1836, designated by HINCKS, 1950: 508). – SPAETH, 1914: 93, not Deloyala DUPONCHEL and CHEVROLAT in D'ORBIGNY, 1843. Palearctic Region.
- Cassidula WEISE, 1889: 260 (homonym, type species: Cassida nobilis LINNAEUS, 1758, designated by HINCKS, 1952: 339). SPAETH, 1914: 97, not Cassidula DE BLAINVILLE, 1830. Palearctic Region.
- Pseudocassida DESBROCHERS, 1891: 15 (as subgenus, type species: Cassida murraea LINNAEUS, 1768, by monotypy). – HINCKS, 1952: 339. – SEENO and WILCOX, 1982: 177, subgenus. Palearctic Region.
- Mionycha WEISE, 1891: 204 (type species: Cassida azurea FABRICIUS, 1801, by monotypy). SPAETH, 1914:
  95. GRESSITT, 1952: 503. HINCKS, 1952: 339. SEENO and WILCOX, 1982: 177. BROVDII, 1983:
  90. CHEN et al., 1986: 468, subgenus. Palearctic Region.
- Odontionycha Weise, 1891: 204 (type species: Cassida viridis Linnaeus, 1758, designated by Hincks, 1952: 339). Spaeth, 1914: 93. Gressitt, 1952: 521. Hincks, 1952: 339. Seeno and Wilcox, 1982: 177. Brovdii, 1983: 84. Chen et al., 1986: 457, subgenus. Palearctic Region.
- Crepidaspis SPAETH, 1912 b: 119 (type species: Crepidaspis varicornis SPAETH, 1912, by monotypy), 1914: 129. – Никскs, 1952: 340 (as syn. of Thlaspidosoma SPAETH, 1901). – SEENO and Wilcox, 1982: 177 (in syn. of Thlaspidosoma). – BOROWIEC, 1990: 4 (as subgenus of Cassida). Oriental Region.

- Taiwania SPAETH, 1913: 47 (type species: Taiwania sauteri SPAETH, 1913, by monotypy), 1914: 144. GRES-SITT, 1952: 486 (as subgenus). – HINCKS, 1952: 339 (as subgenus). – SEENO and WILCOX, 1982: 177 (as genus). – CHEN et al., 1986: 490, 504 (as genus). – BOROWIEC, 1990 b: 4 (as syn. of *Crepidaspis*). Oriental Region.
- Eremocassis SPAETH in SPAETH and REITTER, 1926: 15 (type species: Eremocassis transcaspica SPAETH in REITTER, 1926, by monotypy). HINCKS, 1952: 338. LOPATIN, 1977: 247. SEENO and WILCOX, 1982: 176. LOPATIN and KULENOVA, 1986: 178. BOROWIEC, 1994: 157 (as syn. of *Tylocentra* REITTER in SPEATH and REITTER, 1926). Palcarctic Region.
- Lordicassis REITTER in SPAETH and REITTER, 1926: 23, 27 (type species: Cassida undecimnotata GEBLER, 1841, by monotypy). HINCKS, 1952: 339. SEENO and WILCOX, 1982: 177. CHEN et al., 1986: 462, subgenus. Palearetic Region.
- Tylocentra REITTER in SPAETH and REITTER, 1926: 24, 57 (type species: Cassida turcmenica WEISE, 1892, designated by HINCKS, 1952: 339). GRESSITT, 1952: 525. HINCKS, 1952: 339. SEENO and WILCOX, 1982: 177. MEDVEDEV, 1982: 286 (as genus). CHEN et al., 1986: 469, subgenus. Palearetic Region.
- Lordiconia Reitter in Spaeth and Reitter, 1926: 23, 26 (type species: Cassida canaliculata LAICHARTING, 1781, by monotypy). HINCKS, 1952: 339. SEENO and WILCOX, 1982: 177. BROVDII, 1983: 82, subgenus. Palearctic Region.
- Onychocassis SPAETH in SPAETH and REITTER, 1926: 23, 26 (type species: Cassida brevis WEISE, 1884, designated by HINCKS, 1952: 339). – HINCKS, 1952: 339. – SEENO and WILCOX, 1982: 177, subgenus. Palearetic Region.
- Cassidulella STRAND, 1928: 2 (replacement name for Cassidula WEISE, 1889 not DE BLAINVILLE, 1830; type species: Cassida nobilis LINNAEUS, 1758, designated by HINCKS, 1952: 339). GRESSITT, 1952: 523.
   HINCKS, 1952: 339. SEENO and WILCOX, 1982: 177. BROVDII, 1983: 156. CHEN et al., 1986: 464, subgenus. Palearctic Region.
- Alledoya HINCKS, 1950: 508 (replacement name for *Deloyala* REDTENBACHER, 1858 not DUPONCHEL and CHEVROLAT, 1843; type species: *Cassida seraphina* MÉNÉTRIES, 1836, designated by HINCKS, 1950: 508), 1952: 339. – SEENO and WILCOX, 1982: 177. – LOPATIN and KULENOVA, 1986: 186 (as genus).
   – CHEN et al., 1986: 547 (as genus). Palearctic Region.
- Mionychella SPAETH in HINCKS, 1952: 346 (type species: Cassida hemisphaerica HERBST, 1799, by monotypy). – HINCKS, 1952: 339. – SEENO and WILCOX, 1982: 177. – BROVDII, 1983: 88, subgenus. Palearctic Region.
- Lasiocassis GRESSITT, 1952: 485 (replacement name for *Deloyala* REDTENBACHER, 1858 not DUPONCHEL and CHEVROLAT, 1843; type species: *Cassida vespertina* BOHEMAN, 1862). – BOROWIEC and CHO, 2011: 446, proposed as subgenus. Palearctic Region.
- Cyclocassida CHEN et ZIA, 1961: 442 (type species: Taiwania (Cyclocassida) variabilis CHEN et ZIA, 1961, by oryginal designation), proposed as subgenus of Taiwania; SEENO and WILCOX, 1982: 177 (as subgenus of Taiwania). – CHEN et al., 1986: 491 (as subgenus of Taiwania). – BOROWIEC, 1990: 4 (as syn. of Crepidaspis). Oriental Region.
- Yunocassis CHEN et ZIA, 1961: 442 (type species: Cassida appluda SPAETH, 1926, by oryginal designation), proposed as subgenus of Taiwania; SEENO and WILCOX, 1982: 177 (as subgenus of Taiwania). – CHEN et al., 1986: 500 (as subgenus of Taiwania). – BOROWIEC, 1990 b: 4 (as syn. of Crepidaspis). Oriental Region.
- Cyrtonocassis CHEN et ZIA, 1961: 446 (type species: Cyrtonocassis tumidicollis CHEN and ZIA, 1961, by original designation). – SEENO and WILCOX, 1982: 177 (as genus). – CHEN et al., 1986: 546 (as subgenus of Taiwania), subgenus. Oriental Region.
- Dolichocassida GUNTHER, 1958: 568 (type species: Cassida pusilla WALTL, 1839 = Dolichocassida veselyi GUNTHER, 1958, by monotypy). – SEENO and WILCOX, 1982: 177, subgenus. Palearctic Region.
- Pseudocassis STEINHAUSEN, 2002: 24 (type species: Cassida flaveola THUNBERG, 1794, by original designation), subgenus. Palearctic Region.
- Betacassida STEINHAUSEN, 2002: 26 (type species: Cassida nebulosa LINNAEUS, 1758, by original designation), proposed as subgenus, objective synonym of Cassida LINNAEUS, 1758. Palearetic Region.

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Coptocycla auct., part; SPAETH, 1914: 130, part (Old World species).

Metriona auct., part; SPAETH, 1914: 136, part (Old World species).

#### DIAGNOSIS

Very heterogenous genus. Body varying from parallelsided to circular, from depressed to strongly convex, without or with postscutellar gbbosity or angulation, rarely with conical postscutellar tubercle. Base of elytra not to distinctly wider than pronotum. Pronotal sides from angulate to broadly rounded, usually without basal corners, occasionally with basal corners protruding posterad, disc of pronotum more or less bordered from explanate margin, from smooth and shiny to distinctly punctate or sculptured, sometimes wrinkled, granulate, occasionally tuberculate. Explanate margin of pronotum from narrow to very broad, from smooth to punctate or sculptured, often transparent with honeycomb structure. Scutellum more or less triangular, always well visible. Punctation of disc from regular to partly or completely irregular, marginal row usually well marked. Explanate margin from strongly declivous to subhorizontal, from very narrow to very broad, from smooth and shiny to punctate, or granulate or with distinct microsculpture, often transparent with honeycomb structure. Clypeus from narrow to very broad, usually flat or only slightly convex, occasionally with distinct angulation. Clypeal grooves usually fain, sometimes deep, complete, converging in triangle or arch, sometimes more or less shortened and visible only at base of clypeus. Surface of clypeal plate from smooth and shiny to punctate, or microreticulate and dull. Antennae from short to very long, the third segment usually longer than the second. Last segment of tarsi not or insignificantly longer than the thir, tarsomeres usually with distinct sole. Claws from simple to appendiculate, often apparently appendiculate due to distally projecting flanks of claw segment.

#### DISTRIBUTION

Old World and one native species in the United States.

#### HOST PLANTS

Wide range of hosts (BOROWIEC & ŚWIĘTOJAŃSKA 2013) but bionomy of Madagascan species unknow. Most preferred host famillies are Asteraceae, Chenopodiaceae, Convolvulaceae and Lamiaceae.

## Key to species

1.	Base of pronotum bisinuate, pronotal corners angulate, distinctly protruding poste- rad (fig. 1, 142, 230-231). Base of elytra slightly narrower than pronotum. Body lar-
	ge, length always above 7.5 mm
	Base of pronotum never bisinuate, pronotal sides from angulate to broadly rounded, but never form distinct basal corners. Base of elytra from as wide as to much wider than pronotum. Usually smaller, if length above 7.5 mm than base of elytra much wider from pronotum and pronotal sides broadly rounded
2	Elvtral disc regularly convex in profile (fig 2, 143) Smaller species length 7,6-8,9
2.	mm 3.
	Elvtral disc with high, conical tubercle in profile (fig. 232). Larger species, length
	above 10 mm umbonata Borow.
3.	Elytral longitudinal costa distinctly higher, sharp. Elytral punctation denser. Base
	of pronotum less emarginate, pronotal angles less protruding posterad and angulate
	(fig. 1)acutangula Borow.
	Elytral longitudinal costa distinctly lower, obtuse. Elytral punctation sparser. Base
	of pronotum more emarginate, pronotal angles more protruding posterad and obtuse
	(fig. 142) pauliani Borow.
4.	Surface of pronotum and elytra with wrinkless and folds or tubercles, appears
	completely rugose (fig. 77-78, 98, 158, 239-240) 5.
	Surface of pronotum and elytra without wrinkless and folds, sometimes pronotum
	with regular striation or elytra with more or less developed sculpture but never
	appear completely rugose
5.	Large species, length 6.4-7.1 mm. Groundcolour of elytra with mixed yellowish-
	brown, reddish-brown- and black (fig. 98, 158)6.
	Small species, length 3.8-5.0 mm. Groundcolour of elytra black, some wrinkles
	partly yellowish brown, in rare aberration disc of elytra black with yellow wrinkless
	and yellow explanate margin (fig. //-/8)
6.	Surface of pronotum and elytra only with wrinkless and folds. Body circular (fig.
	98, 158)
	surface of pronotum with granulate sculpture, efficient with six high tubercles. Body
7	Short-Oval (lig. 239-240) multituberculuia h. sp.
	Dorsum bare Jacconteroides n sn
8	Explanate margin of elvtra almost completely black at most with vellowish fene-
0.	strate snot and reddish extreme margin and humeral corner (fig. 55-57, 72, 173)
	177, 194, 214-215, 217-218, 220)
	Explanate margin of elvtra never mostly black, usually vellow, or reddish (fig.
	20), or brown (fig. 11), or only partly black (fig. 17-18), or with humeral or both
	humeral and posterolater spots (fig. 94, 165, 169-170, 179, 181, 200)
9.	Explanate margin of elytra almost completely black, at most with paler extre-
	me margin and humeral corner (fig. 177, 194, 217-218) 10.

	Explanate margin of elytra with yellow fenestrate spot (fig. 55-57, 72, 173, 214-215, 220) 12
10.	Basal part of pronotum black, elytral disc completely black (fig. 194, 217-218)
	Pronotum mostly reddish-brown, elytral disc with several reddish elevated spots (fig. 177)sanguineoguttata SPAETH
11.	Dorsum covered by sparse, adherent pubescence. Elytral disc without distinct
	elevations (fig. 194). Length 5.0 mm scymnoides BOROW. Dorsum bare. Elytral disc without distinct elevations, particularly H-shaped postscutellar elevation well marked (fig. 214-215). Larger, length 5.5-6.3 mm
12.	Body short-oval to circular. Base of elytra slightly to moderately wider than pro- notum (fig. 55-57, 72, 173, 220)
<b></b> .	Body subtriangular. Base of elytra much wider than pronotum (fig. 214-215)
13.	Elytral disc completely black, or only along suture with yelolowish band (fig. 56-57, 72, 220)
	Elytral disc with large brown to reddish spots (fig. 55, 173) 16.
14.	black, only anterior half of explanate margin yellow
	Fenstrate spot on explanate margin elongate (fig. 220). Pronotum mostly brown, only at base of explanate margin black, only area above head on explanate margin unlique tracerule. Source black above head on explanate margin
15.	Legs mostly black. Yellow fenstrate spot on explanate margin of elytra larger,
	with black central hole (fig. 72) flavooculata n. sp.
	Legs yellow. Yellow fenstrate spot on explanate margin of elytra smaller, without
16.	Reddish spot on each elytron constricted in the middle. Yellow fenstrate spot on explanate margin of elytra larger, with black central hole (fig. 173)
	rubromaculata Spaeth
	Reddish or reddish-brown spot on each elytron not constricted in the middle. Yellow fenstrate spot on explanate margin of elytra smaller, without black central hole (fig. 55)
17.	Explanate margin of elytra completely reddish or reddish-brown. Elytral disc mostly black or black with reddish-brown blurred spots (fig. 11, 20)
	Explanate margin of elytra never completely reddish or reddish-brown, if partly dark then distinctly bicoloured (fig. 17-18, 165, 122-123, 169-170) 19
18.	Larger, length 4.35-4.80 mm. Pronotum distinctly punctate with some punctures tend to form longitudinal sulci. Elytral punctation coarser and denser forming slightly impressed rows particularly on slope of disc (fig. 20)
	atrorubra Borow.
	Smaller, length below 4 mm. Pronotum impunctate. Elytral punctation finer and sparser, not arranged in impressed rows (fig. 11) anosyennesensis Borow.

19. Disc of elytra completely black or at most with small yellowish spots (fig. 17-18, Disc of elytra never completely black, if groundcolour black then elytra with pale -. 20. Explanate margin of elytra with black humeral spot (fig. 123, 165, 169-170) ..... 21. Explanate margin of elytra without black humeral spot, if bicolored then black -. occupies area along border between disc and explanate margin (fig. 17-18, 222) 21. Explanate margin of elytra with black both humeral and posterolater spots (fig. 165, 170) ..... 23. Explanate margin of elytra with only humeral spot (fig. 123, 169) ...... 22. -. 22. Larger, length above 4.9 mm. Apical 3-5 antennal segments black. Pronotal surface with regular longitudinal striation (fig. 169) ..... ..... rimosa (Вон.), aberration with only humeral spot Smaller, length 3.9-4.5 mm. Apical two antennal segments black. Pronotal surface ----with fine and sparse punctation, without regular longitudinal striation (fig. 123) ...... mariaeadelheidae SPAETH, black aberration 23. Body subpentagonal (fig. 170). Posterolateral spot normal, area between the spot and apex of suture yellow. Pronotal surface with regular longitudinal striation ..... rimosa (BoH.), aberration with both humeral and posterolateral spots Body subcircular (fig. 165). Posterolateral spot very broad, extending to suture. -. Pronotal surface withot regular longitudinal striation, punctures at most tend to form short, longitudinal grooves ...... pusio SPAETH Large species, length 6.2 mm ...... montana Borow. -. 25. Pronotal sides rounded. Black colour on disc at least in humeral part extending behind marginal row thus explanate margin of elytra partly black (fig. 17-18, Pronotal sides subangulate. Black colour on disc never extending behind marginal -. row thus explanate margin of elytra completely yellow (fig. 134) ..... 26. Black colour of elytra more distinctly extending behind marginal row, particularly in anterior 1/3 length explanate margin of elytra mostly black. Basal part of explanate margin of pronotum mostly black (fig. 17-18). Punctation of elytra coarser with intervals mostly as wide as or slightly narrower than rows Black colour of elytra less distinctly extending behind marginal row, only in area -. below humerus explanate margin of elytra black. Basal part of explanate margin of pronotum narrowly black only close to border of disc (fig. 222). Punctation of elytra finer with intervals 1.5 times to twice wider than rows ..... tryznai n. sp. 27. Explanate margin of elytra with at least humeral spots (fig. 3, 45, 47, 87-88, 94, 

	Explanate margin of elytra without humeral spots, unicolour, if bicoloured then black occupies area along border between disc and explanate margin (fig. 15, 154)
28.	Explanate margin of elytra with both humeral and posterolateral spots (fig. 3, 87-88, 179)
	Explanate margin of elytra with only humeral spots (fig. 45, 47, 94, 122, 146, 181, 200, 221)
29.	Smaller species, length 4.7-6.6 mm. Elytral disc black with yellow elevated spots or yellowish-brown with dark brown pattern (fig. 87-88, 179)
	Very large species, length 9 mm. Elytral disc yellow with few small black spots (fig. 3). Pronotum with broadly rounded sides <b>ambrica</b> Borow
30.	Elvtral disc black with vellow elevated spots.
	Elytral disc yellowish-brown with dark brown pattern. Pronotum with angu- late sides <b>dolens</b> Borow aberration with humeral and posterolateral spots
31.	Pronotal disc purple red, basal part of explanate margin black. Elytral disc with at most 12 large vellow spots (fig. 179)
	Pronotal disc at least in basal half black. Elytral disc with more than 20 yellow, elevated spots
32.	Pronotal disc with black basal half and vellow area above head. Basal striation
	of disc very strong. Scutellum yellow, ground colour of elytral disc black along
	sides and reddish-brown on rest of disc. Explanate margin of elytra with sutural
	black spot lukasi n. sp.
	Pronotal disc almost completely black only lateral lobes partly yellow. Scutellum
	black, ground colour of elytral disc black on whole surface. Explanate margin
	of elytra without sutural spot (fig. 87-88)
	hova (WEISE), aberration with both humeral and posterolateral spots
33.	Elytra strongly converging posterad, outline appears subtriangular (fig. 94, 122,
	146)
	Elytra moderately converging posterad, outline appears oval or subcircular (fig. 45, 47, 88, 181, 200, 221)
34.	Pronotum with large black spot (fig. 94, 146). Elytral sculpture well developed,
	with elevated spots. Claws simple. Larger species, length 5.1-5.3 mm 35.
	Pronotum without black spot (fig. 122). Elytral sculpture less developed, wit-
	hout elevated spots. Claws with basal tooth. Small species, length 3.9-4.5 mm
	mariaeadelheidae Spaeth, pale abertation
35.	Elytral disc mostly red (fig. 94). Ventrites partly black. Inner carina of elytral
	epipleura extremely high johnsoni Borow.
	Elytral disc mostly black with yellow relief (fig. 146). Ventrites uniformly yellow.
	Inner carina of elytral epipleura normal pretiosa Borow.
36.	Base of elytra strongly wider than pronotum (fig. 88, 181). Elytral disc with nu-
	merous yellow, regular elevated spots on black background. Ventrites uniformly
	yellow

Base of elytra slightly to moderately wider than pronotum (fig. 45, 47, 200, 221). Elytral disc mostly with yellow, elevated reticulation. Ventrites partly brown to 37. Black pronotal spot with large yellow spots at base (fig. 181). Pronotal surface without longitudinal striation. Only last antennal segment black ..... Black pronotal spot without yellow spots at base (fig. 88). Pronotal surface with -. longitudinal striation. Two last antennal segments black ..... ..... hova (WEISE), aberration with reduced posterolateral spots 38. Larger species, length 5.1-6.2 mm. Pronotal disc completely black but dark colour not extending behind border between disc and explanate margin, or yellow with black M-shaped figure, or yellow with indistinct brown M-shaped figure (fig. 45, 47, 221). Here two very similar species of the same range of variation of dorsal coloration and proper identification needs comparison with series of properly Small species, length 4.4-4.9 mm. Pronotal disc black with four vellow spots, **—**. black colour at base of disc extending behind border between disc and explanate margin (fig. 200) ..... silvicola Borow. 39. Base of elytra slightly less wider from pronotum. Sides of pronotum slightly more angulate. Elytral sculpture never forms isolated yellow spots (fig. 221) ..... trossula SPAETH, aberration with humeral spots Base of elytra slightly more wider from pronotum. Sides of pronotum slightly less angulate. Elytral sculpture often forms isolated yellow spots, particularly in aberration with mostly black pronotal and elytral discs (fig. 45, 47) ..... 40. Body circular, oval or subtriangular but never cuneiform, only occasionally uniformly yellow, usually with dark pattern or partly dark ventrites, or punctation with dark areola ...... 41. Body cuneiform (fig. 129-130), completely yellow except infustae apical antennal segments ..... morondaviana Borow. 41. Body strongly convex, hemispherical or subcylindrical, explanate margin of elytra usually strongly declivous, if moderately declivous then very large species with length 7.15-10 mm (fig. 37-38, 53-54, 70-71, 120-121, 186-191) ....... 42. Body slightly to moderately convex, never hemispherical or subcylindrical, -. 42. Punctation of elytra very coarse, intervals mostly linear, narrower than rows (fig. Punctation of elytra fine, intervals wider than rows (fig. 53, 70, 189-190) ..... 45. -2 43. Groundcolour of elytra reddish-brown to brown (fig. 120, 186-187). Body hemispherical, L/W ratio 1.17-1.23. Larger species, length 5.5-7.4 mm ..... 44. Groundcolour of elytra yellow (fig. 37). Body slimmer, L/W ratio 1.26-1.35. -. Smaller species, length 4.6-5.0 mm ..... butterwecki Borow.

44.	Smaller, length 5.5-6.25 mm. Postscutellar impressions less impressed, postscu- tellar elevation lower (fig. 188). Punctation in posterolateral part of elytral disc
	more regular rufomicans FAIRM
	Larger, length 7.4 mm, Postscutellar impressions deeply impressed, postscutellar
	elevation higher (fig. 121). Punctation in posterolateral part of elvtral disc more
	irregular madagascarica Borow
45.	Elytral disc uniformly vellow to ochraceous or with only few small black spots
	(fig 53, $189-190$ ) 46.
	Elytral disc black with large ochraceous spots (fig. 70) <i>dulcis</i> (BoH)
46.	Elytra often with small black spots (fig. 190) rarely uniformly yellow (fig. 189)
	Sculpture of elvtral disc regular or at most forming short folds. Anterior margin
	of pronotum regularly curved. Antennal segment 3 twice longer as segment 2
	Clypeal plate strongly elevated to angulate. Prosternum pubescent. Anex of elytral
	epipleura denselv pubescent <b>ruginennis</b> BOH
	Elytra always uniformly vellow to ochraceous (fig. 53). Sculpture of elytral
	disc more irregular, forms elevated fields. Anterior margin of pronotum almost
	straight. Antennal segment 3 only 1.2 times as long as segment 3. Clypeal plate
	not elevated. Prosternum without distinct pubescence. Apex of elytral epipleura
	unpubescent contracta (SPAETH)
47.	Elytral disc depressed, or regularly convex or with more or less marked postscutel-
	lar elavation but never with conical tubercle
	Elytral disc with large conical postscutellar tubercle (fig. 83)
	hovacassiformis Borow.
48.	Elytral disc never with red band across middle 49.
	Elytral disc with red band across middle (fig. 167)
	quadricolorata Borow.
49.	Body outline subcircular, oval or subtriangular but never forms regular circle
	without cleft between pronotum and elytra 50.
	Body outline regularly circular without cleft between pronotum and elytra. Dorsum
	uniformly yellow or with thin black reticulation (fig. 22)
=0	auropustulata FAIRM.
50.	Elytra with thin black ring surrounding elytral disc. Pronotum uniformly yellow $(6 - 12, 24)$
	(ng. 13, 24)
	Eight never with thin black ring surrounding eight disc, if disc surrounded by
51	Fing then it is red (iig. 80, 92) of brown and/or pronotum maculate (iig. 51) 52.
51.	Smaller, length 4.55-4.6 min. Posterior nan of disc without black spots (lig. 15)
	Larger length 6.15 mm Destarior helf of disc with small black mote (fig. 24)
	Larger, lengur 0.15 mm. Posterior nan of disc with small, black spots (ng. 24)
52	Pronotium rather semicircular than elliptical in outline widest close to bace but
54.	with rounded sides (fig 28 31 74-75)
_	Pronotum regularly elliptical widest approximately in the middle or transverse
10	then with angulate to subangulate sides 54

53.	Groundcolour of elytral disc ocharceous with large, brown to black U-shaped figure
	and black spot on postscutellar elevation (fig. 28, 30-31). Surface of pronotal disc
	not granulate
	Groundcolour of elytral disc black with yellow, reticulate relief (fig. 74-75). Sur-
	face of pronotal disc granulate
54.	Elytral margin behind humeral angle shallowly emarginate, humeri appears acute
	(fig. 118, 210). Pronotum with broadly rounded sides. Pronotal disc with black
	spots. Base of elytra much wider than pronotum. Elytral disc black with yellow
	reticulate relief
	Elytral margin behind humeral angle never emarginate, humeri appears rounded
	to angulate, if humeri appear sharply angulate then pronotum immaculate and
	elytra never black with yellow reticulate relief (fig. 132)
55.	Larger, length 4.7-5.8 mm. Pronotal disc with two C-shaped figures. Elytral
	sides less converging posterad (ng. 118). ventrites yellow agilis SPAETH
	Smaller, length 4.05 mm. Pronotal disc with black M-shaped figure. Elytral sides
	more converging posterad (ng. 210). Ventrites mostly black
=(	El tel har mel mider the mere et al ide de la ter (mider tel ser et al ter de la ter d
50.	Eight base much wider than pronotum, width of eight width of pronotum ratio $1.40, 1.51$ (for 102, 102, 105, 106, 175, 182, 184, 222). Eletter distingthe conversion
	1.40-1.51 (lig. 102-105, 105-100, 175, 165-164, 255). Elylia distinctly converging
	posterad, particularly in remarks apex of elytra subaligulate. Fronorum on sides
	species length 5.7-7.6 mm
	Elytral base from slightly to moderately wider than pronotum width of elytra/width
•	of pronotum ratio below 1.35 Other characters not in combination as above 61.
57.	Elytral disc with large red vellow or brown spots surrounded by black Prono-
	tum always with black spot (fig. 102-103, 175)
-	Elvtral disc without large red, vellow or brown spots surrounded by black, often
	unicolors, ochraceous or with brownish pattern. Pronotum usually without black
	spot, only specimens with distinct brown elytral pattern with black spoton pronotal
	disc (fig. 105-106, 183-184) 59.
58.	Pale spots on elytral disc red (fig. 175). Postscutellar elevation higher, forming
	a yellow clasp-shaped figure rubroornata (Вон.)
	Pale spots on elytral disc yellowish to rusty (fig. 102-103). Postscutellar elevation
	lower, not forming a yellow clasp-shaped figure
	laetabilis SPAETH, dark aberration
59.	Pronotum without dark spots (fig. 183-184, 233). Elytral disc uniformly rusty-
	yellow with slightly paler elevations 60.
	Pronotum with black spot or at least brown spots of diffused borders (fig. 105-
	106). Elytral disc with brown pattern of diffused broders
60.	Base of elytra slightly more wider than pronotum. Sides of elytra slightly more
	converging posterad (fig. 183-184). Pronotal striation finer. Humeri more angu-
	late. Sculpture on slope of disc less distinct rudicollis (SPAETH)

	Base of elytra slightly less wider than pronotum. Sides of elytra slightly less con- verging posterad (fig. 233). Pronotal striation more distinct. Humeri less angulate.
61.	Elytral pattern forming red ring surrounding disc and more or less distinct dark spot on postscutellar elevation (fig. 80, 92, 100). Pronotal disc without longitudi-
-	Elytral pattern never forming red ring surrounding disc, if elytral disc with indistinct ring then pronotal disc with distinct longitudinal striation (fig. 132). Postscutellar elevation often without spots, if postscutellar elevation with dark spot then elytra uniformly yellow or with brown or black pattern. Size variable
62.	Larger species, length 3.9-5.4 mm. Base of elytra distinctly wider than pronotum. Punctation of elytra denser. Reddish band along sides of elytral disc usually broader, occupies at least two submarginal rows and two submarginal intervals combined, if narrower than sides of pronotum narrowly rounded
	Smaller species, length 3.7 mm. Base of elytra only slightly wider than pronotum (fig. 100). Punctation of elytra sparser. Reddish band along sides of elytral disc very narrow occupies only two submarginal rows and submarginal interval combined. Sides of pronotum broadly rounded
63.	Pronotal sides broadly rounded. Elytral base more wider than pronotum (fig.
	Pronotal sides narrowly rounded. Elytral base less wider than pronotum (fig. 92)
64.	Pattern of elytra with two dark lines along sides forming a lyriform figure (fig.
	65, 90)
65	Proposal disc finely but distinctly nunctate Punctation of disc between dark
05.	lines coarser, intervals linear (fig. 96). Ventrites yellow lyrica FAIRM.
-	Pronotal disc impunctate. Punctation of disc between dark lines fuiner, intervals well marked (fig. 69). Ventrites partly black
	dorsovittata Boh., rare aberration with maculate elytra
66.	Postscutellar elevation with dark spot or at least dark stripes, other parts of
	elytra uniformly yellow to ochraceous, at least with few very small indistinct
	dark spots close to suture or on sides and/or indistinct yellowish-red bands
	along border of disc (fig. 90, 132, 138, 160, 171, 196, 198, 202). Pronotum
	always uniformity yellow. Efficient never with elevated relief except postsculei-
	Postcoutallar algorithm without dark spot if postcoutallar part dark then algorithm.
	with dorsal nattern of mixed vellow and black or elytra uniformly vellow or with
	only dark punctures. Pronotum often maculate. Elytral disc except postscutellar
	H-shaped elevation often with relief of reticulation or elevated spots
67.	Dorsum pubescent or with erect setae
	Dorsum bare

68.	Dorsum with adherent pubescence. Body less circular. Dark pattern on postscutel-
	lar elevation forming only short black stripes (fig. 160). Larger, length 6.4 mm
	pubipennis Borow.
	Dorsum with erect setae. Body regularly circular. Dark pattern on postscutel-
	lar elevation forming large brown spot (fig. 198). Smaller, length 5.5-5.9 mm
	seniculoides Borow.
69.	Punctation of elytra completely regular, coarse, intervals linear. Pronotal disc with
	regular longitudinal striation
	Punctation of elytra at least in basal part and on slope partly irregular, fine to
70	moderately coarse. Pronotal disc smooth or with irregular wrinkles
70.	Elytral disc surrounded by indistinct, thin brownish ring, in posterior half of
	disc, close to suture, few small brownish spots (fig. 132). Humeral angles more
	angulate. Only last antennal segment infuscate
	Eight disc without thin brownish hing and without spots in posterior half of disc
	(ing. 202). Humeral angles less angulate. Two last antennal segment infuscate
71	Punctation of elutra moderately coarse and moderately dense mostly irregular
/1.	Propotal disc at least at base with wrinkles
	Punctation of elvtra coarse and very dense irregular only at base and posterola-
•	teral part of disc. Pronotal disc completely smooth (fig. 171)
	rogezensis n sn
72.	Postscutellar impressions very deep, postscutellar elevation higher (fig. 90-91.
	138-139). Explanate margin more declivous. Thorax yellow. Larger species, length
	6.0-6.6 mm
	Postscutellar impressions shallow, postscutellar elevation lower (fig. 197). Ex-
	planate margin less declivous, external half subhorizontal. Thorax partly black.
	Smaller species, length 4.85-5.4 mm senicula SPEATH
73.	Elytral disc except postscutellar impressions also with deep principal impressions
	and small impressions close to posterior third of suture. Sutural impressions
	marked with brown stripe, poscutellar elevation marked with small black stripes,
	postscutellar impressions without brown spots (fig. 90). Third antennal segments
	very short, shorter than second segment impressipennis n. sp.
	Elytral disc only with postscutellar impressions, without principal and sutural
	impressions. Poscutellar elevation marked with large brownish-black spot, no
	spots at suture in posterior half of disc, postscutellar impressions mostly brown
	(fig. 138). Third antennal segments distinctly longer than second segment
-	nigroscutata FAIRM.
74.	Dorsum uniformity yellow or green, at most postscutellar impressions with brownish
	markings or eight disc along suture with tew small brownish spots (ng. 9, 35,
	sculpture Small species length 41515 mm
	Dorsum usually with dark pattern in paleet encoming only punctures with dark
	markings, if dorsum immaculate then groundcolour of pronotum and elvtra vel-

	lowish brown to brown (fig. 107-108). Elytral disc except H-shaped postscutellar elavation often with elevated sculpture. Size variable, in many species length distinctly above 5.1 mm
75	Proposal sides rounded (fig. 35, 65) Elytral nunctation completely regular. 76
15.	Pronotal sides angulate (fig. 0). Elytral punctation partly irregular.
•	angulate (iig. 9). Eryttat punctation party integriat
76	Punctation of elytra very coarse intervals linear (fig. 35) Elytra with well marked
/0.	H-shaped elevation Proposal disc with distinct nunctation
	brooksi Bobow completely vellow aberration
	Punctation of elytra moderately coarse intervals well marked mostly wider than
	rous (fig. 65) Elytra without or hardly marked H-shaped elevation Propotal
	disc impunctate darsouittata Boy
77	Dorsum predominantly vellow only nunctures with brown to black areals some-
//.	times areolae on sides of diase partly coalescent but never form distinct reticulate
	natern or disc with numerous small black snots but elytra always appear mostly
	vellow Pronotum always vellow without dark spots but civita always appear mostly
	162-163 224 236) 78
_	Dorsum never predominantly vellow usually black with vellow pattern or vellow
•	with black pattern if dorsum not maculate then groundcolour vellowish-brown
	to brown Pronotum often with dark spots 85.
78.	Small species, length 4,1-5,0 mm
	Larger species, length 5.15-6.25 mm
79.	Punctation fine, distance between punctures mostly wider than puncture diameter.
	intervals well marked. Elvtra vellow with black punctures
	Punctation very coarse, distance between punctures narrower than puncture
	diameter, intervals linear. Elytra with numerous small, black spots (fig. 34)
	brooksi Borow., aberration with small black spots
80.	Punctation of marginal row with punctures between humeral and lateral fold
	partly coalescent, forming a deep hole (fig. 128). Humeral angles more protru-
	ding anterad (fig. 127). Larger, length 4.8-4.9 mm monticola Borow.
	Punctation of marginal row never coalescent and never forming a deep hole
	(fig. 137). Humeral angles less protruding anterad (fig. 136). Smaller, length 4.3
	mm nigropunctata n. sp.
81.	Elytral disc except postscutellar H-shaped figure without a transverse, V-shaped
	elevation in 2/3 length of disc, at most on sides of disc punctures tend to form
	shallowly impressed fields and slightly elevated interspaces. Pronotal punctures
	usually marked with black 82.
	Elytral disc except postscutellar H-shaped figure with a transverse, V-shaped
	elevation in 2/3 length of disc (fig. 148). Pronotal punctures marked with brown
	concallescens Spaeth
82.	Base of elytra only slightly wider than pronotum (fig. 149, 224, 236). Surface
	of eight more regular, except H-shaped postscutellar elevation without elevated
	neids

- Base of elytra distinctly wider than pronotum. Surface of elytra less regular, except H-shaped postscutellar elevation with elevated fields on sides of disc (fig. 162-163).....pulpa SPAETH
  83. Punctures in rows 9-10 marked with black. Pronotal sides less angulate (fig. 149.
- Punctures in rows 9-10 marked with black. Pronotal sides less angulate (fig. 149, 236). Pronotal disc moderately coarse and moderately dense punctate, punctures tend to form short striation. Last two or three antennal segments infuscate 84.
- -. Punctures in rows 9-10 marked with red. Pronotal sides more angulate (fig. 224). Pronotal disc very fine and sparse punctate, punctures never tend to form short striation. Antennae uniformly yellow ...... tsaratanana BOROW.
- 84. Base of elytra more wider than pronotum. Pronotal sides less angulate. Elytral sculpture more distinct, forming not only postscutellar H-shaped elevation but also relief on sides of disc and slope (fig. 236) .....
- *collucens* SPAETH, the palest aberration
  Base of elytra less wider than pronotum, pronotal sides more angulate, elytral sculpture indistinct, forms only low H-shaped elevation (fig. 149)

..... prospera SPAETH, the palest aberration

85. Groundcolour of pronotum and elytra in fully sclerotised specimens yellowishbrown to brown, without pattern or it forms dark areolae around punctures or U-shaped figure of diffused borders, sometimes forms humeral spot on underside of explanate margin, pronotum always without spots. Pronotum with broadly rounded sides (fig. 107-108, 115, 151-152). Punctation of elytra very coarse, regular, intervals linear, elytral disc except postscutellar H-shaped figure without distinct sculpture but second interval in 2/3 length distinctly elevated ......

- Groundcolour of pronotum and elytra in fully sclerotised specimens yellow to ochraceous, if brown then pronotum with angulate sides (fig. 59-60, 62-63), or with dark spots, elytra often with dark pattern of various shape. Puncturation variable, elytral disc except postscutellar H-shaped figure often with various sculpture 88.
- 86. Ventrites partly black. Body more circular. Explanate margin of elytra narrower. Elytral disc uniformly brown or punctures with dark areola but pattern never forming U-shaped figure but sometimes forms humeral spot on underside of explanate margin (fig. 107-108, 151-152). Slightly smaller, length 3.9-5.0 mm .... 87.
- -. Ventrites uniformly yellow. Body less circular, elytral sides slightly more converging posterad. Explanate margin of elytra broader, particularly in posterior half. Elytral disc with dark pattern forming U-shaped figure but sometimes forms humeral spot on underside of explanate margin (fig. 115-116). Slightly larger, length 4.7-5.5 mm ...... *lateritioides* n. sp.
- 87. Dorsum uniformly yellowish-brown and explanate margin of elytra without humeral spots on underside (fig. 107-108) ...... *lateritia* FAIRM.
- -. Dorsum not uniformly brown, punctures with dark, brown centre, in two submarginal rows punctures also with brown areola, the areolae sometimes partly

coalescent thus along sides of disc runs more or less irregular narrow band or row of brown spots, postscutellar point with small brown spot, in 1/3, 2/3 and 3/4 length of elevated second interval small, brown spot. Underside of explanate margin of elvtra usually with brownish humeral spot extending to 2/3-4/5 width of the margin (fig. 151). If dorsum uniformly yellowish-brown then underside of explanate margin of elytra with at least diagonal dark spot (fig. 152) *pseudolateritia* n. sp. 88. Ground colour of elytra brown, including explanate margin (fig. 59-60, 62-89. Pronotum uniformly brown (fig. 62-63). Pronotal sides more angulate. Puncturation of sides of disc coarser and denser, punctures almost touching each other. Claws with very small basal tooth, appears simple ...... dolens Borow. Pronotum bicolour, explanate margin at least in anterior half yellow, disc with -. large black spot of diffused borders (fig. 59, 60). Pronotal sides more angulate. Puncturation of sides of disc finer and sparser, interspaces slightly narrower than puncture diameter. Claws with large basal tooth ...... densestriata n. sp. -. 91. Elytral sculpture forms, except H-shaped postscutellar elevation, reticulate relief, or elevated spots in both anterior anf posterior half of disc, or indistinct folds on Elytral sculpture forms, except H-shaped postscutellar figure, elevated transverse, impunctate band in 2/3 length of disc, the band is bordered by dark punctures (fig. 226) ..... unicatenata WEISE 92. Elytral relief, except H-shaped postscutellar elevation, very distinct, forms Elytral relief, except H-shaped postscutellar elevation, indistinct, forms -. mostly irregular folds on sides of disc (fig. 110, 238) ...... 94. 93. Elytral relief forms elevated reticulation. Groundcolour of pronotum and elevated sculpture yellow (fig. 140). Larger, length 5.2 mm ...... nosybeebsis n. sp. Elytral relief forms elevated spots. Groundcolour of pronotum and elevated -. sculpture ocheous (fig. 41-42). Smaller, length 4.2-4.8 mm ...... coelebs n. sp. 94. At least two apical antennal segments infuscate. Elvtral pattern forms thin dark reticulation (fig. 238). Here two very similar species of the same range of variation of dorsal coloration and proper identification needs comparison Antennae uniformly yellow. Elytral pattern forms more or less distinct -. bands along sides, occasinally whole disc without pattern (fig. 110) ...... ...... latecincta FAIRM., the palest aberration 95. Base of elytra slightly less wider from pronotum. Sides of pronotum slightly more angulate ...... trossula SpAETH, pale aberration Base of elvtra slightly more wider from pronotum. Sides of pronotum slightly less -. angulate ...... collucens SPAETH, pale aberration

96.	Elytral pattern forms on disc dark bands along sides, sometimes disc mostly dark but never pale reticulate or maculate (fig. 15, 39, 50-51, 111, 114, 154, 245)
	Elytral pattern forms on whole surface of disc pale reticulation or pale spots
97. 	Elytral punctures on pale parts of disc black (fig. 15, 154)
98.	Pronotal pattern forms M-shaped figure with two large, yellow praescutellar spots but without lateral yellow spots (fig. 15). Black colour in humeral part of elytral disc limited to marginal row and only slightly extending to surface of explanate margin (fig. 16). Surface of elytral disc completely regular. Smaller, length 4.3- 4.55 mm
	Pronotal black spot with two large yellow spots at base, and oblique yellow spots at sides (fig. 154). Black colour in humeral part of disc partly extending behind border between disc and explanate margin (fig. 155). Surface of elytral disc slightly irregular. Larger, length 5.2 mm <i>pseudostrumosa</i> n. sp.
99.	Base of elytra distinctly wider than pronotum (39, 50-51, 235). Ventrites uniformly vellow. At least two apical antennal segments infuscate
	Base of elytra only slightly wider than pronotum (fig. 111, 114). Ventrites partly infuscate yellow. Antennae uniformly yellow
100.	Anterior margin of pronotum less convex thus maximum width is slightly before middle of pronotum. Humeral angles more protruding anterad, angulate (fig. 39, 235). Elytral disc with surface more regular, with only few transverse folds or wrinkles. Explanate margin of elytra less declivous with external 1/3 width almost horizontal. Claws with larger basal tooth circumspeta Sparth
-	Anterior margin of pronotum more convex thus maximum width in the middle. Humeral angles less protruding anterad, subangulate (fig. 50-51). Elytral disc with surface more wrinkled. Explanate margin of elytra moderately declivous on whole width. Claws with smaller basal tooth consobrina SPAETH
101.	Elytral sculpture or pattern forms on whole disc or at least on sides regular spots $(6a, 5, 26, 44, 84, 85, 207, 208, 228)$
	(ng. 5, 26, 44, 64-85, 207-208, 228)    102.      Elytral sculpture or pattern forms on whole disc reticulation (fig. 7, 32, 144, 148, 156, 192, 204-205, 212)    108.
102	Ventrites partly brown or black. Claws with basal tooth 103.
	Ventrites uniformly yellow. Claws simple (fig. 228) verrucata (BoH.) Proposal disc smooth and shiny
	Pronotal disc punctate, punctures often tend to form short grooves (fig. 44)
104	collucens SPAETH, aberration with sculpture forming regular spots. Yellow elevated spots around postscutellar impressions and in posterior half of disc
	close to suture tend to coalescent and form handle-shaped figures 105. Yellow elevated spots always separated, more or less circular 106.

105.	Explanate margins of elytra slightly wider, particularly in posterior half, and less declivous. Pronotal sides slightly more rounded (fig. 84-85). Larger species, length
	5.0-6.0 mm (mean 5.5 mm)
106.	Larger species, length 5.0-6.0 mm. Elytral yellow spots more convex, mostly with
	regular borders Abdomen often partly infuscate to black 107. Small species, length 4.5-4.8 mm, Elytral vellow spots less convex with irregular
•	borders. Abdomen always yellow (fig. 5) andapaensis n. sp.
107.	Anterior margin of pronotal black spot emarginate in the middle (fig. 26). Scutel-
	Anterior margin of pronotal black spot in the middle prolonged into triangle.
	Scutellum black. Abdomen yellow or infuscate in the middle but never mostly
108.	black <i>goudoti</i> (BoH.), aberration with completely separated elytral spots Smaller species, length 4.2-4.9 mm. Base of elytra strongly wider than pronotum
	Larger species, length 5.15-6.3 mm. Base of elytra slightly to moderately
	wider than pronotum (fig. 148, 192, 212). Here five species very difficult to identification without comparison with series of properly identified specimens
109.	Pronotum with M-shaped black spot, usually vellow lateral lobes of disc, large
	yellow parescutellar spots nad sometimes thin transverse spots in front of M-shaped figure. Yellow reticulation on elytral disc predominates before black background
	Pronotal disc mostly black except yeallow area above head and small V-shaped
	praescutellar spot. Yellow reticulation on elytral disc limited to only ring-shaped
	fold around postscutellar impressions, transverse V-shaped elevation in posterior half of disc and few yellow small spots, elytral disc appereas predominantly black (fig. 144)
110.	Elytral reticulation distinctly elevated, mostly thin and marked with black punctures
	(fig. 7, 32, 204-205). Ventrites partly black
	Elytral reticulation indisticity elevated, mostly broad and not marked with black punctures (fig. 156). Ventrites yellow
111.	Pronotal black spot with only basal yellow V-shaped pot, never divided into two
	or three black spots. Marginal interval always yellow (fig. 8, 33)
	verse yellow spots in front of the black M-shaped figure, sometimes black spot
	divided into large basal part and transverse handle-shaped spots in anterior part of disc (fig. 204-205). Marginal interval often black below humerus (fig. 206)
112	Antennae uniformly vellow Body slimmer length/width ratio 1 22-1 25 Elytral
112.	sculpture slightly less elevated with yellow slightly predominate before black (fig.
	<i>52) bullrschi</i> n. sp.

Two last antennal segments black. Body stouter, length/width ratio 1.14-1.19. -. Elytral sculpture slightly more elevated with black slightly predominate before vellow (fig. 7) ..... andohahelana n. sp. 113. Pronotal sides distinctly angulate (fig. 192, 212) ...... 114. Pronotal sides narrowly rounded to subangulate (fig. 148) ...... 115. 114. Smaller, length 5.45-5.75 mm. Pronotal punctation denser. Elytral punctation slightly coarser and denser (fig. 212) ..... subacuticollis Borow. Larger, length 6.0-6.3 mm. Pronotal punctation sparser. Elytral punctation slight--. ly finer and sparser (fig. 192) ..... sculpturipennis n. sp. 115. Elytral sculpture higher, forming not only postscutellar H-shaped elevation but also relief on sides of disc and slope ..... 116. Elytral sculpture indistinct, forms only low H-shaped elevation, vellow reticulation -. on sides of disc and slope almost flat (fig. 148) ..... ...... prospera SPAETH, maculate aberration 116. Base of elytra slightly less wider from pronotum. Sides of pronotum slightly more angulate. Elytral sculpture more reticulate ..... ...... trossula SPAETH, aberration with reticulate sculpture Base of elytra slightly more wider from pronotum. Sides of pronotum slightly less -. angulate. Elytral sculpture except reticulation often forms few isolated yellow spots ..... collucens SPAETH, aberration with reticulate sculpture

#### DESCRIPTIONS

#### Cassida acutangula BOROWIEC, 1999 (figs. 1-2, map. 1)

Cassida acutangula Borowiec, 1999 b: 440.

#### TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Morondava, fôret sud de Befasy, I-56, R.P. » [MNHN].

#### DESCRIPTION

Length: 8.9 mm, width: 6.4 mm, length of pronotum: 2.9 mm, width of pronotum: 5.8 mm, length/width ratio 1.39, width/length ratio of pronotum: 2.00. Body oval (fig. 1).

Pronotum and scutellum yellowish-brown. Elytra yellowish-brown with black marble pattern. Explanate margin of elytra yellowish-brown, without spots. Clypeus, prosternum and legs yellowish brown, metasternum and abdomen slightly darker, brown. Antennal segments 1-7 yellowish, remainder black except yellowish apex of underside of the last segment.

Pronotum very broad, twice wider than long, with maximum width at base, as wide as base of elytra; base on sides moderately emarginate, angles of pronotum angulate, moderately protruding posterad. Disc moderately convex, indistinctly bordered from explanate margin but with well separated area above head. Surface of disc, except area above head, with irregular, mostly longitudinal folds, thus appears wrinkled. Explanate margin without tendency to form gutter, slightly declivous, its surface slightly irregular but not appearing rugose or wrinkled.

Scutellum triangular with rounded apex, without punctures or sulci. Base of elytra as wide as base of pronotum, humeral angles subangulate, margin behind humerus not emarginate. Disc regularly convex (fig. 2), at top slightly depressed, with sharp, longitudinal costa in position of interval 3rd. In postscutellar point costae joined by transverse fold, thus postscutellar area with H-shaped elevation. Postscutellar impressions shallow but distinct, bordered externally by elytral costa, no principal or lateral impressions. Punctation in postscutellar impressions and between costa and suture irregular, coarse and dense, punctures almost touching each other. Punctation between costa and margin of disc in area close to costa irregular, in area close to margin with tendency to form regular rows, submarginal and marginal rows completely regular. Punctures coarse and dense, almost touching each other, intervals hardly visible, surface appears irregular to rugose. Punctures in submarginal row slightly coarser than in internal rows, those in marginal row only slightly coarser than in submarginal one. Explanate margin 0.38 times as wide as width of disc of each elytron, declivous, its surface irregular but not appearing rugose. Apex of elytral epipleura with sparse erect hairs.

Clypeus 1.2 times wider than long, flat, clypeal lines fine but distinct on whole length of clypeus. Surface of clypeal disc smooth, slightly dull, without punctures.

Labrum emarginate to half length. Antennae moderately elongate, length ratio of antennal segments: 100:63:93:93:80:60:67:60:63:63:115. Segment 3 approximately 1.5 times as long as segment 2 and equaly long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, impressed along sides, strongly expanded apically, its apex punctate.

Claws large, simple.

### DISTRIBUTION MADAGSCAR OUEST (map 1).

#### Remarks

*Cassida acutangula* n. sp. with *C. pauliani* n. sp. and *C. umbonata* n. sp. forms a very distinct group of large species (length exceeding 7.5 mm) with base of pronotum bisinuately emarginate and pronotal angles strongly protruding anterad. *C. umbonata* distinctly differs in the presence of large conical postscutellar tubercle (in both *C. acutangula* and *pauliani* elytral disc is regularly convex with no tubercle). *C. pauliani* is very similar to *C. acutangula* but differs in elytral longitudinal costa distinctly lower, obtuse (sharp in *acutangula*), and sparser elytral punctation; base of pronotum in *C. pauliani* is slightly wider than base of elytra (as wide as in *acutangula*) and deeper emarginate, pronotal angles more protruding posterad but blunt.

MATERIAL EXAMINED Known only from holotype.

#### Cassida agilis SPAETH, 1915 (figs. 118-119, map 1)

Cassida (Cassida) agilis: SPAETH, 1914: 115 (nomen nudum). Cassida agilis SPAETH, 1915: 142. – BOROWIEC, 1999 a: 235.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagasc., 1902, Plason » [MM].

#### DESCRIPTION

Length: 4.7-5.8 mm, width: 4.1-4.85 mm, length of pronotum: 1.65-2.0 mm, width of pronotum: 3.0-3.6 mm, length/width ratio 1.15-1.22, width/length ratio of pronotum: 1.75-1.82. Body from almost circular in male to short-oval to subtriangular in female (fig. 118).

Pronotum yellow, disc with two large, semicircular spots, basal margin narrowly black. Scutellum yellow, sides sometimes narrowly black. Elytral disc yellow with black pattern as in fig. 118. The pattern is constant, postscutellar elevation always with black spots, slightly behind half length of intervals 2-3 and rows 2-4 always irregular spot, punctures in postscutellar impressions marked with black, the black markings mostly coalescent, sides of disc with reticulate black pattern, sometimes coalescent with spot on intervals 2-3. Clypeus, venter, legs and antennae yellow, last antennal segment infuscate to black except yellow apex of venter.

Pronotum regularly elliptical, with maximum width in the middle, sides very broadly rounded. Disc almost flat, indistinctly separated from explanate margin. Surface of disc glabrous, smooth and shiny with several very small punctures. In some specimens sides of disc with very fine striation. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with small black crenulation, humeral angles moderately protruding anterad, elytral edge behind the angle shallowly emarginate thus humeral angles distinctly acute. Disc almost regularly convex in profile (fig. 119) but with well marked H-shaped elevation in postscutellar point, with very shallow scutellar impressions, and shallow principal impressions. Anterior branches of the H-shaped elevation short, not surrounding postscutellar impressions but posterior branches prolonged into slightly elevated second interval. Punctation regular but rows partly broken by slightly elevated yellow parts of disc. Marginal row distinct, its punctures mostly as coarse as on disc with distance between punctures mostly wider than puncture diameter. Intervals in sutural half of disc as wide as, or slightly wider, on sides slightly narrower than rows. Surface of intervals glabrous, smooth and shiny. Marginal interval distinct, 1.5 times wider than submarginal interval, humeral and lateral folds marked rather like broad interspace between punctures than elevation. Explanate margin moderately declivous, broad on whole length, in the widest part only slightly narrower than half width of disc. Surface of explanate margin shallowly but moderately coarse and densely punctate, appears slightly irregular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse, short pubescence.

Eyes large, gena obsolete. Clypeus moderately broad, 1.1 times as wide as long, frontal grooves very fine, running close to eye margins and converging in triangle. Area between grooves, eye margins and upper margin of labrum with row of setose punctures. Surface of clypeal plate flat, shiny, with few small setose punctures. Labrum narrowly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately 1.2-1.3 times as long as wide. Length ratio of antennal segments: 100:53:68:58:61:47:58:45:53:53:100. Segment 3 approximately 1.3 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar slightly shorter than last palpomere. Prosternal process broad, moderately impressed along lateral margins, impressions without rows of erect hairs, very broad apically, rhomboidal apex mostly flat only sides with shallow impressions, shiny, with few moderately coarse punctures.

Claws with moderately large basal tooth.

DISTRIBUTION

MADAGASCAR EST and SUD (map 1).

#### REMARKS

*Cassida agilis* SP. belongs to the group of species with base of elytra much wider than base of pronotum and acute humeral angles. At first glance *C. andohahelana* n. sp. looks the most similar but differs in shape of pronotal spot forming M-shaped figure (two C-shaped spots in *C. agilis*), rather angulate than acute humeral angles and less elevated postscutellar area. *C. trianguliformis* n. sp. looks also similar but differs in smaller size with length 4.05 mm, pronotal pattern forming M-shaped spot, ventrites mostly black, and body shape distinctly subtriangular.

#### MATERIAL EXAMINED

MADAGASCAR EST: - Sud-Est distr., Midongy du Sud, Mont Papango, sud-ouest Befotaka, 1200 m, III 1959, 1 ex., R. ANDRIA [DBET].

MADAGASCAR SUD: – Andohahela Nat. res., VI-XII 1991, 1 ex., B. RANDRIAMAM-PIONONA [DBET].

#### Cassida ambrica BOROWIEC, 1999 (figs. 3-4, map 1)

Cassida ambrica BOROWIEC, 1999 b: 450.

TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Mt. d'Ambre » [DBET].

DESCRIPTION

Length: 9.0 mm, width: 7.9 mm, length of pronotum: 2.6 mm, width of pronotum: 4.9 mm, length/width ratio 1.14, width/length ratio of pronotum: 1.88. Body subcircular (fig. 3)

Pronotum uniformly yellow. Scutellum yellow. Elytral disc mostly yellow, with few short black stripes: one in the middle of basal margin of elytra, one in front of the middle of interval 7th, and one on first interval close to scutellum, one in impression of postscutellar elevation, slightly in anterior half of the interval and one in 2/3 of its length. The pattern is not symmetrical and on right and left elytron the same spots can be of different shape and size. Explanate margin with humeral and posterolateral black spots of irregular borders, humeral spot not extending to anterior margin of the explanate margin, posterolateral spot not extending to margin of elytra. Clypeus, ventrites, legs and antennae uniformly yellow.

Pronotum broad, approximately 1.9 times wider than long, elliptical, with maximum width in the middle, sides rounded. Disc convex, distinctly bordered from explanate margin, but without sulci and without separated part above head; on sides and on border line between disc and explanate margin with small, round impression. Surface of disc smooth and glabrous. Explanate margin subhorizontal, its surface smooth and glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra much wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humeri not emarginate. Disc regularly convex (fig. 4), without tubercles, only with low transverse elevation in postscutellar point; also other parts of disc with few very low transverse elevations. Postscutellar and principal impressions distinct, lateral impression shallow. Punctation of disc regular, but rows partly broken by elytral elevations. Punctures moderately coarse, on sides slightly coarser than in sutural half of disc, moderately dense with distance between punctures from as wide as to twice wider than puncture diameter. Intervals four to five times wider than rows, only interval 5<sup>th</sup> distinctly narrower, as wide as to twice wider than rows, flat, second interval distinctly widened posterad. Marginal interval only slightly wider than submarginal one. Punctures in marginal row approximatelytwice coarser than in submarginal one, disposed regularly. Whole surface of intervals smooth, slightly shiny. Explanate margin broad, as wide as 2/3 width of disc of each elytron, horizontal, forms a shallow gutter, its surface smooth, slightly shiny. Apex of elytral epipleura with sparse erect hairs.

Clypeus moderately broad, approximately 1.4 wider than long, distinctly elevated apically, impunctate, glabrous; clypeal lines very fine, visible only in basal part of clypeus. Labrum emarginate almost to half length. Antennae moderately elongate, length ratio of antennal segments: 100:47:84:82:80:58:61:58:55:58:100. Segment 3 approximately 1.8 times longer than 2, segment 4 only slightly shorter than 3.

Prosternal collar long, slightly longer than last palpomere, prosternal process broad, sides not impressed, apex strongly expanded, with large but shallow impression, impunctate.

Claws simple.

DISTRIBUTION MADAGASCAR NORD (map 1).

#### REMARKS

It belongs to the group of large species with length exceeding 8.0 mm, elytra strongly convex, yellow or with small black spots, and elongate antennae. The group includes also *Cassida rugipennis* (BOH.) and *C. contracta* (SP.). *C. ambrica* distinctly differs in explanate margin with humeral and posterolateral spots (immaculate in both its relatives), almost horizontal, forming shallow gutter (slightly declivous with no tendency to form gutter in the other two species).

MATERIAL EXAMINED Known only from holotype.

#### Cassida andapaensis BOROWIEC, 1988 (figs. 5-6, map. 2)

Cassida andapaensis BOROWIEC, 1988: 560, 1999 a: 237.

TYPE MATERIAL

Holotype: MADAGASCAR Est: «Anadapa, 50 km Ouest Andapa, Anjanaharibe, 1600 m, IV 1960, 1, P. Soga » [DBET].

#### DESCRIPTION

Length: 4.5-4.8 mm, width: 3.8-4.25 mm, length of pronotum: 1.6-1.7 mm, width of pronotum: 2.95-3.2 mm, length/width ratio 1.13-1.18, width/length ratio of pronotum: 1.84-1.88. Body subcircular (fig. 5).

Pronotum yellow, disc with black pattern as in fig. 5. Scutellum yellow with black margins. Disc of elytra black with numerous yellow, partly elevated spots, usually on each elytron 13 large and two small spots arranged as in fig. 5. Margins of large spots irregular. Sometimes spots along suture and spots surrounding postscutellar impression partly coalescent, forming irregular yellow pattern. Marginal interval and apex of disc always yellow, but punctures of marginal row marked with black, sometimes black form spot behind humeral and before lateral marginal folds. Clypeus yellow. Thorax brown to black centrally and gradually paler, brown to yellowish-brown laterally, sometimes also central part of prosternal process yellowish brown. Abdomen and legs pale yellow but coxae usually darker, yellowish-brown. Antennae yellow, only last segment infuscate to black except yellowish apex of ventral side.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subangulate. Disc slightly irregularly convex in profile, with top of convexity in postscutellar point (fig. 6), with small, shallow scutellar impressions. Postscutellar area with no H-shaped elevation. Punctation moderately coarse, regular but regularity of rows interrupted by yellow, impunctate relief. Interspaces in row from as wide as to twice wider than puncture diameter. Marginal row distinct, with moderately dense punctures, thrice coarser than punctures in central rows. Intervals mostly flat, interrupted by more or less elevated yellow relief, three to four times as wide as rows. Marginal interval well marked on whole length, mostly as wide as lateral intervals, with low but broad humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part three times narrower than disc. Surface of explanate margin very shallowly punctate, appears regular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura glabrous, only elytral margin close to suture with few very short setae.

Eyes large, gena hardly marked. Clypeus narrow, 1.1 times as long as wide, frontal grooves very fine, running mostly close to eye margin and converging in triangle on apex of clypeus. Area between grooves and margin of eyes with row of punctures, each puncture armed with long hair. Surface of clypeal plate flat or with shallow median furrow, glabrous, smooth and shiny. Labrum distinctly emarginate to ¼ length. Antennae slim, segments 9-10 slightly longer than wide. Length ratio of antennal segments: 100:60:80:75:65:60:55:50:50:110. Segment 3 approximately 1.3 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically, area between coxae with

few punctures, central part of rhomboidal apex convex, impunctate, sides with rugose punctation.

Claws with very small basal tooth.

DISTRIBUTION MADAGASCAR EST (map 2).

Remarks

It belongs to the *Cassida goudoti* species group and the subgroup which is characterized by elytral disc black with yellow relief forming numerous convex spots. The group comprises *Cassida goudoti* (BOH.), *C. andapaensis* BOR., *C. andohahelana* n. sp., *C. beondrokana* n. sp., *C. suaveola* (SP.) and *C. verrucata* (BOH.). *C. goudoti* and *C. beondrokana* distinctly differ in large size with length usually above 5 mm and in elytral yellow spots more convex with mostly regular borders. *C. verrucata* differs in ventrites always uniformly yellow (partly to mostly black in other species) and simple claws (with more or less developed basal tooth in other species). *C. andohahelana* and *C. suaveola* differ in narrower explanate margin of elytra. *C. suaveola* differs also in elytral relief more regular in outline with most spots more or less round while in *C. andapaensis* they have mostly irregular borders. *C. andohahelana* differs also in the largest spot at base of elytron always connected with spot at top of disc while in *C. andapaensis* the spots are always separated.

MATERIAL EXAMINED Known only from holotype.

> Cassida andohahelana n. sp. (figs. 7-8, map. 2)

TYPE MATERIAL

Holotype: MADAGASCAR SUD: « S MADAGASCAR, Andohahela Nat. P., VI-XII 1991, B. Randriamampionoma » [DBET]. – paratype: MADAGASCAR SUD: « S MADA-GASCAR, Andohahela Nat. P., VI-XII 1991, B. Randriamampionoma » [DBET]. – paratype: MADAGASCAR EST: « Rogez, Madagascar, Mus. Praha » [NMP]. – paratype: MADAGASCAR: « Madagascar, Janvier, collection Le Moult » [DBET].

ETYMOLOGY Named after its type locality.

DESCRIPTION

Length: 4.45-4.75 mm, width: 3.75-4.15 mm, length of pronotum: 1.7-1.8 mm, width of pronotum: 2.95-3.1 mm, length/width ratio 1.14-1.19, width/length ratio of pronotum: 1.69-1.76. Body almost circular (fig. 7).

Pronotum yellow, disc with large black basal spot as in fig. 7. Anterior margin of the black spot in the middle cut not prolonged into triangle. At base of the black spot

two large, oblique yellow spots, bases of the spots separated or connected. Scutellum brown to black. Elytral disc black with yellow relief of 30-36 elevated yellow spots of various shape arranged as in fig. 7. Spots on slope and along suture separated or partly coalescent, the largest spot at base of elytron always coalescent with spot at top of disc thus postscutellar impressions look surrounded by yellow relief with two small spots at apex of scutellum. Marginal interval almost completely yellow, punctures of marginal row partly marked with brown or black. Clypeus yellow. Thorax black or prosternal process and lateral plates yellowish-brown to brown. Abdomen uniformly yellow to mostly black surrounded by yellow margin. Legs uniformly yellow or with brown coxa. Antennae yellow, last two segments brown to black except yellowish ventral side of apex.

Pronotum elliptical, with maximum width in the middle, sides broadly rounded. Disc slightly convex, sides distinctly separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point (fig. 8), with very shallow scutellar impressions, yellow elevated spots form H-shaped figure at top of disc (fig. 7). Punctation fine, regular but regularity of rows partly disordered by yellow elytral relief. Yellow spots often runs along single or two joined intervals and are bordered by punctate rows thus regularity of rows similar to Cassida andohahelana much distinct than in other species of C. goudoti group. Distance between punctures in rows mostly as wide as or only slightly wider than puncture diameter. Marginal row distinct, with moderately dense punctures, distinctly coarser than punctures in central rows, particularly in area between humeral and lateral fold, punctures very coarse, twice coarser than punctures on disc. Intervals partly disordered by elytral relief, in well marked parts vary from twice narrower to as wide as rows. Marginal interval well marked on whole length, broad, humeral and lateral folds only slightly elevated. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with several extremely short setae, thus appears bare.

Eyes large, gena hardly marked. Clypeus narrow, approximately 1.25 times as long as wide, frontal grooves very fine, runs very close to margin of eye, converging in regular triangle. Area between grooves, eye margin and upper margin of labrum with row of setae. Surface of clypeal plate flat or with very shallow impression in the middle, glabrous, smooth and shiny. Labrum distinctly emarginate to <sup>1</sup>/<sub>4</sub> length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:56:84:66:72:63:59:53:56:56:116. Segment 3 approximately 1.5 times as long as segment 2 and 1.3 times as long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa slightly convex, smooth and shiny with few setose punctures, apex rhomboidal with rugose sculpture and few setose punctures.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR EST and SUD (map 2).

#### REMARKS

It belongs to the Cassida goudoti species group which is characterized by elytral disc black with yellow relief forming numerous convex spots or reticulate pattern. The group comprises C. goudoti (BOH.), C. andapaensis BOROW., C. andohahelana n. sp., C. beondrokana n. sp., C. bulirschi n. sp., C. nosybeensis n. sp., C. paveli n. sp., C. suaveola (Sp.) and C. verrucata (BOH.). C. nosybeensis distinctly differs in uniformly yellow pronotum and base of elytra only slightly wider than pronotum. Cassida bulirschi differs in uniformly yellow antennae, slightly slimmer body, sculpture less elevated with yellow slightly predominate than black. C. paveli differs in pronotum mostly black with only yellow, short, y-shaped spot in front of scutellum, in elytral disc predominantly black with sculpture forming a ring surrounding postscutellar impressions, and transverse V-shaped figure on slope and only few additional yellow spots. Other species of C. goudoti group have rather elevated spots than elevated reticulation. C. suaveola (Sp.) is the most similar but differs in at least on sides of disc sculpture forming isolated round spots. C. verrucata differs in ventrites always uniformly yellow and simple claws. C. and apaensis differs in more regular yellow spots with large spot at base of elytron never connected with spot at top of disc (connected in C. andohahelana) and anterior margin of spot on pronotal disc in the middle prolonged in black triangle (cut in C. andohahelana). C. goudoti and C. beondrokana differ in generally larger size (most specimens with length above 5.0 mm), C. goudoti differs also in fewer spots along suture and more regular, almost round, and pronotal spot, if present, with anterior margin of spot on pronotal disc in the middle prolonged in black triangle.

MATERIAL EXAMINED No additional material.

### Cassida angulicollis n. sp. (figs. 9-10, map 2)

#### TYPE MATERIAL

Holotype: MADAGASCAR SUD: « Madagaskar, Toliara distr., Saint Augustin / Madagaskar, 13-18.2.1985, Ivo Jeniš » [DBET].

ETYMOLOGY

Named after its angulate pronotal sides.

#### DESCRIPTION

Length: 4.45 mm, width: 3.55 mm, length of pronotum: 1.75 mm, width of pronotum: 3.15 mm, length/width ratio 1.25, width/length ratio of pronotum: 1.8. Body short-oval (fig. 9).

Pronotum uniformly yellow. Scutellum yellow. Elytra mostly yellow, only postscutellar impression with reddish-brown spot of indistinct borders. Clypeus yellow. Ventrites and legs uniformly yellow. Antennae with segments 1-4 yellow and segments 5-11 slightly infuscate.

Pronotum almost semicircular, maximum width close to base, sides angulate. Disc convex, indistinctly separated from explanate margin but with oval lateral lobes separated from central part of disc by sharp furrow. Surface of basal part of disc impunctate but with low granulation, each granule at top umbilicate, area above head and lateral lobes with extremely low granulation, appears almost regular. Explanate margin impunctate, without granulation, surface appears regular, transparent with well visible honeycomb structure. Whole surface of disc slightly dull.

Base of elytra as wide base of pronotum, basal margin without crenulation, humeral angles moderately protruding anterad, subangulate. Disc almost regularly convex in profile, with top of convexity slightly before the middle (fig. 10), with distinct scutellar impressions. Top of disc with low, indistinctly marked H-shaped figure. Punctation moderately coarse but dense, regular, interspaces narrower than punctures, particularly in postscutellar impressions and on slope. Punctures mostly arranged irregularly, but in central part of disc and on sides tend to form more or less regular rows. Marginal interval well marked on whole length and broad, thrice wider than submarginal interval combined, humeral and lateral folds indistinct. Interspaces and surface of intervals slightly dull. Except H-shaped folds on top of disc no other sculpture. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate slightly irregular and slightly dull, transparent with well marked honeycomb structure. Apex of elytral epipleura without setae.

Eyes large, gena obsolete. Clypeus moderately broad, slightly wider than long, frontal grooves fine, indistinct, converging in triangle with obtuse apex. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, smooth and shiny with very fine and shallow punctation. Labrum shallowly emarginate to 1/6 length. Antennae moderately long, segments 9-10 approximately as times as wide as long. Length ratio of antennal segments: 100:56:61:61:56:48:52:56:56:52:117. Segment 3 approximately 1.1 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, moderately expanded apically, area between coxae shallowly impressed without special sculpture, slightly dull, central and lateral part of rhomboidal apex convex, with few small, shallow punctures.

Claws simple.

DISTRIBUTION MADAGASCAR SUD (map 2).
### REMARKS

Distinct species, well distinguished by small size, predominantly yellow colouration and angulate pronotal sides. On first sight the most similar is yellow form of *Cassida brooksi* BOROW. but differs in rounded pronotal sides and coarser and completely regular punctation of elytra. Similar sized and uniformly yellow form of *C. dorsovittata* BOH. differs in rounded pronotal sides, disc of pronotum without granulation and completely regular punctation of elytra.

MATERIAL EXAMINED No additional material.

# Cassida anosyennesensis n. sp. (figs. 11-12, map 3)

TYPE MATERIAL

Holotype: MADAGASCAR SUD: « SE Madagascar, Chalines, Anosyennes, 7 km S of Imana, 1400-1600 m, 8-12.2.2004, 24°16 S, 46°57 E, P. Bulirsch lgt. » [DBET].

ETYMOLOGY Named after its type locality.

# DESCRIPTION

Length: 3.95 mm, width: 3.25 mm, length of pronotum: 1.3 mm, width of pronotum: 2.5 mm, length/width ratio 1.22, width/length ratio of pronotum: 1.92. Body widest in 1/3 length then distinctly converging posterad (fig. 11).

Pronotal disc black, explanate margin at base close to border of disc black, then basally brown, area in front of head and anterolateral margins pale yellow. Elytral disc black, explanate margin along border of disc blackish, externally brown, elytral edge and apex of explanate margin yellow, borders between black, brown and yellow diffuse. Clypeus at base blackish, gradually paler to apex thus in the middle brown and close to antennal insertions yellowish-brown, thorax and abdomen mostly brownish-black, apex of the last sternite narrowly yellow. Legs yellow only coxa brownish-black. Antennal segments 1-8 yellow, segments 10-11 black, segment 9 yellow basally and brownish apically.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc only slightly convex, on sides bordered from explanate margin by shallow sulcus, with slightly separated area above head. Surface of disc in front of scutellum with two short, oblique impressions, smooth and shiny. Explanate margin smooth and shiny, on pale parts transparent, with honeycomb structure.

Base of elytra much wider than pronotum, basal margin with small crenulation, humeral angles moderately protruding anterad, acute but margin behind humerus not emarginate. Disc almost regularly convex (fig. 12), with very low, hardly marked H-shaped elevation. Postscutellar and principal impressions shallow but distinct, not bordered externally by an elevation. Punctation of disc regular but rows not impressed. Punctation on sides of disc distinctly coarser than in anterior and posterior half of disc, on slope gradually smaller and apical punctures four times smaller than lateral. Distance between punctures on sides of disc as wide as to slightly narrower than puncture diameter, apically and in scutellar area distinctly wider than punctures. Marginal row distinct, its punctures much coarser than in lateral part of disc, placed in short transverse grooves. Intervals flat, in area with small punctation twice to thrice wider than rows, on sides of disc as wide as to slightly narrower than rows. Marginal interval very narrow, as wide as submarginal row, without humeral and lateral folds. Surface of intervals smooth and shiny. Explanate margin moderately declivous, slightly more than four times narrower than disc, its surface shallowly and densely punctate, appears irregular but shiny. Apex of elytral epipleura with several short, erect hairs.

Eyes very large, gena obsolete. Clypeus narrow, slightly longer than wide, with very shallow apical impression, shiny, at base with few setose punctures. Clypeal lines fine, visible on whole length of clypeus, converging in triangle. Area between clypeal triangle and margin of eye with row of long setae. Labrum emarginate to 1/5 length. Antennae moderately slim, segments 9 and 10 approximately as wide as long. Length ratio of antennal segments: 100:62:69:76:62:52:48:45:45:48:107. Segment 3 approximately 1.1 times as long as segment 2, segment 4 approximately 1.1 times as long as segment 3.

Prosternal collar moderately long, prosternal process distinctly expanded apically, central part of apex elevated, sides impressed with several setose punctures, apex convex with few several setose punctures, expanded sides deeply impressed with few setose punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR SUD (map 3).

## REMARKS

Mostly black pronotum and elytra, and reddish to brown spots on base of explanate margin of pronotum, and reddish to brown external parts of explanate margin of elytra place it close only to *Cassida atrorubra* BoRow. but it differs in larger size with length 4.35-4.80 mm, pronotum distinctly punctate with some punctures tend to form longitudinal sulci, coarser and denser elytral punctation forming slightly impressed rows particularly on slope of disc, more distinct H-shaped figure on elytral disc, and in less angulate humeri. See also remarks in *C. atrorubra* BOROW.

MATERIAL EXAMINED No additional material. TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Mt. D'Ambre Madagascar / Mars » [MNHN]. – paratype: MADAGASCAR NORD: « Madagascar Mt. D'Ambre / Novembre » [DBET].

#### ETYMOLOGY

Named after its dorsal pattern forming a thin black ring around elytral disc.

# DESCRIPTION

Length: 4.55-4.6 mm, width: 3.3-3.35 mm, length of pronotum: 1.6.5 mm, width of pronotum: 3.0-3.05 mm, length/width ratio 1.36-1.39, width/length ratio of pronotum: 1.82-1.85. Body short-oval (fig. 13).

Pronotum uniformly yellow. Scutellum yellow. Disc of elytra yellow with small oval to round black spot on postscutellar elevation and thin black ring surrounding disc. The ring in anterior half of disc comprises submarginal interval and upper half of submarginal row. Explanate margin uniformly yellow. Clypeus yellow with brownish basal corners. Thorax black or with yellowish epimera. Abdomen in the middle brown, on sides and apically yellow. Legs yellow, including trochanters, only coxae partly dark brown to black. Antennae with segments 1-8 yellow, segment 9 dark brown, and segments 10-11 black.

Pronotum regularly elliptical, maximum width slightly in front of the middle, sides rounded. Disc moderately convex, distinctly separated from explanate margin but without sharp marginal furrow, lateral lobes not separated from disc, but area above head distinctly separated from central part of disc. Surface of disc regular, without punctation, from slightly dull to slightly shiny. Explanate margin regular, impunctate, transparent with well visible honeycomb structure. Surface of explanate margin shiny.

Base of elytra wider than base of pronotum, basal margin of disc without crenulation, humeral angles distinctly protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow scutellar impressions (fig. 14). Top of disc with low but well marked H-shaped figure. Punctation coarse and dense, interspaces in rows narrower than punctures, linear. Marginal row distinct, with coarse and dense punctures, distinctly coarser than punctures in central rows. Intervals distinctly narrower than rows, on sides linear, second interval slightly elevated. Marginal interval well marked on whole length but moderately broad, only slightly wider than submarginal interval, no humeral and lateral folds. Surface of intervals slightly shiny. Explanate margin moderately declivous with external part almost subhorizontal, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin with shallow but coarse punctation, appears slightly irregular, but shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse long setae.

Eyes large, gena obsolete. Clypeus narrow, 1.2 times as long as wide, frontal grooves fine, running in distance to margin of eye and converging in regular triangle. Along

external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate shallowly impressed, smooth and shiny. Labrum moderately emarginate to 1/5 length. Antennae moderately stout, segments 9-10 approximately 1.1-1.2 times as wide as long. Length ratio of antennal segments: 100:50:83:67:67:50:58:50:50:54:113. Segment 3 approximately 1.7 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar slightly longer than last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, area between coxae almost flat and impunctate centrally and impressed and punctate laterally, shiny, central part of rhomboidal apex convex, with single puncture, shiny, sides impressed with dense, coarse, setose punctures, appear rugose.

Anterior claws with moderate, mid and posterior claws with small basal tooth.

DISTRIBUTION MADAGASCAR NORD (map 3).

Remarks

Dorsal pattern of this species is unique, at first glance similar pattern has *Cassida* beniowskii Borow. but differs in posterior part of disc with small black spots and distinctly larger size with length above 6 mm. Similar size and similar pattern with spot on top of disc and more or less distinct ring around disc have *C. fuscomacula* Borow., *C. inconstans* FAIRM., and *C. liliputana* n. sp. but differ in at least ring red coloured and posterior part of disc with small additional reddish to brown spots.

MATERIAL EXAMINED No additional material.

#### Cassida atromarginata n. sp. (figs. 17-19, map 4)

# TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Madagascar, Mt. D'Ambre / Septembre / Muséum Paris, 1930, COLL. SICARD » [MNHN]. – two paratypes: MADAGASCAR NORD: « Madagascar, Mt. D'Ambre / Septembre / Muséum Paris, 1930, COLL. SICARD » [MNHN]. – paratype: MADAGASCAR NORD: « Madagascar, Mt. D'Ambre / Novembre » [MNHN]. – three paratypes: MADAGASCAR NORD: « Madagascar, Mt. D'Ambre / Septembre » [DBET]. – two paratypes: MADAGASCAR NORD: « Madagascar, Antsiranana Prov., Ambohitra env., 20.-26.XII.2002, leg. Ivo Jeniš / Septembre » [DBET].

# Etymology

Named after partly black explanate margins of pronotum and elytra.

# DESCRIPTION

Length: 4.0-4.35 mm, width: 3.25-3.45 mm, length of pronotum: 1.55-1.6 mm, width of pronotum: 2.65-2.75 mm, length/width ratio 1.23-1.26, width/length ratio of pronotum: 1.71-1.72. Body short-oval (figs. 17-18).

Pronotum in basal ¼ black and anterior 1/4 yellow. Scutellum black. Disc of elytra in holotype and one paratype black with yellowish to brown folds at top and base of disc, in other paratypes disc completely black. Explanate margin in basal half with 2/3 inner part black and 1/3 external part yellow, the black area gradually narrowing posterad, in posterior half completely yellow, external margin of black area in the middle shallowly emarginate thus black anteriorly form more or less distinct humeral spot. Clypeus yellow. Thorax black. Abdomen almost uniformly black only last sternite narrowly surrounded by yellow. Legs yellow, only coxae dark brown to black. Antennae with segments 1-9 yellow and segments 10-11 black, sometimes segment 9 more or less infuscate.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, on whole length of sides separated from explanate margin by furrow, lateral lobes separated by sulcus also from area above head. Surface of basal parts of disc shallowly and densely punctate, appears irregular but not rugose, area above head and lateral lobes finely punctate and their surface appears almost regular. Explanate margin with very fine and moderately dense punctation, surface appears regular, yellow part transparent with well visible honeycomb structure. Whole surface of disc slightly dull.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with very shallow scutellar and principal impressions (fig. 19). Top of disc with low but well marked H-shaped figure. In specimens with completely black disc interspaces regular and do not form any relief. In specimens with yellow spots pale elevated interspaces form small folds or tubercles. Punctation moderately coarse but dense, regular, interspaces narrower than punctures, only in submarginal rows some interspaces as wide as puncture diameter. Marginal row distinct, with moderately dense punctures, slightly coarser than punctures in central rows but deeply impressed with elevated interspaces. Intervals linear, not elevated except small folds and tubercles, second interval not wider than neighbouring ones. Marginal interval well marked on whole length but moderately broad, only as wide as submarginal row and submarginal interval combined, humeral and lateral folds well marked. Surface of intervals slightly dull. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin on black humeral part as coarsely and densely punctate as on disc, on yellow parts shallowly but densely punctate with surface slightly irregular and slightly dull, yellow parts transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse short setae.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, running close to margin of eye and converging in regular triangle. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, or very shallowly impressed, smooth and shiny with few setose punctures. Labrum moderately emarginate to 1/5 length. Antennae stout, segments 9-10 approximately 1.1-1.2 times as wide as long. Length ratio of antennal segments:

100:54:79:71:64:50:50:46:46:50:107. Segment 3 approximately 1.5 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, area between coxae moderately to deeply impressed with few setose punctures, shiny, central part of rhomboidal apex convex, with few coarse, setose punctures, shiny, sides impressed with dense, coarse, setose punctures, appear rugose.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR NORD (map 4).

#### REMARKS

Dorsal pattern of this species is unique, only *Cassida nigroflavens* BOROW. has similar body size and dorsum predominantly black at most with very small sparse yellowish to brownish spots but differs in pronotal sides angulate, less convex elytral disc, explanate margin of pronotum and elytra completely yellow (partly black in *C. atromarginata*), punctation of base of pronotal disc coarser and more dense, and finer marginal row with no elevated interspaces.

MATERIAL EXAMINED No additional material.

# Cassida atropunctata n. sp.

(figs. 15-16, map 4)

TYPE MATERIAL

Holotype: MADAGASCAR SUD: « SE Madagascar, Chaines, Anosyennes, 7 km S Imana, 1500 m, 8-12.ii.2004, lgt. P. Bulirsh » [DBET]. – paratype: MADAGASCAR SUD: « SE Madagascar, Chaines, Anosyennes, 7 km S Imana, 1500 m, 8-12.ii.2004, lgt. P. Bulirsh » [DBET].

ЕтумоLоду Named after black punctation of elytra.

### DESCRIPTION

Length: 4.3-4.55 mm, width: 3.5-3.8 mm, length of pronotum: 1.5 mm, width of pronotum: 2.6-2.7 mm, length/width ratio 1.20-1.23, width/length ratio of pronotum: 1.73-1.78. Body short-oval, widest in anterior 2/5 length then moderately converging posterad (fig. 15).

Pronotal disc black, at base with two large yellow oblique spots. Explanate margin yellow only at base, close to border of disc black. Scutellum black. Disc of elytra olive-yellow, punctures, suture, elongate spot at humeral calli, and ring combined with marginal row in anterior half and narrow band across apex black. Explanate margin of elytra yellow except blackish anterior border of the margin and disc. Clypeus yellow with blackish basal corners. Thorax black. Abdomen black, only last sternite with narrow yellow outer margin. Legs yellow, only coxae black. Antennae with segments 1-9 yellow and segments 10-11 black.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by furrow. Surface of disc glabrous, smooth, with very small pricks and shiny. Explanate margin impunctate, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles distinctly protruding anterad, elytral edge behind humeral angle shallowly emarginate thus humeri acute. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow scutellar and principal impressions but with no H-shaped elevation (fig. 16). Punctation small, regular, punctures rather sparse, rows not impressed. Distance between punctures in various parts of disc from as wide as to thrice wider than puncture diameter. Marginal row distinct, with moderately dense punctures, distinctly coarser than punctures in central rows and deeply impressed. Intervals well marked, all flat, in sutural part of disc twice or slightly more wider than rows, on sides approximately 1.5 times as wide as rows. Marginal interval well marked on whole length but moderately broad, as wide as submarginal interval, without humeral fold, lateral fold narrow. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part four times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, running along margin of eye and converging in arch. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, smooth and shiny with few setose punctures. Labrum broadly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:53:73:73:67:60:47:43:50:56:103. Segment 3 approximately 1.4 times as long as segment 2 and as long as segment 4.

Prosternal collar slightly shorter than last palpomere. Prosternal process between coxae broad, moderately expanded apically, shallowly impressed along lateral margins, impressions with row of setose punctures, between coxae flat, with few setose punctures, shiny, central part of rhomboidal apex convex, with few setose punctures, shiny, sides slightly impressed with few coarse, setose punctures.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR SUD (map 4).

# Remarks

The characteristic pattern with black M-shaped figure on pronotal disc, black marginal interval, black upper margin of humeri, black suture and black punctation of elytra place Cassida atropunctata n. sp. close to C. pseudostrumosa n. sp. and typical form of C. strumosa (SPAETH). Both relatives distinctly differ in pronotal pattern forming except the basal M-shaped figure also black transverse band or at least two transverse spots across anterior margin of pronotal disc usually connected in the middle with M-shaped figure. C. pseudostrumosa n. sp. differs also in broader black anterior part of marginal interval with black colour distinctly extending to explanate margin of elytra and in slightly coarser and more deeply impressed elytral punctation. C. strumosa (SPAETH) differs also in black areolae around elytral punctures tend to connect with neighbouring areola and forming more or less reticulate pattern on sides of disc.

MATERIAL EXAMINED No additional material

## Cassida atrorubra BOROWIEC, 1999 (figs. 20-21, map 3)

Cassida atrorubra BOROWIEC, 1999 b: 470.

# TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « MADAGASCAR, Fianarantsoa, Ranomafana, 10.IX.1996 » [DBET]. – paratype: MADAGASCAR CENTRE: « MADAGASCAR, Fianarantsoa, Amabatolahy, 14 IX 1996 » [DBET].

# DESCRIPTION

Length: 4.35-4.80 mm, width: 3.7-4.0 mm, length of pronotum: 1.60-1.75 mm, width of pronotum: 2.9-3.2 mm, length/width ratio 1.18-1.20, width/length ratio of pronotum: 1.81-1.83. Body almost circular (fig. 20)

Pronotal disc black, explanate margin mostly reddish only area in front of head yellow. Elytral disc black, explanate margin along border of disc blackish, externally reddish, the border between black and red diffuse. Clypeus yellow, thorax and abdomen black, sides of abdomen and apex of the last sternite narrowly yellow. Legs yellow. Antennal segments 1-7 yellow, segments 8-11 black, or segment 8 yellow, segment 9 brownish and only segments 10-11 black.

Pronotum broad, approximately 1.8 times wider than long, elliptical, with maximum width in the middle, sides broadly rounded. Disc only slightly convex, on sides distinctly bordered from explanate margin by sharp sulcus, with slightly separated area above head. Surface of disc in front of scutellum with two short, oblique impressions, except area above head with sparse punctation, some punctures have tendency to form longitudinal sulci but surface does not appear wrinkled. Explanate margin slightly declivous, its surface smooth and glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra distinctly wider than pronotum, humeral angles angulate, distinctly protruding anterad, margin behind humerus not emarginate. Disc moderately and regularly convex, in postscutellar point with H-shaped elevation (fig. 21). Postscutellar impressions distinct, bordered externally by anterad protruding anterior branches of the H-shaped elevation, principal impressions small but distinct, round. Punctation of disc completely regular, fine and moderately dense, distance between punctures as wide as to twice wider than puncture diameter. Punctures in anterior half of disc as coarse as in posterior half. Marginal row distinct, its punctures much coarser than in central part of disc. Intervals flat, twice to thrice wider than rows, marginal interval narrower than submarginal one. Surface of intervals smooth, glabrous. Explanate margin narrow, approximatelythrice narrower than width of disc of each elytron, declivous, its surface shallowly punctate, appears irregular but glabrous. Apex of elytral epipleura with several short, erect hairs.

Eyes very large, gena obsolete. Clypeus narrow, slightly longer than wide, flat, impunctate, glabrous, apex with narrow longitudinal impression; clypeal lines fine, visible on whole length of clypeus, converging in triangle. Labrum emarginate to 1/5 length. Antennae moderately elongate, length ratio of antennal segments: 100:57:71:7 5:71:60:54:58:50:54:108. Segment 3 approximately 1.25 times longer than 2, segment 4 slightly longer than 3.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR CENTRE (map 3).

#### REMARKS

Mostly black pronotum and elytra, and reddish to brown spots on base of explanate margin of pronotum, and reddish to brown external parts of explanate margin of elytra place it close only to *Cassida anosyennesensis* n. sp. but it differs in small size with length 3.95 mm, pronotum impunctate, finer and sparser elytral punctation not arranged in impressed rows, less marked H-shaped figure on elytral disc, and in more angulate humeri.

Mostly black pronotum and elytra and circular body place it also close to *Cassida* currax SPAETH, C. tenax SPAETH and C. scymnoides BOROW. The latter species distinctly differs in pubescent elytra (bare in atrorubra) and irregular elytral punctation (regular in atrorubra). C. tenax differs in larger size (length exceeding 5.6 mm, in atrorubra below 4.9 mm), pronotum with subangulate sides (rounded in atrorubra) and wrinkled surface of pronotal disc (punctate in atrorubra). C. currax at first glance is the most similar, particularly in body shape, but differs in dorsal surface with yellow, sharply bordered from black ground colour (reddish with diffuse borders in atrorubra), explanate margin of elytra usually with small yellow "window" spot (without such spot in atrorubra) and wrinkled surface of pronotal disc. Dorsal surface in C. currax is slightly dull while in C. atrorubra it is glabrous.

#### MATERIAL EXAMINED

MADAGASCAR CENTRE: – Fianarantsoa Prov., Ranomafana Nat. Park, radio tower, 1190 m, 1-19 IX 2001, 1 ex., leg. M.E. IRWIN, F.D. PARKER & R. HARIN'HALA (MLBLSM). -Fia.[narantsoa], Amabatolahy, 14 IX 1996, 4 ex., F. KEISER [LS].

#### Cassida auropustulata (FAIRMAIRE, 1899) (figs. 22-23, map 4)

Coptocycla auropustulata FAIRMAIRE, 1899 a: 558. – WEISE, 1910: 505. – SPAETH, 1914 b: 130. Cassida auropustulata: BOROWIEC, 1999 a: 238. Coptocycla piceidorsis FAIRMAIRE, 1904: 276. – WEISE, 1910: 506. – SPAETH, 1914 b: 130, n. syn.

#### TYPE MATERIAL

Syntype of *Coptocycla auropustulata*: MADAGASCAR OUEST: « Madag., Suberb<sup>lle</sup> [= Maevatanana], H. Perrier / Type / Coptocycla auropustul. Madag., Muséum Paris 1906, coll. Leon Fairmaire» [MNHN]. – syntype of *Coptocycla auropustulata*: MADAGASCAR NORD: « Diego Suarez, Donckier » [MM]. – three syntypes of *Coptocycla auropustulata*: MADAGASCAR: « Madagascar, Perrier » [MNHN].

Holotype of Coptocycla piceidorsis: MADAGASCAR OUEST: « Soalala » [MNHN].

### DESCRIPTION

Length: 5.4-6.5 mm, width: 4.8-5.85 mm, length of pronotum: 1.75-2.1 mm, width of pronotum: 3.9-5.0 mm, length/width ratio 1.10-1.16, width/length ratio of pronotum: 2.21-2.40. Body almost regularly circular (fig. 22).

Pronotum yellow, scutellum yellow with black lateral margins, elytral disc yellow with brown to black reticulation as in fig. 22, the black net surrounding elevated yellow spots. In some specimens elytral punctures on sides and slope with infuscate centre. Sometimes the dark reticulation in posterior part of disc partly broken, in extreme case the reticulation completely obsolete (= ab. *piceidorsis* FRM.). Clypeus, venter, legs and antennae yellow, sometimes apex of last antennal segment infuscate to black.

Pronotum semicircular, with maximum width at sharp basal corners. Disc slightly convex, indistinctly separated from explanate margin. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra as wide as or only slightly wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile (fig. 23), with top of convexity in postscutellar point, with very shallow scutellar impressions, top of disc with cross-shaped elevation. Central part of disc with large, yellow elevations forming relief, elevated spots mostly impunctate or with only 1-3 punctures but surrounded by punctures. On sides of disc, in area externally to black reticulation, punctures tend to form regular rows, submarginal and marginal rows completely regular. Punctation surrounding yellow relief moderately coarse, on sides of disc and in both marginal rows distinctly coarser than on top of disc. Punctures in submarginal and marginal row very dense, almost touching each other, in most specimens punctures in submarginal row coarser than in marginal interval well marked on whole length, 1.5-2.0 times as wide as marginal rows, without humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin almost horizontal, broad on whole length, in the widest part three times narrower than disc. Surface of explanate margin glabrous, and shiny, smooth but not as regular as explanate margin of disc, transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse, short pubescence.

Eyes small, gena well marked, as long as 1/3 length of eye. Clypeus broad, 1.2 times as wide as long, frontal grooves very fine, converging in triangle. Area between grooves and margin of eye with row of setose punctures. Surface of clypeal plate flat, shiny, with few small setose punctures. Labrum not emarginate. Antennae very slim, segments 9-10 twice as long as wide. Length ratio of antennal segments: 100:40:80: 75:68:63:65:60:60:60:98. Segment 3 approximately twice as long as segment 2 and only slightly longer than segment 4.

Prosternal collar almost twice shorter than last palpomere. Prosternal process broad, not impressed along lateral margins, very broad apically, rhomboidal apex mostly flat with shallow impression in the middle, shiny, with several setose punctures.

Claws simple. Spermatheca (fig. 243).

## DISTRIBUTION

MADAGASCAR NORD and OUEST (map 4).

# REMARKS

A very distinct species. Its regularly circular shape ane elytral pattern forming thin reticulation is unique. Form without pattern is well distinguished by completely circular body outline without cleft between base of pronotum and base of elytra.

#### MATERIAL EXAMINED

MADAGASCAR NORD: - Diego Suarez [= Antsiranana], 1 ex. [NMP]. - Territorie de Diego-Suarez, 4 ex. [DBET].

MADAGASCAR OUEST: – Analavelona, 1320 m, 1 ex. [MM]. – Herea, Ankazoabo, 3 ex. [MNHN, MM]. – Morondava, Kirindy forest, II-III 1990, 1 ex., M. BUTTERWECK [SMNS]. – Morondava Prov., Marofandilia, 5-6 XII 1995, 1 ex., I. JENIŠ [MS]. – Soalala, 1 ex. [DBET]; – Suberbieville [= Maevatanana], 2 ex., PERRIER [MNHN].

# Cassida beniowskii BOROWIEC, 1988

(figs. 24-25, map 5)

Cassida beniowskii BOROWIEC, 1988: 552, 1999 a: 240.

Type material Holotype: MADAGASCAR EST: « Forêt de Fito » [DBET].

# Description

Length: 6.15 mm, width: 5.2 mm, length of pronotum: 2.1 mm, width of pronotum: 3.85 mm, length/width ratio 1.18, width/length ratio of pronotum: 1.83. Body short-oval (fig. 24). Pronotum and scutellum yellow. Elytra yellow, disc with brownish black pattern: large round spot on postscutellar elevation, small spot behind the middle of interval 2 and 4 respectively, and narrow ring surrounding disc containing two marginal intervals except external half of humerus and apex of disc. In middle of the base of ring small, yellow spot. Basal margin of pronotum and basal margin of elytral disc narrowly black. Clypeus yellow. Thorax and coxa brown. Abdomen and legs pale yellow. Antennal segments 1-8 yellow, segment 9 from base to apex gradually brown, segments 10 and 11 dark brown.

Pronotum irregularly elliptical, with maximum width slightly before the middle, sides appear subangulate. Disc slightly convex, on sides and laterally to area above head separated from explanate margin by short furrows. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with small black crenulation, humeral angles strongly protruding anterad, subangulate. Disc in profile distinctly elevated in postscutellar point (fig. 25), with shallow, indistinct scutellar impressions, but top of disc forms low tubercle. Punctation moderately coarse, regular and dense, interspaces mostly as wide as puncture diameter. Marginal row distinct, with dense punctures, twice coarser than punctures in central rows, humeral and lateral fold flat, marked rather like broad interruption between punctures than fold. Intervals well marked on whole surface of disc, intervals 2 and 3 approximately 1.5 times as wide as rows, lateral intervals mostly as wide as rows. Marginal interval well marked on whole length, narrow, as wide as submarginal interval. Surface of intervals smooth but moderately shiny. Explanate margin moderately declivous, broad, in the widest part less than four times narrower than disc. Surface of explanate margin shallowly and moderately dense punctate, appears slightly irregular, glabrous, shiny, transparent, in the only known specimen without honeycomb structure but it was probably caused by poor preservation of beetle and in live it probably has well marked honeycomb reticulation. Apex of elytral epipleura with row of very short setae.

Eyes large, gena hardly marked. Clypeus narrow, approximately as long as wide, frontal grooves fine, converging in triangle. Area between grooves and margin of eyes with row of setose punctures. Surface of clypeal plate glabrous, shiny with few small punctures. Labrum narrowly emarginate to <sup>1</sup>/<sub>4</sub> length. Antennae slim, segments 9-10 slightly longer than wide. Segment 3 approximately 1.37 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, the impression with row of punctures, very broad apically, area between coxae with few small punctures, central part of rhomboidal apex with rugose sculpture.

Claws with very small basal tooth.

DISTRIBUTION MADAGASCAR EST (map 5).

### REMARKS

Similar elytral pattern with black spot on postscutellar point and black ring around elytral disc has only *Cassida atroannulus* n. sp. but differs in smaller size with length below 4.7 mm, and posterior part of disc without small black. Similar pattern with spot on top of disc and more or less distinct ring around disc have also *C. fuscomacula* BOROW., *C. inconstans* FAIRM., and *C. liliputana* n. sp. but they differ in at least ring red coloured and body length below 5.5 mm.

MATERIAL EXAMINED No additional material.

#### Cassida beondrokana n. sp. (figs. 26-27, map 5)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Madagascar-Est, dct. Sambava, R.N.XII Marojejy, Beondroka, 1200 m, VI-60, P. Soga » [MNHN]. – paratype: MADAGASCAR EST: « Madagascar-Est, dct. Sambava, R.N.XII Marojejy, Beondroka, 1200 m, VI-60, P. Soga » [DBET]. – paratype: MADAGASCAR EST: « Madagascar, Antakotako, VI.1939 » [NMB]. MADAGASCAR EST: « Madagascar, Maroantsetra » [NMB]. – two paratypes: MADAGASCAR EST: « Madagascar, Antakotako, VI.1939 » [NMB]. MADAGASCAR SAMBIRANO: « Region Androna, Nord Madagascar, 1935 bis 1939 » [1 LS, 1 DBET].

ETYMOLOGY Named after its type locality.

# DESCRIPTION

Length: 5.15-5.75 mm, width: 4.65-5.0 mm, length of pronotum: 1.8-2.0 mm, width of pronotum: 3.45-3.75 mm, length/width ratio 1.11-1.17, width/length ratio of pronotum: 1.87-1.97. Body almost circular (fig. 26).

Pronotum yellow, disc with large black basal spot of two connected semicircular spots, anterior margin with triangular emargination in the middle, sides slightly prolongated in short processes, sometimes latero-basal part of the area above head margined narrowly by black, the black lines connected with basal spot (fig. 26). Anterior margin of the black spot in the middle prolonged into triangle. Yellow spots inside the black basal spot separated. Scutellum yellow or black. Elytral disc black with yellow relief of 30-32(34) elevated yellow spots of various shape arranged as in fig. 26. Spots on slope and along suture separated, the largest spot at base of elytron not coalescent with spot at top of disc, postscutellar impressions not surrounded by yellow relief. Marginal interval mostly yellow, punctures of marginal row partly marked with brown or black. Clypeus yellow. Thorax brown to black. Abdomen from yellow to mostly black surrounded by narrow yellowish-brown margin, or only apex of last sternite narrowly yellowish. Legs yellow with brown coxa. Antennae yellow, last two or three segments black except yellowish ventral side of apex of last segment. Pronotum elliptical with maximum width in the middle, appears more reversely trapezoidal then elliptical, sides rounded. Disc slightly convex, sides well separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile (fig. 27), with top of convexity in postscutellar point, with very shallow scutellar impressions, principal impressions hardly marked. Punctation moderately coarse, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly as wide as or slightly narrower than puncture diameter. Marginal row distinct, with moderately dense punctures, as coarse as punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts of sutural half of disc as wide as on sides twice narrower than rows. Marginal interval well marked on whole length, moderately broad, humeral and lateral folds only slightly elevated. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few short setae.

Eyes large, gena hardly marked. Clypeus moderately narrow, only slightly longer than wide, frontal grooves very fine, running close to margin of eye and converging in triangle. Area between grooves, margin of eye and sides of upper margin of labrum with row of setae. Surface of clypeal plate flat glabrous, smooth and shiny. Labrum shallowly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:53:68:71:63:47:53:47:53:53:110. Segment 3 approximately 1.3 times as long as segment 2 and only slightly shorter than segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, shallowly impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa slightly convex, smooth and shiny with few setose punctures, rhomboidal apex in the middle elevated with few setose punctures, on sides impressed with rugose sculpture and few setose punctures.

Claws with large basal tooth.

# DISTRIBUTION MADAGASCAR EST (map 5).

# Remarks

It belongs to the *Cassida goudoti* species group, and the subgroup which is characterized by elytral disc black with yellow relief forming numerous convex spots. The group comprises *C. goudoti* (BOH.), *C. andapaensis* BOROW., *C. andohahelana* n. sp., *C. suaveola* (SP.), *C. sculpturipennis* n. sp. and *C. verrucata* (BOH.). *Cassida beondrokana*, *C. goudoti* and *C. sculpturipennis* are the largest species with length usually above 5

mm while other species are usually below 4.8 mm. C. goudoti differs in anterior margin of pronotal black spot in the middle prolonged into triangle (emarginate in the middle in C. beondrokana) and large spot at base of elytron usually connected with spot on top of disc, if not connected then large spot at base of elytron elongate, partly surrounding postscutellar impressions (in C. beondrokana large spot at base of elytron round or only slightly elongate never connected with spot at top of disc and never surrounding postscutellar impression). C. sculpturipennis look very similar but differs in pronotal sides distinctly angulate (narrowly rounded in C. beondrokana); C. sculpturipennis differ also in larger size with length 6.0-6.3 mm, anterior margin of pronotal spot not emarginate medially, humeral angles less angulate, and yellow elytral relief partly connected, particularly in posterior half of disc forming rather reticulate than maculate sculpture (in C. beondrokana yellow relief is mostly separated and sculpture appears maculate than reticulate). C. verrucata differs in ventrites always uniformly yellow (partly to mostly black in C. beondrokana) and simple claws (with basal tooth in in C. beondrokana). C. andapaensis and C. suaveola differ in smaller size, C. andapaensis differs also in yellow spots less convex and with irregular borders. C. andohahelana differs in smaller size, pronotal spot with truncate anterior margin (emarginated in C. beondrokana) large spot at base of elytron always connected with spot on top of disc (never connected in C. beondrokana), and spots on elytral disc along suture partly coalescent (separated in C. beondrokana).

MATERIAL EXAMINED No additional material.

#### Cassida bicallosa SPAETH, 1915 (figs. 28-29, 31, map 5)

Cassida (Cassida) bicallosa: SPAETH, 1914: 115 (nomen nudum). Cassida bicallosa SPAETH, 1915: 131. – BOROWIEC, 1999 a: 240.

# TYPE MATERIAL

6 syntypes: MADAGASCAR NORD: « Diego Suarez » [MM]. – syntype: MADAGASCAR: « Madagascar » [NMW].

#### DESCRIPTION

Length: 5.3-6.5 mm, width: 4.15-5.3 mm, length of pronotum: 1.9-2.3 mm, width of pronotum: 3.4-4.2 mm, length/width ratio 1.14-1.28, width/length ratio of pronotum: 1.72-1.88. Body short-oval, males distinctly stouter than females (length/width ratio 1.14-1.19 versus 1.23-1.28) with much wider explanate margin of elytra (figs. 28, 31).

Pronotum and scutellum uniformly yellow. Elytral disc mostly yellow surrounded by broad, reddish-brown to brown U-shaped figure, margins of the figure often darker than central part, at slope sometimes the figure marked with small yellowish spots. At top of disc usually small, brown, round spot, sometimes obsolete. Usually elevated second interval with 1-3 brown stripes, and base of elytra with 4 small brown spots, but occasionally the stripes and spots obsolete. Marginal interval and explanate margin yellow. Clypeus, ventrites and legs uniformly yellow. Antennae yellow, last two segments black except yellowish ventral side of apex of v last segment, sometimes segment 9 infuscate apically.

Pronotum slightly semicircular, widest in 1/3 length before base, sides rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc coarsely and densely but shallowly punctate, distance between punctures mostly narrower than puncture diameter, punctures sometimes tend to form short grooves and interspaces tend to form short wrinkles thus surface of disc appears more or less irregular. Explanate margin very shallowly punctate, in area close to border of disc distinctly more punctate than externally thus surface appears partly slightly irregular and partly smooth. Whole surface of disc slightly dull.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles moderately protruding anterad, in males angulate and in females subangulate. Disc almost regularly convex in profile (fig. 29), with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions, at top with very low H-shaped elevation. Anterior branches of the elevation surround postscutellar impressions, posterior branches prolongated into slightly elevated second interval, also sixth interval in the middle slightly elevated. In 2/3 length of sixth interval is small, yellow tubercle. Punctation coarse and dense, mostly irregular, punctures almost touching each other, only between suture and second interval punctures form two distinct rows, also submarginal and marginal rows regular. In some specimens punctures on sides and in central parts of disc tend to form short, more or less regular rows but disc never appears regularly punctate. Marginal row distinct, with coarse and dense punctures, approximately as coarse as or slightly coarser than in central rows. Intervals mostly obsolete, except elevated second interval and elevated part of sixth interval. Marginal interval well marked on whole length, moderately broad, humeral and lateral folds indistinct. Surface of intervals slightly shiny. In some specimens yellow parts of disc with some interspaces more elevated than other and surface of disc appears slightly sculptured. Explanate margin moderately declivous, in the widest part in males slightly less than three times, in females four times narrower than disc. Surface of explanate margin shallowly punctate, appears mostly irregular, slightly shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with very short and sparse setae, in old specimens appears bare.

Eyes moderately large, gena short but visible, approximately as long as second antennomere. Clypeus broad, 1.2-1.3 times as wide as long, frontal grooves fine, running mostly close to margin of eye and on apex of clypeus converging in triangle. Area between grooves and margin of eyes with row of setae. Surface of clypeal plate slightly convex, glabrous, smooth and shiny, with few setae. Labrum broadly emarginate to ¼ length. Antennae slim, segments 9-10 approximately 1.4 times as long as wide. Length ratio of antennal segments: 100:55:70:70:65:58:65:55:65:110. Segment 3 approximately 1.3 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, moderately impressed along lateral margins, impressions without row of setae, area between coxae smooth and shiny, with several hairs, rhomboidal apex in the middle slightly convex, smooth and shiny, on sides very shallowly impressed, with slightly irregular surface, shiny, with several long hairs.

Claws with very large basal tooth. Spermatheca (fig. 245).

### DISTRIBUTION

MADAGASCAR EST and NORD (map 5).

#### REMARKS

Characteristic shape of pronotum widest in basal 1/3 length place this species close only to *Cassida ferranti* SPAETH, both species have also similar size with length 5.0-6.5 mm. *Cassida ferranti* differs in base of elytra less wider than base of pronotum and elytral disc mostly black with reticulate yellow relief while in *C. bicallosa* elytral pattern forms broad brown to black U-shaped spot, small round spot at elytral hump and small spots at base and on elevated second interval. Similar U-shaped pattern and black spot on elytral hump has *Cassida lateritioides* n. sp. but it differs in pronotal sides broadly rounded with maximum width in the middle and usually smaller size with mean length 5.2 mm.

#### MATERIAL EXAMINED

MADAGASCAR NORD: – Amber Geb., 1 ex. [ZMHU]. – Antirorante, 1 ex. [DBET]. – Antsiranana Prov., Ambohitra anv., 26.XII.2002, 1 ex., Ivo Jeniš [MSCH]. – Diego Suarez [= Antsiranana], 3 ex. [2 MNHN, 1 NMP]. – Diego Suarez [= Antsiranana], Montagne d'Ambre, 2 ex. [DBET]. – Diego Suarez, Montagne des Français, II 1959, 1 ex., A. ROBINSON [DBET]. – Mont d'Ambre, 2 ex. [1 LS, 1 NMP]. – Mont d'Ambre, 1 ex., II, 1 ex., IV, 1 ex., XI, 9 ex, SICARD [6 DBET, 4 MNHN, 2 LS];

MADAGASCAR EST: – Tamatave [= Toamasina], forêt Alahakato, 1 VII 1888, 1 ex. [DBET].

MADAGASCAR: - Madagascar, 1 ex. [DBET].

# Cassida brooksi Borowiec, 1992

(figs. 34-36, map 6)

Cassida brooksi BOROWIEC, 1992: 283, 1999 a: 241.

#### TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Tamatave Prov., Andasibe (Périnet), 2-4 XI 1984 » [SEMC]. – two paratypes: MADAGASCAR NORD: « Tamatave Prov., Andasibe (Périnet), 2-4 XI 1984» [1 DBET, 1 SEMC].

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DESCRIPTION

Length: 4.1-5.0 mm, width: 3.5-3.8 mm, length of pronotum: 1.6-1.8 mm, width of pronotum: 2.8-3.0 mm, length/width ratio 1.17-1.32, width/length ratio of pronotum: 1.67-1.75. Body oval, males slightly stouter than females (figs. 34-35).

In the palest specimens dorsum uniformly yellow (fig. 35). In maculate specimens at least postscutellar point with small, round, black spot; the darkest specimens have elytra with numerous small, black spots (fig. 34): one in postscutellar point, three on second interval in 1/3, 1/2 and 2/3 length of the interval, one in 2/3 length of fourth interval and numerous along sides of disc. Intermediate specimens between the palest and the darkest specimens have more or less developed black spots but completely yellow specimens predominate (of 18 examined specimens only six had maculate dorsum). Labrum and clypeus yellow, thorax black, abdomen mostly black except yellow lateral margins of sternites. Fore femora yellow with slightly infuscate base to basal third or half black, mid and hind femora yellow with basal half black, trochanters always paler coloured than base of femora, yellowish to brownish. Tibiae and tarsi yellow. Antennae yellow with apical four segments brown to black, apex of under side of last segment yellowish.

Pronotum elliptical, with maximum width slightly before the middle, sides rounded. Disc feebly convex, indistinctly bordered from explanate margin, area above head impunctate, basal and central part shallowly but densely punctate, intervals as wide as to twice narrower than puncture diameter, surface of disc appears slightly irregular to rough. Explanate margin very shallowly punctate, surface appears slightly irregular, transparent with well visible honeycomb structure.

Base of elytra wider than base of pronotum, basal margin of disc finely crenulate, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile (fig. 36), with top in postscutellar point, postscutellar impressions very shallow but bordered by slightly elevated second elytral interval. Postscutellar area with low but well marked H-shaped elevation. Punctation coarse and dense, completely regular, punctures in rows almost touching each other. Marginal row distinct in whole length, its punctures approximately twice coarser than in submarginal row. Intervals very narrow, mostly linear, only second interval slightly broader and more convex than neighbouring ones, partoicularly in posterior half on short distance form elevated fold. Explanate margin moderately declivous, approximately four times narrower than disc, shallowly but coarsely and densely punctate, intervals two to three times narrower than puncture diameter, surface appears irregular. Whole surface of disc from slightly dull to slightly shiny. Apex of elytral epipleura bare.

Eyes large, gena hardly marked. Clypeus 1.2 times as wide as long, with fine clypeal groves running close to margin of eyes and converging in arch. Clypeal plate slightly convex, microreticulate but shiny, with 3-5 small and shallow punctures close to antennal insertions. Labrum shallowly emarginate to 1/6 length. Antennae stout, segments 9-10 only slightly longer than wide. Length ratio of antennal segments: 100:50:67:70:55:55:50:45:50:50:100. Segment 3 approximately 1.3 times longer than 2 and only slightly shorter than segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, impressed along sides, apex broadly rhomboidal, without sculpture between coxae and with several large punctures on rhomboidal plate.

Claws with small basal tooth. Spermatheca (fig. 244).

#### DISTRIBUTION

MADAGASCAR EST, NORD and OUEST (map 6).

#### REMARKS

Distinct species, well distinguished by small size and predominantly yellow colouration. At first glance the most similar is yellow form of *Cassida angulicoillis* n. sp. but it differs in angulate pronotal sides and finer and partly irregular punctation of elytra. Similarly sized and uniformly yellow form of *C. dorsovittata* BOH. differs in disc of pronotum impunctate, finer punctation of elytra and well marked intervals, wider than rows, and indistinct or completely lacking H-shaped elytral elevation.

#### MATERIAL EXAMINED

MADAGASCAR EST: – Fia., Mananjary, 7 VIII 1953, 1 ex., F. KEISER [LS]. – Maromizaha (Andasibe), 19-20 XII 1997, 1 ex., P. PACHOLÁTKO [NMB].

MADAGASCAR NORD: - Tam., Perinet, 24 IX 1958, 2 ex., F. KEISER [LS]. - Tam., Perinet, 1000 m, 24 X 1957, 1 ex., F. KEISER [NMB].

MADAGASCAR OUEST: - Forêt de Kirindy, März 1990, 2 ex., M. BUTTERWECK [DBET]. - Morondava, Kirindy forest, II/III 1990, 10 ex., M. BUTTERWECK [9 SMNS, 1 DBET].

MADAGASCAR: - Madagascar, 3 ex. [DBET].

#### Cassida bulirschi n. sp. (figs. 32-33, map 6)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Madagascar, 8.-9.4.2001, Andringitra, Vohidray rdg., 3 km SSE of Amboarafibe, lgt. P. Bulirsch, 1500-1600 m » [DBET]. – paratype: MADAGASCAR EST: « Madagascar, 8.-9.4.2001, Andringitra, Vohidray rdg., 3 km SSE of Amboarafibe, lgt. P. Bulirsch, 1500-1600 m » [DBET].

ETYMOLOGY Named after its collector.

#### DESCRIPTION

Length: 4.5-4.7 mm, width: 3.6-3.85 mm, length of pronotum: 1.5-1.6 mm, width of pronotum: 2.7-2.9 mm, length/width ratio 1.22-1.25, width/length ratio of pronotum: 1.80-1.81. Body short-oval (fig. 32).

Pronotum yellow, disc with large M-shaped black basal spot as in fig. 32. Anterior margin of the black spot in the middle truncate and not prolonged into triangle. At base

of the black spot large V-shaped yellow spot. Scutellum black. Elytral disc black with yellow reticulate relief arranged as in fig. 32. Spots on slope and along suture separated or partly coalescent, the largest spot at base of elytron always coalescent with spot at top of disc thus postscutellar impressions look surrounded by yellow relief with two small spots at apex of scutellum. Marginal interval almost completely yellow, punctures of marginal row not marked with black. Clypeus yellow or with infuscate basal corners. Thorax black. Abdomen mostly black, only last sternite in apical half or 2/3 length yellow. Legs uniformly yellow, including trochanters but coxa black. Antennae uniformly yellow but apical 3-4 segments slightly darker yellow than basal segments.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc slightly convex, sides well separated from explanate margin by short furrow. Surface of disc glabrous, and shiny with several sparse punctures. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile (fig. 33), with top of convexity in postscutellar point, with very shallow scutellar impressions, yellow elevated relief forms H-shaped figure at top of disc (fig. 32). Punctation fine, sparse, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows from as wide as or to distinctly wider than puncture diameter. Marginal row distinct, with moderately dense punctures, distinctly coarser than punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts from as wide as to twice wider than rows. Marginal interval well marked on whole length, broad, humeral and lateral folds only slightly elevated. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena hardly marked. Clypeus narrow, approximately 1.3 times as long as wide, frontal grooves very fine, running very close to margin of eye, converging in regular triangle. Area between grooves and margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny. Labrum distinctly emarginate to ¼ length. Antennae moderately slim, segment 10 approximately 1.3 times as long as wide. Length ratio of antennal segments: 100:59:82:77:73:64:68:59:64:73:127. Segment 3 approximately 1.4 times as long as segment 2 and slightly longer than segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa slightly convex, with few setose punctures, rhomboidal apex at sides with rugose sculpture and on elevated central part with few setose punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR EST (map 6).

### Remarks

It belongs to the *Cassida goudoti* species group and the subgroup which is characterized by elytral disc black with yellow relief forming reticulate pattern. The group comprises *Cassida andohahelana* n. sp. *C. nosybeensis* n. sp., *C. paveli* n. sp., and specimens of *C. suaveola* (SP.) with partly reticulate pattern. *Cassida nosybeensis* distinctly differs in uniformly yellow pronotum and base of elytra only slightly wider than pronotum. *Cassida andohahelana* differs in last two antennal segments black, slightly stouter body, sculpture more elevated with black slightly predominate than yellow. *Cassida paveli* differs in pronotum mostly black with only yellow and short V-shaped spot in front of scutellum, elytral disc predominantly black with sculpture forming ring surrounding postscutellar impressions, and transverse V-shaped figure on slope and only few additional yellow spots. *Cassida suaveola* (SP.) differs in sculpture forming isolated round spots at least on sides of disc. Other species of *C. goudoti* group have rather elevated spots than elevated reticulation.

MATERIAL EXAMINED No additional material.

#### Cassida butterwecki BOROWIEC, 2007 (figs. 37-38, map 7)

Cassida butterwecki Borowiec, 2007: 48.

#### TYPE MATERIAL

Holotype: MADAGASCAR EST: « MADAGASKAR: Morondava, Kirindy forest, II/III. 1990, leg. M. Butterweck » [SMNS]. – three paratypes: MADAGASCAR EST: « MADAGASKAR: Morondava, Kirindy forest, II/III. 1990, leg. M. Butterweck » [2 SMNS, 1 DBET].

#### DESCRIPTION

Length: 4.6-5.0 mm, width: 3.5-3.8 mm, length of pronotum: 1.7-1.9 mm, width of pronotum: 2.7-3.1 mm, length/width ratio: 1.26-1.35, width/length ratio of pronotum: 1.51-1.63. Body short-oval, strongly convex, sides and slope strongly declivous (fig. 37). Sexual dimorphism indistinct.

Pronotum and elytra yellowish brown, punctures of explanate margin partly marked with black, punctures in rows partly with complete or incomplete black areola, elevated intervals with few small black spots. The number of black markings vary in the type series and some specimens look predominantly pale and some predominantly spotted. Clypeus yellowish brown. Prosternal process mostly yellowish brown only elevated margins partly black. Alae of prosternum from brown to black. Central plate of metasternum yellowish brown with blackish margin. Lateral plates brown to black. Whole metasternum from dark brown to black. Abdomen in the middle dark brown and gradually paler to margins. Coxae brown to partly black, trochanters brown, femora, tibiae and tarsi yellowish. Antennal segments 1-7 yellowish, 8-11 gradually infuscate, segments 10 and 11 almost black.

Pronotum subtrapezoidal, with maximum width in anterior 1/4 length. Anterior margin softly curved, anterior corners rounded then sides distinctly converging posterad. Disc convex, distinctly divided into part above head and basal and lateral part and distinctly bordered from explanate margin by a sulcus in anterior lobes and by an impression laterally. Area above head distinctly, coarsely but shallowly punctate, distance between punctures mostly narrower than puncture diameter, interspaces flat and surface of the area appears regular. Basal and lateral part elevated, coarsely punctate, punctures almost touching each other and surface appears slightly irregular. Explanate margin with fine punctation, punctures arranged irregularly, in some parts of surface group in other spread thus distance between punctures vary from as wide as to many times wider than puncture diameter, honeycomb structure invisible. Surface of pronotum slightly dull.

Scutellum triangular, without or with very shallow transverse sulcus. Base of elytra only slightly wider than pronotum, humeri angulate, strongly protruding anterad. Disc strongly convex, sides and slope strongly declining and disc appears slightly cylindrical. In profile disc regularly convex with top of convexity in postscutellar area (fig. 38). Punctation of disc regular, very coarse, foveolate, intervals distinctly narrower than rows, linear. Interval 2 convex, forming a linear costa surrounding postscutellar impression and transverse wrinkle at top of disc thus H-shaped top elevation is well marked. Interval 4 also slightly convex but less convex than interval 2, in 3/4 length forms a slightly more elevated fold. Intervals 6 mostly flat but in 3/4 length also forms a short, longitudinal fold. Marginal row distinct but its punctures finer than those of disc, marginal interval well marked only below humerus, lateral transverse fold distinct, smaller transverse fold marked also below humerus and behind the middle of marginal row. Explanate margin strongly declining, moderately broad, in the widest part approximately as wide as 1/3 width of disc. Punctation of explanate margin fine and spread irregularly thus distance between punctures vary from as wide as to many times wider than puncture diameter, honeycomb structure invisible. Surface of elytra appears slightly dull. Apex of elytral epipleura with sparse, semierect to erect hairs.

Eyes large, gena obsolete. Clypeus almost as wide as long, clypeal plate flat with several small punctures, surface distinctly microreticulate, slightly shiny. Clypeal grooves fine but distinct, well visible on whole length, running close to ventral margins of eyes and converging in regular triangle. Labrum emarginate to 2/5 length. Antennae slim, length ratio of antennal segments: 100:58:83:71:63:42:42:38:42:42:88. Segment 3 approximately 1.4 times as long as segment 2 and approximately 1.2 times as long as segment 4, segments 9 and 10 almost square.

Prosternal collar short, prosternal process moderately broad, in the middle slightly wider than length of trochanters, strongly expanded apically. Basal part of the prosternal process impressed along the middle, expanded apical part in the middle with rounded tubercle, on sides impressed and coarsely punctate.

Tarsi slim, last segment extending to the apical margin of marginal setae. Claws distinctly extending behind marginal setae, simple. Spermatheca (fig. 246).

DISTRIBUTION MADAGASCAR EST (map 7).

### Remarks

A very distinct species with no close relatives in Madagascar or tropical Africa. At first glance it is more similar to the members of the African genus Fornicocassis SPAETH, 1917 than to other Cassida species. The genus Fornicocassis distinctly differs in presence of deep antennal grooves while Cassida butterwecki has venter of pronotum typical for the genus Cassida with no antennal grooves. The strongly convex elytra and very strong elytral punctation and strongly declivous explanate margin of elytra characterize the following Madagascan species: Cassida frontalis BOH., C. madagascarica BOROW., C. pubescens SP., and C. rufomicans FAIRM. C. frontalis at first glance has similar shape except slightly smaller size than in C. butterwecki but differs in strong sculpture of elytra forming irregular folds and wrinkles. Pronotal sides of C. frontalis are regularly rounded and pronotum is widest in or slightly behind middle while in C. butterwecki pronotum is widest distinctly before the middle. Remaining three congeners form a different species group. They are twice to thrice larger than C. butterwecki, with body almost hemispherical, slope less descending than in C. butterwecki, and pronotal sculpture forming longitudinal striation or wrinkles. They also differ in structure of pronotum, with broadly rounded pronotal sides thus pronota are regularly elliptical while in C. butterwecki pronotum is rather subtrapezoidal.

MATERIAL EXAMINED No additional material.

# Cassida circumsepta Spaeth, 1915

(figs. 39-40, 235, map 6)

Cassida (Cassida) circumsepta SPAETH, 1914: 115 (nomen nudum). Cassida circumsepta SPAETH, 1915: 134. – BOROWIEC, 1999 a: 243.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar, coll. Donckier » [MM].

# DESCRIPTION

Length: 5.45-5.9 mm, width: 4.7-5.0 mm, length of pronotum: 1.85-1.9 mm, width of pronotum: 3.5-3.6 mm, length/width ratio 1.16-1.18, width/length ratio of pronotum: 1.84-1.95. Body almost circular (figs. 39, 235).

Pronotal disc yellow, at base with two large brown spots forming a trapezoidal figure with yellow spot at base and yellow line anteriorly separating both spots. Explanate margin yellow. Scutellum yellow. Elytral disc mostly yellow with ochraceous-brown to brownish-black ring surrounding whole disc, the ring runs in anterior half of disc along two submarginal intervals and rows and gradually narrowing posterad, marginal interval yellow. At top of disc brown stripe. Across 2/5 length of disc runs more or less distinct, narrow ochraceous band, in some specimens hardly visible (fig. 39), in other well marked interrupted only on suture (fig. 235). Clypeus, ventrites and legs uniformly yellow. Antennae yellow, last two segments black except yellowish apex of ventral side of last segment, sometimes segment 9 infuscate apically.

Pronotum slightly irregularly elliptical, with maximum width slightly before the middle, sides moderately rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc in some specimens smooth and almost impunctate, in other with small sparse punctation with tendency to form short grooves, shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles strongly protruding anterad, angulate. Disc almost regularly convex in profile (fig. 40), with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions, at top with well marked H-shaped elevation. Anterior branches of the elevation surrounds postscutellar impressions, posterior branches prolongated into slightly elevated second interval. Punctation very coarse and dense, completely regular, punctures in rows almost touching each other. Marginal row distinct, with coarse and dense punctures, approximately as coarse as in central rows. Intervals mostly linear, except well marked elevated second interval only slightly narrower than rows, also linear fourth interval on slope elevated on short distance. Marginal interval well marked on whole length, broad, in anterior half thrice wider than lateral intervals, no humeral or lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, external third almost horizontal, broad, in the widest part slightly less than three times narrower than disc. Surface of explanate margin very shallowly punctate, appears almost regular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura glabrous.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and on apex of clypeus converging in triangle. Surface of clypeal plate with shallow impression in the middle, glabrous, smooth and shiny. Labrum narrowly emarginate to ¼ length. Antennae moderately slim, segments 9-10 approximately as wide as long. Length ratio of antennal segments: 100:63:88:69:69:53:59:53:55:56:94. Segment 3 approximately 1.4 times as long as segment 2 and 1.3 times as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, moderately expanded apically, moderately impressed along lateral margins, impressions with row of setae, area between coxae smooth and shiny, rhomboidal apex slightly convex, its surface with no special sculpture, shiny.

Claws with moderately large basal tooth.

# DISTRIBUTION MADAGASCAR NORD (map 6).

# Remarks

*Cassida circumsepta* SP. is very similar to *C. consobrina* SP. Both species have similar dorsal pattern and body shape but *C. consobrina* differs in anterior margin of pronotum regularly convex with maximum width of pronotum in the middle (less convex thus maximum width is slightly before the middle of pronotum in *C. circumsepta*), humeral angles less protruding anterad, subangulate (more protruding anterad and angulate in *C. circumsepta*), elytral disc with surface less regular, with some interspaces tending to form low transverse folds or wrinkles (more regular in *C. circumsepta*), explanate margin of elytra regularly declivous (less declivous with external 1/3 width almost horizontal in *C. circumsepta*), and claws with smaller basal tooth.

# MATERIAL EXAMINED

MADAGASCAR NORD: – Montagne d'Ambre, Les Roussettes, 1100 m, XII 1958, 1 ex., A. ROBINSON [DBET]. – Mt. d'Ambre, 12°31'34.46"S, 49°10'21.57"E, 8-10 XI 2007, 1 ex., J. Šťastný [LS].

## Cassida coelebs BOROWIEC, 1999

(figs. 41-43, map 7)

Cassida coelebs BOROWIEC, 1999 b: 455.

#### TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Antsingy de Bekopaka, forêt VII-49, RP » [MNHN]. – 4 paratypes MADAGASCAR OUEST: « MADAGASCAR, Anakarahitra [= Ankirihitra] » [DBET].

### DESCRIPTION

Length: 4.2-4.8 mm, width of pronotum: 3.3-3.8 mm, length of pronotum: 1.6-1.8 mm, width: 2.65-3.05 mm, length/width ratio 1.20-1.29, width/length ratio of pronotum: 1.66-1.75. Body oval (figs. 41-42)

Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc black with yellow relief as in figs. 41-42. Marginal interval completely, and submarginal interval partly yellow. Clypeus, ventrites and legs yellow. Antennae yellow or last one to three segments slightly infuscate.

Pronotum moderately broad, approximately 1.7 times wider than long, elliptical but with posterior margin slightly more rounded than anterior one, with maximum width slightly before the middle, sides broadly rounded. Disc slightly convex, indistinctly bordered from explanate margin, sides of disc with small impression; with slightly separated part above head. Surface of disc with small, moderately dense punctures, on sides of disc surface appears slightly irregular and slightly dull, in front of scutellum mostly smooth and slightly glabrous, also area above head smooth but slightly dull. Explanate margin slightly declivous, its surface smooth, from slightly dull to slightly glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra slightly wider than base of pronotum, humeral angles distinctly protruding anterad, angulate, margin behind humerus not emarginate. Disc regularly convex (fig. 43), without tubercles, elytral relief in postscutellar point has tendency to form irregular H-shaped elevation. Postscutellar impressions distinct, bordered externally by elytral relief, no lateral impression. Punctation of disc regular, in anterior part of disc rows partly broken by elytral relief. Punctures coarse and dense, distance between them from twice narrower to almost as wide as puncture diameter. Punctures in anterior half of disc as coarse as on slope. Intervals narrow, approximately as wide as rows or slightly narrower, only marginal interval slightly wider than rows, in sutural half of disc intervals slightly convex, on sides flat. Punctures in marginal row approximatelytwice coarser than in submarginal one, disposed regularly. Pale parts of disc glabrous, dark parts slightly dull. Explanate margin moderately broad, slightly narrower than half width of disc of each elytron, declivous, its surface slightly irregular but glabrous. Apex of elytral epipleura in fresh specimens with sparse, erect hairs, in old dried specimens they are mostly broken and epipleura appear bare.

Clypeus elongate, approximatelyas long as wide, flat, smooth, with few small, shallow punctures; clypeal lines fine, visible on whole length of clypeus. Labrum emarginate to 1/4 length. Antennae short, length ratio of antennal segments: 100:62: 70:70:55:50:50:52:53:110. Segment 3 approximatelyslightly longer than 2, and as long as 4.

Prosternal collar short, prosternal process strongly expanded apically, flat, punctate, its surface appears slightly irregular.

Claws with very small basal tooth, appear simple.

DISTRIBUTION MADAGASCAR OUEST (map 7).

REMARKS

It belongs to the group of the smallest Madagascan species close to *Cassida* inconstans FAIRM. C. coelebs is the only species of the group with yellow pronotum and elytra black with yellow relief. Other species of the group have dorsum uniformly yellow (C. brooksi BOROW.), or yellow with small black spots (form of C. brooksi), or yellow with reddish band along sides of elytra and few black spots (C. inconstans and C. fuscomacula BOROW.), or else with almost whole pronotal disc and elytra black (C. nigroflavens BOROW.). Cassida dorsovittata BOH. of a different group is of similar size but differs in finer elytral punctation, and dorsal colouration usually uniformly yellow to green, or with brownish spots along sides, or with brownish lyriform figure.

MATERIAL EXAMINED No additional material.

#### Cassida collucens SPAETH, 1915 (figs. 44-47, 236, map 7)

Cassida (Cassida) collucens SPAETH, 1914: 115 (nomen nudum). Cassida collucens SPAETH, 1915: 128. – BOROWIEC, 1999 a: 244.

#### TYPE MATERIAL

Syntype: MADAGASCAR CENTRE: «Fianarantsoa» [MM]. – 4 syntypes: MADAGASCAR CENTRE: «Mahatsinjo près Tananarive» [MNHN, MM]. – syntype: MADAGASCAR CENTRE: «Andrangoloaka, OSO de Tananarive, 1600 m» [MM]. – syntype: MADAGASCAR: «Madagascar » [DEI].

# DESCRIPTION

Length: 5.15-6.2 mm, width: 4.35-5.2 mm, length of pronotum: 2.0-2.3 mm, width of pronotum: 3.65-4.2 mm, length/width ratio 1.10-1.21, width/length ratio of pronotum: (1.74)1.80-1.93(1.98). Body short-oval, males slightly stouter than females (figs. 44, 45, 37, 236).

Very variable species in colouration. In the palest specimens dorsum uniformly yellowish with only punctures marked with black (fig. 236). In the darkest specimens pronotal disc dark brown, explanate margin brown basally, yellow apically. Between these extreme form all intermediates were observed, sometimes pronotum with brown M-shaped figure, or with brown trapezoidal spot with two small yellow spots in the middle, elytral punctures with dark areola then areolae partly coalescent and form more or less distinct reticulate pattern, or disc mostly black with yellow relief (figs. 44-45). Explanate margin of elytra uniformly yellow or with broad humeral spot usually extending to both lateral and anterior elytral edges (fig. 45). Sometimes the humeral spot more or less shortened (fig. 47), pronotal disc in specimens with the humeral spot immaculate or with well marked M-shaped spot, or completely black (fig. 45). Clypeus yellow. Thorax black, abdomen mostly black surrounded by yellow margin. Legs yellow, only coxae more or less infuscate to black, in the palest specimens only two last segments infuscate, in the darkest specimens sometimes also segment 8 partly infuscate.

Pronotum irregularly elliptical, with maximum width in basal 1/3 length, sides narrowly rounded. Disc slightly convex, on sides separated from explanate margin by short and shallow furrow. Surface of disc with small, moderately dense to dense punctation, interspaces mostly as wide as puncture diameter, punctures in latero-basal part of disc tend to form short striation, in specimens with black pronotal disc often whole sides of disc distinctly striate. Explanate margin with fine and shallow punctation, appears smooth, transparent with well visible honeycomb structure. Whole surface of disc shiny but without mirror brilliance.

Base of elytra only moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles only slightly protruding anterad, rounded. Disc irregularly convex in profile, with top of convexity in postscutellar point, with distinct scutellar and principal impressions, at top with distinct H-shaped elevation. Anterior branches of the figure surrounded postscutellar elevation, posterior branches prolongated into elevated second interval. Punctation moderately coarse but dense, mostly regular but with additional punctures in postscutellar area and first and fourth interval. Punctures disposed in rows irregularly, partly 2-4 grouped, partly one by one. In specimens with reticulate pattern yellow impunctate parts of disc form irregular very low relief. Sometimes the relief is expanded and elytra appears mostly irregularly punctate. Marginal row distinct, with coarse and moderately dense punctures, twice coarser than in central rows. Intervals except elevated second interval mostly indistinct, linear or disturbed by elytral relief. Marginal interval well marked on whole length, moderately broad, in anterior half as wide as submarginal row and submarginal interval combined, no humeral fold, lateral fold narrow but well marked. Surface of intervals shiny but without mirror brilliance. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin shallowly and densely punctate, appears irregular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with, short, erect setae but in old dried specimens often appears bare.

Eyes large, gena obsolete. Clypeus approximately as long as wide, frontal grooves very fine, running close to margin of eyes and on top of clypeus converging in arch. Area between groove and margin of eye with row of long setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny with few small setose punctures. Labrum broadly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately 1.1 times as long as wide. Length ratio of antennal segments: 100:60:75:65:75:48:50:45:48:48:90. Segment 3 approximately 1.3 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, shallowly impressed along lateral margins, impressions with row of setae, area between coxae smooth and shiny, sometimes elevated to carinate, rhomboidal apex in the middle convex with several setose punctures, shiny, sides impressed with few coarse to dense, setose punctures, shiny.

Tarsal claws with small basal tooth, teeth on mid- and hind claws gradually smaller and in some specimens claws at first glance appear simple. Spermatheca (fig. 247).

# DISTRIBUTION MADAGASCAR CENTRE, EST AND OUEST (map 7).

# REMARKS

Cassida collucens with C. concallescens SP., C. densestriata n. sp., C. prospera SP., and C. trossula SP. forms a natural group of species with moderately large size, pronotal sides narrowly rounded, base of elytra not or only sligfhtly wider than pronotum, moderately coarse and partly irregular punctation, and pronotal disc punctate or with more or less visible striation. Cassida concallescens differs from typical forms of C. collucens in pale dorsum, with at least elytral punctures marked with brown, and explanate margin always without humeral spots, from pale form of C. collucens differs in higher elytral sculpture forming except postscutellar H-shaped figure a transverse, V-shaped elevation in 2/3 length of disc. *C. densestriata* differs in groundcolour of elytra predominantly brown, denser punctation of pronotal disc, and denser and more irregular punctation of elytra. *C. prospera* differs in base of elytra only slightly wider than pronotum, pronotal sides more angulate, elytral sculpture limited only to postscutellar H-shaped elevation, elytral pattern never forming humeral spots, and pronotal pattern in dark aberration forms two separate S-shaped spots. *C. trossula* is the most similar, has the same range of variation of dorsal coloration and proper identification needs comparison with series of properly identified specimens. Base of elytra is in *C. trossula* slightly less wider from pronotum than in *C. collucens* and sides of pronotum slightly more angulate. Elytral sculpture in *C. trossula* never forms more or less isolated spots on dark background. Although the differences are visible in comparison of long series of both taxa its specific separateness needs verification by biological and genetic studies.

# MATERIAL EXAMINED

MADAGASCAR CENTRE: – Forêt d'Ambohitantely, XII 1947, 1 ex. [MNHN]. – Antananarivo prov., Manankazo env., 15-17 XII 1996, 1 ex., I. JENIŠ [MS]. – Fianarantsoa, Ranomafana NP, 21°15'36.0"S, 47°27'28.5"E, 16-18 I 2010, F. PAVEL [LS].– Mahatsinjo, 2 ex. [DBET].

MADAGASCAR EST: – Andasibe, Tamatave [= Toamasina], Maromizaha, 21-24 XI 1995, 1 ex., I. JENIŠ [MS]. – Prov. Andasibe (Périnet), Foret d'Anosibe, I 1951, 1 ex. [MNHN]. – Anjanaharibe-Sud, Marolakana River env., 14°45'16.83"S, 49°29'14.74"E, 25-27 X 2007, 7 spec., J. ŠťASTNÝ [LS]. – Ankasoha, dct. Moramanga, X 1957, 1 ex., P. GRIVEAUD [DBET]. – Anosibe, 21 XII 1963, 1 ex., VIEU [DBET]. – E of Moramanga, Analamazaotra, 1000 m, 8 II 1996, 1 ex., BEDNAŘÍK [MS]. – Moramanga Prov., Périnet, 17 I 1938, 1 ex., 25 I 1938, 1 ex., B. KRECZMER [DBET]. – Moramanga Prov., Périnet, 21 X 1971, 1 ex., L. & R. BLOMMERS [DBET]. – Sambava, Marojejy-Col. Central, 1700 m, I 1960, 1 ex., P. SOGA [DBET]. – Sambava, Marojejy-Ouest, 1600 m, IX-X 1959, 2 ex., XI 1959, 1 ex, P. SOGA [DBET]. – Tamatave [= Toamasina], 2-4 XI 1984, sweeping vegetation, 2 ex., R. W. BROOKS [SEMC]. – Tamatave [= Toamasina], 1 ex. [DBET]. – Zahamena Nat. Parc, 1 ex. [MNHN].

MADAGASCAR OUEST: - Maromandia, 1 ex. [LS].

Cassida concallescens SPAETH, 1915 (figs. 48-49, map 8)

Cassida (Cassida) concallescens SPAETH, 1914: 115 (nomen nudum). Cassida concallescens SPAETH, 1915: 144. – BOROWIEC, 1999 a: 244.

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Fort Dauphin [= Tolanaro], 1899, Sikora » [MM].

DESCRIPTION

Length: 5.2 mm, width: 4.3 mm, length of pronotum: 2.0 mm, width of pronotum: 3.5 mm, length/width ratio 1.21, width/length ratio of pronotum: 1.75. Body broadly oval, sides of elytra only slightly convex and moderately converging posterad thus body outline appears slightly rectangular (fig. 48).

Pronotum and scutellum yellow. Elytral disc orange-yellow except pale yellow two marginal intervals. Punctures in impressed parts of orange-yellow part of disc marked with brown, punctures on elevated parts without markings. Explanate margin pale yellow. Ventrites and legs yellow. Antennal segments 1-7 yellow, segments 8-11 brown except yellow apex of ventral side of apical segment.

Pronotum elliptical but with maximum width slightly before the middle, sides rounded, anterior margin of pronotum less convex than posterior one thus pronotum appears subtrapezoidal. Disc moderately convex (fig. 49), bordered on sides from explanate margin by short sulcus. Surface of disc shallowly, finely to moderately coarse punctate, distance between punctures as wide as to wider than puncture diameter, interspaces smooth and shiny, surface of disc appears regular. Punctation of explanate margin very shallow, interspaces smooth, shiny surface appears regular, transparent with well visible honeycomb structure.

Base of elytra slightly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, basal margin of disc finely serrate. Disc almost regularly convex in profile, with top of convexity in postscutellar fold, postscutellar and principal impressions distinct. Punctation coarse and regular but regularity of rows partly disturbed by elytral sculpture. Postscutellar point with H-shaped elevation in anterior part surrounding postscutellar impressions, behind the middle of disc elevated parts of intervals form half moon-shaped transverse sculpture, also humeral part of intervals and second interval elevated; some interspaces between punctures on sides of disc form short, transverse folds. Punctures in rows usually dense with distance between punctures mostly narrower than puncture diameter. Marginal row distinct, its punctures below humerus almost touching each other, in posterior half of disc with distance as wide as puncture diameter or slightly wider, punctures only slightly coarser than in lateral rows. Intervals in well marked parts narrow, in sutural parts of disc as wide as rows, in central parts linear, on sides distinctly narrower than rows. Marginal row distinct only in anterior half, in posterior half linear. In humeral area marginal interval twice wider than submarginal one. Surface between punctures on whole disc smooth and shiny. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin shallowly bat coarsely and extremely dense punctate, punctures almost touching each other, but interspaces flat and surface appears quite regular. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus moderately broad, approximately 1.1 times as long as wide. Frontal grooves fain, in basal <sup>3</sup>/<sub>4</sub> length running close to margin of eye then converging in arch. Clypeal plate with shallow impression at apex, surface smooth and shiny. Labrum broadly emarginate to 1/3 l3ngth. Antennae moderately long, segments 9-10 approximately as long as wide, segment 3 very long, approximately1.6 times longer than segment 2 and 1.2 times longer than segment 4.

Prosternal collar distinct, as long as last palpomere. Prosternal process moderately broad, strongly expanded apically, deeply sulcate between coxae, expanded part without sculpture only with few moderately coarse punctures.

Tarsi broad, claw segment as long as bilobate third segment, claws simple.

DISTRIBUTION MADAGASCAR EST (map 8).

# REMARKS

Cassida concallescens with C. collucens SP., C. densestriata n. sp., C. prospera SP., and C. trossula SP. forms a natural group of species with moderately large size, pronotal sides narrowly rounded, base of elytra not or only sligfhtly wider than pronotum, moderately coarse and partly irregular punctation, and pronotal disc punctate or with more or less visible striation. C. concallescens differs from all relatives in higher elytral sculpture forming except postscutellar H-shaped figure a transverse, V-shaped elevation in 2/3 length of disc.

MATERIAL EXAMINED No additional material.

#### Cassida consobrina SPAETH, 1915

(figs. 50-52, map 8)

Cassida (Cassida) consobrina SPAETH, 1914: 115 (nomen nudum). Cassida consobrina SPAETH, 1915: 135. – BOROWIEC, 1999 a: 244.

TYPE MATERIAL

Syntype: MADAGASCAR CENTRAL: «Mahatsinjo n. Tananarive, Donckier» [MNHN]. – Syntype: MADAGASCAR: «Madagascar» [DEI].

#### DESCRIPTION

Length: 4.65-5.15 mm, width: 3.85-4.25 mm, length of pronotum: 1.6-1.8 mm, width of pronotum: 2.9-3.25 mm, length/width ratio 1.21, width/length ratio of pronotum: 1.81. Body short-oval (figs. 50-51).

Pronotal disc yellow, at base with two large brown to black spots forming trapezoidal figure with yellow spot at base and yellow line anteriorly separating both spots. Explanate margin yellow. Scutellum yellow. Elytral disc mostly yellow with ochraceous-brown to brownish-black ring surrounding whole disc, the ring runs in anterior half of disc along two submarginal intervals and rows and gradually narrowing posterad, marginal interval yellow, external margin of the ring the darkest then ring gradually paler to ventral margin, in the palest specimens inner margin of the ring diffused with ground colour of disc. At top of disc brown stripe. Across 2/5 length of disc runs more or less distinct, narrow ochraceous band, in some specimens hardly visible, in other well marked interrupted only on suture, also in anterior half of disc more or less distinct, diffused ochraceous spots. Clypeus, ventrites and legs uniformly yellow. Antennae yellow, last three segments black except yellowish apex of ventral side of last segment, sometimes segment 9 yellow basally and infuscate apically.

Pronotum regularly elliptical, with maximum width in the middle, sides moderately rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc with small sparse to moderately dense punctation, in specimens with darker basal spot punctation coarser and more dense than in specimens with pale basal spot, in the darkest specimens punctures tend form short grooves, shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles strongly protruding anterad, subangulate. Disc almost regularly convex in profile (fig. 52), with top of convexity in postscutellar point, with shallow to moderately deep scutellar and principal impressions, at top with well marked H-shaped elevation. Anterior branches of the elevation surrounding postscutellar impressions, posterior branches prolongated into slightly elevated second interval. Punctation very coarse and dense, completely regular, punctures in rows almost touching each other. Marginal row distinct, with coarse and dense punctures, approximately as coarse as in central rows. Intervals mostly linear, including elevated second interval. Marginal interval well marked on whole length, broad, in anterior half thrice wider than lateral intervals, no humeral fold, lateral fold well marked. Surface of intervals mostly glabrous, smooth and shiny, some interspaces tend to form low irregular folds and wrinkles. Explanate margin moderately declivous, broad, in the widest part slightly less than three times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura glabrous.

Eyes large, gena obsolete. Clypeus narrow, 1.3 times as long as wide, frontal grooves very fine, converging in regular triangle. Area between grove and margin of eye with row of setae. Surface of clypeal plate with shallow impression in the middle, glabrous, smooth and shiny. Labrum narrowly emarginate to <sup>1</sup>/<sub>4</sub> length. Antennae moderately slim, segments 9-10 approximately as wide as long. Length ratio of antennal segments: 100:56:78:75:63:50:53:50:53:53:106. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, moderately expanded apically, moderately impressed along lateral margins, impressions with row of setae, area between coxae smooth and shiny, rhomboidal apex slightly convex, its surface with no special sculpture, shiny.

Claws with small basal tooth.

#### DISTRIBUTION

MADAGASCAR CENTRAL and Est (map 8).

# REMARKS

Cassida consobrina SP. is very similar to C. circumsepta SP. Both species have similar dorsal pattern and body shape but Cassida circumsepta differs in anterior margin

of pronotum less convex thus maximum width is slightly before middle of pronotum (regularly convex with maximum width in the middle in *C. consobrina*), humeral angles more protruding anterad, angulate (less protruding anterad and subangulate in *C. consobrina*), elytral disc with surface more regular, with only few transverse folds or wrinkles (more wrinkled in *C. consobrina*), explanate margin of elytra less declivous with external 1/3 width almost horizontal (moderately declivous on whole width in *C. consobrina*), and claws with larger basal tooth.

#### MATERIAL EXAMINED

MADAGASCAR CENTRAL: – Mahatsinjo n. Tananarive, 2 ex. [MNHN]. – Tananarive, 1912, 1 ex., LAMBERTON [MNHN].

MADAGASCAR EST: Foret d'Anosibe, VIII 1953, 1 ex. [MNHN]. – Moramanga, 22-28 II 1995, 2 ex., J. MORAVEC [1 MS, 1 DBET]. – Moramanga env., 10-18 XII 1997, 5 ex., P. Pacholátko [3 NMB, 1 DBET, 1 LS]. – Moramanga distr., Antsahatsaka env., 12-16 XII 1996, 1 ex., J. STOLARCZYK [MS]. – – Tamatave Distr., Moramanga env., 27-30 XII 1996, 1 ex., I. JENIŠ [MHNG]. – Tamatave Distr., Moramanga env., 13-17 XII 1995, 2 ex., J. STOLARCZYK [1 USMB, 1 DBET].

# Cassida contracta (SPAETH, 1915)

(figs. 53-54, map 8)

Coptocycla contracta SPAETH, 1914: 130 (nomen nudum). Coptocycla contracta SPAETH, 1915: 150. Cassida contracta: BOROWIEC, 1999 a: 245.

# TYPE MATERIAL

4 syntypes: MADAGASCAR NORD: « Diego Suarez [= Antsiranana] » [MM]. – syntype: MADAGASCAR EST: « Tamatave, Rolle [= Toamasina] » [MM].

# DESCRIPTION

Length: 7.15-8.2 mm, width: 6.5-7.3 mm, length of pronotum: 2.7-3.0 mm, width of pronotum: 4.75-5.3 mm, length/width ratio 1.07-1.18, width/length ratio of pronotum: 1.70-1.76. Body almost circular, males slightly stouter than females (fig. 53).

Pronotum with disc rusty yellow and explanate margin slightly paler. Scutellum rusty yellow. Disc of elytra with rusty yellow background and slightly paler yellow elevated parts thus elytra appear indistinctly pale maculate. Explanate margin yellow. Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-6 yellow, segment 7 more or less infuscate and segments 8-11 black.

Pronotum elliptical, anterior margin very softly convex thus maximum width distinctly before the middle, sides very broadly rounded. Disc slightly convex, on sides separated from explanate margin by shallow impression. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with extremely small crenulation, humeral angles moderately protruding anterad, ro-

unded. Disc strongly but almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions (fig. 54). Postscutellar area with indistinct, broad H-shaped fold. Punctation fine but placed in round impressions and thus appear coarser, regular but regularity of rows partly disturbed by impunctate pale relief. Marginal row distinct, with dense punctures, only slightly coarser than punctures in central rows. Regularity of intervals disturbed by elevated relief, in well marked parts intervals as wide as to slightly narrower than rows. Marginal interval well marked on whole length, very broad, in anterior half thrice wider than lateral intervals, with well marked humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin strongly declivous, broad, in the widest part less than three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with extremely short setae, in old specimens appear bare.

Eyes moderately large, gena short but well marked, as long as half length of second antennomere. Clypeus very broad, 1.4 times as wide as long, frontal grooves fine, running in distance to margin of eye and converging in regular triangle. Apex of clypeal triangle with short median sulcus. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, glabrous, smooth and shiny. Labrum shallowly emarginate to 1/6 length. Antennae slim, segments 9-10 approximately 1.2-1.3 times as long as wide. Length ratio of antennal segments: 100:50:58:54:52:48:50:48:56:58:108. Segment 3 approximately 1.2 times as long as segment 4.

Prosternal collar distinctly longer than last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, not impressed along lateral margins but between coxae with median impression, along margins wits few setose punctures, central part of rhomboidal apex only slightly convex, with few coarse and very deep setose punctures, sides only slightly impressed with few setose punctures.

Claws simple.

DISTRIBUTION MADAGASCAR EAST and NORD (map 8).

# Remarks

Cassida rugipennis BOH. with C. contracta (SP.) and C. ambrica BOROW. form a group of species with large body (length over 7 mm), surface of elytra not rugose, simple claws, and uniformly yellow ventrites. C. ambrica distinctly differs in explanate margin of elytra with black humeral and posterolateral spots (immaculate in both relatives), almost horizontal, forming a shallow gutter (moderately or strongly declivous in both relatives). C. rugipennis looks at first glance very similar but differs in many characters: dorsum often with dark spots (always immaculate in C. contracta), sculpture of elytral disc regular or at most forming short folds (elevated fields), anterior margin of pronotum regularly curved (almost straight), antennal segment 3 long, twice longer as segment 2 (only 1.2 times as long as segment 3), clypeal plate strongly elevated to angulate (not elevated), prosternum pubescent (without distinct pubescence), and apex of elytral epipleura densely pubescent (unpubescent).

MATERIAL EXAMINED MADAGASCAR EST: – Tamatave [= Toamasina], 1 ex., ROLLE [DBET]. MADAGASCAR NORD: – Amber Geb., 1 ex. [DBET].

# Cassida currax Spaeth, 1915

(figs. 55-58, map 9)

Cassida (Cassida) currax Spaeth, 1914 b: 115 (nomen nudum). Cassida currax Spaeth, 1915 b: 143. – Borowiec, 1999 a: 246.

TYPE MATERIAL Syntype: MADAGASCAR NORD: « Diego Suarez [= Antsiranana] » [MM].

# DESCRIPTION

Length: 4.4-5.75 mm, width: 3.7-4.45 mm, length of pronotum: 1.6-2.0 mm, width of pronotum: 3.0-3.4 mm, length/width ratio 1.19-1.29, width/length ratio of pronotum: 1.70-1.78. Body short-oval, males slightly smaller and stouter than females (figs. 55-57).

Pronotum mostly black, only anterior 1/3 length of explanate margin yellow. Scutellum black. Elytral disc completely black (figs. 56-57), or each elytron between rows 1 and 7 brown or reddish-brown and suture and lateral band black (fig. 55). Explanate margin mostly black with only humeral angle and apical margin narrowly yellow, and in 1/3 length at border of disc with small, round or oval yellow spot. Clypeus yellow. Thorax dark brown to black, abdomen mostly brown to black broadly surrounded by yellow. Coxa and trochanters mostly brown to black. Femora in 2/3-3/4 length black, apices yellow, tibiae and tarsi yellow. Antennal segments 1-8 yellow, last three segments black, sometimes segment 9 only partly infuscate.

Pronotum regularly elliptical, with maximum width in the middle, sides narrowly rounded. Disc convex, sides on whole length separated from explanate margin, also lateral lobes separated from central part of disc by sulcus, area above head placed distinctly lower than basal part of disc. Surface of basal part of disc with more or less regular longitudinal striation, particularly on top, sides sometimes with irregular wrinkles or granulate, lateral lobes with surface from almost regular to striate or wrinkled, area above head usually impunctate centrally and more or less irregular on sides. Black parts of explanate margin wrinkled, yellow parts with shallow but dense punctation, irregular but transparent, with well visible honeycomb structure. Whole surface of pronotum from slightly dull to slightly shiny.

Base of elytra moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subangulate. Disc irregularly convex in profile (fig. 58), with very low H-shaped elevation in postscutellar area and moderately deep scutellar and shallow principal impressions.

Anterior branches of H-shaped elevation surrounding postscutellar impressions, posterior branches very short, no intervals elevated. Punctation completely regular, moderately coarse but dense with distance between punctures mostly as wide as to slightly wider than puncture diameter. Marginal row distinct, its punctures three to four times coarser than punctures in central rows. Intervals well marked, twice to thrice wider than rows. Marginal interval well marked on whole length but narrow, only as wide as submarginal row. Surface of disc appears slightly dull. Explanate margin moderately declivous, moderately broad, in the widest part slightly more than three times narrower than disc. Surface of explanate margin coarsely and densely punctate, appears irregular to rugose. Apex of elytral epipleura mostly glabrous only apical edge of elytra with row of very short setae.

Eyes large, gena obsolete. Clypeus moderately broad, 1.1 times as wide as long, frontal grooves fine, converging in regular triangle. Area between grooves, margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate flat, shiny, with several small, setose punctures. Labrum very shallowly emarginate. Antennae slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:53:58:65:70:60:58:45:48:53:110. Segment 3 approximately 1.1 times as long as segment 2 and segment 4 approximately 1.1-1.2 times as long as segment3.

Prosternal collar longer than last palpomere. Prosternal process broad, impressed along lateral margins, moderately broad apically. Area between coxae partly elevated partly flat, on sides with oblique sculpture of grooves and wrinkles. Central part of rhomboidal apex elevated, partly smooth, sides impressed with irregular sculpture and few setose punctures.

Claws with small basal tooth. Spermatheca (fig. 248).

#### DISTRIBUTION

MADAGASCAR EST and NORD (map 9).

#### REMARKS

*Cassida currax* SP. belongs to the group of moderately large species with shortoval to subcircular body, pronotum and elytra mostly black, including black explanate margin, and base of elytra indistinctly to moderately wider than pronotum. The group comprises *C. flavooculata* n. sp. and *C. tenax* SP., also melanistic form of *C. trossula* SP. is similar. *C. flavooculata* distinctly differs in mostly black legs, larger yellow elytral spot placed at border between disc and explanate margin and marked with black central hole, and finer pronotal sculpture not forming a striation. *C. tenax* differs in elytra completely black, without yellow spot in the middle of the border of explanate margin and disc. *C. tenax* is also distinctly larger species with mean length 5.9 mm while in *C. currax* only 5.01 mm. Melanistic form of *C. trossula* differs in larger yellow spots on explanate margin, and yellow parts of pronotum occupying only area above head. Form of *C. currax* with partly reddish-brown disc is similar to *C. rubromaculata* SP. but it differs in the reddish elytral spot strongly constricted in the middle and yellow spot at the border of disc and explanate margin with black central hole.
MATERIAL EXAMINED

MADAGASCAR EST: – Distr. Sambava, Marojejy Ouest, 1300 m, XII 1958, 2 ex., IX-X 1959, 1 ex., 1600 m, XI 1959, 1 ex., P. Soga [DBET]. MADAGASCAR NORD: – Mt. D'Ambre, XII 1948, 1 ex., R. PAULIAN [MNHN].

## Cassida densestriata n. sp.

(figs. 59-61, map 9)

TYPE MATERIAL

Holotype: MADAGASCAR CENTRAL: « MADAGASCAR c., prov. Antananarivo, Manankazo env., 28.-29.11.2002, Lgt. Mraček » [DBET]. – paratype: MADAGASCAR: « Madagascar, collection Le Moult / Janvier » [MM].

## ETYMOLOGY

Named after dense rows of punctures on elytral disc.

#### DESCRIPTION

Length: 5.15-5.55 mm, width: 4.25-4.5 mm, length of pronotum: 1.9-2.1 mm, width of pronotum: 3.45-3.7 mm, length/width ratio 1.21-1.23, width/length ratio of pronotum: 1.76-1.82. Body short-oval (figs. 59-60).

Variable species. In the pale specimen pronotum yellow, disc at base mostly brownish-black with thin yellow median line, area above head and lateral lobes yellowish (fig. 60). In the dark specimen pronotal disc mostly dark brown to black, explanate margin brown basally, yellow apically (fig. 59). Elytral disc in the pale specimen brownish-black with yellow marginal interval and yellowish elevated pattern as in fig. 60, explanate margin of elytra uniformly yellow. In the darkt specimen elytral disc mostly brownish black with paler brown top of disc and elevations surrounding postscutellar impressions, explanate margin uniformly brown. Clypeus yellow. Thorax black, except yellowish brown to dark brown lateral plates of metathorax. Abdomen mostly black, broadly surrounded by yellow margin. Legs, including coxae and trochanters, yellow to yellowish-brown. Antennal segments 1-6 yellow, segments 7-11 gradually infuscate to black.

Pronotum irregularly elliptical, with maximum width in basal 1/3 length, sides narrowly rounded. Disc slightly convex, on sides separated from explanate margin by short and shallow furrow. Surface of disc with moderately coarse and very dense punctation, interspaces mostly narrower than puncture diameter, punctures in laterobasal part of disc tend to form short striation. Explanate margin with fine and shallow punctation, appears smooth, transparent with well visible honeycomb structure. Whole surface of disc shiny but without mirror brilliance.

Base of elytra only moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles only slightly protruding anterad, rounded. Disc slightly irregularly convex in profile (fig. 61), with top of convexity in postscutellar point, with distinct scutellar impressions, and with sharp H-shaped elevation at top. Anterior branches of the figure surrounded postscutellar elevation, posterior branches prolongated into cimpletely elevated second interval. Punctation moderately coarse but dense, mostly irregular but on sides of disc tend to form regular rows. Punctures disposed in rows dense, interspaces mostly narrower than punctures. Marginal row distinct, with coarse and moderately dense punctures, twice coarser than in central rows. Intervals except elevated second interval mostly indistinct, linear or disturbed by elytral relief. Marginal interval well marked on whole length, moderately broad, in anterior half as wide as submarginal row and submarginal interval combined, no humeral fold, lateral fold narrow but well marked. Surface of intervals shiny but without mirror brilliance. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin shallowly and densely punctate, appears irregular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus approximately as long as wide, frontal grooves very fine, running close to margin of eyes and on top of clypeus converging in arch. Area between groove and margin of eye with row of long setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny with few small setose punctures. Labrum broadly emarginate to 1/4 length. Antennae moderately slim, segments 9-10 approximately 1.1 times as long as wide. Length ratio of antennal segments: 100:69:85:85:73:62:62:58:62:62:85. Segment 3 approximately 1.2 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, shallowly impressed along lateral margins, impressions with row of setae, area between coxae smooth and shiny, with few small punctures, rhomboidal apex in the middle convex with several setose punctures, shiny, size impressed with few coarse to dense, setose punctures, shiny.

Tarsal claws with large basal tooth.

DISTRIBUTION MADAGASCAR CENTRAL (map 9).

## Remarks

Cassida densestriata n. sp. with C. collucens SP., C. concallescens SP., C. prospera SP., and C. trossula SP. forms a natural group of species with moderately large size, pronotal sides narrowly rounded, base of elytra not or only sligfhtly wider than pronotum, moderately coarse and partly irregular punctation, and pronotal disc punctate or with more or less visible striation. C. densestriata differs from all congeners in groundcolour of elytra predominantly brown, denser punctation of pronotal disc, and denser nad more irregular punctation of elytra.

MATERIAL EXAMINED No additional material. Cassida dolens BOROWIEC, 1999 b: 465.

## TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Hera, Ankazoabo » [MNHN]. – 6 paratypes: MADAGASCAR: « Madagascar » [DBET]. – paratype: MADAGASCAR: « Madagascar » [MM, this specimen was designated as syntype of *Cassida rufomicans*].

## DESCRIPTION

Length: 5.5-6.6 mm, width: 4.7-5.4 mm, length of pronotum: 2.1-2.3 mm, width of pronotum: 4.05-4.50 mm, length/width ratio 1.17-1.30, width/length ratio of pronotum: 1.87-2.05. Body short-oval (figs. 62-63).

Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc with variable pattern, the holotype has area between suture and second elytral costa yellowish-brown with several indistinct darker spots and paler parts of costae, area between second costa and marginal row brownish-black, only humerus with paler spot, explanate margin with broad black humeral spots, and very broad posterolateral spots extending to the suture. In the paratypes elytra are paler, varying from almost uniformly yellowish-brown to variegate; in variegate forms darker brown usually are present following spots: spot in front of postscutellar elevation, elongate stripe in 2/3 length of the first elytral costa, and broad stripe along sides between the second costa and submarginal interval. Marginal interval and explanate margin in paratypes uniformly yellowish-brown. Clypeus yellowish brown, ventrites vary from uniformly yellowish-brown to partly black thorax and abdomen. Legs yellowish-brown; antennal segments 1-7 yellowish brown, remainder segments gradually infuscate, sometimes segment 8 also uniformly yellowish-brown.

Pronotum broad, approximately 1.9 times wider than long, elliptical, with maximum width in the middle, sides angulate. Disc depressed, without border between disc and explanate margin, but sides of disc with small impression and with slightly separated part above head. Surface of disc irregular, with more or less regular longitudinal striation, except almost smooth area above head. Explanate margin slightly declivous, its surface mostly smooth, only on sides in basal part slightly irregular. Whole surface of disc slightly dull, striation partly glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra only slightly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc regularly convex (fig. 64), without tubercles, but with moderately high H-shaped elevation in postscutellar point. Postscutellar and principal impressions distinct, deep, no lateral impression; postscutellar impression bordered externally by elevated anterior branches of the H-shaped figure. Posterior branches of the H-shaped figure prolonged to apex of disc and form longitudinal costa. Parallel to the first costa, in the middle of elytron runs the second costa, but in some specimens it is very low or completely obsolete. Punctation of disc mostly irregular, only in lateral part of disc with tendency to form regular rows; in specimens with dark elytral band punctures on dark parts of elytra more regular than in the same parts of elytra in immaculate specimens. Punctures very coarse and dense, almost touching each other. Punctures in anterior half of disc not or only slightly coarser than in posterior half of disc. Intervals, except costae, linear or obsolete. Marginal interval distinct. Punctures in marginal row approximatelytwice to thrice coarser than in submarginal one, disposed regularly. Surface of disc appears irregular. Explanate margin broad, slightly narrower than half width of disc of each elytron, declivous, its surface smooth to slightly irregular. Surface of elytra from slightly glabrous to slightly dull, dark parts of elytra usually dull, immaculate specimens mostly slightly glabrous. Apex of elytral epipleura in fresh specimens with sparse, erect hairs, in old dried specimens they are mostly broken and epipleura appear bare.

Clypeus moderately broad, approximately1.2 wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus. Labrum emarginate to 1/4-1/3 length. Antennae moderately elongate, length ratio of antennal segments: 100:57:93:86:71:61:61:54:61:61:110. Segment 3 approximately1.6 times longer than 2, and slightly longer than 4.

Prosternal collar short, prosternal process strongly expanded apically, in the middle slightly convex, alae impressed, punctate, their surface appears irregular.

Claws with very small basal tooth thus appear simple.

DISTRIBUTION MADAGASCAR OUEST (map 9).

## Remarks

At first glance it is similar to *Cassida latecincta* FAIRM. and *C. circumsepta* SP. All species have base of elytra only slightly wider than base of pronotum, angulate or subangulate sides of pronotum, irregular surface of pronotal disc and tendency to form dark band along sides of elytral disc but differs from both relatives in dark, brown, background colour of pronotum and elytra. *C. latecincta* differs in uniformly yellow antennae (with black apical segments in *C. dolens*), less irregular pronotal surface and more regular elytral punctation. *C. circumsepta* differs in only last two antennal segments are black (at least three segments in *C. dolens*), maculate pronotum (immaculate in *C. dolens*) and pronotum with less rounded anterior margin with maximum width slightly before the middle (in the middle in *C. dolens*). *C. bicallosa* Sp. has at first glance elytral pattern similar to some aberrations of *C. dolens* but differs in pronotum distinctly narrower than base of elytra (only slightly narrower in *C. dolens*) and broadly rounded pronotal sides (angulate in *C. dolens*).

MATERIAL EXAMINED No additional material.

#### Cassida dorsovittata BOHEMAN, 1854 (figs. 65-69, map 10)

- Cassida dorsovittata Boheman, 1854: 395, 1856: 129, 1862: 308. Gemminger and Harold, 1876: 3653. – Kolbe, 1898: 344. – Spaeth, 1912: 503. – Shaw, 1956: 268, 1961: 30, 1972: 73. – Borowiec, 1986: 805, 1995: 371, 1999 a: 249, 2005: 122. – Wegrzynowicz and Wasowska, 1996: 41; Rice, 2003: 81; Heron, 2003: 33.
- Cassida (Cassida) dorsovittata: SPAETH, 1914: 118.
- Cassida insularis BOHEMAN, 1854: 433, 1856: 136, 1862: 335. GEMMINGER and HAROLD, 1876: 3655. WEISE, 1910: 442, 505. BOROWIEC, 1999 a: 249 (as syn. of dorsovittata).
- Cassida (Cassida) insularis: SPAETH, 1914: 115.
- Cassida Coquereli Boheman, 1862: 308. Gemminger and Harold, 1876: 3653. Weise, 1910: 505. Bo-Rowiec, 1999 a: 249 (as syn. of *dorsovittata*).
- Cassida (Cassida) Coquereli: SPAETH, 1914: 115.
- Cassida pallescens Boheman, 1862: 334. Gemminger and Harold, 1876: 3657. Weise, 1910: 505. Borowiec, 1999 a: 249 (as syn. of *dorsovittata*).
- Cassida (Cassida) pallescens: SPAETH, 1914: 116.
- Cassida hebes Weise, 1900: 217. Spaeth, 1922: 1002, 1943: 62. Borowiec, 1999 a: 249 (as syn. of dorsovittata).
- Cassida (Cassida) hebes: SPAETH, 1914: 118.
- Cassida breviuscula FAIRMAIRE, 1904: 274. WEISE, 1910: 505. SPAETH, 1912: 503. BOROWIEC, 1999 a: 249 (as syn. of dorsovittata).
- Cassida (Cassida) breviuscula: SPAETH, 1914: 115.
- Cassida (Cassidula) striola WEISE, 1910: 481, 505. BOROWIEC, 1999 a: 249 (as syn. of *dorsovittata*). Cassida (Cassida) striola: Spaeth, 1914: 116.

#### TYPE MATERIAL

Lectotype of *Cassida dorsovittata*: SOUTH AFRICA: « Cap B. Sp., J. Vahlberg » [NRS, designated by BOROWIEC 1999: 249]. – 4 paralectotypes: SOUTH AFRICA: « Pt. Nat., J. Vahlberg » [NRS].

Syntypes of *Cassida coquereli*: COMORES: « Mayotte, Coquerel » [1 MNHN, 1 NRS].

Holotype of Cassida pallescens: COMORES: « Mayotte, Coquerel » [MNHN].

Lectotype of *Cassida hebes*: TANZANIA: « Mombo, VII 1899 » [ZMHU, designated by BOROWIEC 1999 a: 249]. – paralectotype: TANZANIA « Mombo, VII 1899 » [ZMHU].

Syntype of Cassida breviuscula: MADAGASCAR: « Soalala, Perrier » [MNHN].

Location of types of *Cassida insularis* and *Cassida striola* unknown. Both taxa were synonymized with *Cassida dorsovittata* by BOROWIEC (1999 a).

### DESCRIPTION

Length: 4.10-5.15 mm, width: 3.1-3.65 mm, length of pronotum: 1.5-1.8 mm, width of pronotum: 2.6-3.1 mm, length/width ratio 1.26-1.50, width/length ratio of pronotum: 1.66-1.81. Body short-oval, males distinctly stouter than females (figs. 65-66, 68-69).

Dorsum uniformly yellow or green (figs. 65-66, in *Cassida dorsovittata* green colour typical for live specimens is often preserved in dried specimens). Occasionally, along suture runs paler yellow band marked with several small brown spots or only with

some punctures with brown areola (fig. 68), in extreme case elytral disc with brown lyriform figure (fig. 69). Clypeus from uniformly yellow to mostly black, ventrites in populations from Madagascar mostly black, only abdomen narrowly surrounded by yellow (in Africa predominate populations with ventrites uniformly yellow). Legs in populations from Madagascar usually with black femora except yellowish apex and more or less infuscate tibiae (in Africa predominate specimens with uniformly yellow legs). Antennae vary from uniformly yellow to partly black. In Madagascan populations predominate specimens with infuscate to black apical 4-5 segments, while in African populations predominate specimens with uniformly yellow antennae or with only last segment infuscate.

Pronotum regularly elliptical, with maximum width approximately in the middle, sides broadly rounded. Disc only slightly convex, on sides indistinctly separated from explanate margin. Surface of disc impunctate, at most with extremely fine and sparse pricks, opaque. Explanate margin smooth, transparent with well visible honeycomb structure, its surface from opaque to slightly shiny but without mirror brilliance.

Base of elytra only moderately wider than base of pronotum, in male usually much wider than in female, basal margin without black crenulation, humeral angles only slightly protruding anterad, subangulate. Disc almost regularly convex in profile (fig. 67), with top of convexity in postscutellar point, with indistinct scutellar and principal impressions, at top with low H-shaped elevation. In populations from Madagascar impressions on elytra are less marked than in populations from Africa. Punctation moderately coarse but dense, forms completely regular, not impressed rows. Punctures disposed in rows densely, interspaces mostly narrower than punctures. Marginal row distinct, with coarse and moderately dense punctures, twice coarser than in central rows. Intervals flat, from 1.5 times to twice wider than rows. Marginal interval well marked on whole length, broad, in anterior half as wide as two submarginal rows and submarginal interval combined, no humeral and lateral folds. Surface of intervals slightly opaque. Explanate margin moderately declivous, broad, in the widest part approximately four times narrower than disc. Surface of explanate margin moderately coarse and densely punctate, appears irregular, semitransparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus approximately as long as wide, frontal grooves fine, converging in regular triangle with obtuse apex. Area between groove and margin of eye with row of short setae. Surface of clypeal plate flat glabrous, smooth or with few very small punctures, opaque. Labrum broadly emarginate to 1/4 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:55:68:68:64:55:55:45:55:59:123. Segment 3 approximately 1.2 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, not impressed along lateral margins, area between coxae slightly convex, smooth and shiny, without sculpture, rhomboidal apex in the middle slightly convex, shiny, without special sculpture.

Tarsal claws simple.

#### DISTRIBUTION

The most widely distributed species, the only Afrotropical *Cassida* species common from both Africa and Madagascar (map 10).

## REMARKS

Distinct species, the combination of usually uniformly yellow or green dorsum, impunctate, opaque pronotal disc, completely regular punctation of elytra, flat, wider than rows elytral intervals, elytral sculpture reduced to only very low H-shaped elevation on top of disc and simple claws is unique within Madagascan species of the genus *Cassida* L. Similarly sized and mostly uniformly yellowish *Cassida angulicollis* n. sp. differs in angulate sides of pronotum and mostly irregular punctation of disc. At first glance immaculate form of *C. brooksi* BOROW. looks the most similar but differs in coarser elytral punctation and very narrow, mostly linear intervals and claws with small basal tooth.

## MATERIAL EXAMINED

MADAGASCAR CENTRAL: – Antananarivo, 3 I 1987, 2 ex., F. FARACI [MCSNG]. – Antsirabe, 19 III 1986, 1 ex., F. FARACI [MCSNV]. – Prov. Antananarivo, Tananarive, Parc de Tsimbazaza, 26-29 X 1984, Malaise trap, 4 ex., R. W. BROOKS [SEMC]. – Tananarive, 1 ex., SICARD [MNHN], 1921, 1 ex., DE CHARY [MNHN]. – Tokobory, 1 ex., VOLETZKOW [ZMHU]. – Tsimbarara, XI 1951, 1 ex. [MNHN].

MADAGASCAR EST: – Bas-Mangoky, 4 ex. [MNHN]. – Fampanambo, II 1960, 3 ex., XII 1960, 1 ex., J. VADON [MRAC, DBET]. – forêt de Fito, 4 ex. [MRAC, DBET]. – Moramanga, 1 ex, GRUVEL [MM], 1957, 2 ex, GRUVEL [DBET]. – Maroantsetra, Amboadiveangy, 1 ex., P. SOGA [MNHN].

MADAGASCAR OUEST: – Morondava, Kirindy, 20.15.02 S/44.25.07 E, 18 m, 29 VII 2004, 1 ex., W. Suppantschitsch [UH]. – Nossi-Bé, 28 XI 1895, 1 ex. [ZMHU].

MADAGASCAR: - Madagascar, 1 [ZMHU]. - int. austr., 1 ex., HILDEBRANDT [ZMHU].

### Cassida dulcis (BOHEMAN, 1862)

(figs. 70-71, map 10)

Coptocycla dulcis Boheman, 1862: 430. – Gemminger and Harold, 1876: 3669. – Weise, 1910: 506. Cassida (Cassida) dulcis: Spaeth, 1914 b: 115.

Cassida dulcis: SPAETH, 1915: 138. - BOROWIEC, 1999 a: 249.

Cassida chrysomeloides BRANCSIK, 1910: 186. - SPAETH, 1919: 188 (as syn. of dulcis).

Cassida nigrotecta FAIRMAIRE, 1904: 274. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 249 (as syn. of dulcis).

Cassida (Cassida) nigrotecta: SPAETH, 1914: 116.

## TYPE MATERIAL

Syntype of *Cassida nigrotecta*: MADAGASCAR: « Ankarahitra, Perrier » [MNHN]. Location of type of *Cassida dulcis* BOH. is unknown but according to the original

description it is a senior synonym of Cassida nigrotecta FAIRM. Holotype of Cassida

chrysomeloides is preserved in HNHM and was studied by SPAETH (1919). He established its synonymy with Cassida dulcis (BOH.).

#### DESCRIPTION

Length: 7.5 mm, width: 6.5 mm, length of pronotum: 2.8 mm, width of pronotum: 4.5 mm, length/width ratio 1.15, width/length ratio of pronotum: 1.61. Body almost hemispherical (fig. 70).

Pronotum and scutellum ochraceous yellow. Elytral disc mostly black with yellow pattern arranged as in fig. 70. Marginal interval before and behind lateral fold black. Explanate margin ochraceous yellow. Clypeus, ventrites and legs uniformly ochraceous yellow. Antennal segments 1-7 yellow, segments 8-11 more or less infuscate but never deep black.

Pronotum regularly elliptical, widest in apical 1/3 length, anterior margin only slightly convex, sides very broadly rounded. Disc slightly convex, on sides and anteriorly separated from explanate margin by short furrow. Whole surface of pronotum slightly dull with very fine pricks, explanate margin transparent with honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc without crenulation, humeral angles moderately protruding anterad, humeral angles subangulate. Disc regularly convex in profile (fig. 71), with top of convexity in postscutellar point, without scutellar and principal impressions, at top without elevations, only yellow spots slightly elevated. Punctation moderately coarse and sparse, regular, on yellow spots sparser than in dark parts of disc, interspaces on pale spots usually three to five times, on dark parts as wide as to thrice wider than puncture diameter. Intervals well marked, flat, in sutural half of disc four to five, on sides two to three times wider than rows. Marginal and submarginal intervals twice wider than lateral intervals, humeral and lateral folds only slightly convex but well marked. Surface of intervals slightly dull. Explanate margin strongly declivous, in the widest part slightly more than four times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, dull, semitransparent but with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes moderately large, gena short well marked, approximately as long as second antennomere. Clypeus extremely broad, 1.7 times as wide as long, frontal grooves fine, converging in regular triangle. Area between grooves and margin of eyes with few setose punctures. Surface of clypeal plate slightly convex, glabrous, microreticulate and slightly dull, apically with few small setose punctures. Labrum shallowly emarginate to 1/5 length. Antennae slim, segments 9-10 approximately 1.4 times as long as wide. Length ratio of antennal segments: 100:53:79:79:68:58:63:66:68:68:118. Segment 3 approximately 1.5 times as long as segment 2 and as long as segment 4.

Prosternal collar long, distinctly longer than last palpomere. Prosternal process narrow between coxae, very strongly expanded apically, canaliculate medially, area between coxae convex, smooth and shiny, with few setose punctures, rhomboidal apex in the middle convex, on sides deeply impressed, on whole surface with large, setose foveae.

Claws simple.

# DISTRIBUTION MADAGASCAR EST, NORD and OUEST and NOSY BE ISLAND (map 10).

#### REMARKS

A very distinct species, the only with almost hemispherical body, ochraceousyellow groundcolour, and elytral disc mostly black with yellow pattern arranged as in fig. 70. Other Madagascan species with almost hemispherical body and ochraceous-yellow groundcolour - *Cassida madagascarica* BOROW. and *C. rufomicans* FAIRM. differ in dorsum unicolor or with irregular black pattern but never with yellow spots; *C. rufomicans* is distinctly smaller with length below 6.3 mm. Almost hemispherical body and dark groundcolour has also *C. sanguineoguttata* SP. but differs in elytra black, including explanate margin, and disc with 14 red spots.

MATERIAL EXAMINED MADAGASCAR EST: – Tamatave [= Toamasina], 1 ex. [MNHN]. MADAGASCAR NORD: – Diego Suarez [= Antsiranana], 2 ex. [MNHN]. MADAGASCAR OUEST: – Ankarafantsika, n. Marovoay, 1 XII 1959, 1 ex. [DBET].

# Cassida ferranti SPAETH, 1915

(figs. 74-76, map 10)

Cassida (Cassida) Ferranti SPAETH, 1914: 115 (nomen nudum). Cassida Ferranti SPAETH, 1915: 129. – BOROWIEC, 1999 a: 251.

TYPE MATERIAL Syntype: MADAGASCAR SAMBIRANO: « Sambirano » [MNHN].

## DESCRIPTION

Length: 5.05-6.0 mm, width: 4.05-4.7 mm, length of pronotum: 1.8-2.1 mm, width of pronotum: 3.2-3.75 mm, length/width ratio 1.17-1.31, width/length ratio of pronotum: 1.76-1.83. Body short-oval, males distinctly stouter than female (length/width ratio 1.17 versus 1.253-1.31). In female elytra in anterior 2/3 length almost parallelsided then moderately converging posterad (figs. 74-75).

Pronotum and scutellum uniformly yellow. Elytral disc mostly black with yellow sculpture forming reticulate pattern arranged as in figs. 74-75. Marginal interval, apex of disc and explanate margin yellow. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-7 yellow, segments 8-11 more or less infuscate to black.

Pronotum slightly semicircular, widest slightly before base, sides rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Whole surface of pronotum with very dense, moderately coarse punctation with slightly elevated interspaces thus pronotum at first glance appears granulate, particularly at top of disc. Whole surface of disc shiny.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles only slightly protruding anterad thus base of elytra

almost straight, in both sexes humeral angles subangulate. Disc almost regularly convex in profile (fig. 76), with top of convexity in postscutellar point, with shallow scutellar and principal impressions, at top without H-shaped elevation, but sometimes yellow sculpture at top forms H-shaped figure. Punctation coarse and dense, mostly regular, but regularity of rows disturbed by impunctate yellow relief. Marginal row distinct, with coarse and dense punctures, distinctly coarser than in central rows. Intervals marked only on black parts of disc, as wide as to slightly narrower than rows. Marginal interval well marked on whole length, moderately broad, twice wider than lateral intervals, humeral fold obsolete, lateral fold distinct and brad connected with yellow lateral sculpture of disc. Surface of intervals shiny. Explanate margin moderately declivous, in the widest part in both sexes four times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes moderately large, gena short but marked, approximately as long as second antennomere. Clypeus very broad, 1.4 times as wide as long, frontal grooves very fine, running along margin of eye and on apex of clypeus converging in arch. Area between grooves and margin of eyes with row of short setae. Surface of clypeal plate strongly convex, glabrous, smooth and shiny, with few setae. Labrum broadly emarginate to ¼ length. Antennae slim, segments 9-10 approximately 1.4 times as long as wide. Length ratio of antennal segments: 100:53:74:68:63:55:63:58:55:63:110. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process moderately broad, strongly expanded apically, moderately impressed along lateral margins, impressions without row of setae, area between coxae convex, smooth and shiny, with several short setae, rhomboidal apex in the middle convex, smooth and shiny, on sides very shallowly impressed, with slightly irregular surface, shiny, with several short setae.

Claws simple. Spermatheca (fig. 249).

#### DISTRIBUTION

MADAGASCAR CENTRE, EST, NORD, and OUEST (map 10).

## Remarks

Characteristic shape of pronotum widest in basal 1/3 length place this species close only to *Cassida bicallosa* SP., both species have also similar size with length 5-6.5 mm. *C. bicallosa* differs in base of elytra much wider than base of pronotum and elytral pattern forming broad brown to black U-shaped spot, small round spot at elytral hump and small spots at base and on elevated second interval. Similar elevated, reticulate, yellow pattern have several species of other groups e.g. *C. andohahelana* n. sp., *C. bulirschi* n. sp., *C. goudoti* (BOH.), *C. paveli* n. sp. or *C. sculpturipennis* n. sp. All differ in pronotum widest in the middle and pronotal disc with black pattern. *C. no-sybeensis* n. sp. has similar size, immaculate pronotum and elytral disc with elevated, yellow sculpture but differs in more circular shape, base of elytra only slightly wider than pronotum, and pronotum widest in the middle with not granulate surface of disc.

MATERIAL EXAMINED

MADAGASCAR CENTRE: – La Mandraka, 22 I 1948, 1 ex., R. PAULIAN [MNHN]. – Tananarive, 1912, 1 ex., LAMBERTON [MNHN].

MADAGASCAR EST: - Maromandia, 9 ex. [DBET, NMP, LS]. - Moramanga, 1 ex., GRUVEL [DBET]. - Rogez, 1 ex. [LS]. - Rogez, II 1932, 1 ex., D. SEYRIG [DBET]. MADAGASCAR NORD: - Amber Mts., 1 ex. [MNHN].

MADAGASCAR OUEST: - Ankazoabo, 3 ex, [2 NMP, 1 LS]. - Haute-Vallé de Sambirano, 1 ex. [NMP].

MADAGASCAR: - Madagascar, 1 ex., coll. KRAATZ [DEI]. - Madagascar, 1 ex. [LS]. -Madagascar, VII, 1 ex. [DBET].

#### Cassida flavooculata n. sp. (figs. 72-73, map 11)

#### TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « Inst. Scient. Madagascar, M<sup>t</sup> Tsaratanana, 1500 m, forêt de mousses, X-49, RP / Cassida rubromaculata Sp. det. W.D. Hincks » [MM].

### ETYMOLOGY

Named after yellow, round spots on the border of elytral disc and explanate margin of elytra.

#### DESCRIPTION

Length: 4.9 mm, width: 3.85 mm, length of pronotum: 1.6 mm, width of pronotum: 2.95 mm, length/width ratio 1.27, width/length ratio of pronotum: 1.84. Body short-oval (fig. 72).

Pronotal disc black, explanate margin basally black, anterior margin broadly yellow. Scutellum and elytral disc black. Explanate margin of elytra black. In the middle of border area between disc and explanate margin large yellow spot marked in central part with small black spot. Clypeus yellow, thorax black, abdomen in the middle black, margins broadly yellowish-brown. Legs mostly black, femora from base to apex gradually from black to brown. Antennal segments 1-6 yellowish, segment 7 yellowish-brown, segment 8 pale brown, segments 9-11 black.

Pronotum elliptical, widest slightly before base, sides broadly rounded. Disc only slightly convex, on sides distinctly separated from explanate margin by furrow and with distinct lateral lobes. Whole surface of disc dull, impunctate, base on sides with very indistinct longitudinal rugosities. Black parts of xplanate margin dull, impunctate but with distinct rugosities thus appears irregular. Yellow parts of explanate margin with surface slightly shiny, impunctate, smooth and with honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles only slightly protruding anterad, humeral angles subangulate. Disc almost regularly convex in profile (fig. 73), with top of convexity in

postscutellar point, with shallow scutellar impressions, at top without H-shaped elevation. Punctation moderately coarse and dense, regular, rows not impressed, distance between punctures in rows from slightly narrower to twice wider than puncture diameter. Marginal row distinct, with extremely coarse, deep but sparse punctures, particularly black marked puncture in the middle of median yellow spot very deep, forms a hole. Intervals flat, twice to thrice wider than rows, their surface dull. Marginal interval well marked on whole length, broad, in anterior half as wide as, in posterior half slightly narrower than submarginal interval, but both marginal and submarginal intervals wider than intervals 6 and 7. Humeral fold obsolete, lateral fold indistinct, marked by yellow central spot, surface of the spot shiny. Explanate margin moderately declivous, in the widest part four times narrower than disc. Surface of explanate margin dull, punctate, punctures smaller than those of rows, moderately dense, distance between punctures mostly larger than puncture diameter, area between punctures appear regular to slightly irregular. Apex of elytral epipleura bare.

Eyes very large, gena obsolete. Clypeus approximately as wide as long, frontal grooves fine, converging in regular triangle. Area between grooves and margin of eyes with row of short setae. Surface of clypeal plate flat, dull, impunctate. Labrum very shallowly emarginate to 1/6 length. Antennae moderately long, segment 9 only slightly longer than wide, segment 10 approximately 1.2 times as long as wide. Segment 3 approximately 1.3 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process moderately broad, strongly expanded apically, deeply impressed along lateral margins, impressions with row of setose punctures, area between coxae slightly convex, dull, impunctate, rhomboidal apex strongly impressed, with coarse, dense punctures, its surface dull.

Claws with large basal tooth.

#### DISTRIBUTION

MADAGASCAR SAMBIRANO (map 11).

#### REMARKS

Mostly black dorsum, elytra without sculpture and yellow spot in the middle of border between disc and explanate margin od elytra place *Cassida flavooculata* n. sp. close to *C. currax* SP. and *C. rubromaculata* SP. Both differs in legs partly or completely yellow (in *C. currax* apex of femora and tibiae are yellow, in *C. rubromaculata* whole legs are yellow). *C. currax* differs also in yellow spot on border area of elytral disc and explanate margin smaller, limited only to surface of the explanate margin, without black central spot. Postscutellar impressions in *C. currax* are slightly deeper than in *C. flavooculata* thus it has slightly marked H-shaped elevation on top of disc. In *C. currax* antennal segments 1-8 are yellow in contrast with black segments 9-11. *C. rubromaculata* has at first glance very similar shape and sculpture, and similar yellow with black centre spot on border region of elytral disc and explanate margin but differs in elytral disc mostly reddish-brown, explanate margin of elytra in humeral angle and apical fourth yellow, abdomen completely yellow or only infuscate in central part, and only two black apical segments of antennae. MATERIAL EXAMINED No additional material.

## Cassida frontalis BOHEMAN, 1856

(figs. 77-79, map 11)

Cassida frontalis Boheman, 1856: 143, 1862: 345. – Gemminger and Harold, 1876: 3654. – Weise, 1910: 505. – Borowiec, 1999 a: 252.

Cassida (Cassida) frontalis: SPAETH, 1914: 115.

Cassida funebris FAIRMAIRE, 1904: 275. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 252 (as syn.). Cassida (Cassida) funebris: SPAETH, 1914: 115.

TYPE MATERIAL

Holotype of Cassida frontalis: MADAGASCAR: « Madag. » [NRS].

Holotype of *Cassida funebris*: MADAGASCAR OUEST: « Ankarahitra, Perrier » [MNHN].

## DESCRIPTION

Length: (3.8)4.3-5.0 mm, width: (2.7)3.15-3.65 mm, length of pronotum: (1.45)1.55-1.8 mm, width of pronotum: (2.2)2.55-2.8 mm, length/width ratio 1.34-1.46, width/length ratio of pronotum: 1.52-1.71. Body oval, males slightly stouter than female (figs. 77-78).

In nominotypical form pronotum mostly black or brown only anterior third of explanate margin yellow (fig. 78). Elytra mostly black, only on disc tops of wrinkles and tubercles yellowish to brown. In rare pale form (= *funebris* FAIRMAIRE) pronotum yellow with only brown infuscation on base of disc, explanate margin of elytra and scutellum yellow and disc of elytra brown to black with yellow tops of wrinkles and tubercles (fig. 77). Clypeus yellowish-brown, usually darker basally than apically. Thorax black, abdomen mostly black, narrowly surrounded by yellowish-brown to brown. Legs yellowish-brown, femora with basal 1/3-1/2 length brown to black, coxa black. Antennae yellow basally, segments 8-11 more or less infuscate. In ab. *funebris* clypeus and legs yellow.

Pronotum slightly irregularly elliptical, with maximum width slightly behind the middle, sides broadly rounded. Disc distinctly convex, on both sides separated from explanate margin by furrow, area above head placed distinctly lower than basal part of disc. Surface of basal part of disc with wrinkles and striation, area above head partly smooth partly with transverse grooves. Black parts of explanate margin with irregular sculpture, yellow parts distinctly less sculptured. Although whole surface of disc strongly sculptured it still appears slightly shiny.

Base of elytra moderately wider than base of pronotum, basal margin of disc without black crenulation, humeral angles moderately protruding anterad, subangulate. Disc almost regularly convex in profile (fig. 79), with top of convexity slightly before the middle, with deep scutellar and principal impressions. Whole surface with strong sculpture of costae, wrinkles, folds and tubercles. Postscutellar area with thin and high H-shaped fold, its anterior branches surrounding postscutellar impression, posterior

branches prolongated into costate second interval. Punctures in impressed cells moderately coarse, in sutural half of disc interspaces mostly wider on sides as wide as puncture diameter. Marginal row distinct, with large punctures divided by transverse folds, humeral and lateral fold distinctly higher and longer than other interspaces of marginal row. Marginal interval marked but diffused within elytral sculpture. Surface of disc slightly shiny. Explanate margin strongly declivous, narrow, in the widest part eight times narrower than disc. Surface of explanate margin with irregular sculpture not as high as on disc. Apex of elytral epipleura with very short setae, in old dried specimens often appears bare.

Eyes large, gena hardly marked. Clypeus moderately broad, 1.1 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and on apex of clypeus converging in obtuse triangle. Surface of clypeal plate slightly convex, with several small setose punctures, surface shiny. Area between clypeal triangle and margin of eyes with row of setose punctures. Labrum with small emargination to 1/6 length. Antennae moderately slim, segments 9-10 approximately as wide as long. Length ratio of antennal segments: 100:62:73:58:58:46:58:50:62:62:130. Segment 3 approximately 1.2 times as long as segment 2 and 1.3 times as long as segment 4.

Prosternal collar slightly longer than length of last palpomere, basolaterally with deep groove. Prosternal process moderately broad, broadly and deeply canaliculate medially, moderately broad apically, area between coxae on sides with oblique grooves, rhomboidal apex with irregular sculpture and few setose punctures. Anterior margin of metathorax with row of deep foveae, also metacoxal process along size and anterior margin of first sternite foveolate.

Claws simple. Spermatheca (fig. 250).

#### DISTRIBUTION

MADAGASCAR CENTRE, EST, NORD, and SUD (map 11).

## Remarks

Very distinct species. The combination of characters: small size with length below 5.1 mm and strongly rugose elytral sculpture is unique within Madagascan member of the genus *Cassida*. Two other Madagascan species with rugose elytral sculpture: *Cassia laccopteroides* n. sp. and *C. pubescens* are distinctly larger with length above 6.8 mm and subcircular body outline.

#### MATERIAL EXAMINED

MADAGASCAR CENTRE: – Ambositra, 32 km S, 20°45'38.1"S, 47°20'57.9"E, 612010, 8 ex., F. PAVEL [2 FP, 6 LS]. – Andringitra-Ambalavao, 16 I 1958, 1 ex., R. PAULIAN [MNHN]. – Andringitra, Zomandao, V 1958, 10 ex. [MNHN]. – Anjozorobe, X-XI 1936, 1 ex., VIEU [BB]. – La Mandraka, 1 ex. [NMP]. – Mahatsinjo n. Tananarive, 1 ex. [MNHN]. – Tananarive, 4 ex. [2 MNHN, 2 ZMHU].

MADAGASCAR EST: – Andasibe, Mantadia NP-Anamalazaotra forest, 3-13 II 2007, Z. MRÁČEK [LS]. – Andasibe, Maromizaha, 20 II 1995, 1 ex., J. MORAVEC [DBET]. – Andasibe-Perinet, 130 km E Antananarive, 1999, 2 ex., F. & K. KANTNER [FK, LS]. route d'Anosibé, XII 1961, 4 ex. [2 MRAC, 2 DBET]. – Bezanozano, 2 ex. [ITZ].
Fiaranantsoa, 4 ex. [SD]. – Fiaranantsoa, 1923, 1 ex., J. DESCARPENTRIES [MNHN].
60 km NE of Fianarantsoa, Ranomafana NP, 15-25 XII 2004, 2 ex., R. ANDRAEEVA & I. ANDRAEEV [LS]], 21°15'22.6"S, 47°25'17.8"E, 17-21 XI 2011, 3 ex., M. TRÝZNA [LS]. – Forêt de Fito, 1 ex. [MRAC]. – Forêt de Fito, VI-VII 1897, 7 ex. [MKB, DBET]. – Moramanga, 22-28 II 1995, 1 ex., 17-24 XII 1998, 1 ex., J. MORAVEC [MS].
Moramanga, Andasibe vill., II 1971, 1 ex., J. THIEL [JB]. – Moramanga, Fanovana, 1 ex., LAMBERTON [MNHN]. – Moramanga, Périnet, 13 I 1938, 2 ex., 25 I 1938, 1 ex., 26 I 1938, 1 ex., 28 I 1938, 2 ex, 29 I 1938, 1 ex., 2 II 1938, 1 ex., A. KRECZMER [DBET]. – Perinet, Sahamaloto, 13-17 I 1949, 1 ex. [MNHN]. – Ranomafana, 90 km E Fianarantsoa, 1-5 XII 1999, 1 ex., F. & L. KANTNER [FK].

MADAGASCAR NORD: - Amber Geb., 1 ex. [ZMHU].

MADAGASCAR OUEST: - Isalo NP, Amboantrika, 19 I 2007, 1 ex., MRÁČEK [LS].

MADAGASCAR SUD: – Amboasary, Ambovombe, 220 m, VI 1957, 2 ex., R. ANDRIA [DBET]. – Tuléar [= Toliara], 1957, 2 ex., GRUVEL [MNHN].

MADAGASCAR: – Madagascar int. austr., 1 ex. [ZMHU]. – inter. austr., 4 ex., HILDE-BRANDT [ZMHU]. – Madagascar, 2 ex., GOUD. [ZMHU]; Madagascar centre-sud, 1901, 4 ex., Ch. ALLUAUD [MNHN]. – Madagascar, Septembre, 1 ex., collection LE MOULT [MNHN]. – Madagascar, Janvier, 1 ex., collection LE MOULT [MNHN]. – Maoranhohe, 2 ex. [MNHN].

## Cassida fuscomacula Borowiec, 1988

(figs. 80-81, map 11)

Cassida fuscomacula Borowiec, 1988: 559, 1999 a: 253. - HAITLINGER, 2002: 25.

#### TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « Analavelona, 1320 m » [MNHN]. – paratype: MADAGASCAR CENTRE: « Analavelona, 1320 m » [MM].

#### DESCRIPTION

Length: 3.9-4.45 mm, width: 3.0-3.6 mm, length of pronotum: 1.4-1.6 mm, width of pronotum: 2.4-2.75 mm, length/width ratio 1.23-1.30, width/length ratio of pronotum: 1.71-1.77. Body broadly oval, widest in posthumeral part then moderately protruding posterad (fig. 80).

Pronotum and scutellum yellow. Elytra mostly yellow, disc surrounded by narrow, reddish ring which on sides occupies area between rows 7 and 9 or 8 and 9, marginal interval yellow. Central part of disc with more or less developed black spot on postscutellar elevation, and very small, reddish to brownish spots in the middle of fold surrounding postscutellar impression, in 2/3 length of second and 3/5 length of fourth interval, and close to basal corners of scutellum. Sometimes occurs also very small spot slightly before the middle of second interval, occasionally the pattern is reduced only to spots on postscutellar elevation and 2/3 length of second interval. Clypeus yellow or with blackish basal corners and sides. Thorax black including lateral plates. Abdomen

varies from mostly yellow to mostly black, in the palest specimens only first sternite in the middle infuscate, in the darkest specimens abdomen black surrounded by yellow. Legs yellow except brown to black coxa. Antennae yellow basally, segments 10 and 11 mostly brown, sometimes also segments 8 and 9 more or less infuscate.

Pronotum elliptical, with maximum width in or slightly before the middle, sides moderately rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra distinctly wider than base of pronotum, basal margin of disc with indistinct black crenulation, humeral angles moderately protruding anterad, angulate. Disc slightly convex in profile (fig. 81), almost depressed, with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions. Punctation moderately coarse, completely regular, punctures in rows dense with very narrow interspaces thus punctures almost touching each other. Postscutellar area with low H-shaped fold, its anterior branches surrounding postscutellar impression, posterior branches prolongated into slightly convex second interval. Marginal row distinct, with dense punctures, not or only slightly coarser than punctures in central rows. Intervals mostly linear, except slightly elevated second interval which is twice narrower than neighbouring rows. Marginal interval well marked on whole length, broad, thrice wider than lateral intervals, without humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin very shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura glabrous.

Eyes large, gena hardly marked. Clypeus narrow, 1.05 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and on apex of clypeus converging in triangle. Surface of clypeal plate shallowly impressed in the middle, smooth and shiny, basally with few very small setose punctures. Area between clypeal triangle and margin of eyes with row of setose punctures. Labrum distinctly emarginate to 1/4-1/3 length. Antennae moderately slim, segments 9-10 slightly wider than long. Length ratio of antennal segments: 100:66:93:73:66:60:60:47:47:47:120. Segment 3 approximately 1.4 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar slightly shorter than length of last palpomere. Prosternal process broad, moderately to deeply impressed along lateral margins, very broad apically, lateral impressions with row of setose punctures, area between coxae flat to slightly convex, smooth and shiny, rhomboidal apex with rugose sculpture.

Claws with large basal tooth.

#### DISTRIBUTION

MADAGASCAR EST (map 11).

## REMARKS

Cassida fuscomacula belongs to the group of small species with elytral base moderately wider than pronotum, elytral pattern forming a postscutellar spot and reddish band along sides of elytral disc. The group comprises also *C. inconstans* (FAIRM.) and *C. liliputana* n. sp. The last species differs in very small size with length only 3.7 mm, elytral base only slightly wider than pronotum, and reddish band along sides of elytral disc narrow occupying only two submarginal rows and submarginal interval combined. *C. inconstans* at first glance looks very similar, particularly form with narrow elytral band, but differs in pronotal sides narrowly rounded and elytral base less wider than pronotum than in *C. fuscomacula*.

#### MATERIAL EXAMINED

MADAGASCAR EST: - 5 km S Ambalamanakana, Ambositra-Fianarantsoa road, 10 V 1991, 1 ex. [DBET].

MADAGASCAR: - Madagascar int. austr., 1 ex. [DBET].

## Cassida goudoti (BOHEMAN, 1855) (figs. 84-86, map 12)

Coptocycla Goudoti Boheman, 1855: 264, 1856: 175, 1862: 437. — Gemminger and Harold, 1876: 3670. — Weise, 1910: 506. — Spaeth, 1914: 130.

Cassida goudoti: Borowiec, 1999 a: 254.

## TYPE MATERIAL

Lectotype: MADAGASCAR: « Madag., M. Gall. » [NRS] (designated by Borowiec, 1999 a: 254). – three paralectotypes: MADAGASCAR: « Madagascar, GOUD. » [ZMHU].

#### DESCRIPTION

Length: 5.0-6.0 mm, width: 4.4-5.1 mm, length of pronotum: 1.75-2.0 mm, width of pronotum: 3.2-3.8 mm, length/width ratio 1.14-1.25, width/length ratio of pronotum: 1.78-1.90. Body short-oval to almost circular, male slightly stouter than female (figs. 84-85).

Pronotum yellow, disc with large black basal spot as in figs. 84-85. Anterior margin of the black spot in the middle prolonged into triangle. At base of the black spot two large, oblique yellow spots, bases of these spots usually connected. Occasionally pronotal spot is reduced to bisinuate line, in extreme case forms only V-shaped figure. Scutellum brown to black only in extreme case yellowish-brown with black margins. Elytral disc black with yellow relief of (28)30-32(34) elevated yellow spots of various shape arranged as in figs. 84-85. Spots on slope and along suture usually separated or partly coalescent, the largest spot at base of elytron usually coalescent with spot at top of disc thus postscutellar impressions look surrounded by yellow relief with two small spots at apex of scutellum, often the largest spots at base coalescent with both spots at top of disc and large spot behind humerus. Occasionally the large spot on base of elytron not coalescent with spot at top of disc then elongated and surrounding upper part of margins of postscutellar impression. Marginal interval almost yellow, punctures of marginal row partly marked with brown or black. Clypeus yellow. Thorax usually black or with prosternal process and lateral plates partly yellowish-brown to brown. Abdomen in most specimens uniformly yellow, sometimes more or less infuscate in the middle but never partly black. Legs uniformly yellow or with brown coxa. Antennae yellow, last two segments brown to black except yellowish apex of ventral side, sometimes also segment 9 partly or completely infuscate, occasionally segment 8 partly infuscate.

Pronotum with maximum width slightly before the middle, appears more reversely trapezoidal then elliptical, sides rounded. Disc slightly convex, sides well separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile (fig. 86), with top of convexity in postscutellar point, with very shallow scutellar impressions, yellow elevated spots only occasionally form H-shaped figure at top of disc. Punctation fine, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly as wide as or only slightly narrower than puncture diameter. Marginal row distinct, with moderately dense punctures, twice coarser than punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts from as wide as to slightly narrower than rows. Marginal interval well marked on whole length, broad, humeral and lateral folds only slightly elevated. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few extremely short setae thus appears bare.

Eyes large, gena hardly marked. Clypeus narrow, approximately 1.1 times as long as wide, frontal grooves very fine, running so close to margin of eye if visible only apically when converging in triangle. Area between grooves and margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate flat or with very shallow impression in the middle, glabrous, smooth and shiny. Labrum shallowly emarginate to 1/3 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:59:76:76:62:47:62:53:56:56:124. Segment 3 approximately 1.3 times as long as segment 2 and as long as segment 4.

Prosternal collar slightly longer than last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa flat or slightly convex, smooth and shiny with few setose punctures, rhomboidal apex in the middle elevated with few setose punctures, on sides impressed with rugose sculpture and few setose punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR CENTRAL, EAST, NORD and SUD (map 12).

## Remarks

It belongs to the Cassida goudoti species group and the subgroup which is characterized by elytral disc black with yellow relief forming numerous convex spots. The group comprises C. goudoti (BOH.), C. andapaensis BOROW., C. andohahelana n. sp., C. beondrokana n. sp., C. suaveola (SP.) and C. verrucata (BOH.). C. goudoti and C. beondrokana are the largest species with length usually above 5 mm while other species are usually below 4.8 mm. C. beondrokana looks very similar but differs in abdomen mostly black (usually yellow or only infuscate in the middle in C. goudoti), yellow scutellum (black in C. goudoti), pronotal spot of two connected semicircular spots with anterior margin emarginate in the middle (in C. goudoti the spot forms figure as in fig. 84 with anterior margin in the middle prolonged into triangle; only rare pale forms with partly reduced pronotal spot have anterior margin emarginate in the middle then pronotal spot looks like V-shaped figure), large spot at base of elytron round or only slightly eleongate never connected with spot at top of disc (in C. goudoti usually connected, if not connected then large spot at base of elytron elongate, partly surrounding postscutellar impressions). C. verrucata differs in ventrites always uniformly yellow (partly to mostly black in other species) and simple claws (with more or less developed basal tooth in other species). C. andapaensis and C. suaveola differ in smaller size and large spot at base of elytron never connected with spot at top of disc (usually connected in C. goudoti). C. andohahelana looks very similar to small specimens of C. goudoti but differs in anterior margin of pronotal spot truncate in the middle (prolonged into triangle in C. goudoti) and spots along sture more numerous and more irregular in shape.

#### MATERIAL EXAMINED

MADAGASCAR CENTRAL: - Tananarive, 1 ex. [DBET].

MADAGASCAR EST: – S de la baie d'Antongil, 1 ex. [DBET]. – Forêt de Fito, VI-VII 1897, 20 ex. [MKB, MNHN, DBET]. – Malowato, Maorantsetra, 5 ex. [DBET]. – Maroantsetra, 1 ex. [NMB]. – Rogez, 1 ex., ABADIE [MNHN]. – Rogez, 12 ex. [MNHN, NMP, DBET]. – env. de Rogez, 1 ex. [LS]. – Distr. Sambava, Marojejy, Beondroka, 1200 m, VI 1960, 2 ex., P. Soga [MM].

MADAGASCAR NORD: - Maromandia, 2 ex. [LS].

MADAGASCAR SUD: – Andohahela Nat. Res., VI 1992-V 1993, 1 ex., B. RANDRIA-MAMPIONONA [MZUF]. – Ankazoabo, 3 ex. [LS].

> Cassida hova (WEISE, 1910) (figs. 87-89, map 12)

Coptocycla hova WEISE, 1910: 482, 506. – SPAETH, 1914: 130. Cassida hova: BOROWIEC, 1999 a: 256.

TYPE MATERIAL Syntype: MADAGASCAR: « int. austr., Hildebrandt » [ZMHU]. DESCRIPTION

Length: 4. 5-5.3 mm, width: 3.7-4.65 mm, length of pronotum: 1.55-1.8 mm, width of pronotum: 2.7-3.15 mm, length/width ratio 1.14-1.23, width/length ratio of pronotum: 1.73-1.75. Body short-oval to almost circular, sides of elytra regularly rounded on sides and regularly converging posterad (figs. 87-88).

Pronotal disc black except yellow lateral lobes, sometimes also area above head partly yellow (figs. 87-88). Explanate margin of pronotum yellow, only base partly infuscate. Scutellum black. Elytral disc black with yellow relief of 34-38 elevated yellow spots of various size arranged as in figs. 87-88. Spots mostly separated, only spots in sutural part of disc sometimes partly coalescent. Marginal interval mostly black, except yellow marginal spots, and yellow apex. Explanate margin yellow with black humeral and posterolateral spots of various size. Humeral spots in some specimens complete, broad thus only humeral angle narrowly yellow (fig. 87), in other specimens narrowing gradually with broad yellow area close to humeral angle (fig. 88). Posterolateral spots in some specimens complete, broad (fig. 87), but often partly reduced extending only to half width of the explanate margin, in extreme case posterolateral spots reduced to small brownish spot at border of disc and explanate margin of elytra (fig. 88). Clypeus, ventrites and legs uniformly yellow. Antennae yellow, only two lasts segments black.

Pronotum elliptical with maximum width in the middle, sides broadly rounded. Disc slightly convex, sides and lateral lobes of disc well separated from explanate margin by deep furrow. Surface of disc with longitudinal striation, only lateral lobes and area above head smooth and shiny. Explanate margin with shallow dense punctures, appears slightly irregular, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile (fig. 89), with top of convexity in postscutellar point, with deep scutellar impressions, yellow elevated spots never form H-shaped figure at top of disc. Punctation moderately coarse, dense, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly narrower than puncture diameter. Marginal row distinct, with sparse punctures, twice coarser than punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts of sutural half of disc as wide as on sides almost twice narrower than rows. Marginal interval well marked on whole length, broad, humeral fold indistinct, lateral fold distinctly elevated. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin coarsely, shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few short setae, in old specimens appear bare.

Eyes large, gena hardly marked. Clypeus moderately narrow, approximately 1.1 times as long as wide, frontal grooves very fine, running so close to margin of eye and converging in regular triangle. Area between grooves margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate flat or with very shallow impression

in the middle, glabrous, smooth and shiny. Labrum shallowly emarginate to 1/3 length. Antennae moderately slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:59:71:65:71:59:65:65:135. Segment 3 approximately 1.2 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar slightly shorter than last palpomere. Prosternal process moderately broad, moderately expanded apically, deeply impressed along lateral margins. Lateral impressions with row of setose punctures, area between coxa flat or slightly convex, smooth and shiny with few setose punctures, rhomboidal apex in the middle elevated with few setose punctures, on sides impressed with irregular sculpture and few setose punctures.

Claws simple.

DISTRIBUTION MADAGASCAR CENTRE and EST (map 12).

## Remarks

Simple claws, black elytral disc with yellow elevated spots and presence of humeral spots near this species only to *Cassida pretiosa* Borow. and *C. schenklingi* (SP.). *C. pretiosa* differs in subtriangular body, explanate margin of elytra with only humeral spot, pronotal disc without longitudinal striation, and sculpture on top of elytral disc forming two handle-shaped elevations. *C. schenklingi* at first glance looks very similar but differs in black pronotal spot with large yellow spots at base, pronotal surface without longitudinal striation, and only last antennal segment black.

#### MATERIAL EXAMINED

MADAGASCAR CENTRE: – 33 km S of Ambositra, 1 XII 2005, 1 ex., J. ŠťASTNÝ [LS]. – S Ambositra, km 292-296 Ambatofitorahana, 1700 m, 5-6 I 1999, 1 ex., P. BULIRSCH [MS]. – Fianarantsoa prov., Ranomafana env., 29 XI-2 XII 1995, 1 ex., I. JENIŠ [MS].

MADAGASCAR EST: - Maorantsetra, 1 ex. [DBET].

MADAGASCAR: - Madagascar, 1 ex. [DBET].

## Cassida hovacassiformis BOROWIEC, 1999 (figs. 82-83, map 12)

Cassida hovacassiformis Borowiec, 1999 b: 447.

# Type material

Holotype: MADAGASCAR EST: « Wald bei Fito, 6.7.1897 » [DBET].

## DESCRIPTION

Length: 8.2 mm, width: 8.0 mm, length of pronotum: 2.7 mm, width of pronotum: 5.2 mm, length/width ratio 1.03, width/length ratio of pronotum: 1.93. Body almost circular (fig. 82).

Pronotum yellow, central part of disc purple-red. Scutellum yellow. Elytral disc mostly yellow with purple-red and black pattern. Purple-red forms band along sides occupying humeral callus, two marginal rows and marginal interval, except their apical parts, and apical part of disc except extreme apex. Black forms spot on front part of postscutellar tubercle, spot behind humerus, and stripes in postscutellar impression, basal part of third row, 3/4 and 5/6 length of interval 2, and small spots in 1/3 length of row 4, and in the middle of rows 5-7, also some punctures in first row marked with black. Explanate margin of elytra yellow except purple-red internal margin. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-6 yellow, segment 7 brownish, segments 8-11 black.

Pronotum broad, approximately 1.9 times wider than long, elliptical, with maximum width in anterior 2/5 length, sides rounded. Disc slightly depressed, on sides distinctly bordered from explanate margin by deep sulcus. Surface of disc, except area above head and lateral lobes, with regular longitudinal striation. Striate part of the disc glabrous, lateral lobes and area above head slightly dull. Explanate margin subhorizontal, its surface slightly irregular and dull but not appearing rugose.

Scutellum triangular, without punctures or sulci. Base of elytra much wider than base of pronotum, humeral angles subangulate, margin behind humerus not emarginate. Disc strongly convex, with large, conical, postscutellar tubercle, elytral profile behind top of the tubercle concave (fig. 83). Postscutellar impressions shallow, bordered externally by slightly elevated second interval. Punctation of disc regular, very coarse and dense, punctures almost touching each other. Intervals very narrow, in sutural half of disc approximatelytwice narrower than rows, only interval 3 behind the middle as wide as rows, in lateral part of disc intervals linear. Interval 2 in almost whole length, and interval 4 behind the middle slightly more elevated than neighbouring intervals. Elevated parts of disc appear slightly glabrous, flat parts slightly dull. Marginal interval slightly narrower than submarginal one. Punctures in marginal row approximatelytwice coarser than in submarginal one, form short transverse sulci. Explanate margin very broad, as wide as 5/6 width of disc of each elytron, subhorizontal, its surface slightly irregular and dull. Apex of elytral epipleura mostly bare, only apical margin close to suture with row of short, erect hairs.

Clypeus narrow, as long as wide, flat, with only few very shallow punctures, dull; clypeal lines fine, but visible on whole length of clypeus, converging in a triangle with obtuse apex. Labrum emarginate to 1/4 length. Antennae moderately elongate, length ratio of antennal segments: 100:39:57:63:65:57:63:61:63:65:111. Segment 3 approximately 1.44 times longer than 2, segment 4 only slightly longer than 3.

Prosternal collar distinct, as long as last palpomere. Prosternal process broad, moderately expanded apically, sides shallowly impressed with a row of setose punctures, apex impunctate with large, circular, deep impression.

Claws large, simple, micropectinate.

DISTRIBUTION MADAGASCAR EST (map 12).

## REMARKS

A very distinct species, at first glance more similar to the members of the Madagascan genus *Hovacassis* SP. than to other members of the genus *Cassida* L. Like members of the genus *Hovacassis* it has a large body, elytral base much wider from pronotum, and elytral disc with conical postscutellar tubercle but differs in stouter antennae, pubescent from fifth segment (in *Hovacassis* antennae are extremely thin, filiform, pubescent from fourth segment). It differs from other Madagascan members of the genus *Cassida* species in antennae pubescent from fifth segment (usually from sixth and seventh segment in other species) and elytra with distinct conical postscutellar tubercle (only *C. umbonata* has also large postscutellar tubercle but differs in pronotum bisinuately emarginate basally and pronotal angles protruding posterad while in *C. hovacassiformis* pronotum is elliptical with rounded sides). Elytral coloration of *C. hovacassiformis* is unique.

MATERIAL EXAMINED No additional material.

#### Cassida impressipennis n. sp. (figs. 90-91, map 13)

TYPE MATERIAL

Holotype: MADAGASCAR EST: «Madagascar centr. Or., Andasibe env., 23-25.XI.1999, lgt. F. et L. KANTNER » [DBET]. – paratype: MADAGASCAR EST: «Madagascar centr. Or., Andasibe env., 23-25.XI.1999, lgt. F. et L. KANTNER » [FK].

#### DESCRIPTION

Length: 6.0-6.5 mm, width: 5.15-5.4 mm, length of pronotum: 2.1-2.3 mm, width of pronotum: 3.7-3.8 mm, length/width ratio 1.17-1.20, width/length ratio of pronotum: 1.65-1.76. Body almost circular (fig. 90).

Pronotum uniformly yellow. Scutellum yellow. Elytra mostly yellow with two short, black stripes in postscutellar point, and two moderately long, brown stripes behind 2/3 length of suture. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-7 yellow, segments 8-11 gradually infuscate, two last segments appear almost black.

Pronotum slightly irregularly elliptical, with maximum width slightly before the middle, sides broadly rounded. Disc at base distinctly convex, area above head impressed, lateral lobes along whole sides distinctly bordered from explanate margin by sulcus. Surface of basal part of disc with irregular, longitudinal wrinkles but not appearing striate, area above head only slightly irregular, lateral lobes microreticulate but without special sculpture. Explanate margin with slightly irregular sculpture but transparent with well marked honeycomb structure. Whole surface of pronotum slightly dull and bare.

Base of elytra much wider than base of pronotum, basal margin with small black crenulation, humeral angles moderately protruding anterad and subangulate. Disc moderately convex (fig. 91), with deep postscutellar and principal impressions, top of disc with low but well marked H-shaped elevation. Punctation of disc moderately coarse and dense, mostly irregular, but in posthumeral area punctures tend to form more or less regular rows. Interspaces mostly narrower than puncture diameter. Marginal row distinct, its punctures approximately twice coarser than in central part of disc. Intervals absent, surface of elytra appears slightly irregular. Marginal interval distinct, in humeral area broad, narrowed apically, humeral and lateral folds narrow but distinct. Explanate margin moderately broad, four times narrower than disc, its surface shallowly but densely punctate, appears irregular. Whole surface of elytra slightly dull, bare. Apex of elytral epipleura with moderately long, erect hairs.

Eyes large, gena obsolete. Clypeus moderately narrow, approximately 1.1 times as long as wide, clypeal grooves fine, converging in triangle, surface of clypeal plate flat, slightly shiny with several small setae. Labrum very narrowly emarginated to ¼ length. Antennae moderately elongate, length ratio of antennal segments: 100:57:43: 43:43:57:50:52:57:105. Segment 2 approximately 1.3 times as long as segment 3, segment 4 as long as segment 3.

Prosternal collar slightly longer than last palpomere, prosternal process broad, distinctly expanded apically, central part of apex depressed, sides elevated, surface slightly irregular with several small setose punctures.

Claws simple.

DISTRIBUTION MADAGASCAR EST (map 13).

## REMARKS

At first glance *Cassida impressipennis* is similar to *C. pubipennis* BOROW., *C. seniculoides* BOROW. and *C. senicula* SP., particularly in almost uniformly yellow dorsal surface with dark spot in postscutellar point, yellow ventrites, simple claws and at least partly irregular punctation of disc. *C. pubipennis* differs in adherent pubescence of pronotum and elytra, *C. seniculoides* differs in erect pubescence of pronotum and elytra, and *C. senicula* differs in completely irregular punctation of disc, very shallow principal impression, narrowly rounded pronotal sides, and absence of dark stripes in posterior half of suture. *C. impressipennis* is very characteristic by its short third antennal segment, shorter than second segment.

MATERIAL EXAMINED No additional material.

> Cassida inconstans (FAIRMAIRE, 1899) (figs. 92-93, 237, map 13)

Coptocycla inconstans FAIRMAIRE, 1899 b: 506. Cassida inconstans: FAIRMAIRE, 1904: 272. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 257. Cassida (Cassida) inconstans: SPAETH, 1914: 115.

## TYPE MATERIAL

Syntype: MADAGASCAR OUEST: « Suberbieville [= Maevatanana] » [MNHN]. – syntype: MADAGASCAR: « Madag., Perrier » [MNHN].

## DESCRIPTION

Length: 4.05-5.4 mm, width: 3.4-4.7 mm, length of pronotum: 1.5-2.0 mm, width of pronotum: 2.7-3.5 mm, length/width ratio 1.15-1.1.19, width/length ratio of pronotum: 1.75-1.80. Body almost circular (fig. 92).

Pronotum and scutellum uniformly yellow. Elytra mostly yellow, disc surrounded by reddish ring which on sides occupies area between rows 5 and 9 or 7 and 9, marginal interval yellow. Postscutellar elevation with small brown spot, second and fourth interval in 2/3 length with small brown spot or short stripe. Punctures in postscutellar elevation and in specimens with narrow ring also in humeral area with reddish to brown areola. Clypeus yellow. Thorax varies from uniformly yellow to mostly brown. Abdomen varies from uniformly yellow to infuscate in the middle. Legs yellow. Antennae mostly yellow, last three segments more or less infuscate.

Pronotum elliptical, with maximum width in the middle, sides narrowly rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous and shiny with very fine and sparse pricks. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with indistinct black crenulation, humeral angles strongly protruding anterad, angulate. Disc slightly convex in profile (fig. 93), almost depressed, with top of convexity in postscutellar point, with moderately deep scutellar and principal impressions. Punctation coarse and very dense, completely regular, punctures in rows almost touching each other. Postscutellar area with distinct H-shaped fold, its anterior branches surrounding postscutellar impression, posterior branches prolongated into slightly convex second interval. Marginal row distinct, with dense punctures, not or only slightly coarser than punctures in central rows. Intervals mostly linear, except slightly elevated second interval which is twice narrower than neighbouring rows. Marginal interval well marked on whole length, broad, thrice wider than lateral intervals, without humeral fold and with narrow lateral fold. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena hardly marked. Clypeus narrow, 1.15 times as long as wide, frontal grooves fine, converging in regular triangle. Surface of clypeal plate shallowly impressed in the middle, smooth and shiny Area between clypeal triangle and margin of eyes with row of setose punctures. Labrum emarginate to 1/4 length. Antennae moderately slim, segments 9-10 as wide as long. Length ratio of antennal segments: 100:52:81:71:67:52:52:48:48:52:119. Segment 3 approximately 1.5 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar shorter than length of last palpomere. Prosternal process broad, shallowly impressed along lateral margins, very broad apically, area between coxae flat to slightly convex, smooth and shiny, rhomboidal apex with dense, coarse punctures, appears rugose.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR CENTRAL and OUEST (map 13).

## REMARKS

*Cassida inconstans* belongs to the group of small species with elytral base moderately wider than pronotum, elytral pattern forming postscutellar spot and reddish stripe along sides of elytral disc. The group comprises also *C. fuscomacula* BoRow. and *C. liliputana* n. sp. The last species differs in very small size with length only 3.7 mm, pronotal sides broadly rounded, elytral base only slightly wider than pronotum, and reddish band along sides of elytral disc narrow occupying only two submarginal rows and submarginal interval combined. *C. fuscomacula* at first glance looks very similar, but differs in pronotal sides rounded and elytral base more wider than pronotum than in *C. inconstans*.

### MATERIAL EXAMINED

MADAGASCAR CENTRAL: – Prov. Antananarivo, Tananarive, Parc de Tsimbazaza, 21-25 X 1984, yellow pan trap, 1 ex., malaise trap, 1 ex., 25-27 X 1984, yellow pan trap, 1 ex., R. W. BROOKS [SEMC].

MADAGASCAR OUEST: - Ankarahitra [= Ankirihitra], 1 ex., PERRIER [syntype of C. lateritia, MNHN].

MADAGASCAR: - Madagascar, 2 ex. [DBET].

### Cassida johnsoni BOROWIEC, 1988

(figs. 94-95, map 13)

Cassida johnsoni BOROWIEC, 1988: 564, 1999 a: 260.

#### TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « Mt Tsaratanana, 2000 m, X 1949, 1, R. Paulian » [MM].

#### DESCRIPTION

Length: 5.1 mm, width: 4.0 mm, length of pronotum: 1.6 mm, width of pronotum: 3.03 mm, length/width ratio 1.28, width/length ratio of pronotum: 1.89. Elytra with maximum width slightly behind humeral angles then distinctly narrowing posterad thus body appears subtriangular (fig. 94).

Pronotum yellow, disc with blackish spot as in fig. 94, basal margin of disc reddish, in the middle of dark figure small, yellowish reversed triangle. Scutellum and central

part of disc mostly reddish-yellow, surrounded by irregular dark stripe, blackish along sides and brownish on slope, the border between band and pale central part of disc gradual. Elevated parts of disc behind the middle slightly paler than background thus pattern looks slightly reticulate. Dark band below humerus extending to marginal row but below humeral callus with reddish spot, in 1/3 length broken by large, yellow lateral fold, behind the fold again extending to marginal row then apex of disc yellow; anterior margin of yellow apex at position of rows 3-5 deeply emarginate by yellow thus dark band on suture forms a triangle. Explanate margin of elytra yellow with large, black humeral spot extending to lateral margin of elytra, only humeral angles with yellow spot. Ventrites uniformly yellow. Antennae yellow, last two segments black except yellowish apex of ventral side of last segment.

Pronotum regularly elliptical, with maximum width in the middle, sides rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles distinctly protruding anterad, very shallowly emarginated behind the tip, angulate. Disc irregularly convex in profile (fig. 95), with well marked top of convexity in postscutellar point and well marked scutellar impression. Punctation moderately coarse, regular but regularity is disturbed by elytral relief. Postscutellar area with well marked H-shaped elevation, disc behind the elevation with numerous elevated, paler coloured spots. Marginal row distinct, its punctures as coarse as punctures in lateral rows. Intervals mostly disturbed by arrangement of punctures and elevated interspaces, in well marked parts not wider than rows, on sides of disc linear. Marginal interval well marked on whole length but narrow, not wider than submarginal interval, with well marked simple humeral and very broad lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part three times narrower than disc. Surface of explanate margin very shallowly punctate, appears slightly irregular, glabrous, shiny, on yellow parts transparent with well marked honeycomb structure. Dark humeral spot deeper punctate than yellow area, punctures tend to form narrow grooves. Apex of elytral epipleura bare, only outer elytral margin close to suture with few very short setae. Inner margin of elytral epipleura very high, particularly its posterior part as high as length of first antennomere.

Eyes large, gena completely obsolete. Clypeus narrow, 1.14 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and on apex of clypeus converging in triangle. Surface of clypeal plate, glabrous, smooth and shiny. Labrum with small emargination to 1/6 length. Antennae slim, segments 9-10 elongate, 1.4-1.6 times as long as wide, segment 3 approximately 1.25 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar high, at base slightly longer than last palpomere. Prosternal process broad, shallowly impressed along lateral margins, moderately broad apically, its surface flat, smooth and shiny.

Claws slightly widened at base, but appear untoothed.

DISTRIBUTION MADAGASCAR SAMBIRANO (map 13).

#### Remarks

A very distinct species. Its dorsal colouration, pattern and sculpture are unique. From species with distinct humeral spot only pale forms of *Cassida mariaeadelheidae* Sp. look similar but differ in smaller size and elytral disc with no distinct sculpture. *Cassida pretiosa* BOROW. and forms of *C. schenklingi* Sp. with only humeral spots are also similar but differ in elytral sculpture forming regular elevated yellow, round spots on brownish-black or black background.

MATERIAL EXAMINED No additional material.

## Cassida laccopteroides n. sp. (figs. 98-99, map 14)

#### TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Madagascar, Suberbieville [= Maevatanana] » [DBET]. – paratype: MADAGASCAR OUEST: « Madagascar, Suberbieville [= Maevatanana] » [DBET]. – paratype: MADAGASCAR: « Madagascar » [DBET].

### DESCRIPTION

Length: 6.9-7.1 mm, width: 5.95-6.4 mm, length of pronotum: 2.65-2.95 mm, width of pronotum: 4.5-4.8 mm, length/width ratio 1.15-1.16, width/length ratio of pronotum: 1.63-1.70. Body almost circular (fig. 98).

Whole dorsum brown. Lower parts usually darker brown than elevated parts, particularly tops of wrinkles pale brown. In some specimens on sides of disc above lateral fold darker brown to almost black spot of blurred borders. Clypeus, ventrites and legs yellowish-brown. Antennal segments 1-7 yellowish-brown, four apical segments black except yellowish apex of ventral side of last segment.

Pronotum slightly irregularly elliptical, with maximum width slightly before the middle, sides narrowly rounded. Disc strongly convex, with area above head placed distinctly lower than other parts of disc, lateral lobes well marked, sides on whole length separated from explanate margin by sulcus. Elevated basal part of disc distinctly sculptured, with longitudinal wrinkles and granulation. Area above head and lateral lobes less sculptured than basal part, from almost smooth to only slightly wrinkled. Explanate margin wrinkled, particularly on basal half, not transparent, without honeycomb structure. Whole surface of pronotum unpubescent, slightly dull.

Base of elytra moderately wider than base of pronotum, basal margin with small crenulation, humeral angles moderately protruding anterad, subangulate. Disc very convex, angulate in profile (fig. 99), with large postscutellar elevation and distinct postscutellar and principal impressions surrounded by elevated folds. Whole surface of disc with folds, wrinkles and tubercles, appears rugose. Punctation moderately coarse,

occupies impressed fields, irregular with only submarginal and marginal row more or less regular, interspaces mostly narrower than puncture diameter. Marginal row distinct, interrupted by transverse folds, with very coarse punctures much coarser than punctures on top of disc, particularly three punctures behind humeral fold extremely coarse and deep, in some specimens form a deep cave. Intervals mostly obsolete only marginal interval well marked but interrupted by transverse folds, below humeral callus forms an elevation. Explanate margin strongly declivous, moderately broad, in the widest part four times narrower than disc. Surface of explanate margin with punctures, folds, wrinkles, appears rugose. Whole surface of elytra unpubescent, slightly dull. Apex of elytral epipleura with sparse, short setae.

Eyes moderately large, gena as long as length of second antennomere. Clypeus broad, 1.3 times as wide as long, frontal grooves fine, converging in obtuse triangle. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate flat, shiny, with several small, setose punctures. Labrum narrow, very shallowly and broadly emarginate. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:38:67:54:50:50:46:46:44:92. Segment 2 very short, segment 3 approximately 1.6 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar longer than last palpomere. Prosternal process broad, shallowly impressed along lateral margins, impressions with row of coarse, setose punctures, apex broadly expanded. Area between coxae slightly flat, shiny, slightly irregular but without special sculpture. Central part of rhomboidal apex elevated, forms obtuse carina, sides deeply impressed, with irregular sculpture.

Claws simple.

DISTRIBUTION MADAGASCAR OUEST (map 14).

### Remarks

Cassida pubescens SP. with C. laccopteroides n. sp. form a group of large species with strongly wrinkled dorsum similarly like specimens of common Malgasy Laccoptera regularis FAIRM. C. pubescens differs in pubescent dorsum, narrower angles of pronotum and more angulate humeri, explanate margin of elytra with pale median "window", and higher wrinkles surrounding laterally postscutellar impressions. Punctation of disc is more regular in C. pubescens with regular rows are marked also on sides and posterior half of sutural parts of disc.

MATERIAL EXAMINED No additional material.

#### Cassida laetabilis SPAETH, 1915 (figs. 102-106, map 14)

Cassida (Cassida) laetabilis Spaeth, 1914: 115 (nomen nudum). Cassida laetabilis Spaeth, 1915: 136. – Вогочиес, 1999 a: 260.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar, Mayer dom. » [MM].

## DESCRIPTION

Length: 5.7-7.5 mm, width: 5.0-6.2 mm, length of pronotum: 1.9-2.5 mm, width of pronotum: 3.4-4.3 mm, length/width ratio male 1.14-1.15 female 1.19-1.21, width/ length ratio of pronotum: 1.74-1.86. Males stouter than females, body outline in male subcircular, in female elytral sides distinctly converging posterad (figs. 102-103, 105-106)).

Pronotum yellow to rusty yellow or green (in this species green colour often is preserved also in dried specimens), disc at base with large, triangular or trapezoidal, brown to black spot (figs. 102-103, 105), ocassionally base if pronotum with brownish spot of diffused borders (fig. 106). Scutellum from yellow to black. Disc of elytra usually variable. In typical specimens (holotype represents the palest form) ground colour of disc yellow with brownish band of blurred borders along size and indistinct brownish band across middle, postscutellar elevation with brown stripe (fig. 106). In the darkest form disc surrounded by black ring, black is also suture and transverse band across middle, the band on suture forms rhomboidal figure with two small yellow spots inside (fig. 102). In intermediate specimens pattern is brown and indistinctly bordered from pale background (fig. 105). Explanate margin yellow to green. Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-7 yellow and segments 9-11 infuscate to black, occasionally segment 8 slightly infuscate, in extreme case only last segment black.

Pronotum regularly elliptical, maximum width in the middle, sides very broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by furrow. Top of disc usually with irregular punctation, punctures tend to form longitudinal grooves or striation but shiny. Area above head shallowly punctate without striation, lateral lobes impunctate. Explanate margin shallowly punctate, appears distinctly irregular but shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles distinctly protruding anterad, angulate. Disc slightly irregularly convex in profile (fig. 104), with angulate top of convexity in postscutellar point, with deep scutellar and principal impressions. Postscutellar area with distinct, high H-shaped fold, anterior branches of the fold surrounding postscutellar impressions, posterior branches prolongate into elevated second interval. Punctation very coarse and dense, regular, punctures almost touching each other. Marginal row distinct, with dense punctures, only slightly coarser than punctures in central rows. Intervals mostly linear only elevated second and partly elevated fourth intervals well marked, some interspaces

form transverse folds or wrinkles paler coloured than ground colour of disc. Marginal interval well marked on whole length but narrow, only as wide as submarginal row, no humeral fold, lateral fold in shape of irregular relief. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, very broad, in the widest part less than three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears distinctly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with extremely short setae, in old specimens appear bare.

Eyes large, gena short but well marked, as long as half length of second antennomere. Clypeus broad, 1.1-1.2 times as wide as long, frontal grooves fine, running in distance to margin of eye and converging in regular triangle. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, smooth and shiny with few small setose punctures. Labrum narrowly emarginate to 1/5 length. Antennae slim, segments 9-10 approximately 1.2-1.4 times as long as wide. Length ratio of antennal segments: 100:55:64:61:61:55:57:50:52:57:107. Segment 3 approximately 1.2 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar distinctly longer than last palpomere. Prosternal process between coxae moderately broad, moderately expanded apically, shallowly impressed along lateral margins, along margins without setose punctures, between coxae flat or slightly convex, smooth and shiny with few setose punctures, central part of rhomboidal apex slightly convex, smooth and shiny, sides slightly impressed with few setose punctures.

Claws with large basal tooth. Spermatheca (fig. 251).

#### DISTRIBUTION

MADAGASCAR CENTRE, EST and SUD (map 14).

#### Remarks

Cassida laetabilis SP. with C. rubroornata (BOH.), C. rudicollis (SP.), and C. ultima n. sp. forms a natural group of moderately large species with pronotum of very broad sides, base of elytra much wider than pronotum, pronotal disc usually with more or less distinct longitudinal striation, distinct elytral sculpture and coarse punctation with linear intervals, ventrites uniformly yellow and antennae with apical 3-6 segments infuscate to black. C. rudicollis and C. ultima differ from typical forms of C. laetabilis in pronotum without black spot and eytral disc without distinct brown or black pattern. C. ultima differs also in more circular body and distinct striation on pronotal disc. Pale forms of C. laetabilis are very similar to C. rudicollis but differ in pronotum with brown spots at base, and elytral disc with more or less brownish pattern on sides. Dark, maculate form of C. laetabilis is similar to C. rubroornata but differs in large spots on elytral disc never red but yellow or rusty yellow, smaller and less distinct elevation on top of elytra and usually only three last antennal segments black. MATERIAL EXAMINED

MADAGASCAR CENTRE: – Ambohitantely, 5 II 1948, 1 ex. [MM]. – Antananarivo Prov., Manankazo env., 26-29 XI 2002, 1 ex., MRÁČEK [FK]. – La Mandraka, 1 ex. [DBET]. – Manankazo, Antananarivo prov., 26-29 XI 2002, 1 ex., MRÁČEK [LS]. – Ost Imerina, 1 ex. [DBET].

MADAGASCAR EST: - Maorantsetra, 1 ex. [DBET].

MADAGASCAR SUD: - 32 km ESE Betroka, Vohitrosa forest, 1700 m, 25 XII 1998, 2 ex., BULIRSCH [1 MS, 1 DBET].

MADAGASCAR: - Madagascar, 1 ex., F. SIKORA [IRSN]. - Madagascar, 1 ex. [LS].

#### Cassida latecincta FAIRMAIRE, 1904

(figs. 110-114, map 14)

Cassida latecincta FAIRMAIRE, 1904: 272. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 261. Cassida lateocincta [sic]: XAMBEU, 1906: 143. Cassida (Cassida) latecincta: SPAETH, 1914 b: 116. Cassida (Cassida) varicolor SPAETH, 1914 b: 116 (nomen nudum). Cassida varicolor SPAETH, 1915 b: 133. – BOROWIEC, 1999 a: 261 (as syn.).

TYPE MATERIAL

Syntype of *Coptocycla latecincta*: MADAGASCAR: « Madagascar » [MNHN]. 5 syntypes of *Cassida varicolor*: Madagascar Nord: « Diego Suarez, coll. Donckier » [MM].

DESCRIPTION

Length: 5.3-6.1 mm, width: 4.45-5.1 mm, length of pronotum: 1.95-2.15 mm, width of pronotum: 3.8-4.2 mm, length/width ratio 1.17-1.22, width/length ratio of pronotum: 1.86-1.95. Body short-oval, males slightly stouter than females (fig. 110-111, 113-114).

Very variable species. In the palest specimens dorsum uniformly yellowish with disc of pronotum and elytra slightly darker, yellowish-ochraceous and usually slightly darker bands along sides (fig. 110). In the darkest specimens disc of pronotum black, explanate margin yellow, scutellum partly brown, disc of elytra basally and along sides brown to black and top of disc reddish-ochraceous, explanate margin always yellow (fig. 114). Between these extreme form all intermediates were observed, often pronotum with only small brown spot on top of disc, disc of elytra with more or less infuscate sides but always darker parts with blurred borders. Clypeus yellow. Prothorax more or less infuscate but only occasionally completely black. Metasternum usually yellow or only slightly infuscate in the middle, abdomen uniformly yellow. Antennae uniformly yellow.

Pronotum elliptical, with maximum width in the middle, sides angulate. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc with small sparse to moderately dense punctation, in specimens with darker basal spot punctation coarser and more dense than in specimens with pale basal spot, in some specimens punctures tend to form short grooves, shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra from as wide as to only slightly wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subangulate. Disc almost regularly convex in profile (fig. 112), with top of convexity in postscutellar point, with moderately deep scutellar and principal impressions, at top with well marked H-shaped elevation. Anterior branches of the elevation surrounding postscutellar impressions, posterior branches prolongate into slightly elevated second interval. Punctation very coarse and dense, completely regular, punctures in rows almost touching each other. Marginal row distinct, with coarse and dense punctures, slightly coarser than in central rows. Intervals mostly linear, except elevated second interval, also fourth interval in posterior half on short distance elevated. Marginal interval well marked on whole length, moderately broad, in anterior half as wide as submarginal row and submarginal interval combined, no humeral fold, lateral fold usually indistinct. Surface of intervals mostly glabrous, smooth and shiny, some interspaces tend to form low irregular folds and wrinkles. Explanate margin moderately declivous, broad, in the widest part approximately four times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with numerous, short, erect setae.

Eyes large, gena obsolete. Clypeus approximately as long as wide, frontal grooves very fine, running close to margin of eyes and converging in arch on top of clypeus. Area between groove and margin of eye with row of long setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny with few small setose punctures. Labrum broadly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:62:76:82:65:47:65:53:56:56:118. Segment 3 approximately 1.2 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, shallowly impressed along lateral margins, impressions with row of setae, area between coxae with slightly irregular surface but shiny with few setose punctures, rhomboidal apex in the middle convex with several setose punctures, shiny, size impressed with few coarse, setose punctures, shiny.

Claws with moderately large basal tooth. Spermatheca (fig. 252).

DISTRIBUTION MADAGASCAR NORD (map 14).

## Remarks

*Cassida latecincta* is at first glance similar to species of *C. collucens* group. It has similar size, pronotum with narrowly rounded to subangulate sides, and elytral disc with more or less developed sculpture but is well separated by uniformly yellow antennal segments (other members of the group have at least two apical segments infuscate to black). Typically coloured forms of *C. collucens* SP. and *C. trossula* SP. differ in base of

elytra more wider than pronotum, present humeral spots on explanate margin of elytra, and elytral sculpture forming at least few elevated spots, particularly in posterior half of disc. Pale coloured forms of *C. collucens* and *C. trossula* differ from pale coloured forms of *C. latecincta* in base of elytra more wider than pronotum, less angulate pronotal sides, paler yellow background of elytra, and punctures of disc with dark areola. *C. densestriata* n. sp. differs from dark form of *C. latecincta* in coarser and denser punctate pronotal disc and finer and mostly irregular punctation of elytra.

#### MATERIAL EXAMINED

MADAGASCAR NORD: – Amber Mts., 6 ex. [MNHN]. – Amber Mts., XII 1948, 1140 m, 4 ex., R. PAULIAN [MNHN]; – Mt. de Ambre, I, 3 ex., X, 4 ex., no date, 2 ex. [DBET]. – Mt. d'Ambre, 12°31'34.46'S, 49°10'21.57''E, 8-10 XI 2007, 3 ex., J. ŠťASTNÝ [LS]. – Mt. d'Ambre, Diego Suarez, IX 1957, 1 ex., J. ELIE [DBET]. – Montagne de Ambre, Les Roussettes, 1100 m, XII 1958, 5 ex., A. ROBINSON [DBET]. – Montagne de Ambre, Les Roussettes, 1100 m, II 1959, 1 ex., P. SOGA [DBET].

#### Cassida lateritia FAIRMAIRE, 1904 (figs. 107-109, map 15)

Cassida lateritia FAIRMAIRE, 1904: 272. – WEISE, 1910: 505. – SPAETH, 1922: 1002 (as possible syn. of hebes). – BOROWIEC, 1999 a: 261.
 Cassida (Cassida) lateritia: SPAETH, 1914: 116.

TYPE MATERIAL 2 syntypes: MADAGASCAR: « Madagasc. » [MM].

## DESCRIPTION

Length: 3.9-5.0 (mean 4.6, n = 25) mm, width: 3.15-4.0 mm (mean 3.6, n = 25), length of pronotum: 1.4-1.75 mm, width of pronotum: 2.5-3.1 mm, length/width ratio 1.22-1.28, width/length ratio of pronotum: 1.74-1.87. Body almost circular (figs. 107-108).

Dorsum uniformly yellowish brown to brown. Clypeus, prosternal process and mesosternum yellowish brown, sides of sterna more or less infuscate. Metasternum mostly dark brown to black, often central part of metasternum paler brown or yellowish brown. Abdomen in the middle with more or less developed brownish to black spot of indistinct borders, sides of abdomen always paler, yellowish to yellowish brown, in the darkest specimens abdomen mostly black surrounded narrowly by yellow. Antennae yellow, last two segments brown to black except yellowish apex of ventral side of apical segment, sometimes segment 9 and occasionally also 8 more or less infuscate.

Pronotum regularly elliptical, with maximum width in the middle, sides rounded. Disc slightly convex, on sides separated from explanate margin by shallow furrow. Surface of disc glabrous, slightly dull to slightly shiny, very shallowly punctate, thus surface appears slightly irregular. Explanate margin glabrous, smooth, slightly dull to slightly shiny, impunctate but with surface slightly irregular, transparent with well visible honeycomb structure.

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Base of elytra much wider than base of pronotum, basal margin without crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar impressions, principal impressions obsolete or hardly marked (fig. 109). Postscutellar area with H-shaped elevation, posterior branches of the elevation prolongate into slightly elevated second interval, anterior branches surrounded postscutellar impressions. Punctation coarse, regular on whole disc, punctures in rows very dense, distance between punctures mostly narrower than puncture diameter, almost linear. Marginal row distinct, its punctures distinctly coarser than punctures in central rows, separated by broad, elevated interspaces, distance between punctures mostly as wide as to slightly wider than puncture diameter. Humeral fold indistinct, lateral fold only slightly convex, approximately twice wider than most interspaces in lateral part of margin. Intervals narrow, slightly narrower to as wide as rows. Second interval slightly convex, often in <sup>3</sup>/<sub>4</sub> length on a short distance more convex than in other parts. Marginal interval well marked on whole length, only in humeral area wider than lateral intervals, in lateral part of margin as wide as submarginal and lateral intervals. Surface of intervals glabrous, smooth, from slightly dull to slightly shiny. Explanate margin moderately declivous, broad, in the widest part approximately four times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, glabrous, from slightly dull to slightly shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura glabrous, with no erect setae.

Eyes large, gena hardly marked. Clypeus narrow, 1.18 times as long as wide, frontal grooves very fine, running close to margin of eye and converging in arch on apex of clypeus. Surface of clypeal plate, glabrous, smooth and shiny. Labrum distinctly emarginate to 1/5-1/4 length. Antennae slim, segments 9-10 approximately 1.1 times as long as wide. Length ratio of antennal segments: 100:56:66:63:50:50:44:44:44:53:100. Segment 3 approximately 1.2 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar shorter than length of last palpomere. Prosternal process broad, shallowly impressed along lateral margins, very broad apically, its surface flat, between coxae smooth and shiny, central part of rhomboidal apex with few shallow punctures and/or folds.

Claws with large basal tooth.

## DISTRIBUTION MADAGASCAR CENTRE, EST, and OUEST (map 15).

## Remarks

*Cassida lateritia* belongs to the group of species characterized by the following combination of characters: body short oval, ground colour of dorsum in fully sclerotized specimens rusty yellow, pronotum always without dark pattern, elytra without pattern or it forms areolae around punctures and more or less distinct U-shaped figure, explanate margin unicolor or on underside with more or less distinct humeral spot, base of elytra distinctly wider than pronotum, pronotum with broadly rounded sides, elytral disc with more or less distinct H-shaped elevation, punctation coarse and dense, intervals mostly linear, second interval at least in 2/3 length distinctly elevated. The group comprises also C. lateritiodes n. sp., C. rogezensis n. sp. and C. pseudolateritia n. sp. The most distinct is C. rogezensis which differs in distinctly larger size with length 6.1 mm versus 3.9-5.0 in C. lateritia, postscutellar elevation with large, round, black spot, and ventrites uniformly yellow. C. lateritioides differs in distinct elytral pattern forming small brown to black spot on postscutellar elevation and more or less distinct U-shaped figure on elytral disc, and in pale ventrites. C. lateritiodes is slightly larger species with mean length 5.1 mm versus 4.45 in C. lateritia and has humeral angles more protruding anterad and elytral sides slightly more converging posterad. C. pseudolateritia has similar shape and size, and partly black ventrites but differs in elytra with dark, brown to black pattern, in palest form forming at least short humeral spot on underside of explanate margin, in most common form forming dark areolae around punctures, partly coalescent, particularly on sides of disc, slope and along suture, and more or less visible humeral spot.

## MATERIAL EXAMINED

MADAGASCAR CENTRE: – Fianarantsoa, 3 ex. [MM, DBET]. – La Mandraka, 27 ex. [NMP, DBET, LS]. – 22 km E of Manjakantriana, 12 XI 1994, 1 ex., M.A. IVIE & D.A. POLLOCK [MLBLSM].

MADAGASCAR EST: – Anosibe, 21 XII 1963, 1 ex., VIEU [DBET]. – S de la baie d'Antongil, 2 ex. [MM]. – Moramanga Prov., Périnet, 23 I 1938, 1 ex., 25 I 1938, 2 ex., B. KRECZMER [DBET]. – Ranomafana, pr. Fianarantsoa, 6-10 I 1998, 1 ex., P. PACHOLÁTKO [NMB].

MADAGASCAR OUEST: – Antseranana distr., Marovato vill., Sambirana riv., 5-12 XII 2001, 1 ex., D. HAUCK [LS]. – Béraphia Insel, 1934, 4 ex. [DBET]. – Morondava, foret sud de Befasy, I 1956, 1 ex., R. P. [MM]. – NW Madag., R. Ramena, 3 ex., J. MELLIS [MM].

MADAGASCAR: - Madagascar, 5 ex. [NMP, MM, DBET].

## Cassida lateritioides n. sp. (figs. 30, 115-117, map 15)

TYPE MATERIAL

Holotype: MADAGASCAR NORD: «Madagascar, Mont d'Ambre, Mars/Museum Paris, Madagascar, Mgne d'Ambre, coll. Sicard 1930 » [MNHN]. – paratype: «Madagascar, Mt. D'Ambre, Mars » [DBET]. – paratype: «Madagascar, Mt. D'Ambre, Fevrier » [MNHN]. – paratype: «Madagascar, Mt. D'Ambre, Avril » [MNHN]. – 3 paratypes: «Madagascar, Mt. D'Ambre, Decembre » [DBET]. – paratype: «Madagascar, Diego Suarez » [DBET].

## ETYMOLOGY Named after its external similarity to *Cassida lateritia* FAIRM.
#### DESCRIPTION

Length: 4.7-5.5 (mean 5.2, n = 5) mm, width: 4.0-4.55 mm (mean 4.4, n = 5), length of pronotum: 1.6-1.9 mm, width of pronotum: 3.05-3.4 mm, length/width ratio 1.18-1.21, width/length ratio of pronotum: 1.79-1.90. Body subtriangular, elytral apex acuminate (fig. 115).

Dorsum in not maculate specimens uniformly yellowish brown to brown. Usually postscutellar point with small brown spot, elevated second interval on slope with small, elongate brown spot, sides of elytra between rows 5 and 8 with broad brown band. Sometimes lateral bands reduced to few small brown spots along sides and second interval in 1/3 and 2/3 length with short brown stripe. Clypeus, ventrites and legs yellowish-brown. Antennae yellow, last two segments brown to black except yellowish apex of ventral side of apical segment.

Pronotum regularly elliptical, with maximum width in the middle, sides rounded. Disc only slightly convex, on sides separated from explanate margin by shallow furrow. Surface of disc glabrous, slightly dull to slightly shiny, with fine punctation, distance between punctures from as wide as to slightly wider than puncture diameter, surface appears almost regular. Explanate margin glabrous, smooth, slightly dull to slightly shiny, impunctate but with surface slightly irregular, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin without crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar impressions, principal impressions obsolete or hardly marked (figs. 115-116). Postscutellar area with H-shaped elevation, posterior branches of the elevation prolongate into slightly elevated second interval, anterior branches surrounded postscutellar impressions. Punctation coarse, regular on whole disc, punctures in rows very dense, distance between punctures mostly narrower than puncture diameter, almost linear. Marginal row distinct, its punctures only slightly coarser than punctures in central rows, separated by narrow, slightly elevated interspaces, distance between punctures as wide as to twice narrower than puncture diameter. Humeral fold indistinct, lateral fold only slightly convex, approximately twice wider than most interspaces in lateral part of margin. Intervals mostly linear, only second interval as wide as rows, in 3/4 length on a short distance more convex than in other parts. Marginal interval well marked on whole length, as wide as submarginal row and submarginal interval combined. Surface of intervals glabrous, smooth, from slightly dull to slightly shiny. Explanate margin moderately declivous, broad, in the widest part approximately four times narrower than disc. Surface of explanate margin shallowly punctate and wrinkled, appears distinctly irregular, glabrous, from slightly dull to slightly shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with several short erect setae but in old dried specimens appears bare.

Eyes large, gena hardly marked. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves very fine, running close to margin of eye and only on apex of clypeus converging in arch. Surface of clypeal plate smooth and shiny with several

small setose punctures. Labrum narrowly emarginate to ¼ length. Antennae slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:62:75:62:56:44:56:50:56:53:100. Segment 3 approximately 1.2 times as long as segments 2 and 4.

Prosternal collar shorter than length of last palpomere. Prosternal process broad, not or shallowly impressed along lateral margins, very broad apically, its surface flat, between coxae smooth and shiny with few small setose punctures, central part of rhomboidal apex with few shallow punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR NORD (map 15).

#### Remarks

Cassida lateritiodes belongs to the group of species characterized by the following combination of characters: body short oval, ground colour of dorsum in fully sclerotized specimens rusty yellow, pronotum always without dark pattern, elytra without pattern or it forms areolae around punctures and more or less distinct U-shaped figure, explanate margin unicolor or on underside with more or less distinct humeral spot, base of elytra distinctly wider than pronotum, pronotum with broadly rounded sides, elytral disc with more or less distinct H-shaped elevation, punctation coarse and dense, intervals mostly linear, second interval at least in 2/3 length distinctly elevated. The group comprises also C. lateritia FAIRM., C. pseudolateritia n. sp., C. rogezensis n. sp. C. rogezensis is the most distinct species, the only with length above 6 mm and postscutellar elevation with large, round, black spot. It differs also in elytra without dark pattern except postscutellar spot and elytral sides less converging posterad. C. pseudolateritia differs in partly black ventrites, elytra with dark, brown to black pattern, in palest form forming at least short humeral spot on underside of explanate margin, in the most common form forming dark areolae around punctures, partly coalescent, particularly on sides of disc, slope and along suture, and more or less visible humeral spot. C. lateritia differs in dorsum uniformly rusty yellow, partly black ventrites, smaller size (mean length 4.45 mm versus 5.1 mm in C. lateritioides), and elytral sides less converging posterad.

MATERIAL EXAMINED No additional material.

> Cassida liliputana n. sp. (figs. 100-101, map 15)

TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « MADAGASCAR: Tananarive, Prov. Antananarivo (Tananarive), Parc de Tsimbazaza, 26-29 Oct 1984, Malaise trap » [DBET]. – MADAGASCAR CENTRE: « MADAGASCAR Tam., Mandraka, 4.IV.58 F. KEISÉR » [NMB].

### ETYMOLOGY

Named after its small size. It is one of the smallest Afrotropical and Madagascan members of the genus *Cassida* L.

### DESCRIPTION

Length: 3.5-3.7 mm, width: 2.7-2.9 mm, length of pronotum: 1.35 mm, width of pronotum: 2.2-2.4 mm, length/width ratio 1.28-1.30, width/length ratio of pronotum: 1.63-1.78. Body short-oval (fig. 100).

Pronotum and scutellum yellow. Elytra yellow with reddish-brown pattern: small spot on postscutellar elevation, very small spot in 2/3 length of second interval, short stripe in 3/5 length of fifth row, oblique stripe along punctures of inner margin of humeral callus and narrow ring surrounding disc occupying two submarginal rows and submarginal interval combined. Clypeus yellow with black basal corners, thorax black, abdomen mostly black surrounded by yellow. Legs yellow except brownish-black coxa. Antennae yellow with apical three segments slightly infuscate.

Pronotum elliptical, with maximum width in the middle, sides rounded. Disc moderately convex, on sides bordered from explanate margin by shallow sulcus, area above head impressed. Surface of elevated basal part with fine and sparse punctation, area above head impunctate, interspaces distinctly microreticulate. Explanate margin with extremely fine and shallow punctation, surface appears regular, transparent with well visible honeycomb structure.

Base of elytra only slightly wider than base of pronotum, basal margin of disc without crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top in postscutellar point, postscutellar impressions vary shallow but bordered by slightly elevated second elytral interval (fig. 110). Postscutellar area with well marked H-shaped elevation. Punctation coarse and dense, completely regular, punctures in rows almost touching each other. Marginal row distinct in whole length, its punctures approximately twice coarser than in submarginal row. Intervals very narrow, mostly linear, second interval slightly more convex than neighbouring ones, particularly on slope. Marginal interval distinct, broad, as wide as two submarginal rows and submarginal interval combined, humeral and lateral folds well marked. Explanate margin moderately declivous, approximately four times narrower than disc, shallowly but coarsely and densely punctate, surface appears slightly irregular but shiny. Apex of elytral epipleura with few short setae.

Eyes large, gena hardly marked. Clypeus 1.1 times as long as wide, with deep clypeal groves running in distance from margin of eyes and converging in regular triangle. Along each groove runs row of setae. Clypeal plate shallowly impressed, microreticulate but shiny, with few setose punctures. Labrum narrowly emarginate to 1/6 length. Antennae stout, segments 9-10 slightly wider than long. Length ratio of antennal segments: 100:62:69:65:62:54:50:50:46:50:100. Segment 3 approximately 1.1 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, impressed along sides, apex broadly rhomboidal, without sculpture between coxae, rhomboidal plate in the middle elevated with several small setose punctures, size deeply impressed with rugose sculpture.

Claws with moderately large basal tooth.

DISTRIBUTION MADAGASCAR CENTRE (map 15).

### REMARKS

Cassida liliputana belongs to the group of small species with elytral base moderately wider than pronotum, elytral pattern forming a postscutellar spot and reddish band along sides of elytral disc. The group comprises also *C. fuscomacula* BOROW. and *C. inconstans* (FAIRM.). *C. liliputana* distinctly differs from both related species in very small size with length only 3.7 mm. *C. inconstans* at first glance looks very similar, particularly form with narrow elytral band, but differs in pronotal sides narrowly rounded; typical form of *C. inconstans* differs in very broad red elytral bands occupying three submarginal rows and two submarginal intervals combined. *C. fuscomacula* differs in elytral base much wider than pronotum than in *C. liliputana* and elytral bands broader occupying at least two submarginal rows and two submarginal intervals combined. Specimes with slightly transparent elytra and indistinc ring around disc are similar to *C. brooksi* BOR. but it differs in distinctly larger size with length above 4 mm.

MATERIAL EXAMINED No additional material.

#### Cassida lukasi n. sp. (figs. 241-242, map 16)

### TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « MADAGASCAR / Fianarnatsoa prov. / Ranomafana NP 958 m / 21°15'22.6" S, 47°25'17.8" E / 17-21.xi.2011 / M. TRÝZNA lgt. » [LS].

#### DESCRIPTION

Length: 4.5 mm, width: 4.0 mm, length of pronotum: 1.6 mm, width of pronotum: 2.8 mm, length/width ratio 1.13, width/length ratio of pronotum: 1.75. Body almost circular, sides of elytra regularly rounded on sides and regularly converging posterad (fig. 241).

Pronotal disc black except yellow area above head and lateral lobes, black spot of disc forms triangular prolongation to anterior part of explanate margin (fig. 241). Explanate margin yellow, only base partly infuscate. Scutellum yellow. Elytral disc black along sides, reddish-brown at top with yellow relief of 24-26 elevated yellow spots of various size arranged as in fig. 241. Spots separated. Marginal interval black, except yellow apex. Explanate margin yellow with black, broad humeral, posterolateral and sutural spots. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-8 yellow, segment 9 with infuscate apex, two lasts segments black.

Pronotum elliptical with maximum width in the middle, sides broadly rounded. Disc moderately convex, sides and lateral lobes of disc well separated from explanate margin by a deep furrow. Surface of disc at base elevated with strong longitudinal striation, lateral lobes and area above head smooth and shiny. Explanate margin impunctate, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, lateral margin behind humeral angle shallowly emarginate thus humeral angles appear acute. Disc almost regularly convex in profile (fig. 242), with top of convexity in postscutellar point, with deep scutellar impressions, yellow elevated spots never form H-shaped figure at top of disc. Punctation coarse, dense, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly narrower than puncture diameter or punctures almost touching each other. Marginal row distinct, with sparse punctures, slightly finer than punctures in central rows. Intervals partly disordered by elytral relief, mostly linear, second interval convex, sharp behind posterior yellow spot. Marginal interval very narrow, linear, humeral fold indistinct, lateral fold very narrow, in shape of wrinkle. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin impunctate but slightly irregular, along border of disc with short transverse grooves, on black humeral and posterolateral spots with elongate grooves and wrinkles, shiny, yellow parts transparent with well marked honeycomb structure. Apex of elytral epipleura without setae.

Eyes very large, globular, gena hardly marked. Clypeus very narrow, approximately 1.3 times as long as wide, frontal grooves very fine, running close to margin of eye and converging in angle. Surface of clypeal plate with shallow impression in the middle, smooth and shiny. Labrum shallowly emarginate to 1/4 length. Antennae slim, segments 9-10 approximately 1.5 times as long as wide. Length ratio of antennal segments: 100:40:58:55:58:50:50:45:48:55:100. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as last palpomere. Prosternal process moderately broad, moderately expanded apically, area between coxa deeply canaliculate, with slightly irregular surface but shiny. Rhomboidal apex in the middle slightly elevated, on sides impressed with irregular sculpture.

Claws simple.

DISTRIBUTION MADAGASCAR CENTRE (map 16).

### REMARKS

Simple claws, at least partly black elytral disc with yellow elevated spots and presence of humeral spots near this species only to *Cassida hova* (WEISE), *C. pretiosa* BOROW. and *C. schenklingi* (SPAETH). First species differs in pronotal disc almost completely black with only lateral lobes partly yellow, black scutellum, ground colour of elytral disc black on whole surface and explanate margin of elytra without sutural spot. Last two species differ in absence of posterolateral and sutural spots on explanate margin, *C. schenklingi* differs also in black pronotal spot with large yellow spots at base and base of pronotum without striation, *C. pretiosa* differs in subtriangular body, pronotal disc without longitudinal striation, and sculpture on top of elytral disc forming two handle-shaped elevations.

MATERIAL EXAMINED No additional material.

#### Cassida lyrica FAIRMAIRE, 1904

(figs. 96-97, map 16)

Cassida lyrica FAIRMAIRE, 1904: 273. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 263. Cassida (Cassida) lyrica: Spaeth, 1914: 116.

TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Ankarana, Perrier » [MNHN].

DESCRIPTION

Length: 4.45 mm, width: 3.75 mm, length of pronotum: 1.55 mm, width of pronotum: 2.85 mm, length/width ratio 1.19, width/length ratio of pronotum: 1.84. Body almost circular (fig. 96).

Pronotum and scutellum uniformly yellow. Elytral disc yellow, along sides with dark punctures and short brown to black stripes forming S-shaped line, area between the lines lyriform. Parts of disc outside the lyriform figure coloured paler yellow (in some specimens yellowish-green) and with sparser punctation than central part of disc. Clypeus, ventrites, and legs uniformly yellow; antennae yellow, only last segment partly infuscate to black.

Pronotum slightly irregularly elliptical, with maximum width slightly before the middle, sides broadly rounded. Disc moderately convex, on sides bordered from explanate margin by short and shallow sulcus, area above head indistinctly separated from top of disc. Surface of disc with fine and moderately dense punctation, appears regular. Interspaces from as wide as to twice wider than puncture diameter. Explanate margin smooth, glabrous, transparent with well marked honeycomb structure. Surface of disc slightly shiny, surface of explanate margin slightly dull.

Base of elytra much wider than base of pronotum, humeral angles moderately protruding anterad, subangulate. Disc regularly convex, with top of convexity in postscutellar point, without H-shaped elevation, postscutellar impressions hardly marked, no principal impressions. Punctation of disc completely regular. Punctures inside lyriform figure coarse and dense, punctures almost touching each other. Punctures in pale parts outside the lyriform figure as coarse as on top of disc but distinctly sparser with interspaces from half wide to as wide as puncture diameter. Marginal row distinct, its punctures distinctly coarser than on sides of disc. Intervals inside the lyriform figure linear, outside the figure as wide as rows. Marginal interval distinct, broad, as wide as submarginal row and submarginal interval combined. Surface of disc appears regular, surface inside the lyriform figure slightly less shiny than outside the figure. Explanate margin broad, in the widest part slightly more than thrice narrower than disc, its surface with shallow but dense and coarse punctation. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus broad, approximately 1.4 times as wide as long, flat, smooth, shiny; clypeal grooves fine, running distance from eyes and converging in almost straight line at aprx. Labrum narrowly emarginate to 1/5 length. Antennae stout, length ratio of antennal segments: 100:55:70:65:60:45:55:50:60:60:135. Segment 3 approximately 1.3 times longer than 2, and only slightly longer than 4.

Prosternal collar shorter than last palpomere, broad, strongly expanded apically, area between coxa almost flat, smooth and shiny with few, fine, setose punctures, expanded apex slightly convex, smooth and shiny with few setose punctures.

Claws with widened base but simple.

DISTRIBUTION MADAGASCAR NORD (map 16).

#### REMARKS

Distinct species, its elytral pattern forming lyriform figure is unique. Similar size, shape and elytral punctation has only *Cassida brooksi* BOROW. but it differs, except distinct dorsal colouration, in well marked elytral H-shaped elevation, mostly black ventrites and toothed claws. Rare aberration of *C. dorsovittata* BOH. has pattern with thin lyriform figure but differs in impunctate pronotal disc and finer punctation on top of elytral disc with well marked intervals.

### MATERIAL EXAMINED

MADAGASCAR NORD: – Amber Mts., XII, 1 ex. [MNHN]. – Ankareshir, 1 ex., PERRIER [MNHN]. – Mt. d'Ambre, X, 1 ex. [DBET].

#### Cassida madagascarica BOROWIEC, 1999 (figs. 120-121)

Cassida madagascarica BOROWIEC, 1999 b: 452.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar » [DBET].

#### DESCRIPTION

Length: 7.4 mm, width: 6.3 mm, length of pronotum: 2.4 mm, width of pronotum: 4.75 mm, length/width ratio 1.17, width/length ratio of pronotum: 1.98. Body almost hemispherical (fig. 120).

Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc with marble, pale and darker brown pattern; explanate margin yellowish brown. Clypeus, ventrites, and legs yellowish brown; antennal segments 1-6 yellowish brown, segment 8 dark brown, segments 9-11 black.

Pronotum broad, approximately twice wider than long, elliptical, with maximum width in the middle, sides broadly rounded. Disc depressed, without border between disc and explanate margin; with slightly separated part above head. Surface of disc with regular longitudinal striation, except almost smooth area above head. Explanate margin slightly declivous, its surface in internal parts, close to disc, slightly irregular, external parts smooth. Whole surface of disc slightly glabrous, except partly dull area above head.

Scutellum triangular, without punctures or sulci. Base of elytra distinctly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc strongly, regularly convex, without tubercles, but with moderately high H-shaped elevation in postscutellar point (fig. 121). Postscutellar and principal impressions distinct, deep, no lateral impression; postscutellar impression bordered externally by elevated second interval only in posterior part of the elevation. Punctation of disc mostly regular, only in posterolateral part of disc irregular. Punctures very coarse and dense, punctures almost touching each other. Punctures in anterior half of disc slightly coarser than in posterior half. Intervals mostly invisible or linear, only second interval distinct on almost whole length elevated, forms a sharp costa; also interval 4<sup>th</sup> in posterior half of disc forms a fine costa. Marginal interval distinct. Punctures in marginal row approximatelytwice to thrice coarser than in submarginal one, disposed regularly. Surface of disc appears irregular. Explanate margin broad, as wide as half width of disc of each elytron, declivous, its surface irregular. Whole surface of elytra slightly glabrous. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus moderately broad, approximately 1.2 wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus. Labrum emarginate to 1/3 length. Antennae moderately elongate, length ratio of antennal segments: 100:53:82:68:62:56:56:53:56:56:100. Segment 3 approximately1.6 times longer than 2, and 1.2 times longer than 4.

Prosternal collar short, prosternal process strongly expanded apically, slightly convex, punctate, its surface appears irregular.

Claws with large basal tooth.

### DISTRIBUTION

MADAGASCAR (no precise locality).

### REMARKS

Strongly convex, almost hemispherical body, pronotum with broadly rounded sides and yellowish-brown dorsal coloration place it close only to *Cassida dulcis* (BOH.), *C. rufomicans* FAIRM. and *C. sanguineoguttata* SP. The first species differs in smooth pronotal disc (longitudinally striate in *madagascarica*) and elytra with yellow pattern (without pattern in *madagascarica*); *C. sanguineoguttata* differs in smaller body and elytra with red spots (immaculate in *madagascarica*). *C. rufomicans* is the most similar and at first glance looks like a miniature form of *C. madagascarica*; it differs in smaller size (length to 6.3 mm, usually smaller), less impressed postscutellar impressions and lower postscutellar elevation, and more regular punctation in posterolateral part of elytral disc.

MATERIAL EXAMINED No additional material.

# Cassida mariaeadelheidae Spaeth, 1915

(figs. 122-124, map 16)

Cassida (Cassida) Mariae Adelheidae Spaeth, 1914: 116 (nomen nudum). Cassida Mariae Adelheidae Spaeth, 1915: 142. – Вогочнес, 1999 a: 264 (mariaeadelheidae).

### TYPE MATERIAL

5 syntypes: MADAGASCAR CENTRAL: « Mahatsinjo près Tananarivo, coll. Donckier » [MM].

### DESCRIPTION

Length: 3.9-4.5 mm, width: 3.45-3.9 mm, length of pronotum: 1.4-1.6 mm, width of pronotum: 2.6-2.9 mm, length/width ratio (1.10)1.15-1.19(1.25), width/length ratio of pronotum: 1.72-1.87. Body subpentagonal to subcircular, widest in 1/3 length then moderately converging posterad, males slightly stouter than female (figs. 122-123).

Polymorphic species. Typical form has disc of pronotum completely black and explanate margin yellow, disc of elytra black except yellow middle of marginal interval and extreme apex, yellow explanate margin of elytra with broad, black humeral spot, the humeral spot extends to lateral edge of elytra and only humeral angle narrowly yellow. Scutellum black. In rare (20 % of examined specimens) pale form disc of pronotum yellow or centrally with more or less distinct brown spot, scutellum yellow, disc of elytra on top mostly yellow except brown to black round spot on postscutellar elevation and from top to sides gradually darker, from yellow to reddish brown and submarginal interval black, on intervals 3 and 5 in and behind the middle two short brownish stripes or spots. Usually also at base of scutellum and at base of fifth interval brownish spots. Clypeus in both forms brown basally and yellow apically, in extreme case whole clypeus brown. Thorax black, abdomen black centrally and broadly surrounded by yellow. Legs yellow except black coxa. Antennae mostly yellow, two last segments brown to black, sometimes also apex or whole segment 9 infuscate.

Pronotum regularly elliptical, with maximum width in the middle, sides rounded. Disc slightly convex, with area above head placed slightly lower than other parts of disc, sides separated from explanate margin by shallow furrow. Surface of disc with fine and sparse punctation, interspaces smooth and shiny. Explanate margin smooth, shiny, with honeycomb structure. Base of elytra much wider than base of pronotum, basal margin with very small crenulation, humeral angles moderately protruding anterad, angulate. Disc moderately convex in profile, with top in postscutellar area, and low but distinct H-shaped elevation in anterior part surrounding well marked and deep postscutellar impressions. Principal impression small, round, distinct, inner margin surrounded by H-shaped elevation. Punctation moderately coarse and dense, completely regular on whole disc, interspaces in rows mostly narrower than puncture diameter. Marginal row distinct, its punctures as coarse as on disc but sparser with interspaces larger than puncture diameter. Intervals narrow, from twice narrower than rows to linear. Marginal interval well marked, in the middle broad, twice to thrice wider than lateral intervals, humeral fold indistinct, lateral fold marked on yellow part of elevated margin. Surface of disc shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than thrice times narrower than disc. Surface of explanate margin shallowly but coarsely and densely punctate, appears slightly irregular. Apex of elytral epipleura with sparse, short setae.

Eyes large, gena obsolete. Clypeus moderately long, slightly longer than wide, frontal grooves fine, running in regular triangle. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate flat or with shallow median impression, shiny, with several small, setose punctures. Labrum narrowly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 wider than long. Length ratio of antennal segments: 100:54:71:68:61:50:55:46:43:43:96. Segment 3 approximately 1.3 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, broadly and deeply impressed along lateral margins, impressions with row of coarse, setose punctures, apex broadly expanded. Area between coxae slightly convex, shiny with few setose punctures. Central part of rhomboidal apex elevated, mostly smooth and shiny, at top with few setose punctures, sides impressed, with few setose punctures and slightly irregular interspaces.

Claws with moderately large basal tooth.

# DISTRIBUTION

MADAGASCAR CENTRE, EST and SUD (map 16).

### REMARKS

Cassida mariaeadelheidae with length below 4.6 mm is the smallest species with humeral spots on explanate margin of elytra. At first glance the most similar looks form of *C. rimosa* (BOH.) with reduced posterolateral spots but differs in length above 4.9 mm, black 3-5 apical antennal segments, and pronotal surface with regular longitudinal striation. Other species with distinct humeral spot on explanate margin: *C. johnsoni* BOROW. and *C. pretiosa* BOROW. differ in length above 5 mm and numerous elevated spots on elytral disc. *C. silvicola* BOROW. has similar size but differs in humeral spots short, not extending to lateral margin of elytra, pronotal disc with striation and elytral disc with elevated yellow reticulation.

#### MATERIAL EXAMINED

MADAGASCAR CENTRE: - Foret d'Ivohibe, IX 1950, 1 ex. [MNHN].

MADAGASCAR EST: – dct. Andapa, Anjanaharibe, 50 km ouest Andapa, 1600 m, IV 1960, 1 ex., P. Soga [DBET]. – Andasibe-Mantadia NP, Analamazaotra forest, 2-14 II 2007, 1 ex., M. TRÝZNA [LS]. – Andringitra, Vohidray rdg., 3 km SSE Amboarafibe, 1500-1600 m, 8-9 IV 2001, 1 ex., P. BRULISCH [MS]. – Maromizaha (Andasibe), 19-20 XII 1997, 2 ex., P. PACHOLÁTKO [LS, NHMB]. – Tamatave distr., Maromizaha, 21-24 XI 1995, 1 ex., J. STOLARCZYK [DBET].

MADAGASCAR SUD: – Andohahela, 1800 m, I 1954, 4 ex., R. PAULIAN [MNHN, MM, DBET].

MADAGASCAR: - Madagascar, 1 ex., Cowan [BMNH].

### Cassida montana Borowiec, 1999

(figs. 125-126, map 16)

Cassida montana Borowiec, 1999 b: 460.

#### TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « M' Tsaratanana, 1800 m, forêt de mousses, X-49, 1 ex., R.P. » [MNHN].

#### DESCRIPTION

Length: 6.2 mm, width: 5.2 mm, length of pronotum: 2.1 mm, width of pronotum: 4.15 mm, length/width ratio 1.19, width/length ratio of pronotum: 1.98. Body almost circular (fig. 125).

Pronotal disc black, explanate margin uniformly yellow. Scutellum black, apex with indistinct yellowish-brown spot. Elytral disc black, only apical part of marginal interval yellow. Explanate margin yellow. Clypeus yellow, prosternum and metasternum black, abdomen yellow. Antennae and legs uniformly yellow.

Pronotum broad, approximately twice wider than long, elliptical, with maximum width in the middle, sides narrowly rounded. Disc depressed, with slightly marked border between disc and explanate margin, on sides of disc with two small impressions; without separated part above head. Surface of disc with small sparse punctures, but smooth and glabrous. Explanate margin smooth and glabrous, impunctate.

Scutellum triangular, without punctures or sulci. Base of elytra distinctly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc regularly convex, without tubercles, but with low H-shaped elevation in postscutellar point (fig. 126). Postscutellar impressions shallow but distinct, principal impressions hardly marked, no lateral impression; postscutellar impression bordered externally by elevated anterior branches of the H-shaped figure only in posterior half. Posterior branches of the H-shaped figure not prolonged to apex of disc, elytra without longitudinal costae. Punctation of disc completely regular. Punctures moderately coarse and dense, distance between them as wide as to twice wider than puncture diameter. Punctures in anterior half of disc approximately twice coarser than on slope and in postscutellar impressions. Intervals distinct, flat, approximately twice wider than rows. Marginal interval distinct, not or only slightly wider than submarginal interval. Punctures in marginal row distinctly coarser than in submarginal one, disposed regularly, very deep, particularly in posthumeral area. Surface of disc slightly dull, appears regular, only in posterior half of disc there are some broad and very low transverse folds. Explanate margin broad, approximatelyas wide as half width of disc of each elytron, slightly declivous, its surface slightly irregular, glabrous. Apex of elytral epipleura with several erect hairs.

Eyes large, gena obsolete. Clypeus moderately broad, slightly wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus. Labrum emarginate to 1/4 length. Antennae slim, length ratio of antennal segments: 100:57: 93:77:70:50:60:57:53:57:93. Segment 3 approximately1.6 times longer than 2, and approximately1.2 times longer than 4, distal segment longer than wide.

Prosternal collar short, prosternal process strongly expanded apically, in the middle slightly convex, alae impressed, punctate, its surface appears irregular.

Claws with small basal tooth.

DISTRIBUTION

MADAGASCAR SAMBIRANO (map 16).

#### REMARKS

It is a distinct species, the only with moderate size combined with uniformly black pronotal and elytral discs. The general body shape, structure of pronotum, clypeus, antennae and tarsal claws place it close to the *Cassida goudoti* group, but members of the group differ in elytral disc black with yellow relief. At first glance it is similar to *C. subacuticollis* n. sp. but the latter differs (except pattern) in pronotal sides distinctly angulate (narrowly rounded in *montana*), base of elytra only slightly wider than base of pronotum (distinctly wider in *montana*) and coarser elytral punctation, almost even on whole disc surface (in *montana* punctation is finer and sparser particularly on apex of disc). *C. goudoti* (BOH.) differs, except pattern, in broadly rounded pronotal sides and at least two last antennal segments black (in *C. montana* antennae uniformly yellow). Dark forms of *C. collucens* (SPAETH) and *C. latecincta* (FAIRM.) differ in wrinkled or distinctly irregular pronotal surface (sparsely punctate but smooth between punctures in *montana*).

MATERIAL EXAMINED No additional material.

### Cassida monticola BOROWIEC, 1988

(figs. 127-128, map 17)

Cassida monticola BOROWIEC, 1988: 549, 1999 a: 265.

### TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « Mt Tsaratanana, 1500 m, X 1949, R. PAULIAN » [MNHN]. – paratype: MADAGASCAR SAMBIRANO: « Haut Sambirano, 1000 m, X 1949, R. PAULIAN » [MM].

### DESCRIPTION

Length: 4.8-4.9 mm, width: 3.9 mm, length of pronotum: 1.7 mm, width of pronotum: 2.9-3.0 mm, length/width ratio 1.23-1.26, width/length ratio of pronotum: 1.71-1.76. Body almost circular (fig. 127).

Dorsum yellow, only punctures of elytral disc marked with black and humeral calli with dark stripe. Clypeus yellow, thorax and abdomen completely black, only posterior margin of last sternite narrowly yellow. Coxae brown to black, trochanters partly infuscate, rest part of legs yellow. Antennal segments 1-9 yellow, last two segments brown to black except yellowish apex of ventral side of apical segment.

Pronotum elliptical, with maximum width slightly before middle, sides in male moderately rounded, in female subangulate. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous and shiny, with very small, indistinct, sparse punctation and small depression before scutellum. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles distinctly protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow, hardly marked scutellar impressions (fig. 128). Punctation fine but appears larger due to dark areolae, sparse, appears regular only in two sutural rows, on other parts of disc because of large interspaces punctation appears mostly irregular. Marginal row distinct, with sparse but very coarse punctures. Punctures 3-7 or 4-6 between humeral and lateral folds coalescent, form a deep hole marked along dorsal margin by a black line. Intervals flat, in well marked parts 2-4 times wider than punctures. Marginal interval well marked on whole length, narrow, not wider than submarginal ones. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin appears impunctate, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with several short setae.

Eyes large, gena hardly marked. Clypeus narrow, 1.3 times as long as wide, frontal grooves very fine, run mostly close to margin of eye and on apex of clypeus converging in triangle. Area between grooves and margin of eyes with row of setose punctures. Surface of clypeal plate smooth and shiny. Labrum distinctly emarginate to 1/3-1/4 length. Antennae slim, segments 9-10 as long as to slightly longer than wide. Length ratio of antennal segments: 100:57:68:74:63:52:58:52:58:110. Segment 3 approximately 1.2 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically, area between coxae impunctate, central part of rhomboidal apex convex, smooth, sides depressed with rugose sculpture.

Claws with small basal tooth.

# DISTRIBUTION MADAGASCAR SAMBIRANO (map 17).

### REMARKS

It belongs to the group of species with dorsum yellow, without pattern but with punctures marked by dark areola. It differs from all species by peculiar punctation of marginal row with punctures between humeral and lateral fold partly coalescent, forming a deep hole. Other similarly coloured species are: *Cassida nigropunctata* n. sp., *C. pulpa* SP. and *C. tsaratanana* BOROW. *C. nigropunctata* looks very similar at first glance but differs in punctation of marginal row below humerus sparse and not coalescent never forming a deep longitudinal hole, punctation of elytral disc slightly finer, elytral elevation rather X-shaped than H-shaped, and humeral angles less protruding anterad. *C. pulpa* differs in larger size with length above 5.2 mm abdomen uniformly yellow or only slightly infuscate in the middle, and humeral angles distinctly protrudin anterad. *C. tsaratanana* differs in elytral base only slightly wider than pronotum, pronotal sides narrowly rounded, abdomen completely yellow, and distinctly larger size with length 5.6-6.2 mm.

MATERIAL EXAMINED No additional material.

# Cassida morondaviana Borowiec, 2007

(figs. 129-131, map 17)

Cassida morondaviana BOROWIEC, 2007: 51.

#### TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « MADAGASKAR MORONDAVA, 2004.07.30 leg. W. Suppantschitsch / S 20° 12' 18.2", E 44° 21' 44.1", Höhe: 20m » [SMNS]. – 16 paratypes: MADAGASCAR OUEST: « MADAGASKAR MORONDAVA, 2004.07.30 leg. W. Suppantschitsch / S 20° 12' 18.2", E 44° 21' 44.1", Höhe: 20m » [6 DBET, 10 UH].

#### DESCRIPTION

Length: male 4.4-4.7 mm, female 5.2-5.5 mm, width: male 2.6-2.9 mm, female 2.9-3.1 mm, length of pronotum: male 1.7-1.8 mm, female 1.85-2.0 mm, width of pronotum: male 2.35-2.5 mm, female: 2.45-2.7 mm, length/width ratio: male 1.62-1.69, female 1.77-1.79, width/length ratio of pronotum: 1.33-1.41, female 1.29-1.37. Body cuneiform, strongly convex, sides and slope strongly declining. Sexual dimorphism distinct, male (fig. 129) smaller and stouter than female (fig. 130).

Whole body uniformly yellowish green, including legs, only last four antennal segments infuscate.

Pronotum subtrapezoidal, with maximum width in anterior 2/5 length. Anterior margin very softly curved, anterior corners rounded then sides strongly converging

posterad, explanate margin strongly declining. Disc moderately convex, indistinctly divided into part above head and basal and lateral part and indistinctly bordered from explanate margin. Area above head indistinctly, finely and sparsely punctate. Basal and lateral part of disc coarsely punctate, punctures almost touching each other but surface appears regular. Explanate margin finely, shallowly, and sparsely punctate, honeycomb structure distinct. Surface of pronotum moderately shiny.

Scutellum triangular, without sulci. Base of elytra slightly wider than pronotum, humeri angulate, strongly protruding anterad. Disc strongly convex, sides, slope and explanate margin strongly declining. In profile disc regularly convex with top of convexity almost in mid length (fig. 131). Punctation of disc regular, coarse, intervals slightly narrower than rows. Punctures in rows almost touching each other. Intervals flat, completely regular. Marginal row distinct, its punctures distinctly coarser than those of disc, marginal interval very narrow, well marked only below humerus, no lateral folds. Explanate margin moderately broad, in the widest part approximately as wide as 1/3 width of disc. Punctation of explanate margin moderately coarse and spread regularly, each puncture placed in centre of eye of distinct honeycomb structure. Surface of elytra appears slightly shiny. Apex of elytral epipleura bare.

Eyes small, gena slightly shorter than 1/3 length of eye. Clypeus 1.4 times as wide as long, clypeal plate shallowly impressed in the middle, surface shiny. Clypeal grooves fine but distinct, well visible on whole length, run in distance from ventral margins of eyes and converging in narrow triangle. Labrum shallowly emarginate. Antennae slim, length ratio of antennal segments: 100:55:64:50:45:41:55:45:50:55:105. Segment 3 approximately 1.2 times as long as segment 2 and approximately 1.3 times as long as segment 4, segments 9 and 10 elongate, 1.3-1.5 as long as wide. Tarsi moderately slim, last segment not extending to the apical margin of segment 3, claws extending to apex of marginal setae.

Prosternal collar short, distance between anterior margin of fore coxal cavity and fore margin of the collar shorter than half width of coxa, prosternal process moderately broad, in the middle approximately as wide as length of trochanters, strongly expanded apically. Surface of prosternal process flat, expanded apical part with few shallow punctures.

Claws simple. Spermatheca (fig. 253).

DISTRIBUTION MADAGASCAR OUEST (map 17).

#### REMARKS

A very distinct species, with no close relatives in Madagascar or tropical Africa. At first glance it looks like members of the Palaearctic subgenus *Cassidulella* STRAND, 1928 (type species: *Cassida nobilis* LINNAEUS, 1758), particularly like *Cassida ovalis* SPAETH, 1914 from Algeria and Corsica or *Cassida vittata* VILLIERS, 1789 wide spread in Palaearctic Region. The similarity is also emphasized by similar structure of spermatheca with C-shaped vasculum (see figures in BORDY and DOGUET, 1987: figs. 15 and 16). Palaearctic members differ in less cuneiform body, finer pronotal and elytral

punctation with at least central elytral intervals distinctly wider than rows, interval 3 with additional irregular punctures, distinctly coarsely punctate clypeus with deeper clypeal sulci, stouter antennae with segments 9 and 10 subquadrate, and distinctly longer prosternal collar with distance between anterior margin of fore coxal cavity and fore margin of the collar longer than half width of coxa. From Madagascan members of the tribe Cassidini at first glance are similar some small species of the genus *Sphenocassis* SPAETH, 1911, particularly *S. rotundella* BOROWIEC, 2002 and *S. punctatissima* (WEISE, 1910) but they distinctly differ from *C. morondaviana* in completely irregular elytral punctation.

MATERIAL EXAMINED No additional material.

#### Cassida multistrigata n. sp. (figs. 132-133, map 17)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Forêt Nord d'Anosibe, IX 1953 » [DBET]. – paratype: MADAGASCAR EST: « Moramanga, 1957, Gruvel » [DBET]. – paratype: « Madagascar / Fry Coll. 1900.100 / Cassida strigaticollis n. sp. PARATYPE » [BMNH].

ETYMOLOGY

Named after longitudinally striated pronotal disc.

DESCRIPTION

Length: 5.2 mm, width: 4.4 mm, length of pronotum: 1.7 mm, width of pronotum: 3.15 mm, length/width ratio 1.18, width/length ratio of pronotum: 1.85. Body almost circular (fig. 132).

Dorsum mostly yellow, postscutellar elevation with round brown spot, disc surrounded by thin, pale reddish-brown ring on sides occupying rows 7 and 8 and interval 7 combined. Interval 2 in 2/3 length with short brownish stripe, and intervals 1 and 2 on slope, slightly before the ring surrounding elytral disc with small elongate brown spot. Clypeus, ventrites and legs uniformly yellow. Antennae yellow, only last segment slightly infuscate.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc almost depressed, on sides separated from explanate margin by shallow furrow. Whole surface of disc, except smooth area above head, with distinct longitudinal and oblique striation. Explanate margin glabrous, with slightly irregular surface, slightly dull, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small, yellow crenulation, humeral angles distinctly protruding anterad, acute, elytral edge behind humeral angle shallowly emarginate. Disc moderately convex, with distinct H-shaped elevation, well marked postscutellar and principal impressions (fig. 133). Anterior branches of H-shaped elevation surrounding postscutellar impressions. Interval

2 slightly elevated, also apical parts of intervals 4 and 6 slightly elevated. Punctation of disc coarse and dense, regular, only in scutellar area partly irregular, punctures in rows almost touching each other. Marginal row distinct, with moderately dense punctures, distinctly coarser than punctures in central rows. Intervals very narrow, linear. Marginal interval well marked on whole length, broad, in anterior half as wide as two submarginal rows and submarginal interval combined, humeral and lateral folds indistinctly marked, as elevated as but slightly wider than other interspaces. Surface of intervals glabrous, slightly dull. Explanate margin moderately declivous, broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears rough, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few very short setae.

Eyes large, gena hardly marked. Clypeus only slightly wider than long, frontal grooves very fine, running mostly close to margin of eye and converging in broad triangle on apex of clypeus. Area between frontal grooves and margin of eyes with a row of setose punctures. Surface of clypeal plate flat, glabrous, shiny, with few small setose punctures. Labrum narrowly emarginate to 1/6 length. Antennae slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:53:73:67:63:53:57:57:57:53:107. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, moderately impressed along lateral margins, very broad apically, area between coxae without punctures, smooth and shiny, along sides punctate, central part of rhomboidal apex convex and smooth in the middle, rugose punctate laterally.

Claws with large basal tooth.

#### DISTRIBUTION

MADAGASCAR CENTRAL and Est (map 17).

### REMARKS

*Cassida multistrigata* is close only to *Cassida strigaticollis* Borow. Both species have pronotal disc with dense longitudinal striation, ventrites uniformly yellow, large tooth of basal claws, and dorsum mostly yellow with small dark spot on postscutellar elevation. *C. mutistrigata* differs in elytral disc surrounded by thin brownish ring (without ring in *C. strigaticollis*), humeral angles acute with elytral edge behind humeral angle shallowly emarginate (subangulate without emargination in *C. strigaticollis*) and only last antennal segment infuscate (two segments infuscate in *C. strigaticollis*). *Cassida senicula* (SPAETH) and *Cassida seniculoides* BOROW. look at first glance similar but differ in pronotum without striation and elytral base only slightly wider than pronotum; *C. seniculoides* differs also in elytra covered with short erect setae.

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#### MATERIAL EXAMINED

MADAGASCAR CENTRAL: Forêt d'Ivohibe, XI 1950, 2 ex. [MNHN].

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#### Cassida multituberculata n. sp. (figs. 239-240, map 18)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « E Madagascar, Tamatave distr., Andasibe, 17.-30.2.2001, J. Horák leg. » [LS].

### ETYMOLOGY

Named after elytral sculpture forming high tubercles.

### DESCRIPTION

Length: 6.95 mm, width: 4.95 mm, length of pronotum: 2.3 mm, width of pronotum: 3.75 mm, length/width ratio 1.40, width/length ratio of pronotum: 1.63. Body oval (fig. 239).

Whole body including ventrites uniformly yellowish-brown, only antennal segments 7-11 dark brown.

Pronotum elliptical, with maximum width in anterior 2/5 length, sides narrowly rounded. Disc convex, on sides separated from lateral lobes and area above head by deep furrow. Whole surface of disc with granulate sculpture but shiny. Area above head placed distinctly lower than top of disc. Explanate margin bordered from disc by a shallow impression, whole surface with granulate sculpture but shiny and with honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with small, black crenulation, humeral angles distinctly protruding anterad, subangulate. Disc convex, without H-shaped elevation, only suture behind scutellum slightly elevated, without postscutellar and principal impressions. Sculpture oon ewch elytron forms six large tubercles, three in row along suture, one on humeral callus, and two in posterolateral parts of disc (fig. 240). Surface between tubercles and lateral slopes of tubercles with coarse, very dense, completely irregular punctation, distance between punctures mostly as wide as puncture diameter. Interspaces convex thus whole surface between tubercles appears slightly irregular. Marginal row distinct, interrupted by humeral and lateral fold, with moderately dense punctures, approximately twice coarser than punctures in central rows. Explanate margin moderately declivous, broad, in the widest part slightly more than four times narrower than disc. Surface of explanate margin with granulate sculpture but with well marked honeycomb structure. Apex of elytral epipleura with few very short setae.

Eyes large, gena very short. Clypeus only slightly wider than long, frontal grooves very fine, running mostly close to margin of eye and on apex of clypeus converging in arch. Area between frontal grooves and margin of eyes with a row of setose punctures. Surface of clypeal plate mostly flat, only in central part with very shallow impression, glabrous, shiny, with small and moderately dense punctures. Labrum broadly emarginate to 1/6 length. Antennae stout, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:50:58:55:60:55:48:40:48:100. Segment 3 approximately 1.2 times as long as segment 2 and approximately as long as segment 4.

Prosternal collar long on whole length, aslightly longer than length of last palpomere. Prosternal process broad, between coxae deeply impressed with oblique wrinkles, very broad apically, central part of rhomboidal apex with globular tubercle, sides deeply impressed with coarse setose punctures.

Claws simple.

DISTRIBUTION MADAGASCAR EST (map 18).

### REMARKS

Unique species, the only Madagascan member with elytral sculpture forming wrinkless and high tubercles and with whole pronotal surface covered with granulate sculpture.

MATERIAL EXAMINED No additional material.

### Cassida nigroflavens BOROWIEC, 1988

(figs. 134-135, map 18)

Cassida nigroflavens BOROWIEC, 1988: 556, 1997 a: 665, 1999 a: 268.

TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Piste Tsiroanomandidy, Ankavandra, XI 1943, ABADIE » [MNHN]. – paratype: MADAGASCAR OUEST: « Hera, Ankazoabo » [MM].

### DESCRIPTION

Length: 4.1-4.6 mm, width: 3.3-3.6 mm, length of pronotum: 1.6-1.7 mm, width of pronotum: 2.7-3.0 mm, length/width ratio 1.24-1.25, width/length ratio of pronotum: 1.75-1.76. Body broadly oval (fig. 134).

Pronotal disc black, sometimes margin of praescutellar lobe yellowish-brown. Scutellum yellowish-brown to brown. Disc of elytra black up to marginal row, only below humerus and apex narrowly yellowish, sometimes disc from margin to central part changes gradually from black to brown, the dark ground colour marked by few small, pale, yellow to yellowish-brown spots or stripes. In the darkest specimens occur only stripe at base of fold surrounding postscutellar impression and transverse stripe in 2/3 length of intervals 2-3. In intermediate specimens occur also very small 2-3 spots on sutural row, stripe at base of interval 3 and spot laterally to postscutellar elevation. In the palest specimens yellow can increases and contains large part of postscutellar impression, stripes at base of intervals 2, 3 and 4, transverse, irregular spot on slope and 4-6 small spots spread in posterior half of disc. Clypeus yellow. Thorax black, abdomen mostly black surrounding by yellow. Antennal segments 1-9 yellow, last two segments brown to black except yellowish apex of ventral side of apical segment.

Pronotum irregularly elliptical, with maximum width slightly behind the middle, sides subangulate. Disc slightly convex, on sides separated from explanate margin by short furrow. Area above head smooth and slightly dull, rest of disc slightly elevated with coarse and dense punctation. Punctures in basal part of disc tend to form irregular grooves thus surface appears slightly rugose or indistinctly striated. On sides of disc punctures with interspaces mostly wider than puncture diameter. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra slightly wider than base of pronotum, basal margin of disc with extremely small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost depressed in profile (fig. 135), with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions. Postscutellar point with H-shaped elevation, anterior branches of the elevation surrounding postscutellar impression, posterior branches short thus second interval not or only slightly elevated apically, on slope forms rather narrow, low costa. Punctation coarse and extremely dense on whole disc, foveolate, punctures in rows almost touching each other. Marginal row distinct, with dense punctures, not forming foveae thus appear distinctly smaller than punctures in central rows. Intervals very narrow, linear. Marginal interval very narrow, only in humeral area wider than rows, on sides and apex of disc as wide as or slightly narrower than rows, humeral fold obsolete, lateral fold marked only as moderately broad interruption of marginal row. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part four times narrower than disc. Surface of explanate margin very shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with row of very short setae but in old, dried specimens setation often wear.

Eyes large, gena hardly marked. Clypeus very narrow, 1.3 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in obtuse angle on apex of clypeus. Surface of clypeal plate, glabrous, smooth and shiny with large, shallow, oval depression. Labrum distinctly emarginate to 1/4-1/3 length. Antennae slim, segments 9-10 as long as wide. Length ratio of antennal segments: 100:56:75:75:69:50:44:44:44:50:100. Segment 3 approximately 1.34 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically, area between coxae flat, central part of rhomboidal apex convex with rugose sculpture.

Claws with very small basal tooth, appears rather widened at base than toothed.

#### DISTRIBUTION

MADAGASCAR CENTRE and OUEST (map 18).

### REMARKS

*Cassida nigroflavens* BOROW. and *C. atromarginata* n. sp. are the only Madagascan species with body length below 4.7 mm, pronotal and elytral disc predominantly black at most with very small sparse yellowish to brownish spots and opaque dorsal surface. *C. atromarginata* differs in more convex elytral disc, explanate margin of pronotum and

elytra partly black, punctation of base of pronotal disc finer and sparser, and coarser marginal row with elevated interspaces.

MATERIAL EXAMINED MADAGASCAR CENTRE: – La Mandraka, 2 ex. [DBET].

# Cassida nigropunctata n. sp.

(figs. 136-137, map 18)

TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « MADAGASKAR, Fianarnatsoa distr., Ranomafana env. / MADAGASCAR, 28.I.-6.2.1995, Ivo Jeniš leg. » [DBET]. – MADAGASCAR CENTRE: « MADAGASKAR, Fianarnatsoa distr., Ranomafana env. / MADAGASCAR, 28.I.-6.2.1995, Ivo Jeniš leg. [MHNG].

ETYMOLOGY Named after black punctation of elytra.

### DESCRIPTION

Length: 4.3-4.85 mm, width: 3.95-4.1 mm, length of pronotum: 1.50-1.55 mm, width of pronotum: 2.95-3.0 mm, length/width ratio 1.09-1.18, width/length ratio of pronotum: 1.90-2.00. Body almost circular (fig. 136).

Pronotum and scutellum yellow. Elytra yellow only punctures of disc with black centre and narrow black areola. Clypeus yellow. Thorax black except brown lateral plates of mesothorax. Abdomen black, broadly surrounded by yellow. Legs yellow, including trochanters, only coxae brownish. Antennae with segments 1-9 yellow and segments 10-11 infuscate.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, on sides separated from explanate margin by furrow, lateral lobes not separated by sulcus, area above head indistinctly separated from top of disc. Surface of disc smooth and shiny, across base with several very small and sparse punctures, appears impunctate. Explanate margin smooth and shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow scutellar impressions (fig. 137). Top of disc with low but well marked X-shaped elevation, posterior branches of the elevation run obliquely, second interval not elevated. Punctation moderately coarse and sparse, interspaces mostly wider than puncture diameter. Punctures disposed mostly regularly but long distance between punctures and oblique impunctate low elevations at first glance give effect of irregular punctation. Marginal row distinct, with extremely sparse punctation, no impressed holes of coalescent punctures. Intervals broad, mostly twice wider than punctures. Marginal interval well marked on whole length, in humeral part approximately 1.5 times as wide

as submarginal row and submarginal interval combined, without elevated humeral and lateral folds but with a long impunctate humeral and lateral interspaces. Surface of intervals shiny. Explanate margin moderately declivous, broad, in the widest part slightly three times narrower than disc. Surface of explanate margin with shallow but dense punctation, appears irregular, transparent with well visible honeycomb structure. Apex of elytral epipleura with sparse long setae.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, running close to margin of eye and converging in regular triangle. Along external sides of clypeal triangle row of long setae. Surface of clypeal plate with longitudinal impression, smooth and shiny with few setose punctures. Labrum broadly emarginate to 1/5 length. Antennae slim, segment 10 approximately 1.3 times as long as wide. Length ratio of antennal segments: 100:58:88:75:71:67:58:54:54:63:121. Segment 3 approximately 1.5 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, central part between coxae and central part of rhomboidal apex strongly impressed, with several setose punctures, shiny, sides elevated.

Claws with moderately large basal tooth.

DISTRIBUTION MADAGASCAR CENTRE (map 18).

#### Remarks

Dorsum uniformly yellow with black punctures places *Cassida nigropunctata* n. sp. close to *C. monticola* BOROW., *C. pulpa* SP., and *C. tsaratanana* BOROW. *C. monticola* looks very similar at first glance but differs in punctation of marginal row below humerus coalescent and forming a deep longitudinal hole, punctation of elytral disc slightly coarser, elytral elevation rather H-shaped than X-shaped, and humeral angles more protruding anterad. *C. pulpa* differs in larger size with length above 5.3 mm, humeral angles more protruding anterad, abdomen yellow or only slightly infuscate in the middle, elytral punctation denser with areolae partly coalescent and forming more or less distinct reticulate pattern on sides of disc. *C. tsaratanana* differs in elytral base only slightly wider than pronotum, pronotal sides narrowly rounded, abdomen completely yellow, and distinctly larger size with length 5.6-6.2 mm.

MATERIAL EXAMINED No additional material.

#### Cassida nigroscutata FAIRMAIRE, 1904 (figs. 138-139, map 18)

Cassida nigroscutata FAIRMAIRE, 1904: 273. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 268. Cassida (Cassida) nigroscutata: SPAETH, 1914: 116.

### TYPE MATERIAL

Syntype: MADAGASCAR OUEST: « Ankarahitra [= Ankirihitra], Perrier » [MNHN]. – syntype: MADAGASCAR: « Madag. » [MNHN]. – syntype: MADAGASCAR NORD « Ankareshir, PERRIER » [MNHN].

### DESCRIPTION

Length: 6.6 mm, width: 5.45 mm, length of pronotum: 2.15 mm, width of pronotum: 4.15 mm, length/width ratio 1.21, width/length ratio of pronotum: 1.93. Body short-oval (fig. 138).

Pronotum rusty- to reddish- yellow, only explanate margin in front of head yellow. Scutellum rusty yellow. Elytra mostly green (the green colour is preserved in old dried specimens), only postscutellar impressions with brown triangular spot. Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-8 yellow and segments 10-11 black, segment 9 more or less infuscate.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Almost whole surface of disc usually with irregular wrinkles, appears rugose, only area above head with small punctation. Explanate margin shallowly but extremely dense punctate, appears distinctly irregular to slightly rugose, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc without crenulation, humeral angles moderately protruding anterad, subangulate. Disc irregularly convex in profile, with angulate top of convexity in postscutellar point, with deep scutellar and hardly visible principal impressions (fig. 139), but with only slightly marked H-shaped fold, anterior branches of the fold narrowly surrounding postscutellar impressions, posterior branches prolongate into very thin, slightly elevated second interval. Punctation coarse and dense, mostly irregular, only two sutural rows in posterior half and two submarginal rows more or less regular, sometimes some punctures in posterolateral parts of disc tend to form short rows, interspaces mostly narrower than punctures. Marginal row distinct, with dense punctures, twice coarser than punctures in central rows. Intervals mostly invisible, only elevated second and partly elevated fourth intervals more or less marked. Marginal and submarginal interval well marked on whole length but narrow, marginal interval broad, as wide as submarginal interval and submarginal row combined, no humeral and lateral folds. Interspaces on disc not in the same plane thus surface appears irregular, dull. Explanate margin moderately declivous, moderately broad, in the widest part approximately four times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears distinctly irregular, dull, semitransparent without well marked honeycomb structure. Apex of elytral epipleura with extremely short setae.

Eyes large, gena obsolete. Clypeus moderately broad, slightly wider than long, frontal grooves very fine, hardly visible, run close to margin of eye with, row of fine, setose punctures. Surface of clypeal plate flat, smooth and shiny with few small setose punctures. Labrum narrowly emarginate to 1/4 length. Antennae moderately long, segments 9-10 approximately 1.1-1.2 times as long as wide. Length ratio of antennal

segments: 100:50:69:63:63:50:63:50:50:53:106. Segment 3 approximately 1.4 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar distinctly longer than last palpomere. Prosternal process between coxae broad, strongly expanded apically, shallowly impressed along lateral margins, along margins without setose punctures, between coxae flat, smooth and shiny, central part of rhomboidal apex slightly convex, shiny, with few longitudinal striae, sides slightly impressed with irregular surface.

Claws with large basal tooth.

DISTRIBUTION

MADAGASCAR NORD and OUEST (map 18).

### REMARKS

With *Cassida senicula* (SP.) and *C. seniculoides* BOROW. it forms a group of species with pronotum without dark pattern, elytra mostly yellow to green with small dark spot behind scutellum, base of elytra moderately wider than pronotum, elytral disc very convex with more or less marked elytral hump, and punctation of elytra mostly irregular. *C. nigroscutata* is distinctly larger from both congeners with length above 6.5 mm (below 6.0 mm in both relatives) and differs also in pronotal disc rusty- to reddish- yellow in contrast to mostly yellowish-green elytral disc (in both relatives gro-undcolour of pronotum and is the same as on elytra). *C. seniculoides* distinctly differs in whole dorsal surface covered by short erect setae. *C. senicula* differs in less irregular pronotal surface, never appears rugose. *C. pubipennis* BOROW. has the same size and at first glance looks also similar but differs in pattern behind scutellum forming rather two short black stripes than spot and in adherent elytral and pronotal pubescence.

MATERIAL EXAMINED MADAGASCAR: – Madagascar, 6 ex. (5 MNHN, 1 LB).

#### Cassida nosybeensis n. sp. (figs. 140-141, map 19)

TYPE MATERIAL

Holotype: MADAGASCAR NORD: « MADAGACAR: Nosy Be Island, Lokose forest, 18 IX 1989 » [DBET].

### Etymology

Named after its type locality.

# DESCRIPTION

Length: 5.2 mm, width: 4.3 mm, length of pronotum: 1.8 mm, width of pronotum: 3.3 mm, length/width ratio 1.21, width/length ratio of pronotum: 1.83. Body short-oval (fig. 140).

Pronotum uniformly yellow. Scutellum yellow. Elytral disc black with yellow relief as in fig. 140. Spots on slope and along suture partly coalescent, the largest spot at base of elytron coalescent with spot at top of disc and large spot behind humerus thus postscutellar impressions look surrounded by yellow relief with two small spots at apex of scutellum. Marginal interval completely yellow, punctures of marginal row not marked with brown or black. Clypeus yellow. Thorax partly brown with prosternal process and lateral plates partly yellowish-brown. Abdomen uniformly yellow. Legs yellow or with partly brown coxa and trochanters. Antennal segments 1-7 yellow, segment 8 brown, segments 9-11 black.

Pronotum elliptical with maximum width slightly before the middle, sides rounded. Disc slightly convex, sides well separated from explanate margin by short furrow. Surface of disc with fine and sparse punctation, interspaces glabrous, slightly shiny. Explanate margin glabrous, smooth, slightly dull, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subacute. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with very shallow scutellar impressions, yellow elevated spots form H-shaped figure at top of disc (fig. 141). Punctation moderately coarse, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly as wide as or only slightly narrower than puncture diameter. Marginal row distinct, with moderately dense punctures, as coarse as punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts narrower than rows. Marginal interval well marked on whole length, broad, humeral and lateral folds only slightly elevated. Surface of intervals glabrous, slightly shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly more than three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, slightly shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few extremely short setae.

Eyes large, gena hardly marked. Clypeus moderately narrow, approximately 1.1 times as long as wide, frontal grooves very fine, running very close to margin of eye, apically converging in triangle. Area between grooves and margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate with very shallow impression in the middle, glabrous, smooth and shiny. Labrum shallowly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:63:75:75:69:63:56:56:63:66:106. Segment 3 approximately 1.2 times as long as segment 2 and as long as segment 4.

Prosternal collar slightly longer than last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa flat, surface slightly irregular with few setose punctures, rhomboidal apex in the middle elevated, on sides impressed with rugose sculpture and few setose punctures.

Claws on fore legs with small, on mid legs with moderately large and on hind legs with large basal tooth.

DISTRIBUTION MADAGASCAR NORD (map 19).

#### REMARKS

It belongs to the *Cassida goudoti* group of species, the subgroup with elytral disc with yellow reticulate sculpture on black background but without elevated round spots. The subgroup comprises also *C. andohahelana* n. sp., *C. bulirschi* n. sp., and *C. paveli* n. sp.. *Cassida nosybeensis* differs from all relatives in completely yellow pronotum and elytral base only slightly wider than pronotum.

MATERIAL EXAMINED No additional material.

# Cassida pauliani Borowiec, 1999

(figs. 142-143, map 19)

Cassida pauliani BOROWIEC, 1999 b: 442.

TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Morondava, fôret sud de Befasy, I-56, R.P. / Type / Muséum Paris, Coll. Générale / *Cassida pauliani* HINCKS TYPE, det. W.D. HINCKS / *Rileyocassis pauliani* n. sp. det. L. BOROWIEC » [MNHN]. – paratype: MADAGASCAR OUEST: « Morondava, fôret sud de Befasy, I-56, R.P. / Type / Muséum Paris, Coll. Générale / *Cassida pauliani* HINCKS TYPE, det. W.D. HINCKS / *Rileyocassis pauliani* n. sp. det. L. BOROWIEC » [MNHN]. – paratype: « MADAGASCAR / *Cassida pauliani* HINCKS TYPE, det. W.D. HINCKS / *Rileyocassis pauliani* n. sp. det. L. BOROWIEC » [MNHN]. – paratype: « MADAGASCAR, between Morondava and Marovoay » [DBET].

### DESCRIPTION

Length: 7.6 mm, width: 5.6 mm, length of pronotum: 2.7 mm, width of pronotum: 5.65 mm, length/width ratio 1.36, width/length ratio of pronotum: 2.09. Body oval (fig. 142).

Pronotum and scutellum yellowish-brown, apices of pronotal angles black. Elytra yellowish-brown with black marble pattern but black spots are sparser distributed than in the preceding species. Explanate margin of elytra yellowish-brown, without spots. Clypeus, prosternum and legs yellowish brown, metasternum and abdomen slightly darker, brown. Antennal segments 1-7 yellowish, remainder black except yellowish apex of underside of the last segment.

Pronotum very broad, twice wider than long, with maximum width at base, slightly wider base of elytra; base on sides deeply emarginate, angles strongly protruding posterad but with blunt apices. Disc moderately convex, indistinctly bordered from explanate margin but with well separated area above head. Surface of disc, except area above head, with irregular folds, appears wrinkled; the folds slightly more irregular than in the preceding species with no tendency to form longitudinal striation. Explanate margin without tendency to form a gutter, slightly declivous, its surface slightly irregular only in lateral parts.

Scutellum triangular with rounded apex, without punctures or sulci. Base of elytra as wide as base of pronotum, humeral angles subangulate, margin behind humerus slightly emarginate. Disc regularly convex, less depressed than in the preceding species, with obtuse, longitudinal costa in position of interval 3rd (fig. 143). In postscutellar point costae joined by A-shaped fold, but H-shaped figure in postscutellar area very low. Postscutellar impressions shallow but distinct, bordered externally by elytral costa, no principal or lateral impressions. Punctation in postscutellar impressions and between costa and suture mostly irregular, coarse and dense, distance between punctures from 0.5 to as wide as puncture diameter. Punctation between costa and margin of disc in area close to costa more regular than in the preceding species. Punctures coarse and dense, distance between them 0.5-1.2 times wider than puncture diameter, intervals linear but visible, their surface does not appear irregular or rugose. Punctures in submarginal row slightly coarser than in rows above, in marginal row only slightly coarser than in submarginal one. Explanate margin 0.38 times as wide as width of disc of each elytron, slightly more declivous than in the preceding species, its surface only slightly irregular and not appearing rugose. Apex of elytral epipleura with sparse erect hair.

Eyes large, gena obsolete. Clypeus 1.4 times wider than long, flat, clypeal lines fine but distinct on whole length of clypeus. Surface of clypeal disc smooth, slightly dull, without punctures. Labrum emarginate to 0.4 length. Antennae moderately elongate, length ratio of antennal segments: 100:53:92:73:73:55:57:60:62:56:107. Segment 3 approximately 1.5 times as long as segment 2 and 1.3 times as long as segment 4.

Prosternal process narrow in the middle, strongly expanded apically, sides impressed, rhomboidal apex in the middle slightly elevated, impunctate.

Claws large, simple.

# DISTRIBUTION

MADAGASCAR OUEST (map 19).

### REMARKS

With *Cassida acutangula* BOROW. and *C. umbonata* BOROW. it forms a very distinct group of large species (length exceeding 7.5 mm) with base of pronotum bisinuately emarginate and pronotal angles distinctly protruding anterad. *C. umbonata* distinctly differs in the presence of large conical postscutellar tubercle (both *C. acutangula* and *pauliani* have elytral disc regularly convex without tubercles). *C. acutangula* is very similar to *C. pauliani* but differs in elytral longitudinal costa distinctly higher, sharp, denser elytral punctation, base of pronotum as wide as base of elytra and less emarginate, pronotal angles less protruding posterad and angulate.

### TYPES

No additional material.

Cassida paveli n. sp. (figs. 144-145, map 19)

TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « MADAGACAR, Fianarantsoa, 30 km S of Ambositra, 1693 m, 20°45'38.1"S, 47°10'57.9", 6.i.2010, F. Pavel lgt. » [LS]. – paratype: ADAGASCAR CENTRE: « Madagascar, Fianarantsoa Prov., Ranomafana Nat'l Park, radio tower, 1190 m; hand netted; 1/19-IX-2001, ME Irwin, FD Parker, R Harin'hala, 21°15.05 S, 04°24.43 E » [MLBLSM].

### ETYMOLOGY

Named after its collector Filip PAVEL, Czech specialist in Cleridae.

#### DESCRIPTION

Length: 4.55 mm, width: 3.8 mm, length of pronotum: 1.6 mm, width of pronotum: 2.95 mm, length/width ratio 1.20, width/length ratio of pronotum: 1.8. Body short-oval (fig. 144).

Pronotal disc mostly black, only anterior half of area above head and broad V-shaped spot at base yellow. Scutellum black. Disc of elytra mostly black except marginal interval and apex, with yellow relief forming a ring around postscutellar impressions with short appendages in the middle and apicolaterally, large V-shaped band in 2/3 length of disc, small spots at base of disc, two small spots in the middle close to suture, and one to two small spots behind the V-shaped band. Explanate margin yellow. Clypeus yellow. Thorax black. Abdomen mostly black narrowly surrounded by yellow. Legs yellow, only coxae black. Antennae with segments 1-8 yellow and segments 10-11 black, segment 9 infuscate apically.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, on whole length of sides separated from explanate margin by furrow but lateral lobes not separated from disc. Surface of disc mostly smooth and shiny only in front of yellow basal spot with indistinct longitudinal striation. Explanate margin smooth and shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles distinctly protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with very shallow scutellar and principal impressions (fig. 145). Top of disc with circular elevation surrounding postscutellar impressions, V-shaped transverse elevation in 2/3 length and few small elevations at base, in the middle and behind the V-shaped elevation. Punctation fine and sparse, distance between punctures mostly twice to thrice wider than puncture diameter. Punctures tend to form regular rows but the regularity interrupted by impunctate elytral relief. Marginal row distinct, with coarse but sparse punctures, several times coarser than punctures in central rows. Intervals two to five times wider than rows, flat. Marginal interval well marked on whole length, broad, in humeral part wider than submarginal row and submarginal interval combined, humeral and lateral folds low but well marked. Surface of intervals slightly shiny. Explanate margin mo-

derately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin impunctate, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse short setae.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, on whole length running close to margin of eye and only apically converging in almost transverse line. Along external sides of clypeal triangle row of short setae. Surface of clypeal plate shallowly impressed, impunctate and shiny. Labrum broadly emarginate to 1/4 length. Antennae stout, segments 9-10 approximately as wide as long. Length ratio of antennal segments: 100:56:72:76:68:68:56:56:56:120. Segment 3 approximately 1.3 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, area between coxae and central part of rhomboidal apex convex, with few coarse, setose punctures, shiny, sides impressed with dense, coarse, setose punctures, appear rugose.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR CENTRE (map 19).

### REMARKS

It belongs to the *Cassida goudoti* species group and the subgroup characterized by elytral disc black with yellow relief forming reticulate pattern. The group comprises *C. andohahelana* n. sp. *C. bulirschi* n. sp., *C. nosybeensis* n. sp., and specimens of *C. suaveola* (SP.) with partly reticulate pattern. *C. paveli* differs from all relatives in pronotum mostly black with only yellow, short, v-shaped spot in front of scutellum, in elytral disc predominantly black with sculpture forming a ring surrounding postscutellar impressions, and transverse V-shaped figure on slope and only few additional yellow spots. *C. nosybeensis* distinctly differs in uniformly yellow pronotum and base of elytra only slightly wider than pronotum. *C. andohahelana* differs in more reticulate pattern with black only slightly predominate over yellow. *C. suaveola* (SP.) differs in at least on sides of disc sculpture forming isolated round spots. Other species of *C. goudoti* group have rather elevated spots than elevated reticulation.

MATERIAL EXAMINED No additional material.

> Cassida pretiosa BOROWIEC, 1988 (figs. 146-147, map 20)

Cassida pretiosa Borowiec, 1988: 566, 1999 a: 274. – HAITLINGER, 2002: 22.

TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « Mt Tsaratanana, 1500 m, X 1949, R. Paulian » [MNHN].

### DESCRIPTION

Length: 5.3 mm, width: 4.3 mm, length of pronotum: 1.7 mm, width of pronotum: 3.0 mm, length/width ratio 1.23, width/length ratio of pronotum: 1.76. Body subtriangular (fig. 146).

Pronotal disc black, on sides with large yellow spot. Explanate margin of pronotum yellow. Scutellum yellow. Elytral disc black, each elytron with 11-13 elevated, yellow spots of various shape (fig. 146). Explanate margin of elytra yellow with black, broad humeral spot. The humeral spot extends almost to lateral margin of elytra but with yellow humeral angle, below humeral callus two small yellow spots. Clypeus, ventrites and legs uniformly yellow. Two basal antennal segments yellow (the rest of antennae broken in the only known specimen).

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc moderately convex, on sides distinctly separated from explanate margin by deep furrow. Surface of disc glabrous, smooth and shiny with small depression before scutellum. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with small black crenulation, humeral angles moderately protruding anterad, angulate. Disc gibbous in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar impressions (fig. 147). Punctation moderately coarse, dense, regular but regularity broken by elytral relief. Postscutellar area with two handle shaped elevated spots. Marginal row distinct, with dense punctures, only slightly coarser than punctures in central rows. Intervals narrow, narrower than rows, partly linear. Marginal interval well marked on whole length, with well marked humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part four times narrower than disc. Surface of explanate margin very shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura very short, scarce, erect setae.

Eyes large, gena obsolete. Clypeus narrow, approximately as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in arch on apex of clypeus. Clypeal plate apically with large, oval depression. Surface of clypeal plate, glabrous, smooth and shiny. Labrum distinctly emarginate to ¼ length. Antennae broken in the only known specimen from third segment.

Prosternal collar slightly shorter than length of last palpomere. Prosternal process broad, moderately impressed along lateral margins, very broad apically, central part of rhomboidal apex convex flat and smooth.

Claws simple.

### DISTRIBUTION

MADAGASCAR SAMBIRANO (map 20).

### REMARKS

Simple claws, black elytral disc with yellow elevated spots and presence of humeral spots near this species only to *Cassida schenklingi* (Sp.) but it differs in

black pronotal spot with two large oval yellow spots (without yellow spots at base in *C. pretiosa* BOROW.), stouter and subquadrate body (slimmer, subtriangular in outline in *C. pretiosa*, L/W 1.13-1.16 to 1.23 respectively), humeral spots reddish to brown, shorter not extending to elytral edge with larger yellow part close to humeral angle (black, longer, almost extending to elytral edge in *C. pretiosa*), and spots on top of disc separate (coalescent, forming handle-shaped figure in *C. pretiosa*). Forms of *C. hova* (WEISE) with reduced posterolateral spots look also similar but differs in pronotal disc longitudinally striate (smooth and shiny in *C. pretiosa*) and spots on top of disc isolated, not forming a handle-shaped figure.

MATERIAL EXAMINED No additional material.

### Cassida prospera Spaeth, 1915 (figs. 148-150)

Cassida (Cassida) prospera SPAETH, 1914: 116 (nomen nudum). Cassida prospera SPAETH, 1915: 132. – BOROWIEC, 1999 a: 275.

TYPE MATERIAL

2 syntypes: MADAGASCAR: « Madagascar, coll. Donckier » [MM].

### DESCRIPTION

Length: 5.6-6.25 mm, width: 4.65-5.2 mm, length of pronotum: 2.0-2.2 mm, width of pronotum: 3.95-4.15 mm, length/width ratio 1.17-1.25, width/length ratio of pronotum: 1.86-1.98. Body short-oval, males slightly stouter than females (figs. 148-149).

Variable species. In the palest specimens dorsum uniformly yellowish, only punctures marked with brown or black (fig. 149). In the darkest specimens disc of pronotum with two large, black handle-shaped figures, punctures of elytral disc with black centre and black areola, the areolae partly coalescent and form irregular bands along size and more or less distinct reticulate pattern on top of disc. Between these extreme form all intermediates were observed, sometimes pronotum unicolor yellow but elytral disc with dark reticulate pattern, or pronotum with only thin c-shaped figures and punctures of elytral disc with dark centre and narrow dark areola but the areolae not coalescent. Clypeus yellow. Thorax black, abdomen mostly black surrounded by yellow. Legs yellow, only coxae more or less infuscate. Antennae mostly yellow, three or four apical segments more or less infuscate but never black.

Pronotum irregularly elliptical, with maximum width in basal 1/3 length, sides subangulate. Disc slightly convex, on sides separated from explanate margin by short and shallow furrow. Surface of disc with small sparse to moderately dense punctation, interspaces mostly wider than puncture diameter, punctures in latero-basal part of disc tend to form short striation. Explanate margin with fine and shallow punctation, appears smooth, transparent with well visible honeycomb structure. Whole surface of disc with mirror brilliance.

1.11

Base of elytra only slightly wider than base of pronotum, in some specimens as wide as base of pronotum, basal margin of disc with very small black crenulation, humeral angles only slightly protruding anterad, subangulate. Disc slightly irregularly convex in profile, with top of convexity in postscutellar point (fig. 150), with shallow scutellar and principal impressions, at top with low transverse elevation but without distinct H-shaped figure. Postscutellar impressions not bordered by elevated fold, second interval only slightly elevated. Punctation moderately coarse and dense, mostly regular but with additional punctures in postscutellar area and fourth interval. Punctures disposed in rows irregularly, partly group 2-4 together, partly one by one. In specimens with reticulate pattern yellow impunctate parts of disc form irregular very low relief. Marginal row distinct, with coarse and moderately dense punctures, twice coarser than in central rows. Intervals in sutural part of disc twice wider than rows, on sides narrower, as wide as to 1.5 times as wide as rows. Marginal interval well marked on whole length, moderately broad, in anterior half as wide as submarginal row and submarginal interval combined, no humeral and lateral folds. Surface of intervals with mirror brilliance. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin shallowly and densely punctate, appears slightly irregular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with, short, erect setae.

Eyes large, gena obsolete. Clypeus approximately as long as wide, frontal grooves very fine, running very close to margin of eyes and converging in arch on top of clypeus. Area between groove and margin of eye with row of long setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny with few small setose punctures. Labrum broadly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:56:83:75:67:50:58:47:50:53:106. Segment 3 approximately 1.5 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, shallowly impressed along lateral margins, impressions with row of setae, area between coxae smooth and shiny, rhomboidal apex in the middle convex with several setose punctures, shiny, size impressed with few coarse, setose punctures, shiny.

Tarsal claws with small basal tooth, teeth on mid and hind claws gradually smaller then claws appear simple.

#### DISTRIBUTION

MADAGASCAR (no precise locality).

### REMARKS

Cassida prospera with Cassida collucens SP., C. concallescens SP., C. densestriata n. sp., and C. trossula SP. forms a natural group of species with moderately large size, pronotal sides narrowly rounded, base of elytra not or only sligfhtly wider than pronotum, moderately coarse and partly irregular punctation, and pronotal disc punctate or with more or less visible striation. C. concallescens differs in higher elytral sculpture forming except postscutellar H-shaped figure a transverse, V-shaped elevation in 2/3 length of disc. *C. densestriata* differs in groundcolour of elytra predominantly brown, denser punctation of pronotal disc, and denser nad more irregular punctation of elytra. *C. collucens* differs in base of elytra more wider than pronotum, pronotal sides less angulate, elytral sculpture more distinct, forming not only postscutellar H-shaped elevation but also relief on sides of disc and slope, elytral pattern often forming humeral spots, and pronotal pattern in dark aberration forms M-shaped figure. *C. trossula* is the most similar but differs in wider variation of elytral pattern often forming humeral spots, elytral sculpture more distinct, forming not only postscutellar H-shaped elevation but also relief on sides of disc and slope. The palest aberration of *C. trossula* is very similar but differs in areolae around punctures broader, often partly coalescent and forming more or less distinct black reticulation.

### MATERIAL EXAMINED

MADAGASCAR: - Madagascar, 1 ex. [DBET]. - Madagascar int. austr., 2 ex. [DBET].

#### Cassida pseudolateritia n. sp. (figs. 151-153, map 20)

#### TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Madagascar, Mt. d'Ambre / Fevrier / Museum Paris, Madagascar, Mgne d'Ambre, coll. Sicard 1930 » [MNHN]. – paratype: MADAGAS-CAR NORD: « Madagaskar, Parc d'Ambre, 16.09-21.09. 1987, P. u. H. SCHÜLE » [DBET]. – paratype: MADAGASCAR NORD: « Madagascar, Amber Geb. » [DBET]. – two paratypes: MADAGASCAR NORD: « Madagascar, Antsiranana Prov., Ambohitra, 30.11.-2.12. 1996, leg. Ivo Jeniš » [LS, MHNG]. – 9 paratypes: MADAGASCAR NORD: « Madagascar, Antsiranana Prov., Ambohitra env., 20.-26.XII.2002, leg. Ivo Jeniš / Coll. Dr. Matthias Schöller, Berlin » [DBET, MSCH]. – paratype: MADAGASCAR Est: « MADAGASCAR C, 6.-10. I 1998 Ranomafana, (pr. Fianarantsoa), P. Pacholátko leg. » [NMB].

### ETYMOLOGY

Named after its external similarity to Cassida lateritia FAIRM.

#### DESCRIPTION

Length: 4.2-4.85 (mean 4.6, n = 3) mm, width: 3.5-4.0 mm (mean 3.7, n = 3), length of pronotum: 1.55-1.65 mm, width of pronotum: 2.75-3.0 mm, length/width ratio 1.20-1.26, width/length ratio of pronotum: 1.77-1.82. Body short-oval (figs. 151-152).

Dorsum yellowish brown to brown, punctures with dark, brown centre, in two submarginal rows punctures also with brown areola, the areolae partly coalescent thus along sides of disc runs more or less irregular narrow band or row of brown spots, postscutellar point with small brown spot, in 1/3, 2/3 and <sup>3</sup>/<sub>4</sub> length of elevated second interval small, brown spot. Underside of explanate margin of elytra in humeral part with brownish humeral spot extending to 2/3-4/5 width of the margin. Clypeus yellow,

thorax mostly dark brown to black, abdomen in the middle with more or less developed brownish to black spot of indistinct borders, sides of abdomen always yellowish. Antennae yellow, last two segments brown to black.

Pronotum regularly elliptical, with maximum width in the middle, sides rounded. Disc only slightly convex, on sides separated from explanate margin by shallow furrow. Surface of disc glabrous, slightly dull to slightly shiny, basal part of disc shallowly punctate, interspaces mostly narrower than punctures and surface appears slightly irregular. Area above head finely and sparsely punctate with slightly irregular surface, lateral lobes with distinct oblique striation. Explanate margin glabrous, smooth, slightly dull to slightly shiny, impunctate but with surface slightly irregular, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin without crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar impressions, principal impressions obsolete or hardly marked (fig. 153). Postscutellar area with H-shaped elevation, posterior branches of the elevation prolongate into slightly elevated second interval, anterior branches surrounded postscutellar impressions. Punctation coarse, regular on whole disc, punctures in rows very dense, distance between punctures mostly narrower than puncture diameter, almost linear. Marginal row distinct, its punctures distinctly coarser than punctures in central rows, separated by broad, elevated interspaces, distance between punctures mostly as wide as to slightly wider than puncture diameter. Humeral fold indistinct, lateral fold only slightly convex, approximately twice wider than most interspaces in lateral part of margin. Intervals narrow, linear. Second interval slightly convex, in <sup>3</sup>/<sub>4</sub> length on a short distance more convex than in other parts. Marginal interval well marked on whole length, as wide as submarginal row and submarginal interval combined. Surface of intervals glabrous, smooth, from slightly dull to slightly shiny. Explanate margin moderately declivous, broad, in the widest part approximately four times narrower than disc. Surface of explanate margin shallowly punctate, appears irregular, glabrous, from slightly dull to slightly shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with short, erect setae.

Eyes large, gena hardly marked. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves very fine, running close to margin of eye and converging in arch on apex of clypeus. Surface of clypeal plate flat but with narrow median groove, glabrous, smooth and shiny with few setose punctures. Labrum distinctly emarginate to 1/3 length. Antennae slim, segments 9-10 approximately 1.1 times as long as wide. Length ratio of antennal segments: 100:56:69:63:63:44:50:47:47:56:100. Segment 3 approximately 1.2 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar shorter than length of last palpomere. Prosternal process broad, shallowly impressed along lateral margins, very broad apically, its surface flat, between coxae smooth and shiny, central part of rhomboidal apex impunctate, sides with few shallow punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR NORD (map 20).

### REMARKS

Cassida pseudolateritia belongs to the group of species characterized by the following combination of characters: body short oval, ground colour of dorsum in fully sclerotized specimens rusty yellow, pronotum always without dark pattern, elytra without pattern or it forms areolae around punctures and more or less distinct U-shaped figure, explanate margin unicolor or on underside with more or less distinct humeral spot, base of elytra distinctly wider than pronotum, pronotum with broadly rounded sides, elytral disc with more or less distinct H-shaped elevation, punctation coarse and dense, intervals mostly linear, second interval at least in 2/3 length distinctly elevated. The group comprises also C. lateritia FAIRM., C. lateritioides n. sp., and C. rogezensis n. sp. C. rogezensis is the most distinct species, the only with length above 6 mm and postscutellar elevation with large, round, black spot. It differs also in elytra without dark pattern except postscutellar spot and uniformly pale ventrites. C. lateritioides differs in uniformly pale ventrites, elytra with dark, brown to black pattern, forming more or less visible U-shaped figure, larger size (mean length 5.1 mm versus 4.5 in C. pseudolateritia), and elytra more converging posterad. C. lateritia is very similar but differs in dorsum uniformly yellowish-brown and explanate margin of elytra without humeral spots.

MATERIAL EXAMINED No additional material.

### Cassida pseudostrumosa n. sp. (figs. 154-155, map 20)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Madagascar Est, dct. Sambava, R. N. XII, Marojej Ouest, 1300 m, IX-X-59, Pierre Soga » [MNHN].

ETYMOLOGY Named after its external similarity to Cassida strumosa SPAETH.

#### DESCRIPTION

Length: 5.2 mm, width: 4.3 mm, length of pronotum: 1.75 mm, width of pronotum: 3.25 mm, length/width ratio 1.21, width/length ratio of pronotum: 1.86. Body short-oval (fig. 154).

Pronotal disc mostly black except anterior third of area above head, two large yellow spots at base, and oblique yellow spots at sides. Explanate margin mostly yellow but at base black colour of disc partly extending behind border between disc and explanate margin. Scutellum black. Disc of elytra mostly yellow, punctures with black centre and areola, in submarginal row areolae of punctures partly coalescent,

marginal interval and apex of disc black. Along 1/3 length of border between disc and explanate margin black colour partly extending behind marginal row and border parts of explanate margin black. Clypeus yellowish-brown with black basal corners. Thorax and abdomen completely black. Femora mostly black except yellowish apex, tibiae and tarsi yellowish-brown. Antennae with segments 1-7 yellow, segment 8 brown and segments 9-11 black.

Pronotum elliptical, maximum width slightly in front of the middle, sides rounded. Disc moderately convex, on whole length of sides separated from explanate margin by furrow, lateral lobes not separated from disc, area above head distinctly separated. Surface of disc impunctate, shiny. Explanate margin impunctate, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with very small and shallow scutellar impressions (fig. 155). Top of disc without H-shaped elevation, only external borders of postscutellar impressions slightly elevated and suture along inner margins of postscutellar impressions highly elevated. Punctation moderately coarse, impressed, appears coarser due to black areolae, sparse, interspaces mostly twice to thrice wider than puncture diameter. Punctures tend to form regular rows but due their irregular distances in rows punctation appears slightly irregular. Marginal row distinct, with moderately dense but very coarse punctures, three to four times coarser than punctures in central rows. Intervals mostly as wide as rows, interspaces between punctures slightly elevated and surface partly appears irregular, particularly in sutural part of disc. Marginal interval well marked on whole length, broad, in humeral part wider than submarginal row and submarginal interval combined, humeral and lateral folds low but distinct. Surface of intervals shiny. Explanate margin moderately declivous, moderately broad, in the widest part approximately four times narrower than disc. Surface of explanate margin smooth, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse short setae.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, converging in regular triangle. Along external sides of clypeal triangle row of long setae. Surface of clypeal plate impressed medially, smooth and shiny. Labrum moderately emarginate to 1/5 length. Antennae stout, segments 9-10 approximately as wide as long. Length ratio of antennal segments: 100:54:77:69:65:5 8:50:50:54:62:108. Segment 3 approximately 1.4 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar slightly longer than last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, along sides very deeply impressed with coarse setose punctures, appears rugose, central area between coxae and central part of rhomboidal apex very convex, with few small, setose punctures, shiny.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR EST (map 20).
# REMARKS

Cassida pseudostrumosa belongs to the group of small species with size below 5.3 mm, pronotum partly black, elytral punctures with black centre, marginal interval at least in humeral part black and elytral pattern never forms large black areas and yellow never form elevated sculpture except H-shaped basal elevation. The group comprises also C. atropunctata n. sp., C. silvicola BOROW., and C. strumosa (SPAETH). C. silvicola distinctly differs in the most expanded black pattern of elytra which forms humeral spot on explanate margin extending to 2/3 width of the margin and reticulate spots on sides of disc and slope, and in sculpture of pronotal disc forming on sides fine striation. C. strumosa has similar pronotal pattern with mostly black disc, partly black basal parts of explanate margin and discal spot marked with two large, yellow, praescutellar spots and two smaller, yellow spots on sides, but differs in black colour of pronotum not or only slightly extending to basal part of explanate margin, lateral spots transverse often divided pronotal spot into two or three distinct parts, explanate margin of elytra in humeral part without or with very narrow black band along anterior 2/3 length of border between explanate margin and disc, black pronotal spots and black humeral band on elytra not margined externally by red, and narrower black areolae around punctures. C. atropunctata differs in pronotal pattern forming M-shaped figure with two large, yellow praescutellar spots but without lateral yellow spots, black colour in humeral part of disc limited to marginal row and only slightly extending to surface of explanate margin, punctures of elytra with very narrow areolae, if coalescent then only in submarginal row thus disc appears without black reticulation, and surface of elytral disc completely regular.

MATERIAL EXAMINED No additional material.

> Cassida pseudovicinalis n. sp. (figs. 156-157, map 21)

TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Inst. Scient. Madagascar, Forêt Col. d'Ivohibe, IX-50, AR / Cassida vicinalis (Spaeth)? det. W.D. Hincks » [MM].

### ETYMOLOGY

Named after its external similarity to the holotype of *Cassida vicinalis* (SP.) - now synonym of *C. strumosa* (SP.).

# DESCRIPTION

Length: 4.6 mm, width: 3.95 mm, length of pronotum: 1.55 mm, width of pronotum: 2.85 mm, length/width ratio 1.16, width/length ratio of pronotum: 1.84. Body short-oval (fig. 156). Pronotum yellow, disc with black M-shaped figure as in fig. 156. Scutellum yellow. Disc of elytra yellow with reticulate pattern as in fig. 156. Marginal interval completely yellow. Explanate margin yellow. Ventrites including clypeus, thorax, abdomen and legs yellow. Antennae with segments 1-9 yellow and segments 10-11 infuscate, apex of ventral side of segment 11 yellow.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by shallow furrow. Surface of disc glabrous, smooth and shiny. Explanate margin impunctate, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles moderately protruding anterad, elytral margin behind humeral angle shallowly emarginate thus the angle appears subacute. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with distinct scutellar but without principal impressions (fig. 157). Postscutellar area without distinct H-shaped fold. Yellow parts of elytra mostly impunctate and slightly convex, form a relief. Few separate punctures on yellow parts of elytra group close to the top of disc and in 3/4 length of disc close to suture. Punctation on black parts of disc small, punctures run mostly along borders of yellow relief and black reticulation thus punctation looks mostly irregular. Marginal row distinct, with punctures moderately dense but much coarser than punctures in central part of disc. Marginal interval well marked on whole length, broad, distinctly wider than submarginal row and submarginal interval combined, humeral fold only slightly convex but well marked, lateral fold broad, convex. Surface of yellow relief smooth and shiny. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, elevated intervals form around the disc distinct radial sculpture. Surface of explanate margin glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes very large, gena obsolete. Clypeus narrow, 1.1 times as long as wide, frontal grooves fine, running close to margin of eye and converging in regular triangle. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, or very shallowly impressed, smooth and shiny. Labrum broadly but deeply emarginate to 1/3 length. Antennae moderately slim, segments 9-10 approximately 1.1 times as long as wide, segment 3 approximately 1.4 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar slightly shorter than last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, deeply impressed along lateral margins, impressions with row of setose punctures, between coxae flat, impunctate, central part of rhomboidal apex convex, with few setose punctures, shiny.

Claws with very small basal tooth, appear simple.

DISTRIBUTION MADAGASCAR OUEST (map 21).

### REMARKS

At first glance it is very similar to the pale forms of *Cassida strumosa* (SP.) particularly to the colour form described under name *Cassida vicinalis* (SP.) but all forms of *C. strumosa* differ in ventrites partly black (completely yellow in *C. pseudovicinalis*). Punctation of elytral disc in *C. strumosa* is distinctly coarser than in *C. pseudovicinalis* and at least partly appearing more or less regular. Basal tooth on claws in *C. strumosa* is moderately large but well visible while in *C. pseudovicinalis* it is extremely small thus claws appear simple. Species of *Cassida goudoti* group with black reticulate pattern differ by partly black ventrites except *C. verrucata* (BOH.) with uniformly yellow ventrites but it differs in yellow sculpture of disc high, forming rather yellow round spots than reticulate pattern.

MATERIAL EXAMINED No additional material.

# Cassida pubescens SPAETH, 1905 (figs. 158-159)

*Cassida pubescens* SPAETH, 1905: 107. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 275. *Cassida (Cassida) pubescens*: SPAETH, 1914: 116.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar, coll. Nickerl » [MM].

DESCRIPTION

Length: 7.0 mm, width: 6.0 mm, length of pronotum: 2.4 mm, width of pronotum: 4.3 mm, length/width ratio 1.16, width/length ratio of pronotum: 1.79. Body almost circular (fig. 158).

Pronotum yellowish-brown, disc slightly darker than explanate margin at top with indistinct, dark brown, large V-shaped spot of blurred borders. Elytra with mixed yellowish-brown, brown, and brownish black parts. The palest are basal part of elytron between humeral callus and scutellum, tops of wrinkles and tubercles, large "window spot" in the middle of explanate margin, elytral edge and apex of explanate margin. The darkest are large spot at top of disc, wrinkles on sides of disc and broad humeral and posterolateral spots of explanate margin. Clypeus, ventrites and legs yellowish. Antennal segments 1-7 reddish-yellow, last four segments dark brown.

Pronotum reversely trapezoidal, with maximum distinctly before the middle, with angulate anterior corners. Disc strongly convex, with area above head placed distinctly lower than other parts of disc, lateral lobes well marked, sides on whole length separated from explanate margin by sulcus. Elevated basal part of disc distinctly sculptured, with longitudinal wrinkles. Area above head and lateral lobes only finely punctate without special sculpture. Explanate margin wrinkled, particularly on basal half, appears rather irregular than rugose, partly transparent, honeycomb structure visible only close to anterior edge. Whole surface of pronotum with sparse, erect pubescence, shiny.

Base of elytra only slightly wider than base of pronotum, basal margin with small crenulation, humeral angles moderately protruding anterad, angulate. Disc convex, but not angulate in profile, with distinct postscutellar elevation and distinct postscutellar and principal impressions surrounded by elevated folds, particularly folds surrounding postscutellar impressions very high in basal part (fig. 159). Whole surface of disc with folds, wrinkles and tubercles, appears rugose. Punctation moderately coarse, occupies impressed fields, partly irregular, but on sides of disc and in posterior half of sutural area with more or less regular rows. Submarginal and marginal row more or less regular, interspaces mostly narrower than puncture diameter. Marginal row distinct, interrupted by transverse folds, with very coarse punctures much coarser than punctures on top of disc, particularly three punctures behind humeral fold extremely coarse and deep. Intervals mostly obsolete only marginal interval well marked but interrupted by transverse folds, below humeral callus not elevated. Explanate margin strongly declivous but with less declivous external third, moderately broad, in the widest part four times narrower than disc. Surface of explanate margin with punctures, folds, wrinkles, appears rugose. Whole surface of pronotum with sparse, erect pubescence, shiny. Apex of elytral epipleura with sparse, long setae.

Eyes very large, gena obsolete. Clypeus approximately as wide as long, frontal grooves fine, in basal half running close to eye margin and converging in obtuse triangle. Surface of clypeal plate flat, shiny, with several small. Labrum very shallowly emarginate to 1/6 length. Antennae moderately long, segments 9 and 10 only slightly longer than wide, segment 3 approximately 1.5 times as long as segment and slightly shorter than segment 4.

Prosternal collar longer than last palpomere. Prosternal process moderately broad, deeply impressed along lateral margins, impressions with row of small punctures, apex broadly expanded. Area between coxae convex, shiny, without special sculpture. Central part of rhomboidal apex slightly elevated, sides deeply impressed, surface with coarse, longitudinal punctures and rugosities.

Claws simple. Spermatheca (fig. 254).

DISTRIBUTION MADAGASCAR (no precise locality).

# REMARKS

*Cassida pubescens* SP. and *C. laccopteroides* n. sp. form a group of large species with strongly wrinkled dorsum appearing like specimens of common Malgasy *Laccoptera regularis* FAIRM. *C. laccopteroides* differs in unpubescent dorsum, broader angles of pronotum and less angulate humeral calli, uniformly coloured explanate margin of elytra without pale median "window", and lower wrinkles surrounding laterally postscutellar impressions. Punctation of disc is less regular in *C. laccopteroides* with well marked only two marginal rows while in *C. pubescens* regular rows are marked also on sides and posterior half of sutural part of disc.

MATERIAL EXAMINED No additional material

### Cassida pubipennis BOROWIEC, 1999 (figs. 160-161, map 21)

Cassida pubipennis Borowiec, 1999 b: 475.

TYPE MATERIAL

Holotype: MADAGASCAR CENTRE: « MADAGASCAR, Mahatsinjo » [DBET].

# DESCRIPTION

Length: 6.4 mm, width: 5.3 mm, length of pronotum: 2.3 mm, width of pronotum: 4.15 mm, length/width ratio 1.21, width/length ratio of pronotum: 1.80. Body almost circular (fig. 160).

Pronotum uniformly yellow. Scutellum yellow. Elytra mostly yellow with two short, black stripes in postscutellar point, very small black spot in the middle of submarginal interval, and few extremely small black spots distributed irregularly in anterior half of disc. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-7 yellow, segments 8-11 infuscate.

Pronotum moderately broad, approximately1.8 times wider than long, elliptical, with maximum width slightly behind the middle, sides rounded. Disc distinctly convex, on sides distinctly bordered from explanate margin, area above head and lateral lobes well separated. Whole surface of disc slightly irregular, sides with oblique impression. Explanate margin subhorizontal, its surface slightly irregular. Whole surface of pronotum slightly dull, covered by sparse, adherent hairs.

Scutellum triangular, without punctures or sulci. Base of elytra moderately wider than base of pronotum, humeral angles subangulate, distinctly protruding anterad, margin behind humerus not emarginate. Disc moderately convex, not elevated in postscutellar point (fig. 1610. Postscutellar impressions distinct, bordered externally by distinct elevation. Punctation of disc almost completely irregular, only in area behind humerus punctures have tendency to form regular rows. Punctation moderately coarse and dense, distance between punctures 0.3-0.9 times as wide as puncture diameter. Marginal row distinct, its punctures approximatelythrice coarser than in central part of disc. Intervals absent, surface of elytra appears irregular. Marginal interval distinct. Explanate margin moderately broad, as wide as half width of disc of each elytron, subhorizontal, its surface irregular. Whole surface of elytra slightly dull, covered by sparse, short, adherent hairs. Apex of elytral epipleura with moderately long, erect hair.

Eyes large, gena obsolete. Clypeus narrow, approximately1.1 times wider than long, flat, impunctate, slightly dull; clypeal lines very fine, visible only in basal 2/3 length. Labrum shallowly emarginate. Antennae moderately elongate, length ratio of antennal segments: 100:50:67:60:57:53:60:57:57:60:113. Segment 3 approximately1.33 times longer than 2, segment 4 slightly shorter than 3.

Prosternal collar slightly longer than last palpomere, prosternal process broad, distinctly expanded apically, central part of apex depressed, sides elevated, surface impunctate, slightly irregular.

Claws simple.

DISTRIBUTION MADAGASCAR CENTRE and EST (map 21).

Remarks

At first glance it is similar to *C. seniculoides* BOROW. and *C. senicula* SPAETH, particularly due to almost uniformly yellow dorsal surface with dark spot in postscutellar point. *C. pubipennis* differs in less circular body, with sides of elytra only slightly rounded (regularly rounded in both its relatives). From *C. senicula* differs also in pubescent pronotum and elytra (bare in *senicula*), and from *C. seniculoides* in adherent elytral and pronotal pubescence (erect in *seniculoides*). Pattern in postscutellar point in *C. pubipennis* forms two short black stripes, while in both its relatives it forms round brown spot.

MATERIAL EXAMINED

MADAGASCAR EAST: – Andasibe env., 23-25 XI 1999, 1 ex., F.+L. KANTNER [FK]. – Maromizaha (Andasibe), 19-20 XHH 1997, 1 ex., P. PACHOLÁTKO [NMB].

# Cassida pulpa SPAETH, 1915

(figs. 162-164, map 21)

Cassida pulpa Spaeth, 1915: 145. - Borowiec, 1999 a: 275.

TYPE MATERIAL Holotype: MADAGASCAR: « Madag. Dr Plason » [MM].

DESCRIPTION

Length: 5.3-5.4 mm, width: 4.55-4.6 mm, length of pronotum: 1.8-1.9 mm, width of pronotum: 3.2-3.6 mm, length/width ratio 1.16-1.19, width/length ratio of pronotum: 1.78-1.89. Body almost circular (fig. 162-163).

Dorsum yellow, only punctures of elytral disc marked with brown to black. In some specimens black punctures in posthumeral area group and form thin black reticulation. Clypeus yellow. Pro- and mesosternum yellowish brown in the middle and dark brown along margins, metasternum mostly dark brown, only metasternal process yellowish and area around median suture yellowish brown. Abdomen uniformly yellow or sternites in the middle infuscate but never black. Legs pale yellow. Antennae yellow, last segment black except yellowish apex of ventral side, sometimes penultimate segment brownish to black.

Pronotum elliptical, with maximum width slightly before the middle, sides narrowly to moderately rounded, in males more narrow than in females. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra distinctly wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles in male distinctly in female moderately protruding anterad, subangulate to angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions, also on sides of disc punctures tend to form shallowly impressed fields (fig. 164). Punctation moderately coarse, regular but appears slightly irregular because punctures tend to group 2-5 together with larger intervals between groups. Punctures in anterolateral part of disc distinctly more numerous than on slope thus anterior half of disc appears much punctate than posterior part. Postscutellar area with transverse fold, also some intervals on sides slightly convex then surface of disc appears more or less irregular. Marginal row distinct, with sparse punctures, only slightly coarser than punctures in central rows. Regularity of intervals disturbed by arrangement of punctures and elevated interspaces, in well marked parts intervals in sutural part of disc approximately twice wider than rows, on sides 1.5 times as wide as rows. Marginal interval well marked on whole length, broad, in anterior half twice wider than lateral intervals, with well marked humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part four times narrower than disc, in male external third of the explanate margin more explanate than in female, almost horizontal. Surface of explanate margin very shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura glabrous, only elytral margin close to suture with few very short setae.

Eyes large, gena hardly marked. Clypeus narrow, 1.1 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in triangle on apex of clypeus. Surface of clypeal plate flat, glabrous, smooth and shiny. Labrum distinctly emarginate to ¼ length. Antennae slim, segments 9-10 slightly longer than wide. Length ratio of antennal segments: 100:56:61:58:56:50:56:44:44:44:100. Segment 3 approximately 1.1 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically, central part of rhomboidal apex convex, with few setose punctures.

Claws with very small basal tooth, particularly mid and hind claws appear rather widened at base than toothed.

DISTRIBUTION MADAGASCAR CENTRE and EST (map 21).

# REMARKS

It belongs to the group of species with dorsum yellow, without pattern but with punctures marked by dark areola or centre. Similar colouration with yellow dorsum and black punctation have *Cassida monticola* BOROW., *C. nigropunctata* n. sp., and *C. tsaratanana* BOROW. *C. monticola* differs from all species by peculiar punctation of marginal row with punctures between humeral and lateral fold partly coalescent, forming a deep hole. *C. nigropunctata* at first glance looks similar but differs in small size with length below 4.3 mm, humeral angles less protruding anterad, punctation of elytral disc slightly finer and sparser with areolae never coalescent, and elytral surface more regular. *C. tsaratanana* differs in elytral base only slightly wider than pronotum, pronotal sides narrowly rounded, and distinctly larger size with length 5.6-6.2 mm.

MATERIAL EXAMINED

MADAGASCAR CENTRE: - Mahatsinjo, 5 ex. [DBET].

MADAGASCAR EST: - Moramanga, Fanovana, Lamberton, 1931, 2 ex., RIEL [MNHN].

MADAGASCAR: - Madagas., 1 ex., BAKER [MM)].

### Cassida pusio SPAETH, 1915

(figs. 165-166, map 22)

Cassida (Cassida) pusio: SPAETH, 1914: 116 (nomen nudum). Cassida pusio SPAETH, 1915: 139. – BOROWIEC, 1999 a: 276.

TYPE MATERIAL

Syntype: MADAGASCAR NORD: « Ambergbg., v. Rolle » [MM]. – syntype: « Diego Suarez [= Antsiranana], coll. Donckier » [MM]

### DESCRIPTION

Length: 5.4-6.1 mm, width: 4.55-5.0 mm, length of pronotum: 1.95-2.1 mm, width of pronotum: 3.8-3.95 mm, length/width ratio 1.16-1.22, width/length ratio of pronotum: 1.85-2.00. Body short-oval to almost circular, males slightly stouter than female (fig. 165).

Disc of pronotum completely black or close to anterior margin brownish-yellow, explanate margin yellow. Scutellum black. Elytral disc completely black. Explanate margin with broad black humeral spot extending almost to lateral edge of elytra, humeral angle black or only narrowly yellowish. Central pat of explanate margin yellow, apical ¼-1/3 length completely black. Clypeus yellow. Prosternal collar in central part, prosternal process and mesothorax brown to black, metathorax and abdomen yellow. Legs yellow. Antennae uniformly yellow.

Pronotum elliptical, with maximum width in the middle, sides narrow, subangulate. Disc slightly convex, with area above head placed slightly lower than other parts of disc, sides separated from explanate margin by shallow furrow. Surface of disc small and moderately punctation, punctures tend to form short, longitudinal grooves but surface does not appear striate. Interspaces shiny. Explanate margin smooth, shiny, with honeycomb structure. Base of elytra not or only slightly wider than base of pronotum, basal margin without crenulation, humeral angles moderately protruding anterad, subangulate. Disc moderately convex in profile, with top in postscutellar area, and distinct H-shaped elevation in anterior part surrounding well marked and deep postscutellar impressions (fig. 166). Principal impression distinct, surrounded by elevated interspaces. Punctation coarse and dense, regular on whole disc, interspaces in rows mostly narrower than puncture diameter. Marginal row distinct, its punctures as coarse as on disc, very deeply impressed, particularly behind humerus. Intervals mostly narrow, linear, only elevated second interval well marked, slightly narrower than rows. Marginal interval well marked but narrow, as wide as rows, humeral and lateral folds absent, or only lateral fold slightly marked as elevated interspace. Surface of disc slightly shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than thrice times narrower than disc. Surface of explanate margin shallowly but coarsely and densely punctate, appears slightly irregular. Apex of elytral epipleura with sparse, short setae.

Eyes large, gena obsolete. Clypeus moderately broad, approximately as wide as long, frontal grooves fine, running close to margin of eye and converging in obtuse triangle on apex of clypeus. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate flat, shiny, with several small, setose punctures. Labrum broadly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:53:68:63:61:42:53:47:50:50:97. Segment 3 approximately 1.3 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, impressions with row of coarse, setose punctures, apex broadly expanded. Area between coxae slightly convex, shiny with few setose punctures. Central part of rhomboidal apex elevated, mostly smooth and shiny, at top with few setose punctures, sides impressed, with coarse, dense, partly setose punctures.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR NORD and OUEST (map 22).

### REMARKS

A very distinct species. Its coloration with completely black pronotal and elytral discs and explanate margin of elytra with broad humeral spots and extremely broads posterolateral spots occupying whole apex of the margin is unique. *Cassida tenax* SP. has also completely black pronotal and elytral discs but differs in basal part of explanate margin of pronotum black and explanate margin of elytra completely black except reddish extreme margin. *C. currax* SP. and black aberration of *C. trossula* SP. differ in explanate margin of elytra with yellow fenestrate spots and black basal parts of explanate margin of pronotum.

MATERIAL EXAMINED

MADAGASCAR NORD: – Montagne d'Ambre, Les Roussettes, 1100 m, II 1959, 1 ex., P. SOGA [DBET]. – Mt. d'Ambre, Juillet, 1 ex. [DBET]. – Mt. d'Ambre, 1 ex. [DBET]. MADAGASCAR OUEST: – Beloka, 3 ex. [MNHN].

### Cassida quadricolorata BOROWIEC, 1999 (figs. 167-168, map 22)

Cassida quadricolorata Borowiec, 1999 b: 462.

TYPE MATERIAL

Holotype: MADAGASCAR OUEST: «Andranomandevy, Didy 1039 m, Ambatenaiazaka, X 56, ER » [MNHN].

# DESCRIPTION

Length: 5.3 mm, width: 4.2 mm, length of pronotum: 1.8 mm, width of pronotum: 3.4 mm, length/width ratio 1.26, width/length ratio of pronotum: 1.89. Body elongate-oval (fig. 167).

Pronotum uniformly yellow. Scutellum reddish-brown. Elytral disc with yellow, yellow-green, reddish-brown and black pattern. Yellow is marginal interval and necklace-shaped sculpture in basal part of elytra; yellow-green is transverse irregular sculpture in 3/4 elytral length; reddish-brown forms transverse band between anterior and posterior sculptures; black occupies submarginal interval, anterodorsal part of humeral calli and area between posterior sculpture and submarginal row; on black parts there are some lighter, brownish-black areas. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-8 yellow, segment 9 yellow with slightly infuscate apex, segments 10-11 black except yellow apex of ventral side of the last segment.

Pronotum broad, approximately 1.9 times wider than long, elliptical, with maximum width in anterior 2/5 length, sides angulate. Disc slightly depressed, indistinctly bordered from explanate margin, with well separated part above head, on sides on border line between disc and explanate margin with small, round impression. Surface of disc smooth and glabrous. Explanate margin subhorizontal, its surface smooth and glabrous.

Scutellum triangular, with obtuse apex, without punctures or sulci. Base of elytra moderately wider than base of pronotum, humeral angles distinctly protruding anterad, subacute, margin behind humerus not emarginate. Disc moderately convex, without tubercles, but with two figures of elytral relief; the first forms necklace-shaped sculpture in basal part of elytra, the second forms transverse, irregular band in 3/4 length of elytra. Postscutellar impressions present, bordered externally by the first figure of elytral relief. Punctation of disc regular, but rows partly broken by elytral relief. Punctures moderately coarse, in sutural half of disc dense with distance between punctures approximatelyas wide as puncture diameter or slightly narrower, in lateral part of disc punctures sparser with distance between them approximatelytwice wider than puncture diameter. Intervals approximatelytwice wider than rows, mostly flat, only second interval between anterior and posterior sculpture slightly elevated. Marginal interval approximatelytwice wider

than submarginal one. Punctures in marginal row approximatelytwice coarser than in submarginal one, disposed regularly. Explanate margin broad, slightly wider than half width of disc of each elytron, subhorizontal, impunctate. Whole surface of disc and explanate margin glabrous. Apex of elytral epipleura bare.

Clypeus narrow, slightly longer than wide, flat, impunctate, glabrous; clypeal lines very fine, visible only in apical part of clypeus. Labrum emarginate to 1/5 length. Antennae moderately elongate, length ratio of antennal segments: 100:50:67:60:53:4 0:47:33:37:43:87. Segment 3 approximately1.34 times longer than 2, segment 4 only slightly shorter than 3.

Prosternal collar short, prosternal process strongly expanded apically, its apex with few punctures and irregular sulci.

Claws large, with large basal tooth.

DISTRIBUTION MADAGASCAR OUEST (map 22).

### REMARKS

Elytral coloration and sculpture of *C. quadricolorata* are unique and it has no relatives in Madagascan fauna.

MATERIAL EXAMINED No additional material.

# Cassida rimosa (BOHEMAN, 1854)

(figs. 169-170a, map 22)

Aspidomorpha rimosa Вонеман, 1854: 290. Cassida rimosa: Вонеман, 1856: 143, 1862: 344. – Gemminger and Harold, 1876: 3657. – Weise, 1910: 505. – Borowiec, 1999 a: 277. Coptocycla rimosa: Spaeth, 1914: 130, 1915: 152.

Coptocycla madagassa WEISE, 1910: 482, 506. - SPAETH, 1915: 152 (as syn. of rimosa).

Coptocycla plicaticollis SPAETH, 1914: 130 (nomen nudum).

Coptocycla plicaticollis SPAETH, 1915: 152. - BOROWIEC, 1999 a: 277 (as syn. of rimosa).

### TYPE MATERIAL

Holotype of Cassida rimosa: MADAGASCAR: « Madagascar, Goud. » [ZMHU].

5 syntypes of *Coptocycla plicaticollis*: MADAGASCAR CENTRE « Tananarivo, Mahatsinjo » [MM].

Location of type of *Coptocycla madagassa* is unknown but according to the original description its conspecifity with *Cassida rimosa* is undoubtful.

### DESCRIPTION

Length: 5.0-6.0 mm, width: 4.15-4.75 mm, length of pronotum: 1.7-2.0 mm, width of pronotum: 3.1-3.45 mm, length/width ratio 1.18-1.28, width/length ratio of pronotum: 1.66-1.83. Body subpentagonal with maximum width in 1/3 length then moderately converging posterad (fig. 169-170).

Pronotal disc completely black or with lateral lobes partly or completely yellow, black pronotal spot in front of head often prolongate to small triangle on explanate margin. Explanate margin yellow. Scutellum usually black but in specimens with brown dorsum yellow. Elytral disc in most specimens completely black except yellow middle of marginal interval and extreme apex. Occasionally disc at top brown and gradually darker on sides. Explanate margin in the most specimens yellow with broad, black humeral and posterolateral spots, the spots extending to lateral edge of elytra and only humeral angle narrowly yellow to brown. Occasionally posterolateral spot absent (= *Cassida plicaticollis* SPAETH). Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-6 yellow, last five segments gradually infuscate with three apical segments usually black except yellowish apex of ventral side of last segment, sometimes only three or four last segments darkened.

Pronotum slightly regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc slightly convex, distinctly separated from explanate margin by a deep sulcus. Surface of disc except area above head and lateral lobes with regular longitudinal striation but shiny. Area above head granulate or granulate and shortly striate, irregular, lateral lobes with only fine sculpture. Explanate margin shallowly and densely punctate, surface appears slightly irregular, shiny, transparent, with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subangulate. Disc irregularly convex in profile (fig. 170a), with high H-shaped elevation in postscutellar area and deep scutellar and principal impressions surrounded by elevated interspaces and intervals. Disc at top strongly sculptured. Anterior branches of H-shaped elevation surrounding postscutellar impressions, posterior branches prolongate into elevated second interval, also fourth interval in the middle and sixth interval on slope tends to form shorter or longer longitudinal fold. The longitudinal folds connected by several transverse folds. Punctation regular, elytral sculpture only slightly disturbed the regularity of rows, moderately coarse but very dense, punctures in rows mostly touching each other. Marginal row distinct, its punctures only slightly coarser than punctures in central rows, dense with interspaces mostly narrower than punctures. Intervals mostly well marked, partly disturbed by elytral relief, in sutural half of disc narrower than rows, on sides as wide as rows. Marginal interval well marked on whole length, as wide as neighbouring rows, humeral and lateral folds narrow but distinct. Surface of disc appears shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly more than three times narrower than disc. Surface of explanate margin as coarse and dense punctate as disc, appears irregular, punctures along border of disc tend to form short, transverse grooves. Apex of elytral epipleura mostly glabrous only apical edge of elytra with row of very short setae.

Eyes large, gena obsolete. Clypeus moderately long, slightly longer than wide, frontal grooves fine, converging in regular triangle. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate flat, smooth and shiny, with several small, setose punctures. Labrum narrowly emarginate to 1/6 length. Antennae slim, segments 9-10 approximately 1.2

times as long as wide. Length ratio of antennal segments: 100:50:73:60:73:63:63:55: 60:65:122. Segment 3 approximately 1.5 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, moderately impressed along lateral margins, impressions with row of setose punctures, very broad apically. Area between coxae flat, shiny. Central part of rhomboidal apex elevated, mostly smooth and shiny, at top with few coarse, setose punctures, sides impressed with few setose punctures.

Claws with large basal tooth. Spermatheca (fig. 256).

### DISTRIBUTION

MADAGASCAR CENTRE and Est (map 22).

### Remarks

Very distinct species. Almost completely black pronotum and elytra, black humeral and posterolateral spots on explanate margin of elytra and pronotal disc with regular longitudinal striation distinguished this species from all Madagascan members of the genus *Cassida*. *Cassida sanguinicollis* (SP.) belongs probably to the same group of species and have pronotal disc with striation and explanate margin with humeral and posterolateral spots but differs in pronotal disc mostly red and elytral disc with eight yellow elevated spots. Form of *C. rimosa* with only humeral spot is similar to black form of *C. mariaeadelheidae* SP. but it differs in smaller size (length below 4.6 mm), pronotal disc without striation, and stouter antennae with only two apical segments black. Mostly black dorsum with black humeral and posterolateral spots on explanate margin of elytra has also *C. pusio* SP. but it is a member of different group of species and differs in almost circular body with base of elytra not or only slightly wider than pronotum, pronotal punctation tends to form short, longitudinal grooves but never distinctly striate, posterolateral spot on explanate margin very broad extending to suture and claws with small basal tooth.

### MATERIAL EXAMINED

MADAGASCAR CENTRE: – Andringitra, Vohidray, 3 km SSE Amboarafibe, 1500-1600 m, 8-9 IV 2001, 1 ex., BULIRSCH [DBET]. – Antanarivo distr., Manankazo env., 11-12 XI 1995, 1 ex., I. JENIS [DBET]. – Antanarivo distr., Manankazo env., 28-30 XI 1997, 1 ex., J. STOLARCZYK [MO]. – Mahatsinjo, 3 ex. [IRSN, DBET]. – Mahatsinjo, 1914, 1 ex., E. ANDRE [MNHN].

MADAGASCAR EST: – Cote est, 1 ex.[MNHN]; – Didy, 1 ex. [DBET]. – Fianarantsoa, Ranomafana env., 29 XI-1 XII 1995, 2 ex., JENIS [MS]. – Maromiza n. Perinet, 950-1150 m, 8-10 I 1995, 2 ex., J. JANAK [MS]. – Moramanga, 1 ex. [SD]. – Moramanga, Andasibe vill., II 1971, 2 ex., J. THIEL [JB, LS]. – Moramanga, Andasibe, vic. Anevoka, Forest Pluviale de Maromitza NR, 950-1150 m, 5-12 XI 2004, 1 ex., RANDRIAMANAITRA [SMNS]. – Moramanga Prov., Périnet, 13 I 1938, 1 ex., 1 II 1938, 2 ex., B. KRECZMER [DBET]. – Perinet, 7-8 IX 1989, 1 ex., L. BARTOLOZZI & S. TAITI [MZUF]. – Ranomafana NP, nr. Ranomafana vill., 26-31 I 2007, 1 ex., M. TRÝZNA [LS]. – Route d'Anosibe, 1 III 1972, 1 ex. [BB]. – Toamasina distr., Antsahatsaka, env., 9-11 XII 1997, 1 ex., J. STOLARCZYK [DBET].

MADAGASCAR: – Madagascar, imt. austr., 1 ex., HILDEBRANDT [ZMHU]. – Madagascar, 4 ex. (2 MRAC,1 ZMHU, 1 DBET). – Madagascar, VII, 1 ex. [MNHN]. – Madagascar, 1893, 1 ex. [DBET]. – Madagascar 3 ex., F. SIKORA [IRSN].

# Cassida rogezensis n. sp.

(figs. 171-172, map 23)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Madagascar, Rogez, II 1932, A. Segrig » [DBET].

# DESCRIPTION

Length: 6.1 mm, width: 5.2 mm, length of pronotum: 2.1 mm, width of pronotum: 3.8 mm, length/width ratio 1.17, width/length ratio of pronotum: 1.81. Body almost circular (fig. 171).

Pronotum and scutellum yellow. Disc of elytra rusty yellow, at postscutellar point with large, round, black spot, explanate margin of elytra yellow. Clypeus, thorax, abdomen and legs yellow. Antennae with segments 1-8 yellow, segment 9 yellow with infuscate apex, segments 10-11 black.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, only on sides separated from explanate margin by short furrow, lateral lobes not separated, area above head indistinctly. Surface of smooth, shiny but without mirror brilliance. Explanate margin smooth and shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles moderately protruding anterad, angulate. Disc almost irregularly convex in profile, with well marked postscutellar hump and deep postscutellar impressions (fig. 172). Top of disc with low but well marked H-shaped elevation. Punctation coarse and very dense, punctures almost touching each other, interspaces linear. In basal triangle and on apex punctures arranged mostly irregularly, on top of disc and laterally form regular rows. Marginal row distinct, with dense punctures, approximately twice coarser than punctures in central rows. Intervals linear, second interval distinctly elevated but surface of disc without irregular folds. Marginal interval well marked in whole length but moderately broad, as wide as submarginal row and submarginal interval combined, without humeral or lateral folds. Surface of intervals slightly shiny but without mirror brilliance. Explanate margin moderately declivous, broad, in the widest part slightly more than three times narrower than disc. Surface of explanate margin with shallow but very dense punctation, appears irregular, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena obsolete. Clypeus as long as wide, frontal grooves fine, running close to eye margin and converging in regular triangle. Along external sides of clypeal

triangle with row of short setae. Surface of clypeal plate slightly convex, smooth and shiny. Labrum narrowly emarginate to 1/4 length. Antennae moderately slim, segments 9-10 approximately 1.4-1.5 times as long as wide. Length ratio of antennal segments: 100:58:71:61:58:55:58:52:55:58:100. Segment 3 approximately 1.2 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae broad, strongly expanded apically, area between coxae almost flat, smooth and shiny, central part and sides of rhomboidal apex flat, with few longitudinal striae and sparse, fain, setose punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR EST (map 23).

REMARKS

Cassida rogezenis belongs to the group of species characterized by the following combination of characters: body short oval, ground colour of dorsum in fully sclerotized specimens rusty yellow, pronotum always without dark pattern, elytra without distinct pattern or it forms areolae around punctures and more or less distinct U-shaped figure or postscutellar spot of indistinct borders, explanate margin unicolorous or on underside with more or less distinct humeral spot, base of elytra distinctly wider than pronotum, pronotum with broadly rounded sides, elytral disc with more or less distinct H-shaped elevation, punctation coarse and dense, intervals mostly linear, second interval at least in 2/3 length distinctly elevated. The group comprises also Cassida lateritia FAIRM., C. lateritiodes n. sp., and C. pseudolateritia n. sp. C. rogezensis is the most distinct species, the only with length above 6 mm and postscutellar elevation with large, round, black spot. C. lateritioides differs in distinct elytral pattern forming more or less distinct U-shaped figure on elytral disc and elytral sides slightly more converging posterad. C. pseudolateritia differs in partly black ventrites, elytra with dark, brown to black pattern, in palest form forming at least short humeral spot on underside of explanate margin, in the most common form forming dark areolae around punctures, partly coalescent, particularly on sides of disc, slope and along suture, and more or less visible humeral spot. C. lateritia differs in size below 5.1 mm, dorsum uniformly rusty yellow, and partly black ventrites. Similar pattern with dark spot on postscutellar elevation have species close to C. senicula (SP.) but they differ in mostly irregular elytral punctation.

MATERIAL EXAMINED No additional material.

# Cassida rubromaculata Spaeth, 1918

(figs. 173-174, map 23)

Cassida rubromaculata Spaeth, 1918: 29. - BOROWIEC, 1999 a: 279.

### TYPE MATERIAL

Holotype: MADAGASCAR NORD: « Amber Geb., MOSER don. 15 » [MM].

# DESCRIPTION

Length: 5.4-5.9 mm, width: 4.5-4.6 mm, length of pronotum: 1.95-2.1 mm, width of pronotum: 3.35-3.45 mm, length/width ratio 1.20-1.30, width/length ratio of pronotum: 1.64-1.76. Body short-oval, males slightly stouter than females (fig. 173).

Basal 2/3 of pronotum black or black to gradually paler on sides, reddish brown, anterior 1/3 length yellow. Scutellum black or reddish brown. Elytral disc black, on each elytron with very large, reddish spot broad in anterior half of disc and on slope, narrow in the middle, in some specimens the constriction is so narrow that elytron appears two spotted. Explanate margin mostly black with yellow humeral angle, yellowish-brown anterior 1/3 of elytral edge, and yellowish posterior 1/3 of the explanate margin. In the middle of border region between disc and explanate margin large, is elevated, round yellow spot centrally with very coarse black puncture. Clypeus yellow. Prosternal central part of collar and prosternal process black, meso- and metathorax mostly black except yellow lateral plates. Abdomen yellow, or in the middle more or less infuscate. Legs yellow, bases of femora slightly infuscate. Antennae yellow, two apical segments black except yellowish apical ventral side of last segment.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc slightly convex, with area above head placed distinctly lower than other parts of disc, sides in anterior and basal part separated from explanate margin by short and deep sulci. Whole surface of disc microreticulate, dull, basal part with very fine and sparse punctation, which tends to form longitudinal striation. Explanate margin with very shallow indistinct punctation, yellow parts transparent with honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin without crenulation, humeral angles moderately protruding anterad, subangulate. Disc strongly convex in profile, with top in postscutellar area, and very low H-shaped elevation in anterior part surrounding well marked postscutellar impressions. Principal impression shallow but distinct, small and round. Punctation moderately coarse, regular on whole disc, interspaces in rows from slightly narrower to as wide as puncture diameter. Punctures in submarginal row crossing yellow spot at border of disc and explanate margin distinctly coarser than punctures in central rows. Marginal row distinct, interrupted by yellow median spot, its punctures sparse but much coarser than punctures in central rows. Intervals well marked, twice to thrice wider than rows. Marginal interval well marked but not wider than submarginal row, humeral fold absent, lateral fold marked as a part of elevated yellow central spot. Surface of disc microreticulate, dull. Explanate margin moderately declivous, moderately broad, in the widest part four times narrower

than disc. Surface of explanate margin shallowly but coarsely and densely punctate, appears slightly irregular. Apex of elytral epipleura with sparse, short setae.

Eyes large, gena obsolete. Clypeus broad, 1.2-1.3 times as wide as long, frontal grooves distinct, running in distance of margin of eye and on apex of clypeus converging in obtuse triangle. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate flat, shiny, with several small, setose punctures. Labrum shallowly emarginate to 1/6 length. Antennae moderately slim, segments 9-10 approximately as long as wide. Length ratio of antennal segments: 100:45:68:55:65:53:43:43:48:110. Segment 3 approximately 1.5 times as long as segment 2 and 1.2 times as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, shallowly impressed along lateral margins, impressions with row of coarse and setose punctures, apex broadly expanded. Area between coxae slightly convex, shiny. Central part of rhomboidal apex elevated, mostly smooth and shiny, at top with few setose punctures, sides impressed, with coarse, dense and partly setose punctures.

Claws with moderately large basal tooth.

DISTRIBUTION

MADAGASCAR NORD and SAMBIRANO (map 23).

# REMARKS

*Cassida rubromaculata* SP. with *C. sanguineoguttata* SP. forms a group of species well distinguished by elytra mostly black with red pattern. *C. sanguineoguttata* distinctly differs in pronotum mostly reddish with black only praescutellar lobe, elytral disc with 14 red, more or less round spots, explanate margin without yellow spot marked with black hole, irregular punctation of elytral disc and simple claws. *C. sanguineoguttata* is slightly larger with mean length 6.3 mm while *C. rubromaculata* has mean length only 5.7 mm. Form of *Cassida currax* SPAETH with elytral disc with large reddish spots looks at first glance similar but differs in elytral spots not constricted in the middle, smaller yellow spot on explanate margin without black central hole.

# MATERIAL EXAMINED

MADAGASCAR NORD: - Mt. d'Ambre, Fevrier, 1 ex. [DBET]. - Mt. d'Ambre, 2 ex. [DBET].

MADAGASCAR SAMBIRANO: – Mt. Tsaratanana, 1500-1800 m, 10 X 1949, 1 ex., R. PAULIAN [MNHN].

# Cassida rubroornata (BOHEMAN, 1855)

(figs. 175-176)

Coptocycla rubroornata Boheman, 1855: 413, 1856: 192, 1862: 465. – Gemminger and Harold, 1876: 3673. – Weise, 1910: 506. – Spaeth, 1914: 130.

Cassida rubroornata: BOROWIEC, 1999 a: 279.

TYPE MATERIAL

Holotype: MADAGASCAR: « Madagascar, 1834, GOUDOT » [MNHN].

DESCRIPTION

Length: 7.3 mm, width: 6.35 mm, length of pronotum: 2.25 mm, width of pronotum: 4.2 mm, length/width ratio 1.15, width/length ratio of pronotum: 1.87. Body subtriangular (fig. 175).

Pronotum mostly yellow, disc at base with large, black, square spot, anterior margin of the spot in middle with small triangular projection. Scutellum black. Disc of elytra with three coloured pattern: four large reddish spots, two at base and two on slope, black large spot behind scutellum and black small spot behind postscutellar elevation, black bands along sides and black band across middle of disc, and yellow, elevated ring at top of disc, yellow are also marginal interval, large lateral fold and extreme apex of disc. Explanate margin yellow. Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-6 yellow and segments 8-11 black, segment 7 more or less infuscate.

Pronotum almost regularly elliptical, maximum width slightly in front of the middle, sides very broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by furrow. Black spot on disc with regular, longitudinal striation but shiny. Area above head and lateral lobes shallowly impunctate and without striation. Explanate margin very shallowly punctate, appears almost regular, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with crenulation, humeral angles strongly protruding anterad, angulate. Disc irregularly convex in profile, with angulate top of convexity in postscutellar point, with moderately deep scutellar and principal impressions (fig. 176). Postscutellar area with yellow elevated ring. Postscutellar impressions surrounded by narrow folds, second interval slightly elevated. Punctation very coarse, dense, and regular but rows broken by yellow elytral relief, punctures in rows almost touching each other. Marginal row distinct, with moderately dense punctures, only slightly coarser than punctures in central rows. Intervals linear, always narrower than rows. Marginal interval well marked on whole length but narrow, only slightly wider than submarginal row, no humeral fold, lateral fold large in shape of broad relief. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, very broad, in the widest part less than three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears distinctly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena very short but well marked and as long as half length of second antennomere. Clypeus moderately broad, 1.1 times as wide as long, frontal grooves fine, running in distance to margin of eye and converging in regular triangle. Along external sides of clypeal triangle with row of small setose punctures. Surface of clypeal plate flat, smooth and shiny with few small setose punctures. Labrum narrowly emarginate to 1/4 length. Antennae slim, segments 9-10 approximately 1.3-1.4 times as long as wide. Length ratio of antennal segments: 100:54:62:58:68:52:56:48:54:58:114. Seg-

ment 3 approximately 1.15 times as long as segment 2 and only 1.1 times as long as segment 4.

Prosternal collar distinctly longer than last palpomere. Prosternal process between coxae moderately broad, moderately expanded apically, shallowly impressed along lateral margins, along margins without setose punctures, between coxae flat or slightly convex, smooth and shiny, central part of rhomboidal apex slightly convex, smooth and shiny, sides slightly impressed with few setose punctures.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR (no precise locality).

# REMARKS

Cassida rubroornata with C. laetabilis SP., C. rudicollis (SP.), and C. ultima n. sp. forms a natural group of moderately large species with pronotum of very broad sides, base of elytra much wider than pronotum, pronotal disc usually with more or less distinct longitudinal striation, distinct elytral sculpture and coarse punctation with linear intervals, ventrites uniformly yellow and antennae with apical 3-6 segments infuscate to black. C. rudicollis, C. ultima, and pale forms of C. laetabilis differ in pronotum immaculate, and elytral disc without distinct dark spots except indistinct brownish pattern on sides. C. rubroornata differs also in elytral disc with four red spots. C. ultima differs also in more circular body and distinct striation on pronotal disc. Dark form of C. laetabilis is similar but differs in large spots on elytral disc yellow or rusty yellow never red, smaller and less distinct elevation on top of elytra and usually only three last antennal segments black.

MATERIAL EXAMINED MADAGASCAR: – Madagascar, 1 ex. [DBET].

### Cassida rudicollis (SPAETH, 1915)

(figs. 183-185, map 23)

Coptocycla rudicollis SPAETH, 1914: 130 (nomen nudum). Coptocycla rudicollis SPAETH, 1915: 153. Cassida rudicollis: SPAETH, 1934: 292. – BOROWIEC, 1999 a: 279.

TYPE MATERIAL Holotype: Madagascar Centre: « Tananarive » [MM].

DESCRIPTION

Length: 5.8-7.6 mm, width: 4.9-6.3 mm, length of pronotum: 1.95-2.4 mm, width of pronotum: 3.3-4.3 mm, length/width ratio male 1.11-1.15 female 1.16-1.24, width/ length ratio of pronotum: 1.69-1.85. Males distinctly stouter than females, body outline in male subcircular (fig. 183), in female subtriangular (fig. 184).

Pronotum yellow to rusty yellow, or disc yellow to rusty yellow and explanate margin green (in this species green colour often persist also in dried specimens). Scutellum rusty yellow. Disc of elytra usually rusty yellow with paler yellow elevated parts thus elytra appear indistinctly pale maculate. Explanate margin yellow to green. In rare dark specimens pronotal disc at base with brownish spot and elytral disc along sides with brownish band and postscutellar elevation with brown stripe. Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-6 yellow and segments 8-11 black, sometimes segment 7 more or less infuscate.

Pronotum regularly elliptical, maximum width in the middle, sides very broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by furrow. Top of disc usually with irregular punctation, punctures tend to form longitudinal grooves or striation but shiny. Occasionally punctation of disc indistinct and surface of top of disc appears almost smooth. Area above head shallowly punctate without striation, lateral lobes impunctate. Explanate margin shallowly punctate, appears distinctly irregular but shiny, transparent with well visible honeycomb structure.

Base of elvtra much wider than base of pronotum, basal margin of disc without crenulation, humeral angles distinctly protruding anterad, angulate. Disc irregularly convex in profile, with angulate top of convexity in postscutellar point, with deep scutellar and principal impressions (fig. 185). Postscutellar area with distinct, high H-shaped fold, anterior branches of the fold surrounding postscutellar impressions, posterior branches prolongate into elevated second interval. Punctation very coarse and dense, regular, punctures almost touching each other. Marginal row distinct, with dense punctures, only slightly coarser than punctures in central rows. Intervals mostly linear only elevated second and partly elevated fourth intervals well marked, some interspaces form transverse folds or wrinkles paler coloured than ground colour of disc. Marginal interval well marked on whole length but narrow, only as wide as submarginal row, no humeral fold, lateral fold in shape of irregular relief. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, very broad, in the widest part less than three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears distinctly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with extremely short setae, in old specimens appear bare.

Eyes large, gena short but well marked, as long as half length of second antennomere. Clypeus broad, 1.2 times as wide as long, frontal grooves fine, running in distance to margin of eye and converging in regular triangle. Along external sides of clypeal triangle with row of small setose punctures. Surface of clypeal plate flat, smooth and shiny with few small setose punctures. Labrum narrowly emarginate to 1/4 length. Antennae slim, segments 9-10 approximately 1.3-1.5 times as long as wide. Length ratio of antennal segments: 100:48:70:63:70:61:59:52:57:65:113. Segment 3 approximately 1.5 times as long as segment 2 and only 1.1 times as long as segment 4.

Prosternal collar distinctly longer than last palpomere. Prosternal process between coxae moderately broad, moderately expanded apically, shallowly impressed along lateral margins, along margins without setose punctures, between coxae flat or slightly

convex, smooth and shiny, central part of rhomboidal apex slightly convex, smooth and shiny, sides slightly impressed with few setose punctures.

Claws with large basal tooth. Spermatheca (fig. 255).

#### DISTRIBUTION

MADAGASCAR CENTRE and Est (map 23).

### REMARKS

Cassida rudicollis with C. laetabilis SP., C. rubroornata (BOH.), and C. ultima n. sp. forms a natural group of moderately large species with pronotum of very broad sides, base of elytra much wider than pronotum, pronotal disc with more or less distinct longitudinal striation, distinct elytral sculpture and coarse punctation with linear intervals, ventrites uniformly yellow and antennae with apical 3-6 segments infuscate to black. Typical forms of C. laetabilis and C. rubroornata differ in dark pattern forming brown or black spot on pronotum and brown to black pattern on elytral disc. C. rubroornata differs also in elytral disc with four red spots. Pale form of C. laetabilis is very similar but differs in at least base of pronotum and sides of elytral disc with brownish pattern. C. ultima looks very similar but differs in more circular body with sides of elytra less converging posterad, more distinct pronotal striation, base of elytra slightly less wider than pronotum with slightly less angulate humeri, and more distinct sculpture on slope of disc.

# MATERIAL EXAMINED

MADAGASCAR CENTRE: – Antananarivo distr., Andasibe (Maromizaha), 20-13 II 1995, 1 ex., I. JENIS [MS]. – La Mandraka, 1 ex. [DBET].

MADAGASCAR EST: - route d'Anosibé, XII 1961, 1 ex. [MRAC]. - Forêt de Fito, 1 ex. [MRAC]. - Moramanga, 1 ex. [ZMHU]. - Moramanga env., 18°57'11.1"S, 48°16'13.0"E, 13 - 16 I 2007, 1 ex., F. PAVEL [FP]. - Moramanga, Andasibe vill., II 1971, 2 ex., J. THIEL [JB, VK]. - Moramanga Prov., Périnet, 19 I 1938, 1 ex., 26 I 1938, 1 ex., 28 I 1938, 1 ex., 29 I 1938, 1 ex., 1 II 1938, 1 ex., B. KRECZMER [DBET]. - Perinet, 30 IV 1990, 1 ex., C. RAHARIMINA [MZUF]. - Perinet, Sahamaloto, 13-17 I 1949, 1 ex. [MNHN]. - Perinet, 1 ex. [LM]. - Rogez env., 1 ex. [DBET]. - Tamatave [= Toamasina], 2 ex. [MNHN]. - Tamatave distr., Moramanga env., 14-18 XII 1995, 1 ex., I. JENIS [MS].

MADAGASCAR: - Madagascar, 3 ex. [DBET].

### Cassida rufomicans FAIRMAIRE, 1904

(figs. 186-188, map 24)

Cassida rufomicans FAIRMAIRE, 1904: 271. – WEISE, 1910: 505. – BOROWIEC, 1999 a: 279. Cassida (Cassida) rufomicans: Spaeth, 1914 b: 116. Cassida rugosicollis Spaeth, 1905: 106, 1914: 116 (as syn.), 1915: 154 (as syn.). – WEISE, 1910: 505. TYPE MATERIAL

9 syntypes of *Cassida rufomicans*: MADAGASCAR: « Madagascar » [5 MNHN, 4 MM].

Holotype of *Cassida rugosicollis*: MADAGASCAR: «Madagascar, 1902» [5 MNHN, 4 MM].

# DESCRIPTION

Length: 5.5-6.25 mm, width: 4.6-5.2 mm, length of pronotum: 2.0-2.15 mm, width of pronotum: 3.6-4.05 mm, length/width ratio 1.17-1.23, width/length ratio of pronotum: 1.76-1.93. Body almost hemispherical (fig. 186).

Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc uniformly yellowish brown or with darker brown pattern of irregular band along sides, stripes on second interval, small spots between base of elytra and postscutellar impression, some irregular spots on central part of disc, partly coalescent with lateral band, stripes in apical part of suture; explanate margin yellowish brown. Clypeus, ventrites, and legs yellowish brown; antennal segments 1-6 yellowish brown, segment 7 more or less infuscate, segments 8-11 black.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc depressed, without border between disc and explanate margin, with slightly separated part above head. Surface of disc with regular longitudinal striation, except finely punctate area above head. Explanate margin finely and shallowly but densely punctate, its surface in some specimens appears slightly irregular in other specimens almost regular. Whole surface of disc and explanate margin slightly glabrous, honeycomb structure well visible.

Scutellum triangular, with transverse sulcus. Base of elytra moderately wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc strongly and regularly convex, without tubercles, but with moderately high H-shaped elevation in postscutellar area (fig. 188). Postscutellar and principal impressions distinct, deep. Anterior branches of the H-shaped elevation surrounding postscutellar impressions, posterior branches form slightly elevated second interval, also fourth interval in posterior half of disc on short distance elevated. Punctation of disc very coarse and dense, regular, only in posterolateral part of disc irregular. Punctures in rows almost touching each other. Marginal row distinct, with coarse and dense punctures, distinctly coarser than punctures in lateral rows. Intervals linear, only second elevated interval distinct on almost whole length. Marginal interval distinct, broad, three to four times wider than lateral intervals. Explanate margin broad, strongly declivous, four times narrower than disc, its surface with shallow, coarse and dense punctures, appears irregular. Whole surface of elytra slightly glabrous. Apex of elytral epipleura with row of very short setae.

Clypeus very broad, approximately 1.6 times as wide as long. Clypeal lines fine, converging in obtuse triangle, area between eye and clypeal line with row of setose punctures. Clypeal plate flat, smooth and shiny with few setose punctures. Labrum broadly and shallowly emarginate to 1/6-1/5 length. Antennae moderately slim, segments 9 and 10 approximately 1.2-1.3 times as long as wide, length ratio of antennal

1

segments: 100:56:61:58:53:44:50:50:53:56:105. Segment 3 only 1.1 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as last palpomere, prosternal process broad, strongly expanded apically, deeply impressed along sides, impressions with row of erect setae. Area between coxae smooth and shiny, expanded apex in the middle elevated, shiny with few setose punctures, sides deeply impressed, with slightly irregular surface and setose punctures.

Claws with moderately large basal tooth. Spermatheca (fig. 259).

DISTRIBUTION

MADAGASCAR CENTRE, NORD and OUEST (map 24).

# REMARKS

*Cassida rufomicans* is well distinguished by its almost hemispherical body and yellowish-brown dorsal groundcolour. *C. madagascarica* Borow. at first glance looks the most similar but differs in larger size (length 7.4 mm versus 5.5-6.25 mm), more impressed postscutellar impressions, higher postscutellar elevation and less regular punctation of elytral disc, particularly in posterolateral part of elytral disc. *C. rubromaculata* and *C. sanguineoguttata* have similarly convex elytral disc but differ in elytral disc with red spots on black background.

MATERIAL EXAMINED

MADAGASCAR CENTRE: - Madagascar centr., 2 ex. [DBET]. - Ampolomita, Belanitra, V 1956, 1 ex., P. GRIVEAUD [MNHN].

MADAGASCAR NORD: – Mont d'Ambre, X, 5 ex., XII, 2 ex. [DBET]. MADAGASCAR OUEST: – Ampijoroa, Tsaramandroso, 1 ex. [MNHN].

# Cassida rugipennis BOHEMAN, 1855

(figs. 189-191, map 25)

Coptocycla rugipennis Вонеман, 1855: 405, 1856: 191, 1862: 463. – Gemminger and Harold, 1876: 3673. – Weise, 1910: 506. – Spaeth, 1914: 130. Cassida rugipennis: Borowiec, 1999 a: 280. Cassida plicatula Fairmaire, 1904: 271. – Weise, 1910: 505. – Borowiec, 1999 a: 274, n. syn. Cassida (Cassida) plicatula: Spaeth, 1914: 116.

TYPE MATERIAL

Syntype of *Coptocycla rugipennis*: MADAGASCAR: « Madag. » [NRS]. Holotype of *Cassida plicatula*: MADAGASCAR: « Madagascar, coll. Leon Fairmaire 1906 » [MNHN].

# DESCRIPTION

Length: 7.75-10.0 mm, width: 6.9-9.0 mm, length of pronotum: 2.6-3.4 mm, width of pronotum: 4.55-6.0 mm, length/width ratio 1.05-1.13, width/length ratio

of pronotum: 1.69-1.79. Body almost circular, males (fig. 189) slightly stouter than females (fig. 190).

Pronotum with yellow to rusty yellow. Scutellum yellow to rusty yellow. Disc of elytra yellow to rusty yellow, uniform or with maculation. In the most maculate specimens occur four small spots at basal margin of disc, 4-5 spots on each side of suture, large round spot at lateral fold and 4-5 small spots in central part of slope. If some spots are reduced then usually occur spot at lateral fold , 1-2 spots along suture and single spot at base of elytra, but all intermediate between strongly maculate and immaculate forms have been observed. Northern populations have usually rusty to brown spots and thus they are indistinctly distinguished from background colour, while in southern populations have black and thus well marked spots. Explanate margin yellow. Clypeus, ventrites and legs uniformly yellow. Antennae yellow, last segment more or less infuscate, often antennae uniformly yellow.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc slightly convex, on sides separated from explanate margin by shallow impression. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc without crenulation, humeral angles moderately protruding anterad, rounded. Disc strongly but almost regularly convex in profile, with top of convexity in postscutellar point, with well marked scutellar and principal impressions, in northern populations impressions deeper than in southern populations (fig. 191). Postscutellar area with indistinct, broad H-shaped fold, in southern populations fold hardly marked. Punctation fine but in northern populations placed in round impressions and appear coarser, while in southern populations almost completely regular, in northern populations regularity of rows partly disrupted by transverse folds. Punctures in rows dense, interspaces from slightly narrower to slightly wider than puncture diameter. Marginal row distinct, with dense punctures, distinctly coarser than punctures in central rows. Intervals in southern populations regular, in northern populations partly disrupted by elevated folds, in southern populations intervals when marked than twice to thrice wider than rows, in northern populations as wide as to slightly wider than rows. Marginal interval well marked on whole length, broad, in anterior half slightly wider than lateral intervals, with well marked humeral and lateral folds. Surface of intervals glabrous, smooth and slightly dull to slightly shiny. Explanate margin moderately declivous, broad, in the widest part less than three times narrower than disc. Surface of explanate margin shallowly and moderately dense punctate, in northern populations appears slightly irregular, in southern populations almost regular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with dense, long pubescence.

Eyes large, gena hardly visible. Clypeus shirt and broad, 1.6-1.7 times as wide as long, strongly elevated, in some specimens angulate before antennal insertions, frontal grooves fine, indistinct, running close to margin of eye and converging in triangle. Clypeal triangle with more or less distinct median sulcus. Along external sides of clypeal triangle with row of small setose punctures. Surface of clypeal plate smooth and shiny, covered with moderately dense, long hairs. Labrum shallowly emarginate to 1/6 length.

Antennae slim, segments 9-10 approximately 1.6 times as long as wide. Length ratio of antennal segments: 100:48:96:84:82:64:68:58:60:60:100. Segment 3 approximately twice longer than segment 2 and only 1.1 times as long as segment 4.

Prosternal collar very long, twice longer than last palpomere, anterior part of the collar depressed, partly cover mouth parts. Prosternal process between coxae moderately broad, strongly expanded apically, not impressed along lateral margins, between coxae flat, central part of rhomboidal apex slightly impressed. Whole surface of prosternal collar and prosternal process without special sculpture but covered with long, moderately dense hairs.

Claws simple. Spermatheca (fig. 260).

### DISTRIBUTION

MADAGASCAR CENTRE, EAST, NORD and SAMBIRANO (map 25).

# REMARKS

Northern populations (Antsiranana, Cap d'Ambre) differ from southern ones (Antananarive) in elytra usually without distinct black spots and elytral folds much more distinct, while southern populations has posterior half of disc usually with completely regular surface. Between these populations all transitional forms of elytral maculation and sculpture have been observed.

Cassida rugipennis BOH. with C. contracta (SP.) and C. ambrica (BOROW.) forms a group of species with large body (length over 7 mm), surface of elytra not rugose, simple claws, and uniformly yellow ventrites. C. ambrica distinctly differs in explanate margin of elytra with black humeral and posterolateral spots (immaculate in both relatives), being almost horizontal, and forming shallow gutter (moderately or strongly declivous in both relatives). C. contracta looks at first glance very similar but differs in following characters: dorsum always immaculate (often with dark spots in C. rugipennis), sculpture of elytral disc forming elevated fields (at most with folds), anterior margin of pronotum almost straight (regularly curved), antennal segment 3 short, only 1.2 times as long as segment 2 (twice longer), clypeal plate not elevated (strongly elevated to angulate), prosternum without long hairs (pubescent), and apex of elytral epipleura unpubescent (pubescent).

## MATERIAL EXAMINED

MADAGASCAR CENTRE: - Madagascar centr., 1 ex. [DBET]. - Tananarive, 7 ex. [ZMHU, MM, DBET].

MADAGASCAR EST: – S de la baie d'Antongil, 1 ex. [MM]. – Bezanozano, 1 ex. [ITZ]. – Fampanambo, I 1961, 1 ex., II 1961, 2 ex., J. VADON [2 MRAC, 1 DBET]. – Fenerive, 2 ex., E. PERROT [MM]. – Forêt de Fito, 2 ex. [1 MRAC, 1 DBET]. – Forêt de Fito, VI-VII 1897, 1 ex. [DBET]. – Maroantsetra, 1 ex. [HNHM] – Maroantsetra, II 1919, 1 ex. [DBET]. – Marojejy NP, 1-4 XI 2005, 1 ex., J. ŠŤASTNÝ [LS]. – Marovalo, Rogez, II 1941, 1 ex., ABADIE [MM]. – Rogez, 4 ex. [2 LS, 2 NMP]. – Sihanaka, 1 ex., LE MOULT [IRSN]. – Tamatave [= Toamasina], 3 ex. [MNHN, DBET]. – Tsitondrona, IV 1952, 1 ex. [DS].

MADAGASCAR NORD: – Amber Mts., 6 ex. [MNHN]. – Ambodimanga piste, Anivoranokely, 4 IX 1954, 1 ex. [MNHN]. – Cap d'Ambre, 2 ex., F. SCHNEIDER [MM]. – Diego Suarez [= Antsiranana], 12 ex. [MM]. – Maromandia, 21 ex. [3 LS, 18 NMP].

MADAGASCAR SAMBIRANO: – Ambanja, 1 ex. [NMP]. – Haute-Vallée de Sambirano, 6 ex. [2 LS, 4 NMP].

# Cassida sanguineoguttata SPAETH, 1915

(figs. 177-178, map 24)

Cassida (Cassida) sanguineoguttata SPAETH, 1914: 116 (nomen nudum). Cassida sanguineoguttata SPAETH, 1915: 140. – BOROWIEC, 1999 a: 280.

TYPE MATERIAL

4 syntypes: MADAGASCAR NORD: « Diego Suarez, coll. Donckier » [MM].

# DESCRIPTION

Length: 5.7-6.9 mm, width: 4.8-5.85 mm, length of pronotum: 2.1-2.4 mm, width of pronotum: 3.65-4.35 mm, length/width ratio 1.18-1.21, width/length ratio of pronotum: 1.74-1.82. Body almost hemispherical, elytra widest in 1/3 length (fig. 177).

Pronotum yellowish-red, only praescutellar lobe brown to black, sometimes with brown stripe along middle of disc. Scutellum brown to black or reddish basally and gradually darker apically. Elytral disc reddish brown to brownish-black with 16 reddish yellow spots: two very small near apex of scutellum, one large on each base of elytron, two very large at top of disc, four large round across slope, two transverse at apex, one below humerus and one on lateral fold (fig. 177). Explanate margin brownish black, only humeral angle and lateral edge of elytra narrowly yellowish-brown or yellowish red. Clypeus and ventrites uniformly yellowish to yellowish-red. Legs yellow. Antennae mostly yellow, two apical segments more or less infuscate but never black.

Pronotum irregularly elliptical, with maximum width slightly behind the middle, anterior margin in the middle straight or shallowly emarginate, sides very broadly rounded. Disc moderately convex, with area above head placed slightly lower than other parts of disc, sides in anterior and basal part separated from explanate margin by short by deep sulci. Whole surface of disc with moderately coarse and dense punctation, interspaces narrower than puncture diameter. Punctures tend to form longitudinal grooves and surface appears slightly wrinkled but not longitudinally striated. Explanate margin with punctation as coarse and dense as on disc, surface appears irregular, honeycomb structure hardly visible. Whole surface of pronotum slightly dull.

Base of elytra much wider than base of pronotum, basal margin with crenulation, humeral angles moderately protruding anterad, subangulate. Disc very convex in profile, with top in postscutellar area, without H-shaped elevation, with shallow postscutellar impressions not surrounded by elevations, principal impression absent. Punctation moderately coarse, completely irregular except regular submarginal and marginal rows.

Punctures on dark parts of disc moderately coarse and dense, disposed regularly with interspaces mostly narrower than puncture diameter. Punctures on elevated pale spots slightly coarser than punctures on dark parts of disc, disposed irregularly thus elevated spots party impunctate. Marginal row distinct, interrupted by pale humeral and lateral spots, its punctures sparse but much coarser than punctures in central rows. Marginal interval well marked, in posthumeral part twice wider, in apical half as wide as marginal row. Surface of disc microreticulate, dull. Explanate margin strongly declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin impunctate, only with slightly irregular sculpture, dull. Apex of elytral epipleura with sparse, short setae.

Eyes moderately large, gena well marked and as long as last palpomere. Clypeus broad, 1.3 times as wide as long, slightly elevated, frontal grooves distinct, running in distance of margin of eye and converging in regular triangle. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate microreticulate but shiny, with several small, setose punctures. Labrum shallowly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 slightly longer tan wide. Length ratio of antennal segments: 100:54:77:71:69:60:60:57:57:63:120. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar longer than last palpomere. Prosternal process broad, shallowly impressed along lateral margins, impressions with row of coarse, setose punctures, apex broadly expanded. Area between coxae flat, shiny with few small setose punctures. Central part of rhomboidal apex elevated, mostly smooth and shiny, at top with few setose punctures, sides impressed, with coarse, dense, partly setose punctures.

Claws simple. Spermatheca (fig. 262).

DISTRIBUTION MADAGASCAR NORD (map 24).

# REMARKS

*Cassida sanguineoguttata* SP. with *C. rubromaculata* SP. forms a group of species well distinguished by elytra mostly black with red pattern. The latter distinctly differs in pronotum with black basal half, elytral disc with two red, large spots, constricted in the middle, explanate margin with yellow spot marked with black hole, regular punctation of elytral disc and toothed claws. *C. sanguineoguttata* is also slightly larger with mean length 6.3 mm while *C. rubromaculata* has mean length only 5.7 mm.

# MATERIAL EXAMINED

MADAGASCAR NORD: - Diego Suarez, Montagne d'Ambre, 1 ex. [DBET]. - Mont d'Ambre, I, 1 ex., II, 1 ex., III, 4 ex., XI, 1 ex., XII, 5 ex. [3 DBET, 3 LS, 6 MNHN].

# Cassida sanguinicollis (SPAETH, 1926)

(figs. 179-180, map 24)

Coptocycla sanguinicollis SPAETH, 1926 b: 92. Cassida sanguinicollis: BOROWIEC, 1999 a: 280.

> TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar » [MM].

# DESCRIPTION

Length: 4.75 mm, width: 3.8 mm, length of pronotum: 1.55 mm, width of pronotum: 28 mm, length/width ratio 1.25, width/length ratio of pronotum: 1.81. Body subtrapezoidal (fig. 179).

Pronotal disc purple reddish, explanate margin yellow with black basal spots. Scutellum reddish. Disc of elytra black with six large yellow spots: two in anterosutural part of disc, two on slope, on below humeral callus and one on lateral fold, also apicolateral part of disc yellow. Explanate margin yellow with broad, black humeral, posterolateral and sutural spots. Humeral spots runs in distance from anterior margin of elytra, but both humeral and posterolateral spots extending to lateral edge of elytra (fig. 179). Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-6 yellow, segment 7 infuscate at apex, and segments 8-11 black.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, on whole length of sides separated from explanate margin by furrow. Surface of disc, including lateral lobes with regular striation, on top of disc longitudinal, on sides oblique, only central part of area above head punctate, without striation, but whole surface of disc shiny. Explanate margin on yellow parts impunctate, shiny, transparent with well visible honeycomb structure, on black spots with few shallow punctures.

Base of elytra much wider than base of pronotum, basal margin of disc with small crenulation, humeral angles distinctly protruding anterad, angulate to subacute. Disc almost regularly convex in profile, with deep scutellar and shallow principal impressions (fig. 180), without H-shaped fold in postscutellar area, postscutellar impressions only apically surrounded by thin elevated fold. Punctation coarse and dense, regular in both black and yellow parts of disc, interspaces from half wide to as wide as puncture diameter almost, on sides punctures partly touching each other. Marginal row distinct, with moderately dense punctures, only slightly coarser than punctures in central rows. Intervals in sutural half of disc as wide as, in lateral parts twice narrower than rows. Marginal interval well marked on whole length but narrow, only as wide as submarginal interval, humeral fold narrow, lateral fold broad. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, very broad, in the widest part less than three times narrower than disc. Surface of yellow parts of explanate margin shallowly punctate, appears irregular, on black spots with dense punctures partly forming deep transverse grooves. Whole surface of explanate margin glabrous, shiny, on yellow parts transparent with well marked honeycomb structure. Apex of elytral epipleura appears bare.

Eyes large, gena obsolete. Clypeus narrow, 1.1 times as long as wide, frontal grooves fine, converging in regular triangle. Along external sides of clypeal triangle with row of small setose punctures. Surface of clypeal plate slightly impressed, smooth and shiny with few small setose punctures. Labrum narrowly emarginate to 1/4 length. Antennae slim, segments 9-10 approximately 1.3-1.5 times as long as wide. Length ratio of antennal segments: 100:58:69:73:69:73:65:77:88:154. Segment 3 approximately 1.2 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar as long as last palpomere. Prosternal process moderately broad and moderately expanded apically, between coxae strongly impressed, along lateral margins with rows of long setae, surface with fine, oblique striation but shiny, central part of rhomboidal apex slightly convex with few setose punctures, sides impressed, with few coarse and setose punctures, irregular but shiny.

Fore claws with small basal tooth, mid and hind claws with slightly widened base but simple. Spermatheca (fig. 261).

DISTRIBUTION MADAGASCAR EST (map 24).

# REMARKS

This species has unique dorsal pattern. Body shape, sculpture and presence of humeral and posterolateral spots on explanate margin place it nears *Cassida rimosa* (BOH.) but it differs in pronotal and elytral disc completely black. *C. taediosa* BOH. belonging to the same group differs in explanate margin of elytra mostly black with yellow fenestrate spot in the middle, elytral disc uniformly black or with few indistinct, irregular, brown to reddish spots, and basal half of pronotum black.

### MATERIAL EXAMINED

MADAGASCAR EST: – Moramanga Prov., Périnet, 23 I 1938, 1 ex., B. KRECZMER [DBET]. – Fianarantsoa distr., Ranomafana env., 29 XI 1995, 1 ex., J. STOLARCZYK [MS].

### Cassida schenklingi (SPAETH, 1915) (figs. 181-182, map 26)

Coptocycla Schenklingi SPAETH, 1914: 130 (nomen nudum). Coptocycla Schenklingi SPAETH, 1915: 147. Cassida schenklingi: BOROWIEC, 1999 a: 282.

# TYPE MATERIAL

Syntype: MADAGASCAR CENTRAL: « Ost Imerina, Andranigoloaka, Rolle » [MM].

### DESCRIPTION

Length: 4.75-5.3 mm, width: 4.15-4.55 mm, length of pronotum: 1.7-1.85 mm, width of pronotum: 2.9-3.3 mm, length/width ratio 1.13-1.16, width/length ratio of

pronotum: 1.71-1.78. Body subquadrate, sides of elytra moderately converging posterad (fig. 181).

Pronotal disc black except yellow lateral lobes and two large, yellow, oval spots at base (fig. 181). Explanate margin yellow. Scutellum yellow or black. Elytral disc black with yellow relief of (32)34-38(40) elevated yellow spots of various size arranged as in fig. 181. Spots mostly separated, at most spots along suture and on sides of disc coalescent two together, the largest spot at base of elytron never coalescent with spot at top of disc thus postscutellar impressions never surrounded by yellow relief. Marginal interval mostly yellow, except partly black area below humeral callus, and in some specimens black patches laterally, punctures of marginal row partly marked with brown or black. Explanate margin mostly yellow with reddish-brown to brown humeral spots, the spots run in distance from anterior margin thus area close to humeral angle broadly yellow. Humeral spots usually gradually paler from base to apex, in some specimens almost extending to lateral edge of elytron, in other shortened, extending only to 1/3/1/2 width of explanate margin. Clypeus, thorax, abdomen and legs yellow. Antennae yellow, only last segment black.

Pronotum elliptical with maximum width slightly before the middle, sides broadly rounded. Disc slightly convex, sides and lateral lobes of disc well separated from explanate margin by a deep furrow. Surface of disc in some specimens glabrous, smooth and shiny, in other finely and sparsely punctate, sometimes punctures tend to form indistinct longitudinal striation. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with very shallow scutellar impressions, yellow elevated spots never form H-shaped figure at top of disc (fig. 182). Punctation moderately coarse, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly as wide as puncture diameter. Marginal row distinct, with sparse punctures, twice coarser than punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts of sutural half of disc as wide as on sides twice narrower than rows. Marginal interval well marked on whole length, broad, humeral fold indistinct, lateral fold distinctly elevated. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin coarsely, shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena hardly marked. Clypeus moderately narrow, approximately 1.1 times as long as wide, frontal grooves fine, converging in triangle. Area between grooves and margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate flat with shallow apical impression, smooth and shiny with few fine setose punctures. Labrum shallowly emarginate to 1/3 length. Antennae very slim, segments 9-10 approximately 1.8 times as long as wide. Length ratio of antennal segments:

100:56:64:72:67:61:67:67:72:78:139. Segment 3 approximately 1.1 times as long as segment 2 and segment 4 approximately 1.1 times as long as segment 3.

Prosternal collar slightly longer than last palpomere. Prosternal process broad, deeply impressed along lateral margins, moderately broad apically. Lateral impressions with row of setose punctures, area between coxa flat or slightly convex, smooth and shiny with few setose punctures, rhomboidal apex impressed with several setose punctures tending to form longitudinal grooves.

Claws simple.

DISTRIBUTION MADAGASCAR EST (map 26).

# REMARKS

Simple claws, black elytral disc with yellow elevated spots and presence of humeral spots place this species near *Cassida pretiosa* Borow. Only. However, it differs in black pronotal spot without yellow spots at base (with two large oval yellow spots in *C. schenklingi*), body slimmer, subtriangular in outline (stouter and subquadrate in *C. schenklingi*, L/W 1.23 to 1.13-1.16 respectively), humeral spots black, longer, almost extending to elytral edge (reddish to brown, shorter not extending to elytral edge with larger yellow part close to humeral angle in *C. schenklingi*), and spots on top of disc coalescent, forming handle-shaped figure (separated in *C. schenklingi*). Forms of *C. hova* (WEISE) with reduced posterolateral spots look also similar but differ in pronotal disc strongly longitudinally striate (smooth and shiny or indistinctly punctate and striate in *C. schenklingi*).

# MATERIAL EXAMINED

MADAGASCAR EST: – Didy, 1 ex. [DBET]. – Moramanga, Andasibe, vic. Anevoka, Forest Pluviale de Maromitza NR, 950-1150 m, 27 XI-16 XII 2006, 1 ex., J. BERG & D. BARTSCH [SMNS].

MADAGASCAR: - Maoranhohe, 1 ex. [DBET].

### Cassida sculpturipennis n. sp. (figs. 192-193, map 26)

### TYPE MATERIAL

Holotype: MADAGASCAR EST: « Madagascar-Est, dct. Sambava, R.N.XII Marojejy Ouest, 1300 m, IX-X-59, Pierre Soga » [MNHN]. – paratype: MADAGASCAR EST: « Madagascar-Est, dct. Sambava, R.N.XII Marojejy Ouest, 1600 m, XI-59, Pierre Soga » [DBET].

# DESCRIPTION

Length: 6.0-6.3 mm, width: 5.05-5.3 mm, length of pronotum: 2.05-2.1 mm, width of pronotum: 4.05-4.15 mm, length/width ratio 1.19, width/length ratio of pronotum:

.

1.98. Body short-oval, widest in 1/3 length then moderately converging posterad (fig. 192).

Pronotum yellow, disc with large black, trapezoidal basal spot with broad, yellow V-shaped figure before scutellum (fig. 192). Anterior margin of the black spot in the middle straight or slightly convex but not prolonged into triangle and not emarginate in the middle. Scutellum yellow. Elytral disc black with yellow relief of numerous elevated yellow spots of various shape arranged as in fig. 192. Spots on slope partly coalescent and forming more or less regular reticulation. Marginal interval and apex of disc yellow, punctures of marginal row not marked with brown or black. Clypeus yellow. Thorax black. Abdomen uniformly yellow. Legs yellow with brown coxa. Antennal segments 1-7 yellow, segments 8-11 ochraceous.

Pronotum elliptical with maximum width in the middle, appears more reversely trapezoidal then elliptical, sides subangulate. Disc slightly convex, sides well separated from explanate margin by short furrow, lateral lobes not separated, area above head indistinctly bordered from elevated basal part of disc. Surface of elevated part of disc fine, sparse punctation, interspaces mostly distinctly wider than puncture diameter. Sometimes punctures on sides of black spot tend to form short grooves but surface regular and shiny, never appear striate. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra moderately wider than base of pronotum, basal margin of disc with small black crenulation, humeral angles moderately protruding anterad, almost rounded. Disc slightly irregularly convex in profile, with top of convexity in postscutellar point, distinct H-shaped elevation and with well marked scutellar and principal impressions. Punctation moderately coarse, regular but regularity of rows partly disordered by yellow elytral relief. Distance between punctures in rows mostly narrower than puncture diameter. Marginal row distinct, with moderately dense and deeply impressed punctures, slightly coarser than punctures in central rows. Intervals partly disordered by elytral relief, in well marked parts as wide as rows. Marginal interval well marked on whole length, moderately broad, as wide as submarginal row and submarginal interval combined, humeral fold hardly marked, lateral fold narrow but distinct. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin shallowly but coarsely and densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with several short setae.

Eyes large, gena hardly marked. Clypeus broad, 1.2 times as wide as long, frontal grooves very fine, runnning close to margin of eye and on top of clypeal plate converging in triangle. Area between grooves and margin of eye and sides of upper margin of labrum with row of long setae. Surface of clypeal plate flat, smooth and shiny with several setose punctures. Labrum broadly emarginate to 1/5 length. Antennae slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:53:80:75:70:48:50:55:45:50:85. Segment 3 approximately 1.5 times as long as segment 2 and only slightly sorter than segment 4.

Prosternal collar shorter than last palpomere. Prosternal process moderately broad, shallowly impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa distinctly convex, smooth and shiny with few setose punctures, rhomboidal apex in the middle strongly elevated with few setose punctures, on sides impressed with few coarse, setose punctures.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR EST (map 26).

REMARKS

It belongs to the Cassida goudoti species group, the subgroup which is characterized by elytral disc black with yellow relief forming numerous convex spots. The subgroup comprises also C. goudoti (Вон.), C. andapaensis Borow., C. andohahelana n. sp., C. beondrokana n. sp., C. sculpturipennis n. sp., C. suaveola (Sp.), C. subacuticollis BOROW., and C. verrucata (BOH.). C. sculpturipennis n. sp., C. beondrokana and C. goudoti are the largest species with length usually above 5 mm while other species are usually below 4.8 mm. C. beondrokana differs in smaller size with length below 5.7 mm, abdomen mostly black (uniformly yellow in C. sculpturipennis), humeral angles angulate, more protruding anterad, and anterior margin of pronotal spot emarginate in the middle. C. goudoti has similar elytral relief but differs in pronotum with rounded sides (subangulate in C. sculpturipenis) black scutellum (yellow in C. sculpturipenis), pronotal figure of thinner black margins and more angulate humeral angles. C. subacuticollis is the most similar and differs in slightly smaller size, denser pronotal punctation and denser and coarser elytral punctation. Some specimens of C. collucens Sp. have similar elytral relief but differ in smaller size, denser pronotal punctation, and coarser and denser elytral punctation. partly black abdomen, and base of pronotum with more or less striate sculpture.

MATERIAL EXAMINED No additional material.

# Cassida scymnoides Borowiec, 1999 (figs. 194-195)

Cassida scymnoides BOROWIEC, 1999 b: 467.

TYPE MATERIAL Holotype: MADAGASCAR: « Ambohinasoa, 29-7-48, 1 ex., A.R. » [MNHN].

DESCRIPTION

Length: 5.0 mm, width: 4.1 mm, length of pronotum: 1.8 mm, width of pronotum: 3.4 mm, length/width ratio 1.22, width/length ratio of pronotum: 1.89. Body almost regularly circular (fig. 194).

Pronotum bicoloured, basal half black and anterior part yellowish-brown, but the border between dark and pale parts gradually changes from black, through brown, to yellow. Scutellum black with brownish apex. Elytra mostly black, explanate margin brownish-black, only extreme margin yellow. Clypeus yellow, thorax black, abdomen in central part brown to black, margins yellow. Legs yellow. Antennal segments 1-6 yellow, segments 7-8 infuscate, 9-11 black.

Pronotum broad, approximately 1.9 times wider than long, elliptical, with maximum width slightly behind the middle, sides narrowly rounded. Disc only slightly convex, indistinctly bordered from explanate margin, with slightly separated area above head. Whole surface of disc slightly longitudinally wrinkled, irregular, only area above head slightly irregular. Explanate margin declivous, its surface slightly irregular. Whole surface of pronotum slightly opaque, covered by very sparse, adherent pubescence.

Scutellum triangular, without punctures or sulci, its surface dull. Base of elytra almost as wide as pronotum, humeral angles rounded, moderately protruding anterad, margin behind humerus not emarginate. Disc moderately, regularly convex, not elevated in postscutellar point. Postscutellar impressions very shallow, bordered externally by very low elevation, no other impressions. Punctation of disc completely irregular, fine and dense, distance between punctures from slightly narrower to almost twice wider than puncture diameter. Marginal row distinct, its punctures much coarser than in central part of disc. Space between punctures smooth, surface of elytra appears regular. Marginal interval absent. Explanate margin narrow, approximately thrice narrower than width of disc of each elytron, declivous, its surface shallowly punctate, appears irregular. Surface of elytra slightly opaque, covered by very sparse, short, adherent pubescence. Apex of elytral epipleura with short, erect hair.

Eyes large, gena obsolete. Clypeus narrow, only slightly wider than long, flat, impunctate, glabrous. Clypeal lines fine, visible on whole length of clypeus, converging in triangle with obtuse apex. Labrum emarginate to 1/5 length. Antennae moderately elongate, length ratio of antennal segments: 100:46:75:75:70:43:57:46:50:50:93. Segment 3 approximately 1.6 times longer than 2, segment 4 as long as 3.

Prosternal collar moderately long, prosternal process distinctly expanded apically, central part of apex elevated, sides impressed, surface with few punctures.

Claws moderately large, with small basal tooth.

# DISTRIBUTION

MADAGASCAR (we had a problem to find the type locality "Ambohinasoa" in any gazetteers.

### REMARKS

Very distinct species, the only one with the following combination of characters: elytra mostly black, dorsal surface covered by adherent hairs and elytral punctation completely irregular. Other mostly black, small Madagascan species – *Cassida currax* SP., *C. tenax* SP., *C. anosyennesensis* n. sp. and *C. atrorubra* n. sp. differ in elytral punctation regular and bare surface of elytra.

MATERIAL EXAMINED No additional material.

### Cassida senicula (SPAETH, 1915)

(figs. 196-197, map 26)

Coptocycla senicula SPAETH, 1914: 130 (nomen nudum). Coptocycla senicula SPAETH, 1915: 149. Cassida senicula: BOROWIEC, 1999: 283.

TYPE MATERIAL

5 syntypes: MADAGASCAR CENTRE: « Tananarivo, Mahatsinjo, coll. Donckier » [MM].

# DESCRIPTION

Length: 4.85-5.4 mm, width: 4.65-4.95 mm, length of pronotum: 1.7-1.8 mm, width of pronotum: 3.3-3.55 mm, length/width ratio 1.02-1.09, width/length ratio of pronotum: (1.85)1.89-1.97. Body almost circular (fig. 196).

Pronotal and scutellum uniformly straw-yellow. Elytral disc straw-yellow, on top with small round or oval brownish spot, sometimes reduced to short stripe. Occasionally with a few punctures marked with brown centre in area close to 2/3 length of suture. Clypeus, pro-, mesosternum, abdomen and legs uniformly yellow, metasternum in the middle black. Antennal segments 1-5 yellow, segments 8-11 black, segment 6 from uniformly yellow to infuscate, segment 7 from uniformly yellow to black.

Pronotum regularly elliptical, with maximum width in the middle, sides moderately rounded. Disc slightly convex, sides on whole length separated from explanate margin by furrow. Elevated part of disc usually with longitudinal wrinkles or punctures tending to form longitudinal grooves but disc not appear regularly longitudinally striate. Punctation in some specimens is dense, surface irregular but not distinctly wrinkled. Area above head and lateral lobes impunctate. Explanate margin with shallow punctation, appearing slightly irregular, transparent with well visible honeycomb structure. Whole surface of disc slightly dull, explanate margin slightly glabrous.

Base of elytra moderately wider than base of pronotum, basal margin of disc without crenulation, humeral angles strongly protruding anterad, angulate. Disc slightly irregularly convex in profile, with angulation on top of convexity in postscutellar point (fig. 197), with shallow scutellar and principal impressions, at top without well marked H-shaped elevation but slightly elevated second interval surrounding postscutellar impressions forms short transverse branch to top of disc. Punctation moderately coarse but dense, almost completely irregular, punctures almost touching each other, only along suture and on sides of disc punctures tend to form more or less regular rows. Marginal row distinct, with coarse and dense punctures, distinctly coarser than in central rows. Intervals mostly obsolete, only linear, elevated second interval well marked in anterior 1/3 to <sup>3</sup>/<sub>4</sub> length of disc. Marginal interval well marked on whole length, narrow, in anterior half as wide as two submarginal rows combined. Surface of intervals glabrous,

slightly dull, interspaces not elevated thus surface appears regular. Explanate margin moderately declivous, broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly punctate, appears slightly irregular, glabrous, slightly shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with numerous very short erect setae.

Eyes large, but gena marked and as long as half length of second antennomere. Clypeus as long as wide, frontal grooves very fine, running close to margin of eye and converging in obtuse triangle. Area between grove and margin of eye with row of long setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny with few small, setose punctures. Labrum narrowly emarginate to 1/6 length. Antennae slim, segments 9-10 approximately 1.7-1.8 times as long as wide. Length ratio of antennal segments: 100:53:65:62:76:71:74:71:74:76:129. Segment 3 approximately 1.2 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, moderately expanded apically, shallowly impressed along lateral margins, impressions with row of setae, area between coxae smooth and shiny, rhomboidal apex slightly convex, its surface with no special sculpture, with few setose punctures, shiny.

Claws simple. Spermatheca (fig. 257).

### DISTRIBUTION

MADAGASCAR CENTRE, EAST and OUEST (map 26).

# REMARKS

At first glance it is similar only to *Cassida seniculoides* BOROW. Both species have pronotum and elytra mostly yellow with brown round spot in postscutellar point. *C. seniculoides* distinctly differs in whole dorsal surface covered by short erect setae. *C. strigaticollis* BOROW. has similar body coloration but differs in longitudinally striated pronotal disc and base of elytra much wider than pronotum. *C. nigroscutata* belongs to the same group but differs in larger size with length above 6.5 mm, rusty- to red-dish- yellow pronotal disc, higher elytral hump and more irregular to rugose surface of pronotal disc.

### MATERIAL EXAMINED

MADAGASCAR CENTRE: - Tananarive, 1912, 1 ex., LAMBERTON [MNHN].

MADAGASCAR EST: -- Moramanga Prov., Périnet, 13 I 1938, 2 ex., 16 I 1938, 1 ex., 17 I 1938, 1 ex., 25 I 1938, 1 ex., 29 I 1938, 1 ex., 1 II 1938, 1 ex., B. KRECZMER [DBET]. -- Tamatave distr., Moramanga env., 14-18 XII 1995, 1 ex., I. JENIS [MS].

MADAGASCAR OUEST: - Ankazoabo, 1 ex. [NMP]. - Maromandia, 1 ex. [NMP].

### Cassida seniculoides BOROWIEC, 1999

(figs. 198-199, map 25)

Cassida seniculoides Borowiec, 1999 b: 472.
# TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Soalala » [MM]. – paratype: MADAGASCAR OUEST: « Soalala » [DBET].

# DESCRIPTION

Length: 5.5-5.9 mm, width: 4.9-5.2 mm, length of pronotum: 1.9-2.0 mm, width of pronotum: 3.65-3.90 mm, length/width ratio 1.10-1.13, width/length ratio of pronotum: 1.90-1.95. Body almost circular (fig. 198).

Pronotum uniformly yellow. Scutellum yellow. Elytra yellow with brown rounded spot in postscutellar point. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-8 yellow, segment 9 infuscate apically, segments 10-11 black except yellow apex of ventral side of the last segment.

Pronotum broad, approximately 1.9 times wider than long, elliptical, with maximum width in the middle, sides narrowly rounded. Disc moderately convex, on sides distinctly bordered from explanate margin, area above head and lateral lobes well separated. Whole surface of disc irregularly granulate, only area above rather irregular than granulate. Explanate margin subhorizontal, its surface irregular but granule smaller than on disc. Whole surface of pronotum slightly glabrous, covered by sparse, short, erect setae.

Scutellum triangular, without punctures or sulci. Base of elytra slightly wider than base of pronotum, humeral angles angulate, distinctly protruding anterad, margin behind humerus not emarginate. Disc moderately convex, slightly elevated in postscutellar point but without tubercle, elytral profile behind top of convexity slightly concave (fig. 199). Postscutellar impressions distinct, bordered externally by slightly elevated second interval. Punctation of disc mostly irregular, only in sutural part and area behind humerus punctures have tendency to form regular rows. Punctation moderately coarse and dense, distance between punctures 0.3-1.2 times wider than puncture diameter. Marginal row distinct, its punctures approximatelytwice coarser than in central part of disc. Intervals mostly indistinct, only second interval forms more or less visible longitudinal elevation, also fourth interval in 3/4 length of elytron forms short longitudinal elevation. Marginal interval distinct. Surface of elytra appears slightly irregular, slightly glabrous, covered by sparse, moderately long, erect setae. Explanate margin broad, as wide as 2/3 width of disc of each elytron, subhorizontal, its surface irregular but slightly glabrous. Apex of elytral epipleura with moderately long, erect hair.

Eyes large, gena obsolete. Clypeus narrow, approximatelyas long as wide, flat, with only few very shallow punctures, slightly dull; clypeal lines fine, but visible on whole length of clypeus, converging in a triangle with obtuse apex. Labrum very shallowly emarginate. Antennae moderately elongate, length ratio of antennal segments: 100:47:73:70:50:43:47:43:53:103. Segment 3 approximately1.6 times longer than 2, segment 4 slightly shorter than 3.

Prosternal collar moderately long, prosternal process distinctly expanded apically, its apex impunctate, with slightly irregular surface.

Claws large, simple, micropectinate.

DISTRIBUTION MADAGASCAR OUEST (map 25).

# REMARKS

At first glance it is similar only to *Cassida senicula* SP. Both species have pronotum and elytra mostly yellow with brown round spot in postscutellar point. *C. seniculoides* distinctly differs in whole dorsal surface covered by short erect setae (bare in *senicula*), and irregular, granulate surface of pronotal disc (almost smooth in *senicula*). *C. strigaticollis* BOROW. has similar body coloration but differs in longitudinally striated pronotal disc (granulate in *seniculoides*) and base of elytra much wider than pronotum (slightly wider in *seniculoides*). Setose dorsal surface in *C. seniculoides* is unique within Madagascan members of the genus *Cassida*, similarly setose pronotum and elytra occur only in African *C. innotata* BOH. but it belongs to a different species group with strongly appendiculate tarsal claws (simple in *seniculoides*). *C. pubipennis* BOROW. has similar body colouration, and pubescent dorsum but differs in slightly larger size with length 6.4 mm, less circular body, adherent dorsal pubescence, and dark pattern on postscutellar elevation forming only short black stripes.

MATERIAL EXAMINED No additional material.

# Cassida silvicola BOROWIEC, 1988

(figs. 200-201, map 27)

Cassida silvicola BOROWIEC, 1988: 562, 1999 a: 284.

# TYPE MATERIAL

Holotype: MADAGASCAR EST: « Forêt-Col. d'Ivohibe, XI 1950 » [MM]. – 6 paratypes: MADAGASCAR EST: « Forêt-Col. d'Ivohibe, XI 1950, A.R. » [MNHN, BMNH, MM, DBET].

#### DESCRIPTION

Length: 4.4-4.9 mm, width: 3.6-3.85 mm, length of pronotum: 1.5-1.65 mm, width of pronotum: 2.8-3.0 mm, length/width ratio 1.25-1.27, width/length ratio of pronotum: 1.79-1.90. Body oval, moderately converging posterad (fig. 200).

Pronotal disc black except yellow area above head and oval yellow spot on each side and two yellow, large, kidney-shaped spots before scutellum. Explanate margin mostly yellow except black basal part. Scutellum black. Elytral disc black with yellow relief forming partly maculate and partly reticulate pattern as in fig. 200. Explanate margin mostly yellow with black humeral spots not extending to lateral edge of elytra, humeral angles always yellow. The black humeral spot mostly separated from black disc by yellow spot below humeral callus. Black colour on disc on sides exceeds to marginal row, except yellow area below humeral callus and yellow lateral fold of marginal interval, apex of disc always narrowly yellow. Clypeus yellow. Thorax, abdomen

and coxa dark brown to black, abdomen sometimes narrowly surrounded by yellow. Legs pale yellow. Antennal segments 1-8 yellow, last three segments infuscate to black except yellowish apex of ventral side of last segment.

Pronotum almost regularly elliptical, with maximum width slightly before middle, sides broadly rounded. Disc slightly convex, lateral lobes separated from explanate margin by distinct furrow. Surface of disc above head glabrous, smooth and shiny, laterally and basally with very fine longitudinal striation, sometimes striated only laterally, interspaces shiny. Explanate margin glabrous, smooth, shiny, transparent, on yellow parts with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, in females angulate, in males edge of elytron behind humeral angle very shallowly emarginate then humeral angle appears slightly acute. Disc almost regularly convex in profile, with very low H-shaped elevation in postscutellar area and shallow scutellar impressions bordered laterally by yellow relief (fig. 201). Punctation moderately coarse, regular but rows partly broken by elytral relief. Punctures in rows dense, interspaces mostly from slightly narrower to slightly wider than puncture diameter. Marginal row distinct, with sparse punctures, only slightly coarser than punctures in central rows. Regularity of intervals partly disturbed by arrangement of punctures and elevated interspaces, in well marked parts intervals approximately 1.5 times as wide as rows. In some specimens second interval yellow and slightly convex on whole length, sometimes also fourth interval on slope forms short, yellow elevated fold but in specimens with more maculate relief second and fourth interval never appear costate. Marginal interval well marked on whole length, broad, mostly twice wider than lateral intervals, with hardly marked humeral and distinct lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly less than four times narrower than disc. Surface of explanate margin on black humeral spots with few coarse punctures, on yellow parts very shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few very short setae.

Eyes large, gena obsolete. Clypeus narrow, 1.2 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in triangle on apex of clypeus. Area between grooves and margin of eye with row of setose punctures. Surface of clypeal plate with shallow depression at apex, shiny, with several small, setose punctures. Labrum distinctly emarginate to 1/5 length. Antennae slim, segments 9-10 slightly longer than wide. Length ratio of antennal segments: 100:64:88:82:76:5 9:62:59:59:59:112. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar from slightly shorter to slightly longer than length of last palpomere. Prosternal process broad, moderately impressed along lateral margins, very broad apically. Area between coxae with two rows of setose punctures. Central part of rhomboidal apex elevated and smooth, sides deeply impressed with few coarse, setose punctures, appear rugose.

Claws with small basal tooth.

# DISTRIBUTION MADAGASCAR CENTRAL and EST (map 27).

# REMARKS

Cassida silvicola belongs to the group of small species with size below 5.3 mm, pronotum partly black, elytral punctures with black centre, marginal interval at least in humeral part black and elytral pattern never forms large black areas and yellow never form elevated sculpture except H-shaped basal elevation. The group comprises also C. atropunctata n. sp., C. pseudostrumosa n. sp., and C. strumosa (Sp.). C. silvicola has the most expanded black pattern of elytra which forms humeral spot on explanate margin extending to 2/3 width of the margin and reticulate spots on sides of disc and slope. It also differs from all relatives in sculpture of pronotal disc forming fine striation on sides (in relatives pronotal disc is smooth and shiny). C. pseudostrumosa has similar pronotal pattern with mostly black disc and partly black basal parts of explanate margin and discal spot marked with two large, yellow, praescutellar spots and two smaller, yellow spots on sides, but differs in explanate margin of elytra without humeral spot but only with black band along anterior 2/3 length of border between explanate margin and disc, narrower black areolae around punctures thus reticulate pattern of coalescent areolae is limited only to submarginal intervals and never forms black reticulation on central parts of disc. C. atropunctata differs in pronotal pattern forming M-shaped figure with two large, yellow praescutellar spots but without lateral yellow spots, black colour in humeral part of disc limited to marginal row and only slightly extending to surface of explanate margin, punctures of elytra with very narrow areolae, if coalescent then only in submarginal row thus disc appears without black reticulation, and surface of elytral disc completely regular. C. strumosa differs in pronotal black spot not or only slightly extending to basal part of explanate margin, lateral yellow spots transverse, long, sometimes completely divided pronotal spot into two or three parts, black colour in humeral part of disc only narrowly extending to surface of explanate margin, and narrower black areolae around punctures thus reticulate pattern of coalescent areolae is limited only to submarginal intervals and never forms black reticulation on central parts of disc thus elytra appear mostly yellow.

#### MATERIAL EXAMINED

MADAGASCAR CENTRAL: – Andringitra, Vohidray rdg., 3 km SSE Amboarafibe, 1500-1600 m, 8-9 IV 2001, 3 ex., P. BULIRSCH [MS, DBET].

MADAGASCAR EST: – Andasibe (Périnet) NP, 18°56'S, 48°24'E, 950 m, 27 X 2005, 2 ex., J. Šťastný [LS].

## Cassida strigaticollis BOROWIEC, 1988

(figs. 202-203, map 27)

Cassida strigaticollis BOROWIEC, 1988: 553, 1999 a: 286.

# TYPE MATERIAL

Holotype: MADAGASCAR EST: « Forêt Nord d'Anosibe, IX 1953 » [MM]. – paratype: MADAGASCAR EST: « Moramanga, 1957, Gruvel » [DBET].

## DESCRIPTION

Length: 4.9-5.3 mm, width: 4.3-4.4 mm, length of pronotum: 1.7-1.8 mm, width of pronotum: 3.1-3.3 mm, length/width ratio 1.14-1.20, width/length ratio of pronotum: 1.82-1.83. Body almost circular (fig. 202).

Dorsum yellow, only postscutellar elevation with more or less marked, from yellowish brown to brownish black rhomboidal spot. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-9 yellow, segments 10 and 11 brownish to black.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc almost depressed, on sides separated from explanate margin by shallow furrow. Whole surface of disc, except smooth area above head, with distinct longitudinal striation. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small, yellow crenulation, humeral angles distinctly protruding anterad, subangulate, elytral edge behind humeral angle not emarginate. Disc elevated in profile, with distinct H-shaped elevation (fig. 203), well marked scutellar and hardly marked principal impressions. Anterior branches of H-shaped elevation surrounding postscutellar impressions. Punctation of disc coarse and dense, regular, punctures in rows almost touching each other. Marginal row distinct, with moderately dense punctures, moderately coarser than punctures in central rows. Intervals very narrow, linear. Marginal interval well marked on whole length, broad, in anterior half four times wider than lateral intervals, humeral and lateral folds indistinctly marked, as elevated as but slightly wider than other interspaces. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears rough, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with few very short setae.

Eyes large, gena hardly marked. Clypeus slightly wider than long, frontal grooves very fine, running mostly close to margin of eye and converging in broad triangle on apex of clypeus. Area between frontal grooves and margin of eyes with a row of setose punctures. Surface of clypeal plate flat, glabrous, shiny, with few small punctures. Labrum broadly emarginate to ¼ length. Antennae slim, segments 9-10 slightly longer than wide. Length ratio of antennal segments: 100:52:71:71:57:48:52:57:57:114. Segment 3 approximately 1.4 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically, area between coxae without punctures, along sides punctate, central part of rhomboidal apex convex and smooth in the middle, rugose laterally.

Claws with large basal tooth.

DISTRIBUTION MADAGASCAR EST (map 27).

#### REMARKS

*Cassida strigaticollis* BOROW. is close only to *C. multistrigata* n. sp. Both species have pronotal disc with dense longitudinal striation, ventrites uniformly yellow, large tooth of tarsal claws, and dorsum mostly yellow with small dark spot on postscutellar elevation. *C. mutistrigata* differs in elytral disc surrounded by thin brownish ring (without ring in *C. strigaticollis*), humeral angles acute with elytral edge behind humeral angle shallowly emarginate (subangulate without emargination in *C. strigaticollis*) and only last antennal segment infuscate (two segments infuscate in *C. strigaticollis*).

We revealed that the third paratype specimen (housed in BMNH) belongs to here described *C. multistrigata* n. sp.

MATERIAL EXAMINED MADAGASCAR EST: – Forêt d'Ivohibe, XI 1950, 2 ex. [MNHN].

#### Cassida strumosa (SPAETH, 1915)

(figs. 204-206, map 28)

Coptocycla strumosa SPAETH, 1914: 130 (nomen nudum). Coptocycla strumosa SPAETH, 1915: 146. Cassida strumosa: BOROWIEC, 1999 a: 286. Coptocycla vicinalis SPAETH, 1914: 131 (nomen nudum). Coptocycla vicinalis SPAETH, 1915: 147, n. syn. Cassida vicinalis: BOROWIEC, 1999 a: 293.

#### TYPE MATERIAL

4 syntypes of *Coptocycla strumosa*: MADAGASCAR CENTRAL: « Mahatsinjo près Tananrive, Donckier » [MNHN, MM]. – syntype of *Coptocycla strumosa*: MADAGASCAR Est: « Tananarive, coll. Donckier » [MM].

Holotype of *Coptocycla vicinalis*: MADAGASCAR CENTRAL: «Andrangoloaka, OSO de Tananarive, 1600 m, coll. Donckier » [MM].

#### DESCRIPTION

Length: 4.2-4.9 mm, width: 3.5-4.05 mm, length of pronotum: 1.5-1.7 mm, width of pronotum: 2.8-3.1 mm, length/width ratio 1.20-1.26, width/length ratio of pronotum: (1.76)1.81-1.93. Body short-oval, males (fig. 204) slightly stouter than females (fig. 205).

Variable species. Pronotum in the palest forms yellow, disc in anterior part with two transverse black wavy lines and at base with large black M-shaped figure, explanate margin completely yellow. In the darkest forms pronotal disc black, with yellow small spot anterolaterally and two large yellow spots before scutellum, explanate margin at base with black spot. In intermediate specimens pronotal disc mostly black or mostly yellow, anterior yellow spots transverse, basal spots oblique, explanate margin from uniformly yellow to spotted basally. Scutellum usually black only in the palest specimens yellow. Disc of elytra yellow, in the palest specimens only punctures black. Punctures partly grouped in groups of 2-4 combined and thus form short black lines, on sides of disc the lines partly coalescent thus form thin reticulation. In dark forms punctures with black centre and more or less broad areola then almost whole disc with black reticulation, yellow parts more or less elevated sometimes form distinct relief or only irregular spots. Marginal interval in the palest specimens yellow, in intermediate specimens black with yellow spots, in the darkest specimens black except yellow apex. Explanate margin yellow, but in dark specimens black markings of marginal interval in humeral part exceeded behind marginal row but never form distinct humeral spot. Clypeus yellow. Thorax black, also humeral part of elytral epipleura close to lateral plates of thorax more or less infuscate. Abdomen centrally black, laterally broadly yellow. Legs yellow, only coxae partly infuscate to black. Antennae with segments 1-9 yellow and segments 10-11 black, sometimes apex of segment 9 more or less infuscate, or segment 10 only apically black.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by furrow. Surface of disc glabrous, smooth or with very small pricks and shiny. Explanate margin impunctate, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles distinctly protruding anterad, angulate to subacute. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow scutellar and principal impressions (fig. 206). Postscutellar area without distinct H-shaped fold, but elytral relief of yellow spots often form H-shaped figure. Punctation small, punctures groups in short rows of 2-4 punctures together, only in pale forms punctation appears mostly regular. In specimens with well developed yellow impunctate relief punctation appears mostly irregular. Marginal row distinct, with moderately dense punctures, only slightly coarser than punctures in central rows. Intervals in pale forms usually well marked, in sutural part of disc approximately 1.5 times as wide as rows only second interval slightly wider, twice as wide as rows, on sides of disc intervals mostly as wide as rows. Marginal interval well marked on whole length but moderately broad, only as wide as submarginal row and submarginal interval combined, without humeral fold, lateral fold narrow or indistinct. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part four times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with extremely short setae, in old dried specimens appears bare.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, running close to margin of eye and converging in regular triangle. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, or very shallowly impressed, smooth and shiny. Labrum broadly but deeply emarginate to ¼-1/3 length. Antennae moderately slim, segments 9-10 approximately

1.1-1.2 times as long as wide, segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, deeply impressed along lateral margins, impressions with row of setose punctures, between coxae elevated, with few setose punctures, shiny, central part of rhomboidal apex convex, with few setose punctures, shiny, sides slightly impressed with several dense, setose punctures.

Claws with moderately large basal tooth.

#### DISTRIBUTION

MADAGASCAR CENTRAL and EST (map 28).

# REMARKS

Examination of types of *Coptocycla strumosa* SP. and *C. vicinalis* SP. and their comparison with a series of specimens from various parts of Madagascar showed that both taxa represent only extreme colour forms of one variable species. Both were described in the same paper but *C. strumosa* on p. 130 and *C. vicinalis* on p. 131 thus we propose the name *C. vicinalis* as junior synonym of *C. strumosa*.

Cassida strumosa belongs to the group of small species with size below 5.3 mm, pronotum partly black, elytral punctures with black centre, marginal interval at least in humeral part black and elytral pattern never forming large black areas and yellow never form elevated sculpture except H-shaped basal elevation. The group comprises also C. atropunctata n. sp., C. pseudostrumosa n. sp., and C. silvicola Borow. C. silvicola distinctly differs in the most expanded black pattern of elytra which forms humeral spot on explanate margin extending to 2/3 width of the margin and reticulate spots on sides of disc and slope, and in sculpture of pronotal disc forming fine striation on sides. C. pseudostrumosa has similar pronotal pattern with mostly black disc and partly black basal parts of explanate margin and discal spot marked with two large, yellow, praescutellar spots and two smaller, yellow spots on sides, but differs in black colour of pronotum distinctly extending to basal part of explanate margin and lateral spots not as transverse as in C. strumosa, explanate margin of elytra with black band along anterior 2/3 length of border between explanate margin and disc, black pronotal spots and black humeral band on elytra margined externally by red, and broader black areolae around punctures. C. atropunctata differs in pronotal pattern forming M-shaped figure with two large and yellow praescutellar spots but without lateral yellow spots, black colour in humeral part of disc limited to marginal row and only slightly extending to surface of explanate margin, punctures of elytra with very narrow areolae, if coalescent then only in submarginal row thus disc appears without black reticulation, and surface of elytral disc completely regular.

#### MATERIAL EXAMINED

MADAGASCAR CENTRAL: - Andraemandevy, Didy, Ambatondrazaka, 1030 m, X 1956, 1 ex. [MNHN]. - La Mandraka, Manjakandriana, 1250 m, 30 X 1956, 1 ex., A.R. [MM]. – route d'Tamatale, between Dinbatolaona et La Mandraka, XI 1954, A.R., 1 ex. [MNHN].

MADAGASCAR EST: – Maroantsetra, 1 ex. [MNHN]. – Maromizaha (Andasibe), 19-20 XII 1997, 1 ex., P. PACHOLÁTKO [NHMB]. – Marovato, Rogez, VII 1943, 1 ex., ABADIE [MNHN]. – Maromizaha (Andasibe), 19-20 XII 1997, 2 ex., P. PACHOLÁTKO [LS, NMB]. – Moramanga, Andasibe, vic. Anevoka, Forest Pluviale de Maromitza NR, 950-1150 m, 5-12 XI 2004, 1 ex., RANDRIAMANAITRA [SMNS]. – Moramanga, Anosibé, II 1963, 1 spec., E. HAAF [NHMB]. – Moramanga-Anosibe, II 1963, 1 ex., E. Haaf [NMB]. – Tamatave distr., Maromizaha, 21-24 XI 1995, 1 ex., J. STOLARCZYK [DBET]. – Toamasina env., Analamazaotra env., 3-8 XII 1997, 1 ex., J. STOLARCZYK [MS].

MADAGASCAR: - Madagas., 1 ex. [DBET].

# Cassida suaveola (SPAETH, 1915)

(figs. 207-209, map 29)

Coptocycla suaveola SPAETH, 1914: 130 (nomen nudum). Coptocycla suaveola SPAETH, 1915: 148. Cassida suaveola: BOROWIEC, 1999 a: 286.

TYPE MATERIAL Holotype: MADAGASCAR CENTRAL: « Tananariva » [MM].

DESCRIPTION

Length: 4.4-5.1 mm, width: 3.9-4.2 mm, length of pronotum: 1.5-1.75 mm, width of pronotum: 2.95-3.2 mm, length/width ratio 1.13-1.21, width/length ratio of pronotum: 1.83-1.97. Body from short-oval to almost circular, male (fig. 207) slightly stouter than female (fig. 208).

Pronotum yellow, disc with large black basal spot. Anterior margin of the black spot bisinuate on sides thus in the middle forms black triangle. At base of the black spot two large yellow spots forming V-shaped figure, bases of the spots coalescent or separate. Scutellum black or with brownish centre. Elytral disc black with 26-28 regular, elevated yellow spots arranged as in fig. 207. The largest spot at base of elytron sometimes coalescent with the largest spot behind humeral callus but never coalescent with the spot at top of disc. Marginal interval mostly yellow, punctures of marginal row partly marked with black. Clypeus yellow. Pro- and mesosternum brown to black, metasternum yellow or only in the middle infuscate. Abdomen and legs yellow, pro- and mesocoxae brownish. Antennae yellow, last two segments infuscate to black except yellowish apex of ventral side of last segment.

Pronotum elliptical, with maximum width slightly before the middle, sides moderately rounded. Disc slightly convex, on sides separated from explanate margin by short furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subangulate.

Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar impressions, no H-shaped elevation at top of disc, no principal impressions (fig. 209). Punctation fine, regular but rows disrupted by yellow elytral relief. Distance between punctures in rows mostly wider than puncture diameter. Marginal row distinct, with sparse punctures, distinctly coarser than punctures in central rows. Intervals on black parts of disc well marked, in sutural half of disc twice to thrice wider than rows, on sides as wide as rows. Marginal interval well marked on whole length, broad, in anterior half twice wider than lateral intervals, with well marked humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part three times narrower than disc. Surface of explanate margin very shallowly punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with row of short setae.

Eyes large, gena hardly marked. Clypeus narrow, 1.1 times as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in triangle on apex of clypeus. Area between grooves and margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate flat or with shallow impression along middle, glabrous, smooth and shiny. Labrum distinctly emarginate to ¼ length. Antennae moderately slim, segments 9-10 approximately 1.2 times as long as wide. Length ratio of antennal segments: 100:53:69:72:61:55:50:47:47:47:94. Segment 3 approximately 1.3 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar slightly shorter than last palpomere. Prosternal process broad, moderately impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa flat, smooth and shiny, rhomboidal apex with rugose sculpture and few setose punctures.

Claws with large basal tooth.

#### DISTRIBUTION

MADAGASCAR CENTRE, EST, OUEST and SAMBIRANO (map 29).

# REMARKS

It belongs to the *Cassida goudoti* species group. *C. suaveola* has intermediate position between subgroups with spotted and reticulate relief. It has central parts of elytral disc with reticulate pattern but sides with several isolated elevated spots. Forms of *C. goudoti* with partly coalescent spots are similar but differs in distinctly larger size (mean length 5.5 mm, versus 4.6 mm in *C. suaveola*), slightly more rounded pronotal sides, and slightly wider and more explanate margins of elytra.

MATERIAL EXAMINED

MADAGASCAR CENTRE: - La Mandraka, 1 ex. [NMP].

MADAGASCAR EST: – Antalaha, 1 ex. [NMP]. – Andasibe, X 1970-II 1980, 1 ex., WOJNAROVICH [DBET]. – Moramanga, Andasibe, vic. Anevoka, Forest Pluviale de Maromitza NR, 950-1150 m, 5-12 XI 2004, 1 ex., RANDRIAMANAITRA (SMNS). – Rogez, 2 ex. [NMP]. MADAGASCAR OUEST: - Ankazoabo, 4 ex. [3 NMP, 1 LS]. - Maromandia, 6 ex. [4 NMP, 2 LS].

MADAGASCAR SAMBIRANO: - Haute-Vallé de Sambirano, 1 ex. (NMP).

Cassida subacuticollis BOROWIEC, 1999 (figs. 212-213, map 27)

Cassida subacuticollis BOROWIEC, 1999 b: 457.

TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « M<sup>t</sup> Tsaratanana, 1500 m, forêt de mousses, X-49, R.P. » [MNHN]. – paratype: MADAGASCAR NORD: « Amber Geb. » [DBET]

#### DESCRIPTION

Length: 5.45-5.7 mm, width: 4.7-5.05 mm, length of pronotum: 2.0-2.15 mm, width of pronotum: 3.9-4.1 mm, length/width ratio 1.13-1.19, width/length ratio of pronotum: 1.84-2.05. Body short-oval to almost circular (fig. 212).

Pronotal disc yellow with large basal black spot marked in front of scutellum by V-shaped yellow spot. Anterior margin of the black spot irregular, with few emarginations. Explanate margin of pronotum uniformly yellow. Scutellum yellow, sometimes with black anterior corners. Elytral disc mostly black with yellow relief of several spots: two at base of each elytron, two small close to scutellar apex, large H-shaped in postscutellar point, large irregularly V-shaped on slope, moderately large on lateral fold of disc and numerous small between H-shaped and V-shaped sculptures (fig, 212). Marginal interval uniformly yellow. Clypeus yellow, prosternum partly to almost completely black, metasternum from uniformly yellow to mostly black. Abdomen yellow. Legs and antennae uniformly yellow.

Pronotum broad, approximately twice wider than long, elliptical, with maximum width in the middle, sides subacute to angulate. Disc slightly depressed, indistinctly bordered from explanate margin, but sides of disc with small impression; part above head only slightly separated. Surface of disc glabrous, with fine, sparse punctation, in holotype appears smooth, in paratype punctures on sides of disc slightly elongate and surface appears slightly striate. Explanate margin smooth, glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra approximatelyas wide as base of pronotum, humeral angles moderately protruding anterad, obtuse, margin behind humerus not emarginate. Disc regularly convex, without tubercles, but with moderately high H-shaped elevation in postscutellar point (fig. 213). Postscutellar impressions distinct, bordered externally by elytral relief. Punctation of disc regular, but rows partly interrupted by yellow elytral relief. Punctures moderately coarse but dense, distance between them from slightly narrower to twice wider than puncture diameter. Punctures in anterior half of disc approximatelytwice coarser than on slope and in postscutellar impressions. Intervals approximatelytwice wider than rows, mostly flat, only second interval on almost whole length and fourth interval behind the middle slightly elevated. Marginal interval distinct. Punctures in marginal row much coarser

than in submarginal one, disposed regularly, in posthumeral part very deep. Surface of disc appears regular. Explanate margin broad, approximatelytwice narrower than width of disc of each elytron, slightly declivous, its surface slightly irregular, glabrous. Apex of elytral epipleura with several short, erect hairs.

Clypeus moderately broad, approximately 1.2 wider than long, flat, smooth, glabrous. Clypeal lines fine, visible on whole length of clypeus. Labrum emarginate to 1/4 length. Antennae slim, length ratio of antennal segments: 100:57:89:89:79:57:64:64:6 7:64:110. Segment 3 approximately 1.6 times longer than 2, and as long as 4.

Prosternal collar short, prosternal process strongly expanded apically, in the middle slightly convex, alae impressed, with irregular surface.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR NORD and SAMBIRANO (map 27).

#### REMARKS

It belongs to the *Cassida goudoti* species group, the subgroup which is characterized by elytral disc black with yellow relief forming reticulate pattern. *C. subacuticollis* is well distinguished by its subangulate sides of pronotum except *C. sculpturipennis* which has similar pronotal shape but differs in larger size, sparser pronotal punctation, and sparser and finer elytral punctation.

#### MATERIAL EXAMINED

MADAGASCAR NORD: – Amber Geb., 1 ex. [DBET]. – Antsiranana prov., Ambohitra, 30 XI-2 XII 1996, 1 ex., I. JENIŠ [DBET]. – Mt. d'Ambre, Decembre, 2 ex. [DBET]. – Mt. d'Ambre, Janvier, 1 ex. [DBET]]. – Mt. d'Ambre, 12°31'34.46"S, 49°10'21.57"E, 8-10 XI 2007, 1 ex., J. ŠŤASTNÝ [LS].

#### Cassida taediosa BOHEMAN, 1856

(figs. 214-216, map 30)

Cassida taediosa Вонеман, 1856: 143, 1862: 344. – Gemminger and Harold, 1876: 3659. – Weise, 1910: 505. – Вокоwiec, 1999 a: 287.

Coptocycla taediosa: SPAETH, 1914: 130.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar » [BMNH].

# DESCRIPTION

Length: 5.0-5.6 mm, width: 4.1-4.6 mm, length of pronotum: 1.8 mm, width of pronotum: 3.05-3.25 mm, length/width ratio 1.22, width/length ratio of pronotum: 1.69-2.81. Body subtriangular, widest in posthumeral area then distinctly converging posterad (figs. 214-215).

Pronotal disc completely black, explanate margin in basal half black in anterior half yellow. Scutellum black. Elytral disc mostly black, at top and slope with some brownish-red brightening indistinctly bordered from black background. At extreme apex of disc two oval yellow spots, also lateral fold of marginal interval yellow. Explanate margin almost completely black, only in the middle, close to border of disc with yellow spot connected with yellow lateral fold of marginal interval. Clypeus, thorax, abdomen and legs uniformly yellow. Antennal segments 1-8 yellow, last three segments black except yellowish apex of ventral side of last segment.

Pronotum regularly elliptical, with maximum width in the middle, sides broadly rounded. Disc at top convex with lower placed area above head, lateral lobes distinctly separated by a deep sulcus explanate margin. Surface of elevated part of disc with regular longitudinal striation, area above head centrally punctured on sides with more or less striate sculpture, lateral lobes punctate. Explanate margin on dark parts coarsely punctate, appears irregular, on yellow parts also coarsely but shallowly punctate, appears irregular, transparent, with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles distinctly protruding anterad, angulate to acute. Disc irregularly convex in profile, with high H-shaped elevation in postscutellar area and shallow but distinct scutellar and principal impressions (fig. 216). Anterior branches of H-shaped elevation surrounding postscutellar impressions, posterior branches short thus second interval not elevated, paler parts of disc more or less elevated form irregular folds. Punctation coarse and dense with distance between punctures mostly smaller than puncture diameter. Rows almost completely regular but partly broken by elytral relief. Marginal row distinct, its punctures twice coarser than punctures in central rows. Intervals very narrow, mostly linear and disturbed by elevated parts of paler relief, only on sides of disc more or less regular but narrower than rows. Marginal interval well marked on whole length but only slightly wider than neighbouring rows with distinct lateral fold. Surface of disc appears shiny, Explanate margin moderately declivous, broad, in the widest part less than three times narrower than disc. Surface of explanate margin very coarse and dense punctate, punctures tend to form short grooves thus whole surface appears rugose. Apex of elytral epipleura mostly glabrous only apical edge of elytra with row of very short setae.

Eyes large, gena obsolete. Clypeus moderately broad, 1.1 times as wide as long, frontal grooves very fine, running in distance from margin of eye and converging in triangle. Area between grooves and margin of eye with row of setose punctures. Surface of clypeal plate with flat, shiny, with few small, setose punctures. Labrum not emarginate. Antennae slim, segments 9-10 elongate, 1.3-1.4 times as long as wide. Length ratio of antennal segments: 100:65:76:76:82:65:74:59:59:82:153. Segment 3 approximately 1.2 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, moderately impressed along lateral margins, moderately broad apically. Area between coxae flat, shiny. Central part of rhomboidal apex elevated, mostly smooth, at top with few punctures, sides impressed with few setose punctures.

Claws with moderately large basal tooth. Spermatheca (fig. 258).

DISTRIBUTION MADAGASCAR EST (map 30).

## Remarks

A very distinct species. Its subtriangular body with base of elytra much wider than pronotum and dorsal colouration with black basal half of pronotum and mostly black elytra with only yellow fenestrate spot on explanate margin and more or less visible yellowish spots in apex of elytra are unique. *Cassida rimosa* (BOH.) and *C. sanguinicollis* BOH. belongs to the same group, they have similar subtriangular body shape and pronotal disc with regular longitudinal striation but differs in distinct dorsal pattern. Similar colouration have *Cassida currax* SP. and *C. flavooculata* n. sp. but differ in short-oval to subcircular body with base of elytra not or only slightly wider than pronotum.

#### MATERIAL EXAMINED

MADAGASCAR EST: - Tamatave distr., Maromizaha, 21-24 XI 1995, 1 ex., J. STO-LARCZYK [DBET]. - Sambava distr., Marojejy Ouest, 1140 m, IX-X 1959, 1 ex., P. SOGA [DBET].

#### Cassida tenax SPAETH, 1915

(figs. 217-219, map 30)

Cassida (Cassida) tenax SPAETH, 1914: 116 (nomen nudum). Cassida tenax SPAETH, 1915: 138, 1934: 292. – BOROWIEC, 1999 a: 288.

TYPE MATERIAL

Holotype: MADAGASCAR CENTRAL: « Mahatsinjo près Tananarive » [MM].

#### DESCRIPTION

Length: 5.5-6.3 mm, width: 4.55-5.2 mm, length of pronotum: 2.0-2.2 mm, width of pronotum: 3.8-4.1 mm, length/width ratio 1.20-1.27, width/length ratio of pronotum: 1.80-2.00. Body subcircular with maximum width slightly before the middle (figs. 217-218).

Pronotal disc completely black or only area above head brown. Explanate margin in the darkest specimens mostly black with only anterior margin of pronotum yellow, in the palest specimens only sides of explanate margin brown and to anterior margin gradually yellowish. Scutellum black. Elytral disc completely dark brown to black. Explanate margin in the darkest specimens black with only edge of elytra yellow, in the palest specimens dark brown anteriorly and gradually paler brown posterad with elytral edge yellowish or yellowish-red. Clypeus yellow. Thorax black, abdomen mostly black more or less surrounded by yellow margin. Legs yellow except brown to black coxa. Antennal segments 1-6 yellow, last five segments gradually infuscate with two apical segments usually black except yellowish ventral side of apex of last segment, sometimes only two or three last segments darkened. Pronotum slightly irregularly elliptical, with maximum width slightly behind the middle, sides narrowly rounded. Disc slightly convex, indistinctly separated from explanate margin. Whole surface of disc coarsely and densely punctate, punctures partly touching each other and tend to form longitudinal striation, only area above head indistinctly sculptured. Explanate margin on dark parts finely sculptured, sometimes appears indistinctly striated, on yellow parts almost smooth and shiny, transparent, with well visible honeycomb structure.

Base of elytra slightly wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, subangulate. Disc irregularly convex in profile, with distinct H-shaped elevation in postscutellar area and shallow but distinct scutellar and principal impressions (fig. 219). Anterior branches of H-shaped elevation surrounding postscutellar impressions, posterior branches prolongate into elevated second interval, also fourth interval in the middle and sixth interval on slope tends to form shorter or longer longitudinal fold. Punctation moderately coarse but dense with distance between punctures mostly smaller than puncture diameter. Rows more or less regular and visible only in sutural and marginal parts of disc, central part of each appears mostly irregularly punctate. Marginal row distinct, its punctures only slightly coarser than punctures in central rows. Intervals marked only in elevated parts, on most parts of disc indistinct or linear. Marginal interval well marked on whole length but not or only slightly wider than neighbouring rows. Surface of disc appears shiny. Explanate margin moderately declivous, moderately broad, in the widest part four times narrower than disc. Surface of explanate margin as coarse and dense punctate as disc, appears irregular. Apex of elytral epipleura mostly glabrous only apical edge of elytra with row of very short setae.

Eyes large, gena obsolete. Clypeus broad, 1.2 times as wide as long, frontal grooves very fine, running mostly close to margin of eye and converging in obtuse triangle on apex of clypeus. Area between grooves and margin of eye and above upper margin of labrum with row of setose punctures. Surface of clypeal plate with shallow longitudinal impression, shiny, with several small, setose punctures. Labrum broadly emarginate to 1/6 length. Antennae slim, segments 9-10 slightly longer than wide. Length ratio of antennal segments: 100:64:88:82:76:59:62:59:59:112. Segment 3 approximately 1.4 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, not impressed along lateral margins, very broad apically. Area between coxae flat, shiny, with few setose punctures. Central part of rhomboidal apex elevated, mostly smooth, at top with few punctures, sides along upper margin with deep punctate grooves.

Claws with small basal tooth. Spermatheca (fig. 263).

#### DISTRIBUTION '

MADAGASCAR CENTRAL and Est (map 30).

## REMARKS

*Cassida tenax* belongs to the group of moderately large species with short-oval to subcircular body, pronotum and elytra mostly black, including black explanate margin,

and base of elytra indistinctly to moderately wider than pronotum. The group comprises also C. currax SP. and C. flavooculata n. sp., also melanistic form of C. trossula SP. is similar. It differs from C. currax and C. flavooculata in elytra completely black without yellow spot in the middle of the border between disc and explanate margin and more shiny dorsal surface. C. flavooculata distinctly differs also in mostly black legs, smaller size with length 4.9 mm, and finer pronotal sculpture not forming striation. C. currax is distinctly larger species with mean length 5.01 mm while in C. tenax 5.9 mm. Melanistic form of C. trossula differs in large yellow spot on explanate margin.

#### MATERIAL EXAMINED

MADAGASCAR EST: - Anjanaharibe-Sud, Marolakana River env., 14°45'16.83"S, 49°29'14.74"E, 25-27 X 2007, 1 spec., J. ŠŤASTNÝ [LS]. – Moramanga, Andasibe, vic. Anevoka, Forest Pluviale de Maromitza NR, 950-1150 m, 13-26 XI 2004, 1 ex., J. BERG & D. BARTSCH [SMNS]. - Moramanga prov., Périnet, 29 I 1938, 1 ex., B. KRECZMER [DBET]. - Perinet, 9 X 1959, 1 ex., F. KEISER [MM]. - Sambava distr., Marojejy Col Central, 1700 m, I 1960, 1 ex., P. SOGA [DBET]. - Sambava distr., Marojejy Ouest, 1300 m, IX-X 1959, 3ex., P. SOGA [MM, DBET].

#### Cassida trianguliformis n. sp. (figs. 210-211, map 28)

# TYPE MATERIAL

Holotype: MADAGASCAR SUD: « E Madagascar, 25.-28.12.1998, 32 km ESE of Betroka, 1650-1700 m, Vohitrosa Forest, o.5 km S of ▲ 1798 m, P. Bulirsch » [DBET].

## ETYMOLOGY

Named after its subtriangular body outline.

#### DESCRIPTION

Length: 4.05 mm, width: 3. 45 mm, length of pronotum: 1.4 mm, width of pronotum: 2.65 mm, length/width ratio 1.17, width/length ratio of pronotum: 1.89. Body subtriangular (fig. 210).

Pronotum yellow, disc with large black M-shaped spot as in fig. 210. Scutellum black. Disc of elytra black with yellow reticulate relief as in fig. 210, marginal interval and apex yellow. Clypeus yellow with brown basal corners. Thorax black. Abdomen almost uniformly black only last sternite narrowly surrounded by yellow. Legs yellow, only coxae dark brown to black. Two basal antennal segments yellow, remaining segments missing in the only known specimen.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, on whole length of sides separated from explanate margin by furrow, lateral lobes not separated from disc by sulcus, area above head indistinctly separated. Surface of disc smooth and shiny. Explanate margin smooth and shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small crenulation, humeral angles moderately protruding anterad, elytral margin behind humeral angle shallowly emarginate thus angles appear acute. Disc regularly convex in profile, with top of convexity in the middle (fig. 211). Top of disc with low H-shaped elevation and shallow postscutellar and principal impressions. Punctation moderately coarse but dense, interspaces distinctly narrower than punctures, due to impunctate elytral relief punctation appears arranged irregularly but on black parts of disc punctures tend to form regular rows. Marginal row distinct, with sparse punctures, twice coarser than punctures in central rows but deeply impressed with elevated interspaces. Intervals on black parts of disc mostly as wide as puncture diameter. Marginal interval well marked on whole length but moderately broad, as wide as two punctures combined, humeral fold indistinct, fold very low but broad. Surface of intervals shiny. Explanate margin moderately declivous, broad, in the widest part slightly more than three times narrower than disc. Surface of explanate margin with very shallow and dense punctation appears irregular, transparent with well marked honeycomb structure. Apex of elytral epipleura with sparse short setae.

Eyes large, gena obsolete. Clypeus moderately narrow, 1.1 times as long as wide, frontal grooves fine, converging in triangle with obtuse apex. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate slightly impressed, shiny with few setose punctures. Labrum broadly and shallowly emarginate to 1/5 length. Antennae broken in the only known specimen except two basal segments.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, area between coxae on sides deeply impressed with dense setose punctures, central part between coxae and central part of rhomboidal apex convex, with few coarse, setose punctures, shiny, sides impressed with dense, coarse, setose punctures, appear irregular.

Claws with large basal tooth.

#### DISTRIBUTION

MADAGASCAR SUD (map 28).

#### REMARKS

*Cassida trianguliformis* n. sp. belong to the group of moderately large species with pronotal disc with large, black M-shaped spot and elytral disc black with irregular yellow relief. Similar size, pattern and sculpture have *C. andohahelana* n. sp. and *C. bulirschi* n. sp. but they differ in body short-oval and humeri without emargination behind humeral angle. Similar subtriangular shape and reticulate pattern of elytra has *C. pseudovicinalis* n. sp. but differs in yellow pattern not or only slightly elevated, distinctly finer and sparser elytral punctation, and less acute humeral angles. *C. agilis* Sp. have similarly acute humeral angles and similar pattern of elytra but differs in larger size with length 4.7-5.8 mm, venter uniformly yellow, body rather circular to oval than subtriangular, and pronotal pattern forming two black C-shaped spots.

MATERIAL EXAMINED No additional material.

## Cassida trossula Spaeth, 1915

(figs. 220-221, 238, map 31)

Cassida (Cassida) trossula Spaeth, 1914: 116 (nomen nudum). Cassida trossula Spaeth, 1915: 137. – Вогочіес, 1999 а: 289.

# TYPE MATERIAL

Syntype: MADAGASCAR CENTRAL: « Tananarivo » [MM]. – syntype: MADAGASCAR CENTRAL: « Mahatsinjo près Tananarive » [MNHN].

#### DESCRIPTION

Length: 5.55-6.2 mm, width: 4.35-5.2 mm, length of pronotum: 2.0-2.15 mm, width of pronotum: 3.7-4.1 mm, length/width ratio 1.17-1.27, width/length ratio of pronotum: 1.81-1.95. Body short-oval, males slightly stouter than females (fig. 220).

Very variable species. In the palest specimens dorsum uniformly yellowish or elytra with only punctures marked with black. Typically and most common specimens have pronotum yellow to rusty yellow, at base with brown M-shaped spot, elytral disc yellow to rusty yellow and punctures with black centre and black areola, areolae partly connected then black form irregular reticulate pattern, explanate margin of elytra yellow with broad humeral, brown to black, spot never extending to lateral margin of elytra, often extending to only half width of the explanate margin. In the darkest specimens pronotal disc dark brown to black, explanate margin black basally, brown medially and yellow above head, border between disc and explanate margin partly rusty yellow, elytral disc black, explanate margin black, in the middle with large yellowish fenestrate spot. Explanate margin of elytra uniformly yellow or with broad humeral spot usually extending to both lateral and anterior elytral edges. Sometimes the humeral spot more or less shortened, pronotal disc in specimens with the humeral spot immaculate or with well marked M-shaped spot, or completely black. Clypeus always yellow. Thorax usually black, sometimes with yellowish lateral plates, abdomen from uniformly yellow, or with large median, brown spot, or mostly black broadly surrounded by yellow. Legs yellow, only coxae more or less infuscate. Antennae mostly yellow, two to four apical segments more or less infuscate to black, occasionally antennae uniformly yellow. The dark colour of ventrites is not correlated with degree of black on dorsum and specimens with mostly black dorsum often have yellow antennae, yellow lateral plates of thorax and mostly yellow abdomen.

Pronotum irregularly elliptical, with maximum width in basal 1/3 length, sides narrowly rounded. Disc slightly convex, on sides separated from explanate margin by short and shallow furrow. Surface of disc with small, sparse to moderately dense to dense punctation, interspaces mostly wider than puncture diameter, punctures in latero-basal part of disc sometimes tend to form short striation, in specimens with black pronotal disc often whole sides of disc distinctly striate. Explanate margin with fine and shallow punctation, appears smooth, transparent with well visible honeycomb structure. Whole surface of disc shiny but without mirror brilliance.

Base of elytra only moderately wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles only slightly protruding anterad, rounded. Disc irregularly convex in profile, with top of convexity in postscutellar point, with distinct scutellar and principal impressions, at top with distinct H-shaped elevation (fig. 221). Anterior branches of the figure surrounded postscutellar elevation, posterior branches prolongate into more or less elevated second interval. Punctation moderately coarse and moderately dense, mostly regular but with additional punctures in postscutellar area, and in first and fourth interval. Punctures disposed in rows irregularly, partly group 2-4 together, partly one by one. In specimens with reticulate pattern yellow impunctate parts of disc form irregular, very low relief. Marginal row distinct, with coarse and moderately dense punctures, twice coarser than in central rows. Intervals except elevated second interval mostly indistinct, usually as wide as rows, sometimes partly disturbed by elytral relief. Marginal interval well marked on whole length, moderately broad, in anterior half as wide as submarginal row and submarginal interval combined, no humeral fold, lateral fold narrow but well marked. Surface of intervals shiny but without mirror brilliance. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Surface of explanate margin shallowly and densely punctate, appears irregular, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura with, short, erect setae but in old dried specimens often appears bare.

Eyes large, gena obsolete. Clypeus approximately as long as wide, frontal grooves very fine, running close to margin of eyes and converging in arch on top of clypeus. Area between groove and margin of eye with row of long setae. Surface of clypeal plate flat or with shallow impression in the middle, glabrous, smooth and shiny, sometimes with few small setose punctures. Labrum broadly emarginate to 1/5 length. Antennae moderately slim, segments 9-10 approximately 1.1 times as long as wide. Length ratio of antennal segments: 100:55:83:79:76:59:62:55:55:52:117. Segment 3 approximately 1.5 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, strongly expanded apically, shallowly impressed along lateral margins, impressions with row of setose punctures, area between coxae smooth and shiny, sometimes elevated to carinate, rhomboidal apex in the middle convex with several setose punctures, shiny, size impressed with few coarse to dense, setose punctures, shiny, punctures often tend to form longitudinal grooves.

Tarsal claws with small basal tooth.

# DISTRIBUTION

MADAGASCAR CENTRAL, EST, OUEST and SUD (map 31).

## REMARKS

*Cassida trossula* SP. with *C. collucens* SP., *C. concallescens* SP., *C. densestriata* n. sp., and *C. prospera* SP., forms a natural group of species with moderately large size, pronotal sides narrowly rounded, base of elytra not or only slightly wider than pronotum, moderately coarse and partly irregular punctation, and pronotal disc punctate or with more or less visible striation. *C. concallescens* differs in higher elytral sculpture forming except postscutellar H-shaped figure transverse and V-shaped elevation in 2/3 length of disc. *C. densestriata* differs in groundcolour of elytra predominantly brown, denser punctation of pronotal disc, and denser nad more irregular punctation of elytra. *C. prospera* differs elytral sculpture limited only to postscutellar H-shaped elevation, elytral pattern never forming humeral spots, and pronotal pattern in dark aberration forms two separate S-shaped spots. *C. collucens* is the most similar species, displaying similar variability of dorsal coloration and proper identification requires comparison with series of properly identified specimens. Base of elytra is in *C. trossula* slightly less wider than pronotum than in *C. collucens* and sides of pronotum slightly more angulate. Elytral sculpture in *C. trossula* never forms more or less isolated spots on dark background. Although the differences are visible in comparison of long series of specimens, separate status of both taxa needs verification by biological and genetic studies.

MATERIAL EXAMINED

MADAGASCAR CENTRAL: - Tananarive, 2 ex. [DBET].

MADAGASCAR EST: – Analamazaotra env., E of Moramanga, 5.-11 XII 1996, 1 ex., J. STOLARCZYK [DBET]. – Analamazaotra env., 3-8 XII 1997, 1 spec., P. SENFT [LS]. – Maromizaha (Andasibe), 19-20 XII 1997, 2 ex., P. PACHOLÁTKO [NHMB]. – Andasibe (Périnet) Nat. Park, 950 m, 27 X 2005, 2 ex., J. ŠTASTNÝ [LS]. – Maromizaha (Andasibe), 19-20 XII 1997, 3 ex., P. PACHOLÁTKO [LB, NMB]. – Moramanga, rte. d'Anosibe, 1.57, 1 ex., R.J.E. [DBET]. – Rogez, 1 ex. [DBET]. – Tamatave [= Toamasina], 1 ex. [DBET]. – Toamasina distr., Analamazaotra env., 3-8 XII 1997, 1 ex., leg. P. SENFT [LS].

MADAGASCAR OUEST: - Maromandia, 2 ex. [DBET].

MADAGASCAR SUD: – Andohahela Nat. P., VI-XII 1991, 2 ex., B. RANDRIAMAMPIO-NONA [DBET].

MADAGASCAR: - Madagascar, 2 ex. [DBET].

Cassida tryznai n. sp. (figs. 222-223, map 29)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « MADAGASCAR, NP Andrigitra, east part, Imaitso forest, M. Trýzna lgt., 22.-25.i.2007 / Collection Lukáš Sekerka, Liberec, Czech Republic » [LS]. – paratype: MADAGASCAR OUEST: « MADAGASCAR, Isalo NP, Amboantrika, Lgt. Mráček, 19.1.2007 » [DBET].

#### ETYMOLOGY

Named after collector of the holotype specimen Miloš TrýzNA, Czech specialist in Bostrychidae.

### DESCRIPTION

Length: 4.35-4.8 mm, width: 3.45-3.8 mm, length of pronotum: 1.55-1.75 mm, width of pronotum: 2.7-3.0 mm, length/width ratio 1.26, width/length ratio of pronotum: 1.71-1.74. Body short-oval (fig. 222).

Pronotal disc black except anterior 1/3 of area above head yellow, explanate margin yellow except black parts at base of pronotal disc. Scutellum black. Disc of elytra completely black including marginal interval, in humeral part black colour slightly extending behind marginal row. Explanate margin of elytra yellow. Clypeus yellow. Thorax black. Abdomen mostly black, only apex narrowly surrounding by yellow margin. Legs yellow. Antennae with segments 1-9 yellow and segments 10-11 black, sometimes segment 9 more or less infuscate.

Pronotum regularly elliptical, maximum width in the middle, sides broadly rounded. Disc moderately convex, on whole length of sides separated from explanate margin by furrow, lateral lobes not separated from disc, area above head well separated. Surface of basal parts of disc with fine longitudinal striation only area above head mostly with regular surface. Explanate margin on black parts with fine and sparse punctation, surface appears regular, yellow part transparent with well visible honeycomb structure. Black part of pronotum dull, yellow part shiny.

Base of elytra moderately wider than base of pronotum, basal margin of disc without crenulation, humeral angles moderately protruding anterad, angulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow scutellar impressions (fig. 223). Top of disc with low but well marked H-shaped elevation with short branches. Punctation moderately coarse but dense, completely regular, interspaces in rows mostly narrower than punctures, only in submarginal rows some interspaces as wide as or slightly wider than puncture diameter. Marginal row distinct, with moderately dense punctures, interspaces mostly twice wider than punctures, punctation twice coarser in central rows with slightly elevated interspaces. Intervals 1.5 times to twice wider than rows, second interval not wider than neighbouring ones. Marginal interval well marked on whole length but moderately broad, only as wide as submarginal row and submarginal interval combined, humeral and lateral folds indistinctly marked. Surface of intervals slightly dull only elevated parts slightly shiny. Explanate margin moderately declivous, moderately broad, in the widest part slightly more than four times narrower than disc. Surface of explanate margin shallowly but densely punctate with surface slightly irregular but shiny. Apex of elytral epipleura with sparse short setae.

Eyes large, gena obsolete. Clypeus only slightly longer than wide, frontal grooves fine, running close to margin of eye and converging in regular triangle. Along external sides of clypeal triangle row of small setose punctures. Surface of clypeal plate flat, smooth and shiny. Labrum moderately emarginate to 1/4 length. Antennae stout, segments 9-10 approximately 1.1 times as wide as long. Length ratio of antennal segments: 100:68:80:76:76:60:64:48:52:52:116. Segment 3 approximately 1.2 times as long as segment 2 and 1.1 times as long as segment 4.

Prosternal collar as long as last palpomere. Prosternal process between coxae moderately broad, strongly expanded apically, area between coxae with impressed sides with rows of setose punctures, central part moderately flat or slightly convex with few setose punctures, shiny, central part of rhomboidal apex convex, with few coarse, setose punctures, shiny, sides impressed with few coarse, setose punctures.

Claws with small basal tooth.

DISTRIBUTION MADAGASCAR EST and OUEST (map 29).

## Remarks

*Cassida tryznai* n. sp. with *C. atromarginata* n. sp. and *C. nigroflavens* Borow. forms a group of small species with pronotal disc completely black, and elytra completely black or at most few yellowish spots, and elytral punctation moderately coarse to coarse, completely regular and dense. *C. nigroflavens* differs in subangulate pronotal sides, disc of pronotum with extremely dense punctation and irregular surface but without regular longitudinal striation, and black colour on elytra not extending behind marginal row. *C. atromarginata* at first glance looks similar but differs in pronotal surface slightly irregular, with moderately dense punctation but never forming longitudinal striation, black colour of elytra more distinctly extending behind marginal row, particularly in anterior 1/3 length explanate margin of elytra mostly black, and punctation of elytra coarser with intervals mostly as wide as or slightly narrower than rows.

MATERIAL EXAMINED No additional material.

# Cassida tsaratanana Borowiec, 1994

(figs. 224-225, map 28)

Cassida alticola BOROWIEC, 1988: 548, not Cassida (Lordicassis) alticola CHEN et ZIA, 1984. Cassida tsaratanana BOROWIEC, 1994: 157 (replacement name for Cassida alticola BOROWIEC, 1988 not CHEN et ZIA, 1984), 1999 a: 289.

# TYPE MATERIAL

Holotype: MADAGASCAR SAMBIRANO: « Mt Tsaratanana, 1500 m, X 1949, R. Paulian » [MNHN]. – 2 paratypes: MADAGASCAR SAMBIRANO: « Mt Tsaratanana, 1500 m, X 1949, R. Paulian » [BMNH, MM].

### DESCRIPTION

Length: 5.6-6.2 mm, width: 4.7-4.9 mm, length of pronotum: 2.0-2.1 mm, width of pronotum: 3.8-3.9 mm, length/width ratio 1.19-1.26, width/length ratio of pronotum: 1.86-1.90. Body almost circular, males slightly stouter than females (fig. 224).

Dorsum yellow, only punctures in rows 1-7 marked with black and punctures in rows 8-10 marked with red. Clypeus yellow. Thorax completely black. Abdomen and legs yellow, only coxae partly brownish. Antennae uniformly yellow.

Pronotum elliptical, with maximum width in the middle, sides subangulate. Disc almost depressed, on sides separated from explanate margin by short furrow. Surface of disc glabrous and shiny, with several small, shallow and scarce punctures, appears smooth. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra slightly wider than base of pronotum, basal margin of disc with distinct, small black crenulation, humeral angles moderately protruding anterad, in male obtuse, in female subangulate. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar and principal impressions, top of disc with low H-shaped elevation (fig. 225). Punctation small but appear larger because of dark areola, mostly regular but with some additional confused punctures on intervals 3 and 5, also in postscutellar impressions punctures disposed irregularly. Punctures in rows partly groups in 2-3 together thus in some parts of disc interspaces smaller than puncture diameter in other parts as wide as to thrice wider than punctures. Marginal row distinct, with dense and coarse punctures, particularly between humeral and lateral fold punctures extremely coarse and deep, three to four time coarser than punctures in lateral rows. Intervals well marked, 1.5-2.0 times as wide as rows, on sides of disc broken by low transverse folds. Marginal interval well marked on whole length, broad, in anterior half twice wider than lateral intervals, with narrow and only slightly elevated humeral and lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Explanate margin densely but shallowly punctate, punctures as coarse as those on disc, surface appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral with few short setae.

Eyes large, gena hardly marked. Clypeus narrow, approximately as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in obtuse angle on apex of clypeus. Area between frontal grooves and margin of eyes with row of punctures armed with a very long setae. Surface of clypeal plate flat, smooth and shiny, with few punctures armed with a long setae. Labrum distinctly emarginate to ¼ length, its upper margin with few long setae. Antennae slim, segments 9-10 distinctly longer than wide. Length ratio of antennal segments: 100:60:90:80:50:70:50:60:65:110. Segment 3 approximately 1.5 times as long as segment 2 and as long as segment 4.

Prosternal collar as long as length of last palpomere. Prosternal process broad, deeply impressed along lateral margins, very broad apically, area between coxae with several setose punctures, rhomboidal apex convex, on sides rugose and centrally with several punctures.

Claws of fore tarsi with moderately large, of mid and hind tarsi with small basal tooth.

DISTRIBUTION MADAGASCAR SAMBIRANO (map 28).

### Remarks

Cassida tsaratanana belongs to the group of moderately large species close to C. collucens Sp. The group is characterised by stout body, base of elytra only slightly wider than pronotum with humeri moderately protruding anterad, and pronotal sides narrowly rounded to subangulate. Only C. tsaratanana and the palest form of C. collucens have dorsal pattern limited to dark punctures. In C. tsaratanana punctures in rows 1-7 are marked with black and punctures in rows 8-10 marked with red, while in C. collucens all punctures are marked with black. C. collucens differs also in punctures of pronotal disc tend to form short striation and two to three apical segments infuscate. The palest form of C. trossula SP. has also elytral pattern limited to dark areoles of punctures but the areolae are broader and on sides of disc and slope partly coalescent. form more or less visible dark reticulation. C. trossula differs also in punctures in latero-basal part of disc tend to form short striation. The palest form of C. latecincta FAIRM, is also similar but differs in punctation marked with red on whole elvtral disc and more developed elytral sculpture with some elevated reticulation on sides of disc. C. montana Borow. and C. nigropunctata n. sp. have elytral pattern also limited to black punctures but they belong to different group of species and distinctly differs in smaller size with length below 5 mm, base of elytra much wider than pronotum and rounded pronotal sides. C. pulpa SP. differs in smaller size with length below 5.5 mm, pronotal size more rounded, base of elytra more distinctly wider than pronotum and humeral angles more protruding anterad.

MATERIAL EXAMINED No additional material.

# Cassida ultima n. sp. (figs. 233-234, map 32)

TYPE MATERIAL

Holotype: MADAGASCAR EST: « Madagascar centr. or., ANDASIBE env., 23.-25.. xi.1999, lgt. F. et. L. Kantner » [DBET]. – paratype: MADAGASCAR: « MADAGASCAR Collection Le Moult / cll. Achard, Mus. Pragense / rufomicans ab., Spaeth det. / Cassida rudicollis (Spaeth), det. W.D. Hincks » [NMP]. – paratype: MADAGASCAR: « MADA-GASCAR Collection Le Moult / cll. Achard, Mus. Pragense / Cassida rufomicans ab., Spaeth det. » [NMP].

# Etymology

Latin "ultimus" means last. It was the last new species we found in examined collections.

# DESCRIPTION

Length: 6.1-6.4 mm, width: 5.2-5.7 mm, length of pronotum: 2.05-2.2 mm, width of pronotum: 3.7-3.9 mm, length/width ratio 1.12-1.17, width/length ratio of pronotum: 1.77-1.80. Body subcircular (fig. 233).

Pronotum and scutellum yellow. Disc of elytra rusty yellow with paler yellow elevated parts thus indistinctly pale maculate. Marginal interval yellow. Explanate margin yellow. Clypeus, ventrites and legs uniformly yellow. Antennae with segments 1-5 yellow and segments 8-11 black, segment 6 and 7 more or less infuscate.

Pronotum regularly elliptical, maximum width in the middle, sides very broadly rounded. Disc slightly convex, on whole length of sides separated from explanate margin by furrow. Top of disc usually with irregular punctation, punctures tend to form longitudinal grooves or striation, surface of whole top of disc except area above head appears slightly irregular. Area above head shallowly punctate without striation, lateral lobes impunctate. Explanate margin shallowly punctate, appears distinctly irregular but shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc without crenulation, humeral angles distinctly protruding anterad, angulate. Disc irregularly convex in profile, with angulate top of convexity in postscutellar point, with deep scutellar and principal impressions (fig. 234). Postscutellar area with distinct, high H-shaped fold, anterior branches of the fold surrounding postscutellar impressions, posterior branches prolongate into elevated second interval, slope with few irregular transverse folds. Punctation very coarse and dense, regular, punctures almost touching each other. Marginal row distinct, with dense punctures, only slightly coarser than punctures in central rows. Intervals mostly linear only elevated second and partly elevated fourth intervals well marked, some interspaces form transverse folds or wrinkles paler coloured than ground colour of disc. Marginal interval well marked on whole length but narrow, only as wide as submarginal row, no humeral fold, lateral fold in shape of irregular relief. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, very broad, in the widest part less than three times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears distinctly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes moderately large, gena short but well marked, as long as half length of second antennomere. Clypeus broad, 1.1 times as wide as long, frontal grooves fine, running in distance to margin of eye and converging in regular triangle. Along external sides of clypeal triangle with row of small setose punctures. Surface of clypeal plate flat, smooth and shiny with few small setose punctures. Labrum narrowly emarginate to 1/4 length. Antennae slim, segments 9-10 approximately 1.4-1.5 times as long as wide. Length ratio of antennal segments: 100:50:53:56:67:50:58:53:58:61:119. Segment 3 approximately 1.1 times as long as segment 2 and slightly shorter than segment 4.

Prosternal collar distinctly longer than last palpomere. Prosternal process between coxae moderately broad, moderately expanded apically, lateral margins deeply impressed with rows of setose punctures, between coxae flat or slightly convex, smooth and shiny, central part of rhomboidal apex slightly convex, smooth and shiny, sides slightly impressed with few setose punctures.

Claws with large basal tooth.

# DISTRIBUTION MADAGASCAR EST (map 32).

# Remarks

Cassida ultima n. sp. with C. laetabilis SP., C. rubroornata (BOH.) and C. rudicollis (SP.) forms a natural group of moderately large species with pronotum of very broad sides, base of elytra much wider than pronotum, pronotal disc with more or less distinct longitudinal striation, distinct elytral sculpture and coarse punctation with linear intervals, ventrites uniformly yellow and antennae with apical 3-6 segments infuscate to black. C. laetabilis and C. rubroornata differ in dark pattern forming brown or black spot on pronotum and brown to black pattern on elytral disc. C. rubroornata differs also in elytral disc with four red spots. C. rudicollis looks very similar but differs in less circular body with sides of elytra more converging posterad, particularly in females, finer pronotal striation, base of elytra slightly more wider than pronotum with slightly more angulate humeri, and less distinct sculpture on slope of disc.

Franz SPAETH identified both paratype specimens as "*Cassida rufomicans* ab." but true *C. rufomicans* distinctly differs in almost hemispherical body with base of elytra only slightly wider than pronotum, groundcolour of pronotum and elytra yellowish- to reddish-brown, elytra often with brown pattern, surface of pronotal disc more distinctly striated, and very broad clypeus approximately 1.6 times as wide as long.

MATERIAL EXAMINED No additional material.

Cassida umbonata Borowiec, 1999

(figs. 230-232, map 29)

Cassida umbonata BOROWIEC, 1999 b: 445.

TYPE MATERIAL

Holotype: MADAGASCAR OUEST: « Hera, Ankazoabo » [MM]. – 2 paratypes: MADA-GASCAR OUEST: « Hera, Ankazoabo » [MNHN, DBET].

DESCRIPTION

Length: 11.6 mm, width: 9.2-94 mm, length of pronotum: 3.7 mm, width of pronotum: 8.4-8.5 mm, length/width ratio 1.23-1.26, width/length ratio of pronotum: 2.27-2.30. Body oval (figs. 230-231).

Pronotum and scutellum yellow. Elytra with brown to black pattern, in the palest form the pattern forms numerous spots as in fig. 231 occupying almost whole disc surface except two external intervals, in the darkest form almost whole disc brown to black except two marginal intervals (fig. 230). Explanate margin of elytra, clypeus, antennae, ventrites and legs uniformly yellow.

Pronotum very broad, approximately2.3 times wider than long, with maximum width at base and as wide as base of elytra. Base on sides distinctly emarginate, angles

strongly protruding posterad and angulate. Disc slightly convex, indistinctly bordered from explanate margin but with well separated area above head. Surface of disc mostly smooth, only in central part indistinctly wrinkled, slightly dull. Explanate margin without tendency to form a gutter, slightly declivous, its surface smooth, slightly dull.

Scutellum triangular with rounded apex, without punctures or sulci. Base of elytra as wide as base of pronotum, humeral angles form an angle of 110°, obtuse, margin behind humerus not emarginate. Disc strongly convex, with large, conical, postscutellar tubercle, elytral profile behind top of the tubercle concave (fig. 232). Postscutellar impressions shallow but distinct, no principal or lateral impressions. Punctation of disc regular, very coarse and dense, distance between punctures 0.5-0.8 times wider than puncture diameter. In form with yellow and brown to black pattern yellow parts are slightly more convex than dark pattern, form a relief; in this form elytral rows of punctures partly broken or disordered by the relief. Intervals in sutural half of disc as wide as to slightly wider than rows, in lateral part of disc slightly narrower than rows, except broad interval 9 which is approximatelytwice wider than rows. Surface of intervals irregular, some parts of intervals convex, surface of elytral disc appears irregular. Punctures in submarginal row slightly coarser than in rows above, in marginal row slightly coarser than in submarginal one. Marginal row in area below humeral callus strongly impressed, forms a concavity. Explanate margin broad, approximatelytwice narrower than width of disc of each elytron, declivous, its surface only slightly irregular. Apex of elytral epipleura with sparse erect hair.

Eyes large, gena obsolete. Clypeus approximately 1.6 times wider than long, flat, clypeal lines very fine but visible on whole length of clypeus. Surface of clypeal disc smooth, slightly dull, without punctures. Labrum emarginate to 1/6 length. Antennae moderately elongate, length ratio of antennal segments: 100:46:86:83:73:66:73:66:6 3:66:133. Segment 3 approximately 1.8 times as long as segment 2 and only slightly longer than segment 4.

Prosternal process narrow in the middle, expanded apically, sides only slightly impressed, its apex impunctate, only on sides with surface slightly irregular. Whole surface of prosternal process covered with sparse, long pubescence.

Claws large, simple.

DISTRIBUTION MADAGASCAR OUEST (map 29).

# REMARKS

It forms a unique group of species, including also *Cassida acutangula* BOROW. and *C. pauliani* BOROW., characterized by large size (length 7.4-11.6 mm), pronotum with bisinuate base, and basal corners acute and protruding posterad. It distinctly differs from both relatives in large conical postscutellar tubercle (no tubercle in *C. acutangula* and *C. pauliani*) and length above 11 mm (below 9 mm in both relatives). It is the largest Madagascan member of the genus *Cassida* L.

MATERIAL EXAMINED No additional material.

### Cassida unicatenata (WEISE, 1910)

(figs. 226-227, map 30)

Coptocycla unicatenata WEISE, 1910: 482, 506. – SPAETH, 1914: 130. Cassida unicatenata: BOROWIEC, 1999 a: 290.

TYPE MATERIAL

Type location unknown. According to WEISE (1910) the species was described from material collected in "Amber-Gebirge" and purchased from H. ROLLE for Berlin museum (ZMHU), however, the type was not found there.

## DESCRIPTION

Length: 4.9-5.2 mm, width: 4.0-4.4 mm, length of pronotum: 1.7-1.85 mm, width of pronotum: 3.2-3.5 mm, length/width ratio 1.18-1.23, width/length ratio of pronotum: 1.88-1.89. Body short-oval (fig. 226).

Pronotum and scutellum uniformly yellow. Elytral disc mostly yellow or ochraceous-yellow on sides with blackish band runs along two submarginal rows and submarginal interval combined, inner margin of the band irregular, without distinct border from pale parts of disc. Yellow elevations in humeral part of disc and slope surrounded by brown to black punctures. Clypeus yellow. Thorax black or with yellowish prosternal process, mesosternum and metasternal process. Abdomen mostly black surrounded narrowly by yellow margin, sometimes also metacoxal process yellowish. Legs yellow, only coxae partly brownish. Antennae mostly yellow, two last segments infuscate to black.

Pronotum slightly irregularly elliptical, with maximum width slightly before the middle, sides rounded. Disc slightly convex, on sides separated from explanate margin by furrow. Basal part of disc moderately coarse, shallowly but densely punctate, punctures almost touching each other, surface appears irregular to granulate. Area above head finely and indistinctly punctate, surface regular. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc without crenulation, humeral angles strongly protruding anterad, angulate. Disc regularly convex in profile, with top of convexity almost in the middle, with shallow but marked scutellar and principal impressions, top of disc with thin H-shaped elevation. Punctation completely regular, coarse and extremely dense, punctures in rows almost touching each other, regularity of rows disturbed only by elytral relief in humeral part and on slope. Marginal row distinct, with dense and coarse punctures, as coarse as or only slightly coarser than in central rows. Intervals mostly linear, second interval slightly elevated but thin, its anterior part surrounds postscutellar impressions. Surface of intervals slightly dull, only elytral relief shiny. Explanate margin moderately declivous, broad, in the widest part approximately three times narrower than disc. Explanate margin densely but shallowly punctate, surface appears only slightly irregular, from slightly

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dull to slightly shiny, transparent with well marked honeycomb structure. Apex of elytral with several short setae.

Eyes large, gena hardly marked. Clypeus narrow, approximately as long as wide, frontal grooves very fine, running mostly close to margin of eye and converging in angle on apex of clypeus. Area between frontal grooves and margin of eyes with row of punctures with row of long setae. Surface of clypeal plate flat or slightly impressed, smooth and shiny, with few punctures armed with a long setae. Labrum distinctly emarginate to ¼ length, its upper margin with few long setae. Antennae slim, segments 9-10 slightly longer than wide. Length ratio of antennal segments: 100:59:76:71:65:4 7:53:47:50:47:100. Segment 3 approximately 1.3 times as long as segment 2 and only slightly longer than segment 4.

Prosternal collar slightly shorter than last palpomere. Prosternal process broad, deeply impressed along middle, very broad apically, area between coxae with several setose punctures, regular, shiny, rhomboidal apex convex in the middle, impressed, its whole surface with several punctures, appears irregular.

Claws large basal tooth.

DISTRIBUTION MADAGASCAR NORD (map 30).

# REMARKS

Elytral sculpture with transverse elevation in posterior third, rusty yellow coloration in central parts of elytral disc, black pattern on sides and uniformly yellow explanate margins are unique for *Cassida unicatenata*. Maculate form of *C. brooksi* BOROW. looks similar but differs in elytra without elevations and smaller size with mean length 4.55 mm (5.05 in *C. unicatenata*).

MATERIAL EXAMINED

Madagascar Nord: – Mt. d'Ambre, 1 ex. [DBET]. – Nd. Madagascar, Amber Gebirge, 1 ex. [DBET].

# Cassida verrucata (BOHEMAN, 1855)

(figs. 228-229, map 32)

Coptocycla verucata Вонеман, 1855: 265, 1856: 176, 1862: 437. – Gemminger and Harold, 1876: 3675. – Weise, 1910: 506. – Spaeth, 1914: 131. Cassida verucata: Borowiec, 1999 a: 291.

TYPE MATERIAL Holotype: MADAGASCAR: « Madagascar, GOUD. » [ZMHU].

### DESCRIPTION

Length: 4.85 mm, width: 4.15 mm, length of pronotum: 1.8 mm, width of pronotum: 3.05 mm, length/width ratio 1.17, width/length ratio of pronotum: 1.69. Body almost circular (fig. 228). Pronotum yellow, disc with large black basal spot. Anterior margin of the black spot bisinuate on sides thus in the middle forms black triangle. At base of the black spot two large, oblique yellow spots, bases of the spots separate. Scutellum yellow with dark margins. Elytral disc black with 34-40 elevated yellow spots of various shape arranged as in fig. 228. Spots on slope and sides separated or partly coalescent but the largest spot at base of elytron never coalescent with spot at top of disc. Marginal interval mostly yellow, punctures of marginal row partly marked with brown or black. Clypeus, whole ventrites and legs yellow. Antennae yellow, only last segments black except yellowish apex of ventral side.

Pronotum elliptical, with maximum width in the middle, sides broadly rounded. Disc slightly convex, but sides well separated from explanate margin by long furrow, also lateral lobes of disc separated from top by fine furrow. Surface of disc glabrous, smooth and shiny. Explanate margin glabrous, smooth, shiny, transparent with well visible honeycomb structure.

Base of elytra much wider than base of pronotum, basal margin of disc with very small black crenulation, humeral angles moderately protruding anterad, angulate to subacute. Disc almost regularly convex in profile, with top of convexity in postscutellar point, with shallow but well marked scutellar impressions, no H-shaped elevation at top of disc, no principal impressions (fig. 229). Punctation fine, regularity of rows completely disordered by yellow elytral relief only in specimens with spots on sides divided into several spots in short distance run more or less regular rows. Distance between punctures rows mostly wider than puncture diameter. Marginal row distinct, with sparse punctures, distinctly coarser than punctures in central rows, particularly in area between humeral and lateral fold punctures are very coarse, three times coarser than punctures on disc. Intervals completely disordered by elytral relief. Marginal interval well marked on whole length, broad, with well marked humeral and very broad lateral folds. Surface of intervals glabrous, smooth and shiny. Explanate margin moderately declivous, moderately broad, in the widest part 2.5 times narrower than disc. Surface of explanate margin shallowly but densely punctate, appears slightly irregular, glabrous, shiny, transparent with well marked honeycomb structure. Apex of elytral epipleura bare.

Eyes large, gena hardly marked. Clypeus moderately narrow, approximately as long as wide, frontal grooves very fine, converging in regular triangle. Area between grooves and margin of eye and upper margin of labrum with row of setae. Surface of clypeal plate with shallow impression in the middle, glabrous, smooth and shiny. Labrum distinctly emarginate to ¼ length. Antennae slim, segments 9-10 approximately 1.4-1.5 times as long as wide. Length ratio of antennal segments: 100:45:60:55:58:55: 60:50:58:120. Segment 3 approximately 1.3 times as long as segment 2 and slightly longer than segment 4.

Prosternal collar as long as last palpomere. Prosternal process broad, moderately impressed along lateral margins, very broad apically. Lateral impressions with row of setose punctures, area between coxa flat, smooth and shiny with few setose punctures, rhomboidal apex with rugose sculpture and few setose punctures.

Claws simple.

# DISTRIBUTION MADAGASCAR CENTRAL and EST (map 32).

## Remarks

It belongs to the *Cassida goudoti* species group and the subgroup characterized by elytral disc black with yellow relief forming numerous convex spots. The group comprises *C. goudoti* (BOH.), *C. andapaensis* BOROW., *C. andohahelana* n. sp., *C. suaveola* (SP.) and *C. verrucata* (BOH.). *C. verrucata* differs from all relatives in ventrites always uniformly yellow (partly to mostly black in other species) and simple claws (with more or less developed basal tooth in other species). *C. andapaensis* at first glance looks the most similar but differs, except partly black ventrites and presence of small basal tooth on claws, in wider and less declivous explanate margin of elytra and only 15 yellow spots on each elytron (17 or more spots in *C. verrucata*).

MATERIAL EXAMINED

Madagascar Central: - Mahatsinjo près Tananarive, 1 ex. [DBET].

Madagascar Est: – Tamatave prov., Andasibe, Maromizaha, 19-20 XII 1996, 1 ex., I. JENIŠ [MS]. – Tamatave prov., Moramanga env., 14-18 XII 1995, 1 ex., 27-30 XII 1996, 1 ex., I. JENIŠ [1 MHNG, 1 MS].

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1

# MALGASY CASSIDINAE SPECIES CHECK-LIST (continuation from volume 1)

## Tribe Cassidini Gyllenhal, 1813

#### Genus Cassida LINNAEUS, 1758

061. Cassida acutangula Borowiec, 1999

062. Cassida agilis SPAETH, 1915

063. Cassida ambrica Borowiec, 1999

064. Cassida andapaensis Borowiec, 1988

065. Cassida andohahelana Borowiec et Świetojańska n. sp.

066. Cassida angulicollis Borowiec et Świętojańska n. sp.

067. Cassida anosyennesensis Borowiec et Świętojańska n. sp.

068. Cassida atroannulus Borowiec et Świętojańska n. sp.

069. Cassida atromarginata Borowiec et Świętojańska n. sp.

070. Cassida atropunctata Borowiec et Świetojańska n. sp.

071. Cassida atrorubra Borowiec, 1999

072. Cassida auropustulata (FAIRMAIRE, 1899)

073. Cassida beniowskii BOROWIEC, 1988

074. Cassida beondrokana Borowiec et Świetojańska n. sp.

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075. Cassida bicallosa SPAETH, 1915

076. Cassida brooksi Borowiec, 1992

077. Cassida bulirschi Borowiec et Świetojańska n. sp.

078. Cassida butterwecki BOROWIEC, 2007

079. Cassida circumsepta SPAETH, 1915

080. Cassida coelebs BOROWIEC, 1999

081. Cassida collucens SPAETH, 1915

082. Cassida concallescens SPAETH, 1915

083. Cassida consobrina SPAETH, 1915

084. Cassida contracta (SPAETH, 1915)

085. Cassida currax SPAETH, 1915

086. Cassida densestriata Borowiec et Świetojańska n. sp.

087. Cassida dolens BOROWIEC, 1999

088. Cassida dorsovittata BOHEMAN, 1854

089. Cassida dulcis (BOHEMAN, 1862)

090. Cassida ferranti SPAETH; 1915

091. Cassida flavooculata Borowiec et Świętojańska n. sp.

092. Cassida frontalis BOHEMAN, 1856

093. Cassida fuscomacula Borowiec, 1988

094. Cassida goudoti (Вонеман, 1855) i i piĝin

095. Cassida hova (WEISE, 1910)

096. Cassida hovacassiformis Borowiec, 1999

097. Cassida impressipennis Borowiec et Świetojańska n. sp.

- 098. Cassida inconstans (FAIRMAIRE, 1899)
- 099. Cassida johnsoni Borowiec, 1988
- 100. Cassida laccopteroides Borowiec et Świętojańska n. sp.
- 101. Cassida laetabilis Spaeth, 1915
- 102. Cassida latecincta FAIRMAIRE, 1904
- 103. Cassida lateritia FAIRMAIRE, 1904
- 104. Cassida lateritioides Borowiec et Świętojańska n. sp.
- 105. Cassida liliputana Borowiec et Świętojańska n. sp.
- 106. Cassida lukasi Borowiec et Świętojańska n. sp.
- 107. Cassida lyrica FAIRMAIRE, 1904
- 108. Cassida madagascarica BOROWIEC, 1999
- 109. Cassida mariaeadelheidae SpAETH, 1915
- 110. Cassida montana Borowiec, 1999
- 111. Cassida monticola Borowiec, 1988
- 112. Cassida morondaviana Borowiec, 2007
- 113. Cassida multistrigata Borowiec et Świętojańska n. sp.
- 114. Cassida multituberculata Borowiec et Świętojańska n. sp.
- 115. Cassida nigroflavens BOROWIEC, 1988
- 116. Cassida nigropunctata Borowiec et Świętojańska n. sp.
- 117. Cassida nigroscutata FAIRMAIRE, 1904
- 118. Cassida nosybeensis Borowiec et Świętojańska n. sp.
- 119. Cassida pauliani BOROWIEC, 1999
- 120. Cassida paveli Borowiec et Świętojańska n. sp.
- 121. Cassida pretiosa BOROWIEC, 1988
- 122. Cassida prospera SPAETH, 1915
- 123. Cassida pseudolateritia Borowiec et Świętojańska n. sp.
- 124. Cassida pseudostrumosa Borowiec et Świętojańska n. sp.
- 125. Cassida pseudovicinalis Borowiec et Świętojańska n. sp.
- 126. Cassida pubescens SPAETH, 1905
- 127. Cassida pubipennis Borowiec, 1999
- 128. Cassida pulpa Spaeth, 1915
- 129. Cassida pusio SPAETH, 1915
- 130. Cassida quadricolorata Borowiec, 1999
- 131. Cassida rimosa (Вонеман, 1854)
- 132. Cassida rogezensis Borowiec et Świętojańska n. sp.
- 133. Cassida rubromaculata SPAETH, 1918
- 134. Cassida rubroornata (BOHEMAN, 1855)
- 135. Cassida rudicollis (SPAETH, 1915)
- 136. Cassida rufomicans FAIRMAIRE, 1904
- 137. Cassida rugipennis BOHEMAN, 1855
- 138. Cassida sanguineoguttata SPAETH, 1915
- 139. Cassida sanguinicollis (SPAETH, 1926)
- 140. Cassida schenklingi (SPAETH, 1915)

141. Cassida sculpturipennis Borowiec et Świętojańska n. sp.

142. Cassida scymnoides BOROWIEC, 1999

143. Cassida senicula (SPAETH, 1915)

144. Cassida seniculoides Borowiec, 1999

145. Cassida silvicola BOROWIEC, 1988

146. Cassida strigaticollis BOROWIEC, 1988

147. Cassida strumosa (SPAETH, 1915)

148. Cassida suaveola (SPAETH, 1915)

149. Cassida subacuticollis BOROWIEC, 1999

150. Cassida taediosa Boheman, 1856

151. Cassida tenax Spaeth, 1915

152. Cassida trianguliformis Borowiec et Świętojańska n. sp.

153. Cassida trossula Spaeth, 1915

154. Cassida tryznai Borowiec et Świętojańska n. sp.

155. Cassida tsaratanana Borowiec, 1994

156. Cassida ultima Borowiec et Świętojańska n. sp.

157. Cassida umbonata Borowiec, 1999

158. Cassida unicatenata (WEISE, 1910)

159. Cassida verrucata (Вонеман, 1855)



Map 1. Distribution of Cassida acutangula BOROW., C. agilis SPAETH and C. ambrica BOROW.



Map 2. Distribution of Cassida and apaensis Borow., C. and ohahelana n. sp. and C. angulicollis n. sp.



Map 3. Distribution of Cassida anosyennesensis n. sp., C. atroannulus n. sp. and C. atrorubra n. sp.



Map 4. Distribution of Cassida atromarginata n. sp., C. atropunctata n. sp. and C. auropustulata FAIRM.



Map 5. Distribution of Cassida beniowskii BOROW., C. beondrokana n. sp. and C. bicallosa SPAETH.



Map 6. Distribution of Cassida brooksi Borow., C. bulirschi n. sp. and C. circumsepta SPAETH.



Map 7. Distribution of Cassida butterwecki BOROW., C. coelebs BOROW. and C. collucens SPAETH.



Map 8. Distribution of Cassida concallescens SPAETH, C. consobrina SPAETH and C. contracta SPAETH.



Map 9. Distribution of Cassida currax SPAETH, C. densestriata n. sp. and C. dolens SPAETH.



Map 10. Distribution of Cassida dorsovittata BOR., C. dulcis BOR. and C. ferranti SPAETH.



Map 11. Distribution of Cassida flavooculata n. sp., C. frontalis BOH. and C. fuscomacula BOROW.



Map 12. Distribution of Cassida goudoti (Вон.), C. hova (WEISE) and C. hovacassiformis BOROW.



Map 13. Distribution of Cassida impressipennis (BOH.), C. inconstans (FAIRM.) and C. johnsoni BOROW.



Map 14. Distribution of Cassida laccopteroides n. sp., C. laetabilis SPAETH and C. latecincta FAIRM.



Map 15. Distribution of Cassida lateritia FAIRM., C. lateritioides n. sp. and C. liliputana n. sp.



Map 16. Distribution of *Cassida lukasi* n. sp., *C. lyrica* FAIRM., *C. mariaeadelheidae* SPAETH and *C. montana* BOROW.



Map 17. Distribution of Cassida monticola BOROW., C. morondaviana BOROW. and C. multistrigata n. sp.



Map 18. Distribution of Cassida multituberculata n. sp., C. nigroflavens Borow., C. nigropunctata n. sp. and C. nigroscutata FAIRM.



Map 19. Distribution of Cassida nosybeensis n. sp., C. pauliani Borow, and C. paveli n. sp.



Map 20. Distribution of Cassida pretiosa Borow., C. pseudolateritia n. sp. and C. pseudostrumosa n. sp.



Map 21. Distribution of Cassida pseudovicinalis n. sp., C. pubipennis BOROW. and C. pulpa SPAETH.



Map 22. Distribution of Cassida pusio SPAETH, C. quadricolorata BOROW. and C. rimosa BOH.



Map 23. Distribution of Cassida rogezensis n. sp., C. rubromaculata SPAETH and C. rudicollis SPAETH.



Map 24. Distribution of Cassida rufomicans FAIRM., C. sanguinicollis (SPAETH) and C. sanguineoguttata SPAETH.



Map 25. Distribution of Cassida rugipennis FAIRM. and C. seniculoides BOROW.



Map 26. Distribution of *Cassida schenklingi* (SPAETH), *C. sculpturipennis* (SPAETH) and *C. senicula* (SPAETH).



Map 27. Distribution of Cassida silvicola BOROW., C. strigaticollis BOROW. and C. subacuticollis BOROW.



Map 28. Distribution of Cassida strumosa (SPAETH), C. trianguliformis n. sp. and C. tsaratanana BOROW.



Map 29. Distribution of Cassida suaveola (SPAETH), C. tryznai n. sp. and C. umbonata BOROW.



Map 30. Distribution of Cassida taediosa BOH., C. tenax SPAETH and C. unicatenata (WEISE).



Map 31. Distribution of Cassida trossula Вон.


Map 32. Distribution of Cassida verrucata (Вон.) and C. ultima n. sp.

## PLATES



Plate 1. fig. 1-2: *Cassida acutangula* BOROW. – fig. 3-4: *C. ambrica* BOROW. – fig. 5-6: *C. andapaensis* BOROW. – fig. 7-8: *C. andohahelana* n. sp. – fig. 9-10: *C. angulicollis* n. sp. – fig. 11-12: *C. anosyennesensis* n. sp.



Plate 2. fig. 13-14: Cassida atroannulus n. sp. – fig. 15-16: C. atropunctata n. sp. – fig. 17-19: C. atromarginata n. sp. – fig. 20-21: C. atrorubra Borow. – fig. 22-23: C. auropustulata (FAIRM.).



Plate 3. fig. 24-25: Cassida beniowskii BOROW. – fig. 26-27: C. beondrokana n. sp. – fig. 28-29, 31: C. bicallosa SPAETH – fig. 30: C. lateritioides n. sp. – fig. 32-33: C. bulirschi n. sp.



Plate 4. fig. 34-36: Cassida brooksi Borow. – fig. 37-38: C. butterwecki Borow. – fig. 39-40: C. circumsepta Spaeth – fig. 41-43: C. coelebs Borow.



Plate 5. fig. 44-47: Cassida collucens Spaeth – fig. 48-49: C. concallescens Spaeth. – fig. 50-52: C. consobrina Spaeth.



Plate 6. fig. 53-54: Cassida contracta (SPAETH) – fig. 55-58: C. currax SPAETH – fig. 59-61: C. densestriata n. sp.



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