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Review of the [*Cyphogastra* DEYR.]-supergenus (Coleoptera: Buprestidae) III. The *Tuberculata*-, *Satrapa*- and *Collarti*-circles

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Introduction

Cyphogastra DEYR., well characterized as a genus, is remarkably homogeneous in morphology, what poses formidable challenges to a student attempting to disentangle its internal structure. The subgroups (circles – see HOLYŃSKI 1992 for definition), – albeit usually easy to recognize “at glance” – are very difficult to exactly diagnose in words, needing typically longish, cumbersome polythetic characterizations, whereas interspecific differences appear almost invariably in form of minor, also not always easy to define and often irritatingly variable, details of colouration, sculpture or proportions. Moreover, these large and usually colourful beetles are in high demand among collectors (not necessarily buprestid specialists or even biologists...), and in the current “pandemia” of increasingly suffocating impediments for scientific collecting (HOLYŃSKI 2008) procurement of new material has become a near-monopoly of “dealers” (for whom, curiously enough, these sabotaging regulations do not stand...); this situation has at least two very disastrous consequences: 1) the specimens are sold at very high prices, so very few of them become available for study to a specialist, 2) labelling of dealers’ specimens are notoriously inexact and frequently erroneous – all this of course finally resulting in serious abatement of both precision and reliability of taxonomic, phylogenetic, biogeographic and any other studies based on such material!

This paper – like the previous (HOLYŃSKI 2016, 2020) parts of the Review – has been of course also badly influenced, one of the manifestations of this influence (besides uncertainties as to the distribution, specific *vs.* subspecific status of particular taxa, diagnostic value of characters, &c.) are some new nominal species of not always well substantiated validity: described on one or two specimens, from unknown (*e.g.* *C. atroviridis* *sp.n.*) or more or less dubious (*C. minahassae* *sp.n.*) locality, or based on otherwise deficient data. One could

– and some readers certainly will – question the advisability of introducing names which, with not negligible probability, may eventually augment the list of synonyms. Like in many other – in fact, if ELDREDGE & CRACRAFT’S (1980) statement [“*facts ... are nothing more than highly corroborated hypotheses*”] is true (as it obviously is), in virtually all – situations we cannot, however, avoid the choice between “bad and still worse” (the danger of “false positive” and “false negative” error), and must accept the necessity to evaluate the degrees of probability and potential harmful consequences of each option. As regards deficiently justified (new or old) nominal taxa, I am firmly convinced that their erroneous acceptance is much less harmful than erroneous rejection: if, *e.g.*, *C. atroviridis* has been described as valid taxon but later proved synonymous, no serious problem appears: the interested students will simply attribute all meanwhile accumulated records of *C. atroviridis* *HOL.* to *C. atropurpurea* *HOL.*; alternatively, if I do not describe *C. atroviridis* as a separate species, entomologists using my paper to identify their material would, consequently, determine all dorsally unicolorous representatives of the *Collarti*-circle as *C. atropurpurea* *HOL.*, and if later it nevertheless turns out to be a composite of two separate taxa, all previous informations on “*C. atropurpurea* *HOL.*” become uninterpretable, *i.e.* effectively void. Moreover, what has not been named, does effectively not exist: nobody is searching for it, and so it is less likely to become known also in future...

Fully aware of these deficiencies, I am presenting herein the third part of the Review, devoted to clarification of the taxonomical, phylogenetical and biogeographical relations within and between the *Tuberculata*-, *Satrapa*- and *Collarti*-circles. The first and, especially, the last of these are somewhat dubious groupings whose polyphyletic, convergent origin cannot be convincingly excluded; the content of the *Satrapa*-circle seems much less questionable, but instead its internal structure remains somewhat obscure.

Conventions

Like in my other publications (unless “corrected” by editors...), I follow the very useful conventions of applying (of course, except wordly citations, where the original form must be retained) SMALL CAPS to *all* [irrespective of context and full *vs.* abbreviated version: inconsistent use deprives the display of any sense!] personal family- (*not* given-) names, *italicizing* species- and genus-group names (as well as citations and words in languages different from that of the main text), and writing the suprageneric taxon-names in **Bold** [the latter is not a generally accepted custom, but is often important, as some of such names (*e.g.* of the subtribes **Buprestina** **LEACH**, **Melobasina** **BÍLÝ** or **Coraeбина** **BED.**) are (or may easily become) “homonymous” (but valid!) with generic or subgeneric ones (*Buprestina* *OB.*, *Melobasina* *KERR.*, *Coraeбина* *KERR.*)]

Labels of type-specimens are quoted as exactly as possible, including *italics* and *handwriting* (both represented in my text by *italics*), CAPITAL LETTERS, SMALLCAPS, framing, colour of text and approximate colour of the label. Individual labels are quoted in quotation marks “”, a label glued on another label (frequent *e.g.* in KBIN) in † †, a label glued on another label on which still another has been glued in † † † (so, some may look like “abc † def † ghi † †”). Determination- and type-designation labels added by me are not cited: the former are white, in the form like “*Cyphogastra atroviridis* *HOL.*, det. R. HOLYŃSKI” with year of determination written vertically on the left side; the latter red [for primary types], *e.g.* “*Cyphogastra sulana* *HOLYŃSKI*, HOLOTYPE” or green [for paratypes], *e.g.* “*Cyphogastra jadviszczaki* *HOLYŃSKI*, PARATYPE”.

New species will be described in detail, descriptions of others restricted to the characters potentially helpful in identification.

Except in citations and synonymies, quoted as in the respective original publications, I apply the term “*morpha*” [“*m.*”] for discrete variants (where intermediates are absent or very rare) and “*forma*” [“*f.*”] for sections of continuous spectrum; „variety” – “*varietas*” [“*v.*” or “*var.*”] is used as a neutral word of no specific connotation].

Length of body measured from anterior margins of eyes to elytral apices; length of elytra from anterior margin of scutellum; width of pronotum where it is the widest, width of elytra just behind subhumeral protuberances; with of head with eyes, in dorsal aspect; width of vertex between internal margins of eyes.

As usual, my phylogenetic reconstruction has been performed with MICSEQ – see HOLYŃSKI (2001) for the general outline of the algorithm with presentation and justification of basic assumptions, and HOLYŃSKI (2016) for the present state of its development and discussion of some aspects of the procedure.

Explanation of terms (used generally in my publications, but not necessarily all of them in any particular paper)

- Epistomal ridge:** Arcuate or biarcuate keel running from one anterolateral angle of epistome to another behind its emarginated anterior margin at the supraepistomal border
- Supraepistomal carina:** transverse ridge above the frontoepistomal border
- Frontal depression:** median concavity of front, widest at epistome and tapering to or beyond the level of upper margins of eyes
- Anterior cavity of front:** deeper anterior part of frontal depression, more or less distinctly separated from the rest by oblique elevations
- Collar:** apical, constricted part of pronotum before truncation
- Truncation:** obliquely convergent part of pronotal sides between anterolateral angles and collar
- Anterolateral angle of pronotum:** angular bend between subparallel basal and abruptly oblique apical portion of sides
- Anterior foveae of pronotum:** anterolateral and anteromedian
- Anterolateral fovea of pronotum:** small, often indistinct fovea near apical angle
- Anteromedian fovea of pronotum:** small, often indistinct fovea placed midlaterally at apical margin
- Lateral margin of pronotum:** between base and anterolateral angle (exclusive of truncation)
- Fossae:** laterobasal depressions of pronotum
- Median depression of pronotum:** regular, rather deep concavity along midline
- Midlateral elevations of pronotum:** longitudinal elevations on disk to both sides of median depression
- Prehumeral relief:** elevated fragment of pronotal surface at basal angles, surrounded anteromedially by fossae
- Subhumeral protrusion/denticle:** moderately salient/prominently angularly protruding epipleural margin at humeri
- Caudate elytra:** of concave lateroapical margins and dorsal profile
- Abdominal plaque:** elevated surface of 1. sternite, posteriorly delimited by more or less vertical step separating it from the rest of abdominal surface
- Femoral brushes:** long and dense, [semi]erect pubescence on caudal surface of meso- and metafemora
- Midlateral:** lying at *ca.* mid-distance between median line and side margins
- Subrhomboidal:** quadrangular with two neighbour angles right or almost so and one of the opposite strongly obtuse
- Rhomboidally triangular:** quadrangular with one angle right or almost so, the opposite strongly obtuse, and the remaining two acute
- Morpha:** discrete morphological infrasubspecific variant
- Forma:** a section of continuous spectrum of infrasubspecific variability
- Variety (varietas):** a neutral (without more exact connotation) term for infrasubspecific variant
- Phenun (pu):** unit of the “cost of transformation” between character states, *i.e.* of phenetic distance between analysed taxa: **1 pu** = distance between two neighbour traits in the transformation chain if the weight has been settled as 1
- Support quotient [SQ=x/y (in phenuns)]:** rough estimator of “robustness” of particular pairing, where **x** is the “corrected distance” (at the relevant stage of analysis, *i.e.* when the pairing is being performed) between the paired taxa, and **y** – the shortest distance between any of them and any other remaining “in game”.

Abbreviations:

- L = length
W = width
BW = basal width
AW = apical width
H = width of head with eyes
V = width of vertex between eyes
ø = sex unknown
m. = *morpha* (see above)
f. = *forma* (see above)
v. or *var.* = *varietas* (see above)
BP*** = (*e.g.* BPfnt): specimen-identifying signature
≈ = approximately equal
[⊙],[⊙] = round type-label with coloured frame in BMNH
[] = in quare brackets data not specified on labels

Collection acronyms:

- BMNH = Natural History Museum, London, ENGLAND
BPBM = Bernice P. Bishop Museum, Honolulu, USA
EONMP = Entomologické Oddelení Národního Muzea, Praha, CZECHIA
KBIN = Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, BELGIUM
MCGD = Museo Civico di Storia Naturale „Giacomo Doria”, Genova, ITALY
MNCN = Museo Nacional de Ciencias Naturales, Madrid, SPAIN
MNHN = Muséum National d’Histoire Naturelle, Paris, FRANCE
RBH = Roman B. HOLYŃSKI, Milanówek, POLAND
TT = Takeshi TERABAYASHI, Shiotsu, JAPAN

Systematic review

BUPRESTIDAE LEACH
BUPRESTINAE LEACH
BUPRESTINI LEACH
CHRYSOCHROINA CAST.
Cyphogastra **DEYR.**
Cyphogastra **DEYR. s. str.**

Cyphogastra DEYROLLE 1864: 36-37
[type-species: *Buprestis foveicollis* BOISDUVAL 1835]

Abbreviated key to the identification of circles of the sg. *Cyphogastra* DEYR. s.str.

- 1(14) No dfp sulci on apical half of elytra; if pronotum black then ventral side also black or fossae irregular with dfp bottoms entirely reduced or almost so
- 2(13) Elytral apices without any trace of cupreous-red; or fossae deep but irregular, not extending to anterior foveae, with bottom spaces not or but indistinctly dfp; or elytral sides arcuately narrowed to extreme apices
- 3(12) Anteromedian angle of laterobasal relief definitely obtuse or totally obliterated, or irregular and indefinite; pronotal fossae irregular or c-shaped, with at most very small dfp areas; or, if extensively dfp and/or anteromedian angle of relief right, then anterior foveae well developed and at least one of them obliquely elongated, joining fossa or but narrowly separated from it. If body black then either tarsi yellow, or pronotal sides convergent, anterolateral angles not protruding, or elytra finely sculptured
- 4(11) Fossae deep but irregular, not extending to anterior foveae; bottom spaces at most indistinctly dfp; or – if dfp spaces more extensive – then elytral margins brightly cupreous apically, and/or anterior pronotal foveolae indistinct, and/or tarsi yellow. Elytra either multicoloured, or differing in colour from pronotum, or but slightly (if at all) caudate, metallic (green, bronzed or cupreous) with bluish suture and/or black extreme tips; if dorsal side uniformly black and tarsi yellow then lateral dfp areas on abdomen longitudinally divided into marginal and midlateral stripes
- 5(10) Elytra not or but slightly caudate, concolorous or with diffuse reddish lateroapical patch
- 6 (9) Dfp bottoms of fossae absent or not extending anterad beyond pronotal midlength. Body convex, elongated: L:W>3.0
- 7 (8) Anterolateral angles more or less protruding (pronotal margins behind them at least slightly concave); if not, then colouration (including ventral side) uniformly black, tarsi yellow, and bottoms of pronotal fossae without dfp spots ... ***Tuberculata*-circle**
- 8 (7) Anterolateral angles of pronotum not protruding (margins behind them straight). Tarsi black. Ventral side bronzed- to bluish-green, or – if black – bottoms of pronotal fossae at least with rudimental dfp spots ***Satrapa*-circle**
- 9 (6) Fossae very broad in basal part, entirely dfp, extending to or beyond anterolateral angles of pronotum. Body flattened, wide: L:W<3.0 ***Collarti*-circle**
- 10 (5) Elytra markedly caudate, with (often polychrome) lateral patch not extending to apices, or apical parts entirely blackish ***Javanica*-circle**
- 11 (4) Fossae shallow, poorly defined, not dfp; or – if deep, irregular, with bottom areas partly dfp – then anterior foveolae well developed and elytra definitely caudate,

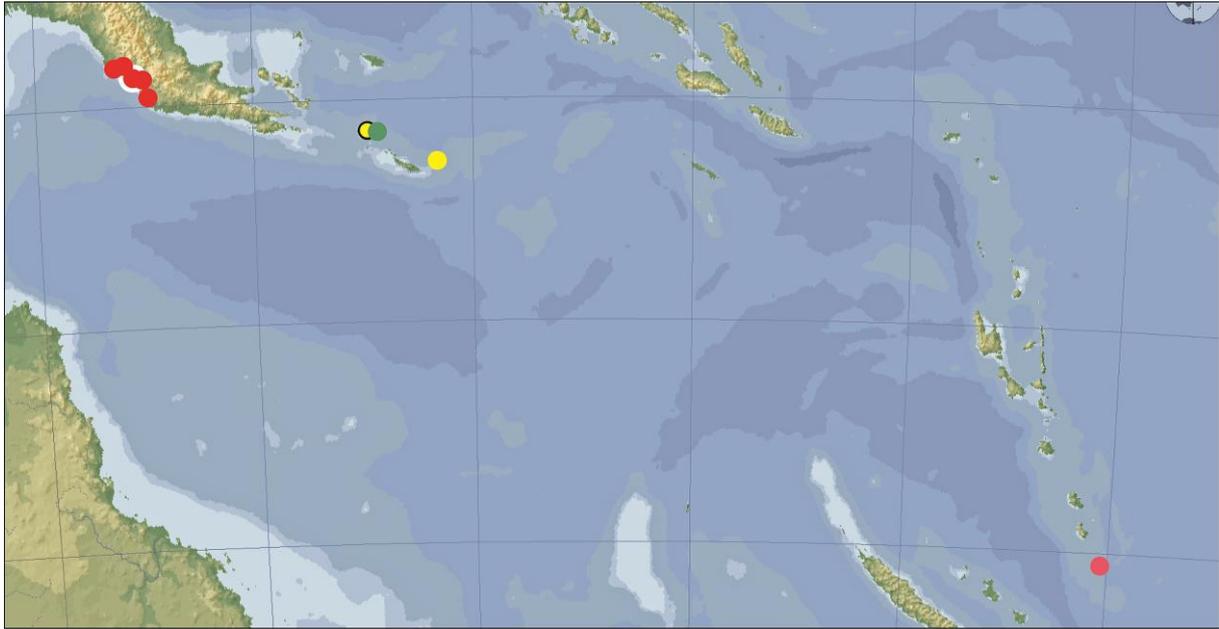
- unicolorous (except bluish-black extreme tips), concolorous with pronotum; if dorsal side black then tarsi dark or abdominal sides entirely broadly dfp
- .. *Tinianica*-, *Uxorismeae*-, *Bruyni*-, *Viridis*-, *Armata*-, *Flavimana*-circles [see **pt. II**]
- 12 (3) Fossae extensively dfp on bottoms, either right-angledly (in form of upturned L-square) bent, not extending to anterior foveolae, leaving anteromedian angles of laterobasal reliefs approximately right; or very large, regularly ovate, with laterobasal reliefs reduced to triangular widening of lateral ridge. Anterior foveae lacking or inconspicuous, not joined to fossae, or body [bluish-]black, tarsi dark, pronotum parallelsided with prominent anterolateral angles, and elytra coarsely punctured *Punctatissima*-, *Lansbergei*-, *Mniszechi*-, *Albertisi*-, *Caudata*-circles
- 13 (2) Elytral apices more or less extensively cupreous; fossae right-angled (upturned L-shaped), extensively dfp; elytral sides sinuately or at most straightly tapering to apices *Gloriosa*-circle
- 14 (1) Apical half of elytra with longitudinal dfp depressions, or pronotal fossae in form of upturned L-square with bottoms extensively dfp, pronotum piceous-black and ventral side metallic *Modesta*-, *Kampeni*-, *Canaliculata*-, *Ventricosa*-, *Venerea*-, *Pistor*-circles

***Tuberculata*-circle**

Remarks: This is a small circle of uncertain affinities: some morphological features show superficial similarity to the *Satrapa*- or *Javanica*-, some others to the (also geographically closer) *Gloriosa*- or *Punctatissima*-circle, but which (if any) of these resemblances reflects true phylogenetic relationship remains still in the realm of guess... Combination of well accentuated anterolateral angles of pronotum and black colouration with either yellow tarsi or strikingly high abdominal plaque distinguishes it from the former, system of colouration from the second, and narrow deep fossae without any trace of dfp bottoms from all. The *Tuberculata*-circle is apparently the southeasternmost subgroup of the genus [a series of *C. abdominalis* WATH. (*Gloriosa*-circle) from Samoa represents almost certainly either mislabelling or artificial introduction), inhabiting SE-New Guinea, Louisiades, and New Hebrides.

Key to the identification of species of the *Tuberculata*-circle

- 1 (6) Tarsi dark
- 2 (5) Dorsal side black
- 3 (4) Abdominal plaque prominent, roundedly acute-angled in profile, its “height” distinctly greater than length of 2. sternite behind it. Ventral side purplish or sometimes green, elytra unicolorous (without lateroapical patch) *C. (s.str.) tuberculata* THS.
- 4 (3) Abdominal plaque low, outline in lateral aspect flatly S-shaped. Ventral side black, elytra with rather inconspicuous reddish or bronzed lateroapical streak *C. (s.str.) misimana* HOL.
- 5 (2) Body green, lateroapical cupreous-red streak usually conspicuous *C. (s.str.) mincik* HOL.
- 6 (1) Tarsi testaceous *C. (s.str.) jadviszczaki* sp.n.



Map 1

Geographical distribution of the *Tuberculata*-circle

● – *C. tuberculata* THS.; ● – *C. misimana* HOL.; ● – *C. mincik* HOL.; ● – *C. jadwischczaki* sp.n.

[here and on other maps]:

simple markings – exact localities; normal size white border – general area (exact locality unknown);

large white border – numerous closely spaced localities; black border – probably erroneous data

***Cyphogastra* (s.str.) *tuberculata* THS.**

Cyphogastra tuberculata THOMSON 1878: 22-23

Material examined: 4 ♀, 2♂

Characters [Fig. 1]: Females [4] 32.5×11 – 38.5×12.5. Dorsal side lustrous black, ventral purplish-green. Pubescence in median sulcus of prosternal process rather long, semierect, grayish; dfp areas in fresh specimens covered with brick-red pulverulence; otherwise body practically glabrous. Pronotal sides shallowly sinuate, subparallel; anterolateral angles definitely protruding; fossae deep but narrow, non-dfp; laterobasal reliefs not clearly individualized, in form of swelling of rather thick, sparsely punctured marginal ridges; discal punctulation fine and very sparse, somewhat denser in median sulcus and/or in anterior foveae. Elytra non-caudate; subhumeral protrusions not prominent; sculpture coarse and irregularly confluent in *ca.* anterior fifth, then very fine and sparse. Irregular spaces of proepisterna, sides of sternum and abdomen) dfp, but no midlateral stripes; abdominal plaque highly elevated (as high or higher than the length of posterior part of 2. sternite), its posterior slope vertical or (usually) “overhanging”; apex of anal syternite of female shallowly notched; male unknown to me.

Geographical distribution [Map 1]: Apparently endemic to New Hebrides (in fact, all specimens known to me, labelled more exactly than that, came from Aneityum I.).

Remarks: Superficially resembling *C. detecta* HOL. (*Flavimana*-circle – see HOLYŃSKI 2020), but clearly differs in conformation of pronotal fossae; the combination of uniformly black dorsal and purplish-green ventral colouration, dark tarsi and highly elevated abdominal plaque makes *C. tuberculata* THS. easily recognizable among representatives of its “own” circle, while non-dfp fossae and fine sculpture distinguishes it from *C. punctatissima* KERR.



Fig. 1
Cyphogastra tuberculata THS.
 ♀ [BPBM], N.Hebrides: Aneityum I.



Fig. 2
Cyphogastra misimana HOL.
 HT ♀ [TT], Misima I.
 (phot. T. TERABAYASHI)



Fig.3
Cyphogastra mincik HOL.
 PT ♀ [BPBM], Rossel I.



Fig.4
Cyphogastra jadwieszczaki sp.n.
 ♀ PT [MNCN], PNG: Centr.Pr.: Sogeri

***Cyphogastra (s.str.) misimana* HOL.**

Cyphogastra misimana HOLYŃSKI 2016: 58-59

Material examined:

Holotype: "Misima Is., E. P.N.G" [♀ (TT)]

Additional material: None

Characters [as the holotype **[Fig. 2]** – the only known specimen – is now inaccessible to me, I can only copy the original description here]:

“Female 28.5×9 mm. Dorsal side black with very slight bronzy shine, only poorly delimited but distinct lateroapical stripe definitely bright-bronzed and pronotal fossae dull blackish-plumbeous; ventrally black with somewhat brassy dfp. Ventral surface covered with short, erect, white (dense in median sulcus of prosternal process, sparse elsewhere) pilosity, only dense pubescence in dfp areas is recumbent.

Epistome arcuately emarginate, with conspicuous roundedly trapezoidal epistomal ridge; deep and broad, transverse, sparsely but rather coarsely punctured groove extends between this ridge and prominent (transverse on sides, protruding deeply downwards at middle) supraepistomal carina. Front very much wider than long, sides slightly divergent; frontal depression deep, elongately triangular, reaching distinctly behind upper margins of eyes, impunctate; anterior cavity rather inconspicuous; lateral ridges broadly rounded off, only just at anterior ends somewhat sharper, very fine and sparse punctulation becomes coarser and denser behind eyes; periocular sulci and median groove very deep, smooth; $V:H\approx 0.55$. 1. antennal joint club-shaped, ca. 3× longer than thick; 2. globular, almost as wide as long, ca. 5× times shorter and definitely thinner than 1.; 3. very elongately triangular, slightly shorter than 1., distally as wide as 2.; 4. somewhat shorter than 3. but as wide as 1.; 5.–10. progressively somewhat narrower and definitely shorter (10. ca. 1.5× longer than wide); 11. missing.

Pronotum transverse ($BW:AW:L\approx 1.4:1.0:1$), sides distinctly, almost straightly convergent from acute basal angles to midlength, then divergent to protruding anterolateral angles and abruptly obliquely truncated to distinctly marked collar; base angularly bisinuate, broadly arcuate prescutellar lobe moderately prominent; anterior margin deeply sinuate on both sides of broadly, somewhat sinuately truncated median lobe. Median depression moderately deep, stria at its bottom discernible; fossae deep, impunctate but distinctly microsculptured, axe-shaped, almost totally divided by acute-angularly produced prehumeral relief into elongately tetragonal “shaft” and triangular “blade”; irregular depression runs from anterolateral corner of each fossa to reentrant angle between collar and truncation; shallow, densely and irregularly but not coarsely punctured transverse depression on each side behind apical margin separates collar from disk, but anterior foveae not individualized. Disk finely and sparsely punctulate, punctures on prehumeral relief much coarser. Scutellum convex (with deep foveola at middle), trapezoidal, as wide (apically) as long.

Elytra 2,2× longer than wide. Sides inconspicuously truncated at humeri, slightly protruding between truncation and short sinuation just behind, very slightly divergent on basal third, arcuately convergent to not caudate apices; lateroapical margin with few (5–6) sharp denticles. Intercostal foveae at very base irregular, shallow, poorly developed; otherwise no trace of costae; elytral puncturation very coarse on basal fourth of disk, becoming progressively finer (but everywhere distinct) backwards and sideways; rows more or less regular on median part, practically disappear at sides.

Sides of sternum almost entirely, very regularly dfp; prosternal process narrowly, deeply sulcate and very densely irregularly punctured along midline, almost impunctate laterally (with clear-cut border between depressed and elevated parts); median parts of

ventral surface (including abdominal plaque) rather sparsely but not very finely punctured; sternum medially grooved. Abdominal plaque low, not prominent, outline in lateral aspect flatly S-shaped (both – re-entrant at base and convex at top – angles, formed by its posterior slope with ventral profile of abdomen, broadly rounded); midlateral dfp stripes on abdomen distinct and rather wide but poorly delimited; apex of anal sternite deeply, somewhat trapezoidally notched” [HOLYŃSKI 2016].

Geographical distribution [Map 1]: Known only from the holotype, collected on Misima Island (Louisiade Archipelago, SE of New Guinea).

Remarks: The closest relative of *C. misimana* HOL. – despite the disparity in colour – is apparently *C. mincik* HOL., differing also in poorly delimited glabrous sulcus of prosternal process and prominently angular abdominal plaque – other differences being not reliably diagnostic. In dorsal colouration and general habitus it resembles *C. tuberculata* THS. which, however, has purplish or green ventral side, very prominent abdominal plaque, and unicolorous (without bronzed lateroapical patch) elytra.

***Cyphogastra (s.str.) mincik* HOL.**
Cyphogastra mincik HOLYŃSKI 2016: 55-57

Material examined:

Holotype: “Misima, Papua, N. Guinea, 2. 81” ”*Cyphogastra sp.*” ”Museo Civ. Genova, ex coll. B. Bari, (acquist. 1994)” [♀ (MCGD)]

Paratypes: “ROSSEL ISL., MILNE Bay Prov., P.N.G. X.81” ”Museo Civ. Genova, ex coll. B. Bari, (acquist. 1994)” [1 ♀ (MCGD), 1 ♀ (RBH: BPj-r)]; “PNG: NEW GUINEA, Milne Bay Prov., Rossel Is., IV 1979” [6 ♀ (BPBM), 2 ♀ (RBH: BPj-p, BPj-q)]; “Rossel I., IV. 79” [1 ♀ (RBH: BPekp)]

Additional material: 1 ♀

Characters [Fig. 3]: Females [13] 27×8.5 – 32.5×10.5 mm. Dorsal side bright green, lustrous, with cupreous-red streak of elytra; sternum and abdomen golden-green; tarsi dull bronzed. Dfp areas on ventral side covered with ochraceous pulverulence; body otherwise practically glabrous. Pronotal sides subparallel, usually shallowly sinuate; anterolateral angles somewhat swollen, more or less distinctly protruding; fossae deep, narrow, impunctate (no trace of dfp areas); anterior foveae practically absent; disk very finely and sparsely punctulate, punctures on elongately subquadrangular laterobasal relief and near anterior angles denser and somewhat coarser. Elytra slightly caudate; no subhumeral protrusion; puncturation very coarse on basal fourth of disk, becoming progressively much finer backwards and sideways; rows more or less regular over most of surface. Proepisterna almost entirely, very regularly dfp; prosternal process narrowly, deeply sulcate and rather coarsely but sparsely punctured along midline, almost impunctate laterally; abdominal plaque rather low (*ca.* half of length of 2. sternite) but prominent, markedly protruding backwards, finely and sparsely punctulate; abdomen otherwise sparsely, rather finely punctured; midlateral dfp stripes inconspicuous; apex of anal sternite narrowly, not deeply (at slightly obtuse angle) triangularly emarginated between broadly rounded lobes [♀].

Geographical distribution [Map 1]: Holotype labelled (probably erroneously – see discussion in HOLYŃSKI 2016) as from Misima I., all the remaining known specimens come from Rossel I.

Remarks: Apparently the “sister species” of *C. misimana* *sp. n.* which, besides colouration, is easily distinguishable by low and (in profile) broadly rounded abdominal plaque, and densely punctured, pubescent, sharply delimited median sulcus of prosternal

process. Green body, dark tarsi and similar ventral dfp pattern characterize several representatives of the *Gloriosa*-circle, esp. *C. praeclara* KERR. to which the new species also shows remarkable similarity – these, however, have anterior foveae on pronotum more or less developed, fossae extensively dfp, median sulcus of prosternal process densely punctured and sharply delimited, apex of female anal sternite regularly rounded or but indistinctly, shallowly incised, &c.

Cyphogastra (s.str.) jadwischczaki sp.n.

Material examined:

Holotype: “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” ”Museo Civ. Genova” [♀ (MCGD)]

Paratypes: “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” ”Museo Civ. Genova” [2 ♀ (MCGD)]; “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” ”Museo Civ. Genova” “*Cyphog. tuberculata* Thoms.” [1 ♀ (MCGD)]; “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” [1 ♀ (BPBM)]; “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” [1 ♀ (RBH: BPj-j)]; “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” ”Museo Civico di Genova” “Von 7 Expl. *Cyphog. tuberculata* Thoms. 1 St. für meine Sammlung behalten” [HOSCHEK’s label] [1 ♀ (RBH: BPj-i)]; “N.GUINEA MER., PORT MORESBY, *Giugno 1889*, L. LORIA” ”Museo Civ. Genova” “*Cyphog. flavimana* Lansbg.” [KERREMANS’ label] [1 ♀ (RBH: BPj-k)]; “N.GUINEA MER., KAPAKAPA, *Mag. Giugno 1891*, L. LORIA” [1 ♀ (RBH: BPj-l)]; “Port Moresby, N^{elle} Guinée, 4–70” “Mus. Civ. Genova, ex coll. B. Bari, (acquist. 1994)” [1 ♀ (MCGD)]; “Attracted to light, H.Champion, Cent. Dist., 24/V/75, L.Araa” [1 ♂ (RBH: BPj-e)]; “PAPUA NEW GUINEA, Central District, KONEDOBUNU” “14 I 1974, Coll: H. Iupa” [1 ♀ (RBH: BPj-f)]; “Papua N. Guinea, National Capital, Konedobu, 29.IV.76, Coll. I. Hira” [1 ♀ (RBH: BPj-g)]; “PAGA HILL (PT. MORESBY), PAPUA, 17 I 1964, Coll. SIR ALAN H. MANN” [1 ♀ (RBH: BPj-h)]

Additional material: 42 ♀

Holotype: Female 32×10 mm. All black, lustrous, with contrastingly white pattern of pubescence on ventral side; antennae piceous-brown, only 1. joint black; tarsi ferruginous except distal $\frac{2}{3}$ of 5. joint. Dfp areas on ventral side covered with rather dense, short, pure-white pubescence (no trace of pulverulence); otherwise body glabrous.

Epistome very broadly arcuately emarginate, epistomal ridge sharply elevated; between this ridge and prominent supraepistomal carina extends deep and rather broad transverse, practically impunctate groove. Front much wider than long, sides markedly divergent; frontal depression elongately triangular, reaching distinctly behind upper margins of eyes, deep throughout; anterior cavity and vertex behind eyes rather coarsely and densely punctured, otherwise head almost totally smooth; pericocular sulci and median groove very deep, prominent. 1. antennal joint club-shaped, robust, *ca.* 2.5× longer than thick; 2. ring-shaped, distinctly wider than long, *ca.* 5× times shorter and definitely thinner than 1.; 3. thickened towards apex, as long as 1. but as wide as 2.; 4. elongately triangular, somewhat shorter but much wider, as wide as 1.; 5.-10. nearly equal in width but progressively shorter (10. *ca.* 1.5× longer than wide); 11. a little longer than 10., *ca.* 2× longer than wide, somewhat asymmetrically ovoid.

Pronotum transverse, sides subparallel; base somewhat angularly bisinuate, prescutellar lobe very broad and moderately prominent; basal angles acute, very slightly protruding outwards; anterolateral angles somewhat swollen but not protruding; collar very distinct, almost parallelsided, separated from obliquely truncated part of lateral margins by deep obliquely (convergent backwards) arcuately longitudinal (extending to laterobasal foveae) sulci; anterior margin rather deeply sinuate on both sides of broadly truncated median lobe.

Median depression rather deep, almost smooth except sparse, moderately fine, shallow punctures in anterior half; fossae deep, irregularly c-shaped, sparsely covered with coarse punctures, no trace of dfp spaces; outer anterior foveae coarsely and rather densely punctured, prolonged into above-mentioned oblique sulcus; inner deep, elliptical, almost impunctate; punctulation of pronotal disk very sparse and fine, hardly discernible; elevations at lateral margins very coarsely but not very densely punctured. Scutellum trapezoidal, *ca.* twice wider posteriorly than at base, as wide (apically) as long.

Elytral sides slightly protruding at humeri between oblique basal truncation and short but rather deep sinuation just behind, subparallel to near midlength, then almost straightly, cuneately (somewhat caudately) convergent to apices; lateroapical margin with numerous, moderately prominent denticles. No trace of costae except at very base where they are separated by deep irregular foveae; puncturation very coarse on basal fourth of disk, becoming progressively finer (but everywhere very distinct) backwards; rows confused anteriorly and apically, more or less regular in between.

Proepisterna irregularly rugosely reticulate with smaller and larger dfp spaces in between; prosternal process with deep, densely and rather coarsely punctured median sulcus, almost impunctate laterally; median parts of meso- and metasternum almost impunctate, sides extensively dfp, border zone between them coarsely though rather sparsely punctured; metasternum not appreciably grooved along midline. Abdominal plaque low (less than half of length of 2. sternite), anteromedially smooth, on sides and near apex with very fine, sparse, elongate punctures; otherwise puncturation of abdomen moderately coarse and sparse, with well delimited dfp areas arranged into narrow lateral and midlateral stripes and some small patches between them; apex of anal sternite but narrowly and shallowly emarginated between rather broadly rounded lobes.

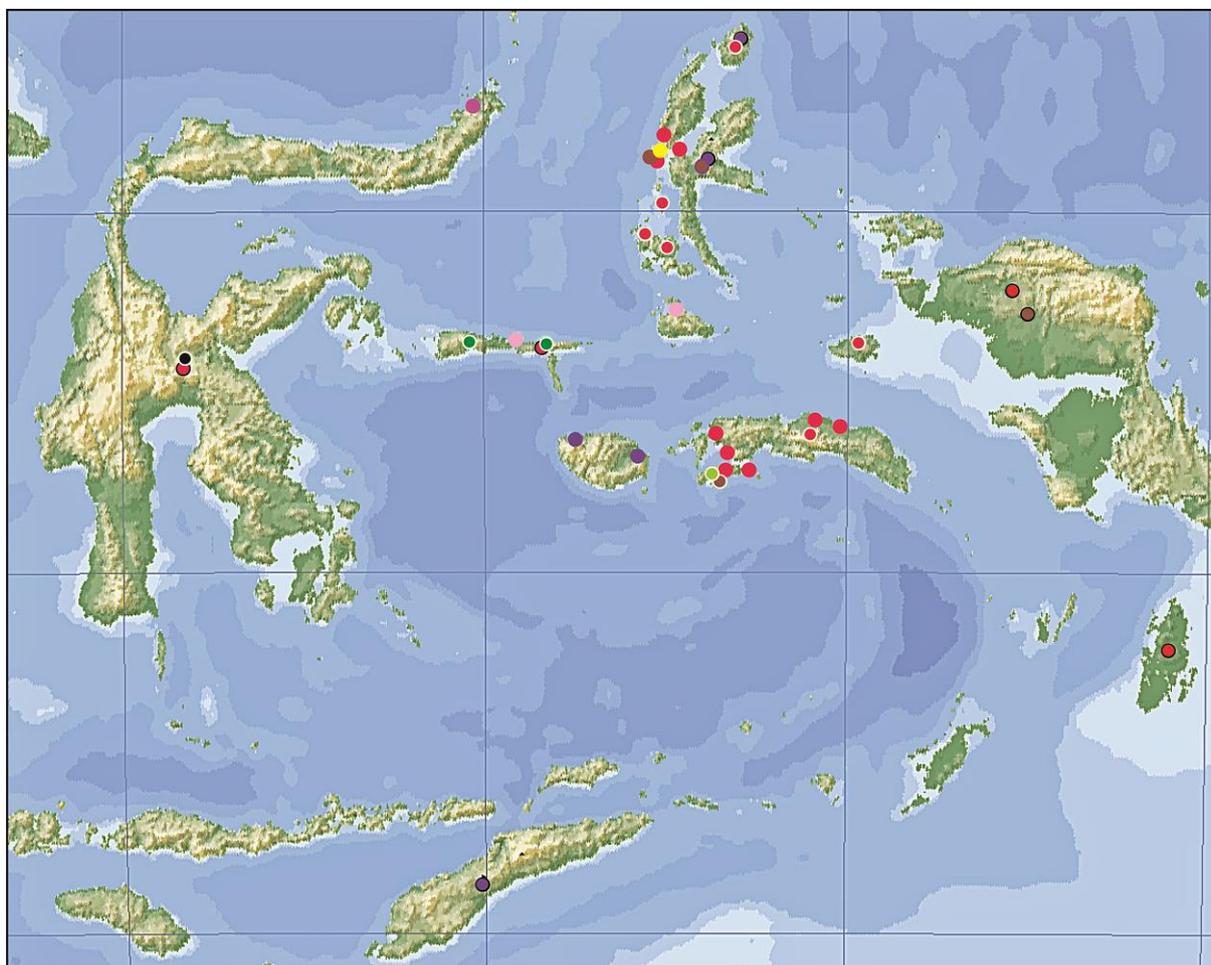
Variability: Male much smaller (22.5×7 mm.), its antennae somewhat paler and definitely shorter, with antennomeres much less elongated than in females (10. barely, 11. *ca.* 1.5× longer than wide); abdomen non-metallic, rather pale reddish-brown; ventral dfp areas more extensive, leaving but small glabrous spot at anterior angles of 2. sternite and larger one more posteromedially on each of 2.–5. segments; apical emargination of anal sternite broadly paraboloidal. Female paratypes variable in size (27.5×5.5 – 37.5×12.5) and to some extent in colouration (with rather distinct bronzed shine in some specimens [Fig. 4]), anterolateral angles of pronotum sometimes slightly protruding, elytra not or slightly caudate, apical incision of anal sternite in some specimens a little deeper (up to right-angled); otherwise very homogeneous series.

Geographical distribution [Map 1]: All examined specimens of the new species have been collected in the vicinities of Port Moresby at southern coast of southeastern peninsula of New Guinea.

Remarks: Notoriously misinterpreted species: in MCGD figured as *C. tuberculata* THS., in MNCN as *C. flavimana* LSB., in other collections usually as *C. wollastoni* WATH. Rather irregular but deep pronotal fossae with no trace of dfp areas, combined with black dorsal colouration, suggest indeed the affinity to *C. tuberculata* THS., but yellow tarsi, black ventral side, more distinctly caudate elytra and rather low abdominal plaque clearly distinguish it from the latter; *C. flavimana* LSB. differs in very low abdominal plaque, *C. wollastoni* WATH. in dark tarsi and prominent subhumeral protrusions, and both – besides wide geographical separation – in paler colouration and broad, shallow, poorly delimited fossae.

Satrapa-circle

Remarks: The *Satrapa*-circle had already been treated by me (as *Suturalis*-circle) earlier (HOLYŃSKI 1992), but from that time several new important informations, including new species, have accumulated. It is one of the most problematic groups of *Cyphogastra* DEYR.: very difficult to unambiguously diagnose, of both external affinities (various morphological or biogeographical evidences point to various directions: it may be sister-, mother- or daughter-taxon as well of the *Tuberculata*- as *Mniszechi*-, *Gloriosa*- or *Albertisi*-circle) and internal structure open to neither reliably defensible nor convincingly falsifiable hypotheses... The circle seems best characterized by combination of pattern of colouration [either uniformly black or with at least ventral side (bronzed-, golden- or bluish-)-green with cupreous lateroapical elytral stripe and usually bluish sutural interstria] with characteristic (even if difficult to reliably describe in words – see the key) form of pronotal fossae, but even this is not always easy to interpret... The circle seems endemic or near-endemic to Moluques (with possible occurrences on Celebes and Mysol: New Guinea, Aru or Timor – let alone Java or Solomon Is. – are probably either mislabellings or artificial introductions).



Map 2

Geographical distribution of the *Satrapa*-circle

- – *C. nigripennis* DEYR.; ● – *C. aeripennis* KIRSCH; ● – *C. celebensis* KERR.; ● – *C. carbonaria* THY.
 - – *C. satrapa* (SCHH.) s.str.; ● – *C. s. obiensis* THY.; ● – *C. augustini* THY.; ● – *C. sulana* sp.n.; ● – *C. minahassae* sp.n.
- [see also [Map 1](#)]

Key to the identification of species of the *Satrapa*-circle

- 1 (2) Elytra black, body otherwise metallic [bluish-]green ... *C. (s.str.) nigripennis* DEYR.
- 2 (1) Dorsal side either entirely metallic or entirely black
- 3(12) If body bright green, then cupreous-red streak on elytra more or less distinct. Pronotal fossae without or with only small reduced dfp spots
- 4(11) Elytra not or but slightly caudate, dorsal profile at most indistinctly concave
- 5 (8) Elytra greenish- to chestnut-brown, very finely and sparsely punctulate, definitely not caudate, apices rather broadly jointly rounded
- 6 (7) Ventral side black with metallic reflexions. Midlateral dfp stripes on abdomen clearly separated from marginal band *C. (s.str.) aeripennis* KIRSCH
- 7 (6) Ventral side bright golden-green. Midlateral bands remarkably broad, on anal sternite confluent with also relatively broad marginal dfp *C. (s.str.) celebensis* KERR.
- 8 (5) Elytra variously coloured but only exceptionally brown (then puncturation at least moderately coarse), usually slightly but distinctly caudate, very narrowly rounded or subtruncate at apices
- 9(10) Body entirely black *C. (s.str.) carbonaria* THY.
- 10 (9) Ventral side metallic (cupreous, green or blue) *C. (s.str.) satrapa* (SCHH.)
- 11 (4) Elytra markedly caudate *C. (s.str.) augustini* THY.
- 12 (3) Body green with no trace of cupreous-red on elytra. Fossae extensively dfp
- 13(14) Fossae in basal half more extended inwards: inner margin closer to midline than to pronotal side; base of prescutellar lobe elevated as smooth rim widened sideways; apical half of lateral ridge distinctly widened anterad *C. (s.str.) sulana* sp.n.
- 14(13) Basal half of fossae narrower: their inner margin *ca.* as distant from pronotal midline as from lateral margin; basal margin of prescutellar lobe undifferentiated; anterior half of lateromarginal ridge of pronotum parallelsided .. *C. (s.str.) minahassae* sp.n.

Cyphogastra (s.str.) nigripennis DEYR.

Cyphogastra nigripennis DEYROLLE 1864: 43

Material examined: 23 ♂, 21 ♀, 11 ♂

Characters [Fig. 5]: Males [22] 22×7 – 27.5×8.5; females 23×7 – 30×9.5 mm. Head, pronotum and ventral side bright green to blue; elytra black with inconspicuous reddish-bronzed lateroapical streak; tarsi concolorous with sternum. Dfp areas on ventral side covered with rufous (♂) or ochraceous (♀) pulverulence; sulcus of prosternal process with erect pubescence, elevated parts of ventral side very sparsely inconspicuously pilose, body otherwise practically glabrous. Pronotum subparallelsided; anterolateral angles not protruding; fossae deep, c-shaped, non-dfp; anterior foveolae practically absent; disk finely and sparsely punctulate, punctures on sides (including fossae) somewhat denser but not much coarser. Elytra not or but slightly caudate; no subhumeral protrusion; puncturation rather coarse on basal fourth of disk, becoming progressively finer backwards and sideways. Proepisterna partly dfp; prosternal process broadly sulcate, finely but very densely irregularly punctulate-granulate in males, much coarser in females; abdominal plaque rather low, its posterior slope s-shaped in profile; sides of abdomen rather broadly dfp, on anal segment almost confluent with wide and well marked midlateral stripes; apex of anal sternite deeply semicircularly or subtriangularly emarginated in ♂, minutely notched in ♀.

Geographical distribution: Seems endemic to Buru I.: “Morotai”, “Halmahera” and “Timor” are certainly mislabellings.

Remarks: Distinctive colouration makes *C. nigripennis* DEYR. unmistakable.



Fig. 5
Cyphogastra nigripennis DEYR.
♀ [BPefa], Bourou I.



Fig. 6
Cyphogastra aeripennis KIRSCH
♀ [BPeez], Amboyne I.



Fig. 7
Cyphogastra celebensis KERR.
PT ♀ [BPBM], Celebes



Fig. 8
Cyphogastra carbonaria THY.
♀ [BPcjk], Halmahera I.



Fig. 9
Cyphogastra satrapa (SCHH.) s.str.
♂ [BPdxl], Amboyne I.



Fig. 10
Cyphogastra s. obiensis THY.
♀ HT [MNHN], Obi I.



Fig. 11

C. satrapa (SCHH.) f. *ignicauda* DEYR.
♀ [BPdxq], Batjan I.



Fig. 12

C. satrapa (SCHH.) f. *punctipennis* DEYR.
♀ ?ST [MNHN], Gilolo



Fig. 13

C. satrapa *obiensis* THY.
♀ “*sulaensis* DESC.” PT [KBIN], Sula Is.



Fig. 14

Cyphogastra satrapa (SCHH.) f. *ludekingi* OBB.
♀ [BPj-n], Ceram: 35 km E Pasahari



Fig. 15

Cyphogastra satrapa (SCHH.) m. *intrusa* DEYR.
♀ HT [MNHN], “Malay Pen.”



Fig. 16
Cyphogastra (s.str.) augustini THY.
♀. HT [MNHN], Ternate I.

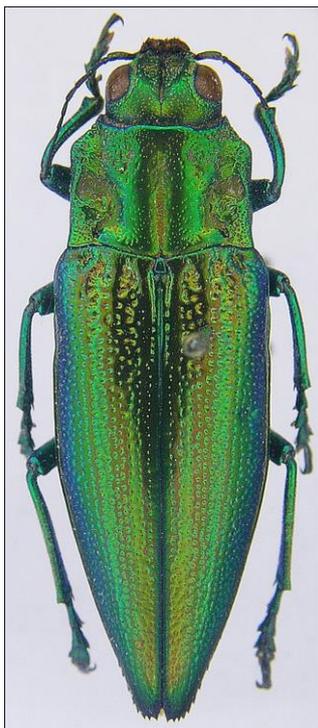


Fig. 17
Cyphogastra (s.str.) sulana HOL.
♀ HT [BPf-t], Sula Is.: Mangole I.



Fig. 18
Cyphogastra (s.str.) minahassae HOL.
♀ HT [BPekk], Celebes: Manado

***Cyphogastra (s.str.) aeripennis* KIRSCH**

Cyphogastra aeripennis [sic!] KIRSCH 1885: 113-114

Material examined: 1 ♀

Characters [Fig. 6]: Female [1] 23.5×7.5 [ø: 25-30×8-10.5 – KIRSCH 1885] mm. Head and pronotum according to original description “*erzgrün*”, in specimen examined by me greenish-blue with lateromarginal carina very narrowly (not seen from above) contrastingly purplish; elytra chestnut-brown with blackish sutural interstria; ventral side blackish with metallic green to aeneous reflexions [Map 2]; tarsi black. Body practically glabrous except for ventral dfp areas and short erect pubescence in sulcus of prosternal process. Pronotum subparallelsided; anterolateral angles not protruding; fossae deep, irregularly c-shaped, with single deep but non-dfp fovea at middle; anterior foveolae practically absent; disk finely and sparsely punctulate, punctures on sides (including fossae) much coarser and somewhat denser. Elytra not caudate; no subhumeral protrusion; puncturation fine, only towards base somewhat coarser, mostly arranged into not quite regular rows. Proepisterna partly dfp; sulcus of prosternal process rather narrow at base, sides converging backwards to point, densely irregularly punctulate-granulate; abdominal plaque rather low, its posterior slope nearly vertical; sides of abdomen narrowly dfp, midlateral stripes wide and well marked; apex of anal sternite shallowly incised [♀].

Geographical distribution [Map 2]: Known only from Amboina I.

Remarks: In the literature usually (KERREMANS 1910, OBENBERGER 1926, BELLAMY 2008) referred to as *C. aeripennis* KIRSCH, but originally (KIRSCH 1885) spelled *aeripennis*. Considered synonymous with *C. nigripennis* DEYR. [KERREMANS 1910], *C. suturalis* (F.) [= *C. satrapa* (SCHH.)] (THÉRY 1926) or *C. satrapa* ssp. *ignicauda* DEYR.

[BELLAMY 2008], but distinctive colouration, definitely non-caudate elytra and some minor details, with no known intermediates, induce me to tentatively accept *C. aeripennis* KIRSCH as separate species.

***Cyphogastra (s.str.) celebensis* KERR.**
Cyphogastra celebensis KERREMANS 1910: 189-190

Material examined:

Holotype: “Célèbes, Staud” “*Celebensis* Kerrem. Type” “MUSÉUM PARIS, COLL. CH. KERREMANS, 1923” “■” [empty red label] [♀ (MNHN)]

Additional material: none

Characters [Fig. 7]: Female [1] 25.5×8 mm. Head and pronotum dull aeneous-green, elytra dark bronzed-brown with inconspicuous reddish-bronzed lateroapical streak, ventral side rather bright golden-green to blue; tarsi piceous-black. Dfp areas on ventral side covered with very dense, short, recumbent white pubescence and ochraceous pulverulence; pilosity in sulcus of prosternal process sparse, rather long, erect; that of elevated parts of ventral side very sparse, inconspicuous; body otherwise practically glabrous. Pronotum subparallelsided; anterolateral angles slightly swollen but not distinctly protruding; fossae deep, c-shaped, each with two (smaller at base, larger at middle of lateral pronotal margin) deep dfp pits; anteromedian foveola absent, anterolateral in form of short oblique sulcus; midlateral elevations very finely and sparsely, median sulcus somewhat denser, marginal carinae (including narrowly elongated laterobasal reliefs) slightly coarser but also sparsely punctured, only at anterior margins puncturation moderately coarse. Elytra not caudate; no subhumeral protrusion; puncturation moderately coarse on basal fourth of disk, becoming definitely finer backwards and sometimes also sideways, here and there arranged into not quite regular rows. Proepisterna uniformly dfp; sulcus of prosternal process rather coarsely irregularly punctulate-granulate; abdominal plaque rather low but well accentuated, its posterior slope vertical; sides of abdomen rather broadly dfp, on anal segment confluent with very wide and well marked midlateral stripes; apex of anal sternite deeply though narrowly subtriangularly emarginated.

Geographical distribution [Map 2]: Like its taxonomic validity, the occurrence of *C. celebensis* KERR. on Celebes, very far from the known distribution (Amboyna) of its apparently nearest relative, looks rather suspicious: besides (also not unquestionable) *C. minahassae* sp.n. it would be the only representative of the *Satrapa*-circle native to anywhere outside of the Moluccan Archipelago.

Remarks: In general outlook as well as in colouration *C. celebensis* KERR. resembles *C. aeripennis* KIRSCH to the extent that their taxonomic identity cannot be fully excluded: morphological differences may prove merely individual [indeed, e.g. the distinctive pronotal colouration of my specimen of *C. aeripennis* KIRSCH is misleading: KIRSCH (1885) writes “*capite prothoraceque viridi-aeneis*” (latin diagnosis) and “*Kopf und Halsschild erzgrün*” (extended German description), what fits the holotype of *C. celebensis* KERR. quite well], and appearance of disjunct distribution might be a result of mislabeling, but the currently available material does not allow any decisive conclusion, so I tentatively retain them here as separate species. From all the remaining species of the *Satrapa*-circle it differs clearly in almost uniform (without distinct contrast between pronotum and elytra) bronzed-green to bronzed-brown dorsal colouration and definitely non-caudate elytra with rather broadly jointly rounded apices.

***Cyphogastra (s.str.) carbonaria* THY.**

Cyphogastra carbonaria THÉRY 1908: 81

Cyphogastra atra HOLYŃSKI i.l.

Material examined:

Paratype: “Moluques, I. Ternate, A.W. Mucks” “**PARATYPE**” “EX COLLECTION Dr. A. Cobos” “*Cyphogastra punctipennis carbonaria* Théry, A. Descarpentries det.” [♀ (MNCN)]

Additional material: 185 ♂, 169 ♀

Characters [Fig. 8]: Males [186] 19.5×6 – 29.5×9; females [169] 23.5×7 – 32.5×10.5 mm. Body entirely (dorsal and ventral side) black. Dfp areas on ventral side covered with ochraceous or rufous pulverulence; pilosity in sulcus of prosternal process dense, erect; body otherwise practically glabrous. Pronotum subparallelsided; anterolateral angles not protruding; fossae deep, c-shaped, each with two (smaller at base, larger at middle of lateral pronotal margin) dfp pits; anterior foveolae absent; midlateral elevations very finely and sparsely, median sulcus somewhat denser, marginal carinae (including narrowly elongated laterobasal reliefs) slightly coarser but also sparsely punctured, only at anterior margins puncturation coarse. Elytra slightly or not caudate; no subhumeral protrusion; puncturation coarse on basal fourth, becoming definitely finer backwards. Proepisterna uniformly dfp; sulcus of prosternal process wide in male, much narrower in female, rather coarsely irregularly punctulate-granulate; abdominal plaque rather low but well accentuated, its posterior slope near-vertical or even slightly “overhanging”; sides of abdomen rather broadly dfp, on anal segment confluent with very wide and well marked midlateral stripes; apical emargination of anal sternite deeply subtriangular, moderately wide in male, much smaller but also conspicuous in female.

Geographical distribution [Map 2]: Apparently very common on Ternate – where, on the other hand, dorsally black (*m. intrusa* DEYR.) and dark blue (*f. cyaneomicans* KERR., *f. ludekingi* OBB.) varieties of *C. satrapa* (SCHH.) seem rare or altogether absent – but occurs also on Halmahera and, perhaps, on other Moluccan islands (I have seen some specimens [mis-]labelled as from Amboyne).

Remarks: I have not managed to find any other palpable diagnostic character, but entirely black colouration makes it unmistakable within the *Satrapa*-circle.

***Cyphogastra (s.str.) satrapa* (SCHH.)**

Characters: Extremely variable in colouration from bronzed-brown to green, and from dark blue to black; elytral suture usually bluish-black, lateroapical streak cupreous-red (less conspicuous, bronzed in dorsally black specimens); sternum and abdomen more or less green; tarsi black. Pronotal sides subparallel, sometimes shallowly sinuate; anterolateral angles somewhat swollen but not protruding; fossae rather deep, narrow, c-shaped, without dfp areas or each with two small at the opposite ends of fossa; anterior foveae indistinct or small; disk very finely and sparsely punctulate, punctures on elongately subquadrangular laterobasal relief and near anterior angles denser and somewhat coarser. Elytra slightly caudate; no subhumeral protrusion; puncturation coarse on basal fourth of disk, progressively much finer backwards and sideways. Abdominal plaque rather low but well marked; midlateral dfp stripes well developed; apex of anal sternite more (♂) or less (♀) broadly and deeply emarginated.

Geographical distribution [Map 2]: Occurs almost everywhere throughout the Moluccan Archipelago.

Remarks: The “nucleus” of an extremely frustrating superspecies, in which extravagant individual variability is accompanied by trifling, hardly discernible and not easily definable geographical (subspecific) and/or specific differences. In my first attempt (HOLYŃSKI 1992) to clarify the relationships between various forms I found some characters (dfp in fossae and proepisterna, metallic lustre on tarsi) which seemed near-diagnostic to, respectively, northern- vs. southern-Moluccan populations, what resulted in acceptance of two subspecies: *C. suturalis* (F.) [according to then accepted nomenclature] *s.str.* on Ceram and Amboyna and *C. s. ignicauda* DEYR. on Halmahera and surrounding islands; however, more abundant material examined later has shown that the differences are much less reliable and rather do not reach the critical (AMADON 1949) 75% consistency needed for valid subspecies, so now I include *C. ignicauda* DEYR. [Fig. 11] among varieties of *C. satrapa* (SCHH.). On the other hand, specimens from Obi I. look consistently duller and usually show elytral costae somewhat darker than the remaining interstriae (rarely or never so in those from other Moluccan islands), what seems to warrant subspecific separation.

Key to subspecies of *C. satrapa* (SCHH.)

- 1 (2) Only 1. (sutural) elytral costa blackish or dorsal side entirely bluish-black. Sternites unicolorous green *C. satrapa* (SCHH.) *s.str.*
- 2 (1) Elytra dull, green to cupreous-bronzed, costae 1-3. at least at base bluish-black. On sides of apical margins of 3-4. sternites more or less distinctly golden to cupreous *C. s. obiensis* THY.

Cyphogastra* (*s.str.*) *satrapa* (SCHH.) *s.str.

Buprestis satrapa SCHÖNHERR 1817: 231

=*Buprestis suturalis* FABRICIUS 1801: 195-196 [nec THUNBERG 1789: 94-95 (*Aristosoma*)]

=*Cyphogastra ignicauda* DEYROLLE 1864: 42-43

=*Cyphogastra punctipennis* DEYROLLE 1864: 44-45

=*Cyphogastra intrusa* DEYROLLE 1864: 45-46

=*Cyphogastra cupriventris* KERREMANS 1895: 200-201

=*Cyphogastra aeneicollis* KERREMANS 1895: 201-202

=*Cyphogastra moluccana* KERREMANS 1895: 202

=*Cyphogastra obscura* KERREMANS 1895: 202-203

=*Cyphogastra* v. *cyaneomicans* KERREMANS 1903: 87 [i.ssp.]

=*Cyphogastra azurea* KERREMANS 1910: 191-192

=*Cyphogastra ludekingi* OBENBERGER 1922: 66-67

=*Cyphogastra ludekingi* ssp. *halmaheirae* OBENBERGER 1922: 67

Material examined:

Holotype: “Misima, Papua, N. Guinea, 2. 81” “*Cyphogastra* sp.” “Museo Civ. Genova, ex coll. B. Bari, (acquist. 1994)” [♀ (MCGD)]

Syntype [?of *C. punctipennis* DEYR.?]: “Morty” “**SYNTYPE**” [1 ♀ (MNHN)] [see **Remarks** below]

Syntype [of *C. intrusa* DEYR.]: “Intrusa, Type, HDeyr., Peninsule Malaise” [frame golden] “**TYPE**” [1 ♀ (MNHN)]

Syntypes [of *C. cupriventris* KERR.]: “**Syntype**” “Halmaheira, Staudinger” “*cupriventris* Kerr. Type” “Kerremans 1903-59” [1 ♂ (BMNH)]; “**Syntype**” “Batchian, Staudinger” “*cupriventris* Kerr. Type” “Kerremans 1903-59” [1 ♂ (BMNH)]

Syntypes [of *C. aeneicollis* KERR.]: “**Syntype**” “Amboine, Staudinger” “*aeneicollis* Kerr. Type” “Kerremans 1903-59” [1 ♂ (BMNH)]; “**Syntype**” “Amboine, Heyne” “*aeneicollis* Kerr. Type” “Kerremans 1903-59” [1 ♂ (BMNH)]

Syntypes [of *C. obscura* KERR.]: “**Syntype**” “*obscura* Kerr. Type” “Amboine, Stauding.” “Kerremans 1903-59” [2 ♂ (BMNH)]

Syntypes [of *C. ludekingi* OBB.]: „Gr. Ceram, Ludeking” „**TYPUS**” „*Cyphogastra ludekingi* m. *Type*. Det D^f Obenberger” „Mus. Nat. Pragae, Inv. 20 013” [1 ♀ (EOMNP)]

Syntypes [of *C. halmaheirae* OBB.]: „Halmaheira” „**TYPUS**” „*C. ludekingi* ssp. *halmaheirae* m. *Type*. Det D^f Obenberger” „Mus. Nat. Pragae, Inv. 20 014” [1 ♀ (EOMNP)]; „Halmaheira” „**TYPUS**” „*C. ludekingi* ssp. *halmaheirae* m. *Type*. Det D^f Obenberger” „Mus. Nat. Pragae, Inv. 20 015” [1 ♀ (EOMNP)]

Additional material: 78 ♂, 156 ♀, 107 ♂

Characters [Fig. 9]: Males [76] 17.5×6.5 – 28×9.5, females [155] 23×7 – 33.5×10.5 mm. Extremely variable in colouration: dorsal side from bronzed-brown (f. *aeneicollis* KERR.) through bronzed-green (f.

cupriventris KERR., *f. obscura* KERR.) to green (*f. typ.*); black *m. intrusa* DEYR. (= *halmaheirae* OBB.) [Fig. 15], with dark blue modifications (*f. cyaneomicans* KERR., *f. ludekingi* OBB.) [Fig. 14] seems to be a discrete variety determined by a single gene or supergene; elytral suture in metallic varieties usually contrasting bluish-black, cupreous-red lateroapical streak in dark specimens often reduced and/or inconspicuous; sternum and abdomen always more or less green, usually bright; tarsi black with or without metallic shine. Dfp areas on ventral side covered with ochraceous to rufous pulverulence which, however, easily becomes erased and so is only on fresh specimens clearly observable; pubescence in median sulcus of prosternal process moderately long, erect; body otherwise practically glabrous. Pronotal sides subparallel, sometimes shallowly sinuate; anterolateral angles somewhat swollen but not protruding; fossae rather deep, narrow, c-shaped, without dfp areas or each with two small at the opposite ends of fossa; anterior foveae indistinct or small; disk very finely and sparsely punctulate, punctures on elongately subquadrangular laterobasal relief and near anterior angles denser and somewhat coarser. Elytra slightly (rarely not at all) caudate; no subhumeral protrusion; puncturation coarse on basal fourth of disk, rather fine and becoming progressively much finer, sparse and irregular backwards and sideways (spaces between punctures rarely narrower than their diameters) – more coarse and dense, arranged into more or less irregular rows in *f. punctiennis* DEYR. Proepisterna partly or entirely dfp; prosternal process narrowly, deeply sulcate and rather coarsely but sparsely punctured along midline, almost impunctate laterally; abdominal plaque rather low (*ca.* half of length of 2. sternite) but well marked, rather finely and sparsely punctured like the rest of non-dfp areas of abdomen; midlateral dfp stripes well developed, on anal sternite often not or but indistinctly separated from lateral dfp stripe; apex of anal sternite more (♂) or less (♀) broadly and deeply emarginated, but emargination is in both sexes variable to the extent of looking nearly identical in some specimens.

Geographical distribution [Map 2]: Halmahera- and Ceram-groups of Moluccas [“*Peninsule Malaise*” [HT of *C. intrusa* DEYR. – [Fig. 14)], Java, Aru, New Guinea, Solomon Is. are evident mislabellings].

Remarks: By far the most common, most widely distributed taxon of the *Satrapa*-circle. The subspecific distinction from *C. s. obiensis* THY. do not seem perfectly convincing, but synonymization would be still less so. The specimen illustrated on [Fig. 12] was only labelled as “**SYNTYPE**” with no attached species name, but combination of morphological characteristics (large size and extremely non-caudate elytra approach – but still do not exceed – the limits of normal variability) with locality (“Morty” = Morotai) leaves no other realistic possibility than its being a syntype of *C. punctipennis* DEYR.

Cyphogastra (s.str.) satrapa (SCHH.) obiensis THY.

= *Cyphogastra obiensis* THÉRY 1923: 241-243

= *Cyphogastra sulaensis* DESCARPENTRIES *i.l.*

Material examined:

Holotype: [“Obi, Doherty”] [“Coll. Van de Poo”], [“*praeclara Kerr.*”] “*Cyphogastra obiensis* Thery, *Type unique*” “MUSÉUM PARIS, 1935, Coll. A. THÉRY” [1 ♀ (MNHN)]

Paratype: [of *C. sulaensis* DESC.]: [“*Ile Sula, Platen*”] “*Cyphogastra sulaensis n.sp., PARATYPE mihi, A. Descarpentries det.*” “**PARATYPE**” “R.I.Sc.Nat.Belg., I.G. 16.519” [1 ♀ (KBIN)]

Additional material: 1 ♂, 13 ♀

Characters [Fig. 10]: Male [1] 24.5×7.5, females [14] 23×7 – 30.5×9.5 mm. Colouration dull, green to bronzed-cupreous; elytral suture contrastingly blackish, cupreous-red lateroapical streak conspicuous; tarsi black without distinct metallic lustre. Dfp areas on ventral side covered with ochraceous to rufous pulverulence; pubescence in median sulcus of prosternal process rather dense, long, erect; otherwise body practically glabrous. Pronotum subparallelsided; anterolateral angles not protruding; fossae rather deep, narrow, c-shaped, dfp areas variously developed; anterior foveolae indistinct; disk rather finely and sparsely punctured. Elytra slightly caudate; no subhumeral protrusion; puncturation coarse on basal fourth of disk, becoming progressively finer (but everywhere dense: spaces between punctures narrower than their diameters) backwards. Dfp spaces on proepisterna not extensive; prosternal process deeply sulcate and finely but densely punctulate-granulate along midline, almost impunctate laterally; abdominal plaque well marked; midlateral dfp stripes well developed, on anal sternite almost totally confluent with lateral dfp stripe; apex of anal sternite more (♂) or less (♀) broadly and deeply emarginated.

Geographical distribution [Map 2]: Moluccas: Obi Is., ?Sula Is.

Remarks: Poorly differentiated subspecies. The KBIN “paratype” of *C. sulaensis* DESC. [Fig. 13] looks somewhat different (elytra more broadly cuneate apically, lateroapical markings practically absent, fossae slightly broader) and – if really collected on Sula Is. – might represent a separate subspecies, but (the differences being rather inconclusive, with but single specimen available for examination) it seems prudent to leave the question unresolved.

***Cyphogastra (s.str.) augustini* THY.**
Cyphogastra augustini THÉRY 1923: 243-244

Material examined:

Holotype: “Ternate, Coll Van de Pool” “*Cyphogastra augustini* Thery, Type unique” “MUSEUM PARIS, 1935, Coll. A. THÉRY” [♀ (MNHN)]

Paratype: “Cotype” ♂ “Ternate, Coll Van de Pool” “*Cyphogastra augustini* Thery, cotype, Théry det.” “ex Coll. A. Théry, B.M.1923-364” [♂ (BMNH)]

Additional material: 2 ♂

Characters [Fig. 16]: Males [2] 28×8.5 – 29.5×9.5; female [1] 33.5×10.5 mm. Body green, with or without bronzed shine on dorsal side; elytral suture concolorous; cupreous-red lateroapical streak and bluish-black extreme apices very bright, contrasting. Dfp areas on ventral side covered with ochraceous or rufous pulverulence; pilosity in sulcus of prosternal process rather dense, erect; body otherwise practically glabrous. Pronotum subparallelsided; anterolateral angles not protruding; collar not or poorly marked; fossae deep, c-shaped, each with two (smaller at base, larger at middle of lateral pronotal margin) more or less extensively dfp spots; anteromedian foveolae small but deep, inconspicuously dfp; anterolateral not individualized; midlateral elevations very finely and sparsely punctulated, in median sulcus punctulation somewhat denser, sides denser and (especially near anterior angles) coarser punctured; anteromedian angle of laterobasal reliefs obsolete, not clearly demarcated from somewhat depressed, coarsely punctured oblique elevation separating dfp foveolae. Elytra markedly caudate, both side margins and dorsal profile definitely concave before apices; no subhumeral protrusion; puncturation coarse on basal fourth, becoming definitely finer backwards. Proepisterna extensively, sometimes almost entirely dfp; sulcus of prosternal process rather narrow; abdominal plaque moderately elevated, its posterior slope near-vertical or even slightly “overhanging”; lateral dfp of abdomen rather broad but clearly separated from midlateral stripes by glabrous, coarsely punctured band; apex of anal sternite broadly arcuately emarginated in male, subtruncated in female.

Geographical distribution [Map 2]: All three specimens known to me originated from Ternate, where the species occurs sympatrically with *C. satrapa* (SCHH.) and *C. carbonaria* THY.

Remarks: Besides more robust, darker aedoeagus and strongly caudate elytra with brighter lateroapical markings (evident character displacement preventing hybridization), *C. augustini* THY. is deceptively similar to sympatric *C. satrapa* (SCHH.); it would not be easy to imagine how it could have developed on (or invaded – from where?) a small island already inhabited by expansive close relative, but as phylogenetically older its Ternatean population may represent a relict of once wider distributed but then elsewhere outcompeted species.

***Cyphogastra (s.str.) sulana* sp.n.**

Material examined:

Holotype: „Mangole Is., Sula Iss.” „Indonesia, iv.1992” „Akiyama Collection” [1♀ (RBH: BPF-s)]

Paratypes: „Is. Mangole, Sula Iss., Oct. 1990, Native collector leg.” „Akiyama Collection” [♀ (RBH: BPizl)]; „Taliabu, II 2003” [1♀ (TT)]; „Sula Kepulauan, Indonesia. Apr 1993” [2♀ (TT)]

Additional material: none

Holotype [Fig. 17]: Female 26×8.5 mm. Almost uniformly green (more golden on ventral side) with golden-cupreous posterior half of pronotal median line; elytral tips, apical fourth of epipleura and very narrowly suture violaceous-black; antennae piceous-black with basal joint dull blackish-green. Dfp areas on ventral side covered with rather dense, short, recumbent whitish pubescence and traces of ochreous pulverulence; otherwise glabrous.

Epistome broadly, rather deeply arcuately emarginate; epistomal ridge inconspicuous, supraepistomal carina low, not prominent. Front much wider than long, sides slightly divergent; frontal depression elongately triangular, reaching distinctly behind upper margins of eyes, anterior cavity bordered laterally with elevated ridges; periocular sulci conspicuous, median groove deep; front and vertex (V:H \approx 0.55) covered with rather fine and sparse puncturation, only in anterior cavity punctures coarser and very dense. 1. antennal joint club-shaped, *ca.* 3 \times longer than thick; 2. nearly globular, as long as wide, four times shorter and definitely thinner than 1.; 3. elongately subtriangular, almost as long and (at apex) nearly as wide as 1.; 4. definitely wider, as long as 3.; 5.-10. equal in width to 4. but progressively shorter (10. almost twice so); 11. slightly longer than 10., elongately (*ca.* 2 \times longer than wide) subovate.

Pronotum transverse, sides nearly parallel except for slightly prominent acute basal angles (BW:AW:L \approx 1.43:1.38:1; base bisinuate, prescutellar lobe very broad and moderately prominent; lateral margins shallowly sinuately subparallelsided; anterior margin rather deeply sinuate on both sides of broadly truncated median lobe. Basal $\frac{2}{3}$ of midline deeply but rather narrowly depressed with dense, fine punctulation at bottom, apical third of median sulcus triangularly widened and sparser punctured; fossae c-shaped, with moderately extensive irregular dfp spaces; anterior foveolae very small and irregular; pronotal punctulation moderately fine and rather sparse to both sides of median depression, otherwise coarse and dense. Scutellum trapezoidal, *ca.* twice wider posteriorly than at base, apical width equal to length; surface convex, smooth, midline sulcate.

Elytra 2.1 \times longer than wide. Sides obliquely, somewhat roundedly truncate at humeri, subparallel in anterior $\frac{2}{5}$, then almost regularly arcuately convergent to apices; lateroapical margin with *ca.* 10 denticles, of which anterior 2 or 3 very fine. Surface without any trace of costae except at very base where they are separated by deep irregular foveae; puncturation very coarse on basal fourth of disk, becoming progressively finer (but everywhere very distinct) backwards and sideways, arranged in rather regular rows; microsculpture hardly discernible anteromedially, very conspicuous on apical half.

Proepisterna dfp with smooth reticulate reliefs in anterior part; prosternal process with deep, densely and rather coarsely punctured median sulcus, almost impunctate laterally; sides (lateral “slopes”) of meso- and metasternum almost entirely dfp, separated from almost impunctate median parts by narrow zone of coarse but rather shallow foveolate (themselves dfp at bottom) punctures; metasternum deeply grooved along midline. Abdominal plaque low (less than half of length of 2. sternite), sparsely and rather finely punctured; otherwise puncturation of abdomen moderately coarse and rather sparse, sparser along midline and here and there on sides but without well delimited “mirrors”, lateral dfp stripe very narrow but continuous, midlateral well developed; apex of anal sternite with minute triangular incision between narrowly rounded lobes.

Variability: Varies but slightly in size (26 \times 8.5, 29 \times 9.5), colouration (larger specimens with inconspicuous golden alternate longitudinal stripes on elytra; one paratype dorsally [greenish-] dark blue, in some elytra with very indistinct narrow bronzed-cupreous margins just before tips), shape (somewhat widened anterad in smaller ex.) and structure (fossae more or less broadly and regularly dfp) of pronotum, details of sculpture (extent of proepisternal dfp, often somewhat more prominent abdominal plaque and/or shallower apical incision of anal sternite); general habitus almost identical.

Geographical distribution [Map 2]: Apparently endemic to Sula Is.

Remarks: The closest relative of *C. sulana* sp.n. seems to be somewhat duller coloured and slightly differing in pronotal structure (see the key) *C. minahassae* sp.n.; *C. suturalis* (F.) differs in colouration (highly variable but if light green then elytra lateroapically cupreous-red), lacking or but rudimental dfp spaces in pronotal fossae, contrasting abdominal sculpture (extensive dfp areas and well defined smooth “mirrors”), uniform (also apically indistinct) elytral microsculpture, usually finer puncturation, &c. On the other hand, the new species shows some affinity also to *C. pisciformis* DEYR., whose especially western races (*C. p. geelvinkiana* GESTRO, nominotypical *C. pisciformis* s.str.) are similarly (though usually somewhat darker) coloured, but differ in having distinct deep foveolae at anterior margin of pronotum, narrower and more or less distinctly caudate elytral apices, not or but very shallowly incised apex of anal sternite, and also lack of conspicuous microsculpture on elytra. At last, *C. sulana* sp.n. may be confounded with some forms (*C. praeclara* KERR., *C. granulosissima* THY., &c.) of the *Gloriosa*-circle, but these have entirely concolorous elytral suture and epipleural margin, elytral tip usually with cupreous-red spot, deep foveae at anterior margin of pronotum, often dfp stripe along lateral margin of elytra, &c.

***Cyphogastra* (s.str.) *minahassae* sp.n.**

Material examined:

Holotype: „CELEBES, Menado” [♀ (RBH: BPekk)]

Additional material: none

Holotype [Fig. 18]: Female 29.5×9.5 mm. Almost uniformly rather dull green (more golden on ventral side); elytral tips, apical half of epipleura and sutural interstria violaceous-black; antennae piceous-black with basal joint green. Dfp areas on ventral side covered with rather dense, short, recumbent whitish pubescence and traces of ochreous pulverulence; median sulcus of prosternal process with sparse erect pilosity; otherwise glabrous.

Epistome broadly, rather deeply arcuately emarginate; epistomal ridge inconspicuous, supraepistomal carina low, not prominent. Front much wider than long, sides slightly divergent; frontal depression elongately triangular; periocular sulci shallow; punctures in anterior cavity moderately coarse and dense. 1. antennal joint club-shaped, ca. 4× longer than thick; 2. nearly globular, as long as wide, six times shorter and definitely thinner than 1.; 3. elongately subtriangular, somewhat shorter but (at apex) nearly as wide as 1.; 4. definitely wider, as long as 3.; 5.-10. progressively shorter (10. almost twice so) and thinner; 11. as long as 10., elongately (ca. 2× longer than wide) asymmetrically subovate.

Pronotum transverse, sides nearly parallel except for slightly prominent acute basal angles; base bisinuate, prescutellar lobe very broad and shallowly arcuate; anterior margin rather deeply sinuate on both sides of bilobate median lobe. Disk deeply and rather broadly depressed along midline, with dense, fine punctulation at bottom; fossae slightly c-shaped, extensively dfp at bottoms; anterior foveae broad but shallow, densely but rather coarsely punctured; pronotal punctulation moderately fine and rather sparse to both sides of median depression, otherwise coarse, dense, irregular. Scutellum trapezoidal, ca. twice wider posteriorly than at base, apical width equal to length; midline furrowed.

Elytra 2.1× longer than wide. Sides obliquely, somewhat roundedly truncate at humeri, subparallel in anterior ²/₅, then almost regularly arcuately-cuneately convergent to apices; lateroapical margin with ca. 10 denticles. Surface without any trace of costae except at very base where they are separated by shallow, irregular foveae; puncturation very coarse on basal fourth of disk, becoming progressively finer (but everywhere very distinct) backwards and sideways, arranged here and there into more or less regular rows; microsculpture hardly discernible anteromedially, very conspicuous on apical half.

Proepisterna entirely dfp; prosternal process with deep, regularly narrowed to point, densely and rather coarsely punctured median sulcus, almost impunctate laterally; sides (lateral “slopes”) of meso- and metasternum almost entirely dfp; metasternum deeply grooved along midline. Abdominal plaque low (less than half of length of 2. sternite), sparsely and rather finely, somewhat cuneately punctured; lateral dfp stripe very narrow but continuous, midlateral stripes wide and almost confluent with lateral; otherwise puncturation of abdomen moderately coarse and rather dense; apex of anal sternite (♀) broadly, not very deeply arcuately incised between narrowly rounded lobes.

Geographical distribution [Map 2]: Holotype collected at Menado: northwesternmost end of northern peninsula (Minahassa) of Celebes.

Remarks: The closest relative of *C. minahassae* sp.n. is deceptively similar *C. sulana* sp.n., differing only in somewhat brighter colouration, pronotal fossae more regularly c-shaped and more expanded mediad.

Collarti-circle

Remarks: As well the external affinities as the very validity (monophyletic origins) of this enigmatic circle is not unquestionable: wide geographical separation and striking morphological differences raise serious doubts as to the real affinity between Timorese type-species and the two New Guineans tentatively included here on the account of similarity in distinctive pronotal fossae.

Key to the identification of species of the *Collarti-circle*

- 1 (4) Elytra definitely caudate, unicolorous blackish
- 2 (3) Ventral side bright purplish-cupreous. Elytra lustrous, pure black *C. (s.str.) atropurpurea* sp.n.
- 3 (2) Ventral side bright green. Elytra submat, dark brown with greenish-bronzed shine ...
..... *C. (s.str.) atroviridis* sp.n.
- 4 (1) Elytra not or but indistinctly caudate, green on disk, lateroapically transgressing through cupreous to black *C. (s.str.) collarti* DESC.

***Cyphogastra (s.str.) atropurpurea* sp.n.**

Material examined:

Holotype: “NEW GUINEA: Koroba, 40 km. W of Tari, 1750 m., 15 IX 1963” “R. Straatman, Collector, BISHOP” [1♀ (BPBM)]

Additional material: none

Holotype [Fig. 19]: Female 30×10 mm. Dorsal side pure black with cupreous-red pronotal fossae. Glabrous above; ventral side with fine (dense in sulcus of prosternal process, very sparse elsewhere) erect pilosity; dfp spaces on sides (proepisterna, metasternum, metacoxae, abdomen) covered with rufous pulverulence.

Epistome rather deeply emarginated, adorned with conspicuous carinula in form of upturned \llcorner , separated from front by deep depression and transverse {-shaped ridge; front much wider than long, somewhat arcuately subparallelsided; frontal depression broadly and deeply triangular, reaching far beyond upper margins of eyes; anterior cavity also deep and triangular, deeply grooved along midline, coarsely punctured; otherwise punctulation of front and vertex very fine and sparse; periocular furrows deep, purplish at bottom; eyes slightly protruding, markedly convex in dorsal aspect; vertex moderately wide (V:H≈0.45). Antennae long and slender, reaching slightly beyond midlength of pronotal sides; 1. joint thickly club-shaped, 2× longer than thick; 2. globular, as long as wide, $\frac{2}{3}$ of width and $\frac{1}{4}$ of length of 1.;

3. thin, subequal in length to 1., slightly thickened towards distal end and there as thick as 2.;
 4. as long as 3., flattened, elongately triangular, at apex almost as wide as 1.; 5.-10. progressively shorter, perceptibly narrower and more rhomboidal – 10. 1.5× longer than wide;
 11. ovate, as long as 10. but twice longer than wide.



Map 3

Geographical distribution of the *Collarti*-circle

● – *C. atropurpurea* sp.n.; ● – *C. atroviridis* sp.n.; ● – *C. collarti* DESC.

[see also [Map 1](#)]

Pronotum widest at base, there *ca.* 1.45× wider than long, sides very slightly convergent, anterolateral angles well accentuated but not protruding; no discernible collar; prebasal emargination of lateral margin deep; apical margin markedly trisinate; basal margin shallowly subangularly bisinate, basal angles distinctly acute. Median depression moderately wide and deep, bottom distinctly punctured along basal ⁴/₅ of median line, median stria barely marked; fossae deep, very wide, dfp, reaching to *ca.* anterolateral angles but prolonged, by joining obliquely elongated anteromedian fovea, almost to anterior pronotal margin; prehumeral reliefs not individualized, elongately triangular, rather sparsely covered with moderately coarse punctures. Scutellum almost equilaterally triangular, impunctate.

Elytra 2.2× longer than wide, markedly caudate; sides obliquely truncate at humeri, with prominent subhumeral protuberances, very slightly divergent to *ca.* midlength and sinuately convergent to jointly rounded, sharply denticulate apices (with 3–4 widely spaced denticles also on sides). Elytral surface regularly convex; sculpture very coarse and somewhat irregularly rugose around humeri, becoming much finer, arranged into irregular rows, backwards and inwards.

Extensive areas of proepisterna, isolated spots on metasternum, anterior part of metepisterna and outer half of metacoxae, narrow marginal stripe and well developed midlateral vitta on abdomen dfp; median furrow of prosternal process very densely and rather coarsely irregularly punctured, lateral rims impunctate; median parts of sternum very sparsely and finely, sloping lateral surface and abdomen much coarser and somewhat denser punctured along median, very coarsely so on midlateral parts; abdominal puncturation moderately coarse

and sparse. Abdominal plaque markedly elevated (height subequal to length of 2. sternite behind), right-angled in profile; apex of anal sternite broadly rounded.

Geographical distribution [Map 3]: Holotype collected at 1750 m. near Koroba (Muller Range, Southern Highlands Pr., New Guinea).

Remarks: Closest relative of *C. atropurpurea* sp.n. is evidently *C. atroviridis* sp.n., differing in green colouration of ventral side, conspicuous greenish-bronzed tinge of less lustrous and coarser punctured elytra, and some minor details.



Fig. 19

Cyphogastra (s.str.) *atropurpurea* sp.n.
♀ HT [BPBM], PNG: Koroba



Fig. 20

Cyphogastra (s.str.) *atroviridis* sp.n.
♀ HT [MNHN], New Guinea



Fig. 21

Cyphogastra (s.str.) *collarti* DESC.
♂ HT [KBIN], Timor: Soë

***Cyphogastra* (s.str.) *atroviridis* sp.n.**

Material examined:

Holotype: “Rég. austral., N. Guinée, Chassot 12.1962” [1♀ (MNHN)]

Additional material: none

Holotype [Fig. 20]: Female 29.5×10.5 mm. Blackish-brown dorsally with (especially on elytra) strong greenish-bronzed shine; ventral side green; pronotal fossae dull purplish. Elevated surfaces glabrous (above) or almost so (very sparse and fine erect pilosity on sternum and abdomen barely discernible, denser only in sulcus of prosternal process, very sparse elsewhere); dfp depressions covered with grayish pulverulence.

Epistome shallowly emarginated, depressed along midline; front much wider than long, subparallelsided; frontal depression broadly triangular, reaching far beyond upper margins of eyes; anterior cavity shallow, deeply grooved along midline, covered with contrastingly dense, coarse, irregularly confluent puncturation; otherwise front almost impunctate; pericocular furrows deep; eyes slightly protruding; vertex moderately wide (V:H≈0.45), sparsely and rather finely punctured. Antennae long and slender; 1. joint club-shaped, 3×

longer than thick; 2. as long as wide, by a half narrower and 6× shorter than 1.; 3. thin, as long as 1. and at distal end as thick as 2.; 4. shorter than 3., flattened, elongately triangular, at apex almost as wide as 1.; 5.-6. progressively shorter and perceptibly narrower; distal antennomeres missing.

Pronotum widest at base, there *ca.* 1.5× wider than long, subparallelsided; anterolateral angles not protruding but well accentuated; collar distinct; prebasal emargination of lateral margin deep; apical margin markedly bilobate; basal margin shallowly bisinuate, basal angles distinctly acute. Median depression moderately wide and deep, bottom finely and sparsely punctured; fossae deep, very wide, dfp, reaching to *ca.* anterolateral angles but prolonged almost to anterior pronotal margin by joining narrowly oblique anteromedian foveae; prehumeral reliefs not individualized, elongately triangular, rather densely covered with coarse punctures; otherwise pronotal punctulation fine, rather dense along anterior margin, less so in basal half, practically none in between. Scutellum small, elongately trapezoidal, deeply depressed, finely punctured.

Elytra twice longer than wide, distinctly caudate; sides obliquely truncate at humeri, with inconspicuous subhumeral protuberances, divergent to *ca.* midlength and shallowly sinuately convergent to jointly rounded, sharply denticulate apices (with 4-6 denticles also on sides). Elytral surface regularly convex; sculpture coarse around humeri, becoming finer backwards and inwards.

Proepisterna, sides of metasternum, outer half of metacoxae and almost entire sides of abdomen dfp (midlateral stripes not separated from broad marginal band); median furrow of prosternal process very densely, coarsely irregularly sculptured, lateral rims impunctate, median parts of sternum almost so, abdomen sparsely but rather coarsely punctured. Abdominal plaque markedly elevated (height subequal to length of 2. sternite behind), roundedly right-angled in profile; apex of anal sternite truncated.

Geographical distribution [Map 3]: Known only from the holotype collected somewhere in New Guinea.

Remarks: Closest relative of *C. atropurpurea sp.n.*, which however differs in colouration (purplish ventral, pure black dorsal side), much less extensive ventral dfp areas, thicker basal antennomere, &c.

***Cyphogastra (s.str.) collarti* DESC.**

Cyphogastra collarti DESCARPENTRIES 1956: 229-230

Material examined:

Holotype: “*Coll. I. R. Sc. N. B., Iles de la Sonde:* † Soë (alt. 880 m, Timor central) ex coll. Le Moul” “† *Cyphogastra collarti m. n.sp.* ♂ *Holotype*, A. DESCARPENTRIES DET. † *Cf.: Bull. Soc. Ent. France 1956, 61: 229, 30* † **Holotype** †” “Le Moul vend., CYPHOGASTRA timoriensis C.G.” [♂ (KBIN)]

Paratype: “Soë (alt. 880 m), Timor central” “Le Moul vend., CYPHOGASTRA timoriensis C.G.” “*Cyphogastra collarti m. n.sp.* ♂ *Paratype*, A. DESCARPENTRIES DET.” “**Paratype**” “*Cf.: Bull. Soc. Ent. Fr., 61, 1956. pp. 229-230*” [1 ♂ (MNHN)]

Additional material: 1 ♀

Characters [Fig. 21]: Males [2] 24×8 – 25×8.5, female [1] 31.5×11 mm. Head and pronotum black, bottoms of pronotal fossae green, green colour of elytral disk transgressing lateroapically through cupreous into black; ventral side green with at least partly cupreous abdominal plaque and (especially in female) some indefinite spots along midline of sternum and abdomen; tarsi black with (♀) or without (♂) aeneous lustre. Dfp areas covered with dense recumbent pubescence and grayish pulverulence, otherwise body practically glabrous.

Pronotum subparallelsided; anterolateral angles well accentuated but not or but very slightly protruding; fossae very broad, semiseparated into long basal and short apical part by protrusion of midlateral elevations, not extending to apical margin but joining anterolateral fovea reaching to outer margin of truncation; pronotal punctulation fine and very sparse. Elytra non-caudate; subhumeral protrusions barely appreciable; sculpture consists of moderately coarse, mostly irregular puncturation only slightly finer towards apices. Proepisterna and entire (♂) or almost entire (♀) sides of sternum and abdomen dfp, midlateral abdominal stripes not (♂) or poorly (♀) individualized; abdominal plaque moderately elevated (lower than length of posterior part of 2. sternite) but its posterior slope vertical (♂) or even “overhanging” (♀); abdominal punctulation rather coarse (especially in ♀) and moderately dense; anal sternite of male neither very deeply nor broadly subtriangularly emarginate in ♂, narrowly rounded and minutely incised at tip in ♀.

Geographical distribution [Map 3]: Seems endemic to Timor.

Remarks: Colouration like *C albertisi* GESTRO, pronotal fossae somewhat intermediate between *C albertisi* GESTRO and *C bicolor* WATH., but as well geographical separation as other features (wide body, non-caudate elytra, extensively dfp abdomen, &c.) suggest rather convergent origin of these characters. Dorsal colouration, shape of pronotal fossae, no caudate elytra &c. make *C. collarti* DESC. unmistakable not only within the circle.

Phylogenetical reconstruction

Like in other parts of the Review, all terminal “in-group” taxa – representatives of the targeted (*Tuberculata*-, *Satrapa*- and *Collarti*-) circles – have been included, as well as reconstructed ancestors of the circles convincingly resolved in previous parts [in cases of doubts as to the monophyly of a circle its “suspicious” parts (*C. flavimana* LSB. vs. *C. detecta* HOL., *C. wallacei* DEYR. vs. the rest of the *Bruyni*-circle) have been treated separately]. To “root” the tree, a “complex” of *Metataenia* (*Chalcomroczkowskia*) *ocellata* (L.S.) and *Iridotaenia* (*Iridomroczkowskia*) *koyoi* HOL. was included in the reconstruction as “fixed” distant out-group: its *a priori* constrained position makes superfluous to show it in the cladogram, while, as only the characters variable **within in-group** have been taken into consideration, the discussion of its morphological evolution also would be pointless.

In relation to the previous (HOLYŃSKI 2020) reconstruction the “direction” of parphyly has been reversed: now *Guamia* THY. has been recovered as “sister” of *C. tinianica* KUR. and so “nested” within *Cyphogastra* DEYR. *s.str.*; this, however, does not seem likely and, indeed, support for such arrangement is very poor (SQ=11/12). On the other hand, as predicted in comments to that earlier analysis, the basalmost placement of the *Flavimana*-circle has not been confirmed, allowing *C. tinianica* KUR. to “return” to its intuitively and biogeographically “unquestionable” near-ancestral position.

Excluding *C. tinianica* KUR., the common ancestor [W] of *Cyphogastra* DEYR. *s.str.* looks now as a beetle of uncertain (green or black) dorsal colouration with more (if green) or less (if black) distinct cupreous or bronzed lateroapical elytral streak, concolorous ventral side and dark (brownish-black with or without metallic sheen) tarsi and antennae; pronotum subparallelsided with conspicuous anterior foveolae, well developed but not protruding anterolateral angles, deeply irregularly furrowed fossae with traces of dfp, narrowly parallelsided marginal rims and undifferentiated basal margin of prescutellar lobe; sculpture of markedly caudate elytra moderately coarse, no subhumeral protrusion or dfp depressions; abdominal plaque high, proepisterna entirely dfp, midlateral and marginal abdominal dfp stripes well developed, apical incision of female anal sternite barely discernible. If collected

today, it would have probably been identified as a member of the *Satrapa*-circle close to *C. augustini* THY.

As the first “offshoot” the present analysis recovered the ancestor [U] of the *Collarti*-circle, having apparently developed on south-western part of New Guinea and characterized by broad flattened body and very broad, extensively dfp fossae. The monophyly of this circle – the “sister” relation between Timorese *C. collarti* DESC. [very broad contrasting lateroapical elytral streak; contrastingly coloured elytra (disk green) and pronotum (blackish); poorly developed anterior foveolae; anteriorly widened marginal and smooth, laterally swollen basal rim of pronotum; coarse elytral puncturation] and New Guinean [E] (lack of lateroapical elytral streak; contrastingly coloured ventral side, distinctly marked subhumeral protrusion) does not look unquestionable and is “supported” only by formal assumptions of MICSEQ algorithm (SQ=12/12). The descendants of [E] differ in colour of ventral side (purplish-cupreous in *C. atropurpurea* sp.n. vs. green in *C. atroviridis* sp.n.), highly elevated abdominal plaque and very extensively dfp sides of sternites in the latter, and prominent subhumeral denticle in the former.

The “resident”, northwestern New Guinean, population of [W] remained (as [T]) almost unchanged (differing from the ancestor at most only in – ambiguous in both – dorsal colouration), but both its descendants seem rather strongly distinguished. In already unambiguously green [S] pronotal sides became definitely convergent, fossae not dfp, basal margin of prescutellar lobe laterally swollen, subhumeral protrusion distinct, proepisterna partly dfp. Also distinctive (dorsally bronzed; no anterior foveolae; barely marked anterolateral pronotal angles; broad but poorly delimited, non-dfp fossae; not differentiated marginal rim; very fine elytral sculpture; very low abdominal plaque) was the ancestor of the *Armata*-circle, whereas its “sister”, [R], remained almost (except near-disappearance of lateral abdominal dfp) unchanged. One of its descendants was again widely differentiated (purplish-violaceous ventral side, yellow tarsi, subparallelsided pronotum with well marked anterolateral angles, non-dfp proepisterna, no midlateral stripes on abdomen) *C. uxorismeeae* HOL., while in the other, [K], fossae were partly dfp, lateral swelling of basal margin of prescutellar lobe disappeared, and elytra became coarsely punctured. One of the “daughters” of [K], the ancestor of the *Viridis*-circle, differed in subparallelsided pronotum with distinct anterior foveolae, c-shaped fossae, and well marked broadly semicircular apical incision of anal sternite in female, while the pronotum of its “sister”, [J], was characterized by barely marked anterolateral angles and undifferentiated marginal rims. Judging from the result of the present reconstruction, [J] does not seem to have differed from the ancestor of the *Bruyni*-circle, which – with disappearance of dfp in fossae; lateral swelling of basal margin of prescutellar lobe; finer elytral sculpture; and almost regularly rounded anal sternite of female – gave rise also to (here tentatively treated separately) *C. wallacei* DEYR. The biogeographical relations between the *Armata*-, *Uxorismeeae*-, *Viridis*- and *Bruyni*-circles have been discussed earlier (HOLYŃSKI 2020).

[Q], another, black descendant of [T], was the “mother”-taxon of barely (by lateral swelling of basal margin of prescutellar lobe) differentiated [P] and much more distinctive (yellow tarsi; broad but poorly delimited non-dfp fossae; non-caudate elytra; almost entirely dfp sides of abdomen, barely discernible incision on female anal sternite) ancestor of the southwestern (Lesser Sundas) *Flavimana*-circle, [F], whose two “daughters” differ in prominent, outwards projecting anterolateral pronotal angles and very fine sculpture (*C. detecta* HOL.) vs. bronzed colouration and very low abdominal plaque (*C. flavimana* LSB.). New Guinean [P] probably outcompeted by the descendants of [S], survived only on the “Far

East” (southern coast of the southeastern peninsula of the island – [M]: prominent anterolateral angles and anteriorly swollen lateral margins of pronotum) and “Far West” (Moluccas – [O]: green colouration, c-shaped fossae).

[M], the ancestor of the *Tuberculata*-circle, spread probably – without discernible morphological changes – to Louisiade Archipelago, whereafter the resident “continental” New Guinean population evolved (yellow tarsi, distinct anterior foveolae on pronotum, partly dfp proepisterna, low abdominal plaque, minute but deeply triangular apical incision of female anal sternite) into *C. jadwiszczaki sp.n.*, while few individuals (perhaps a single fertilized female, but most likely a fallen tree infested with larvae) of the insular population [L], apparently in a single (to my knowledge, no representative of the circle has ever been recorded from any intermediate locality) “jump” (or, rather, rafting) over 2000 km. of open ocean, invaded southeasternmost island of New Hebrides (Aneityum) to quickly develop there into highly distinctive but almost invariable (founder principle – MAYR 1942) *C. tuberculata THS.* The Louisiade population [L] itself, transformed (lateroapical streak and coarser puncturation of elytra) into [A], have differentiated into Misiman *C. misimana HOL.* (non-caudate elytra) and Rosselian *C. mincik HOL.* (bright green colouration). Interestingly, no representative of the *Tuberculata*-circle seems to have been ever reported from any intermediate (including the largest, Tagula I.) island of the archipelago – if not simply a manifestation of deficient knowledge, perhaps also a founder event?

Meanwhile the Moluccan (probably Halmaheran) progenitor [O] of the *Satrapa*-circle seems to have invaded northeasternmost Celebes (Halmahera Peninsula) – to evolve there (bluish-black elytral suture, extensively dfp pronotal fossae) into [B], apparently identical to recent *C. minahassae sp.n.* – and from there to Sula Is., where slight modification (anteriorly widened lateral pronotal ridge and partly dfp proepisterna) transformed it into *C. sulana sp.n.* Halmaheran population of [O], having evolved (lateroapical elytral streak, deeper incision of female anal sternite) into [N], invaded Ternate (*C. augustini THY.*: partly dfp fossae, definitely caudate and coarsely sculptured elytra) and spread to southern Moluccas as [I] (pronotal and elytral colouration contrastingly different, puncturation very fine) which, in turn, evolved into *C. nigripennis DEYR.* (black elytra, simple basal margin of prescutellar lobe, partly dfp proepisterna) on Buru and into [H] (elytra bronzed, non-caudate) on, perhaps, Ceram. [H] then invaded Amboyne – where it is now represented by practically unchanged (the only apparent modification being shallower apical incision of female anal sternite) *C. aeripennis KIRSCH* – and then spread perhaps (the geographical context of the transformations [H]→[G]→[D] is difficult even to hypothesize...) northwards to evolve into [G] (pronotum concolorous with elytra, lateral dfp areas on abdomen inconspicuous, apex of anal sternite in female not distinctly incised), which seems identical to *C. celebensis KERR.* (whose occurrence on Celebes and even taxonomic validity looks, however, highly suspicious...). Further evolution of [G] (green body, partly dfp fossae, slightly caudate and coarser punctured elytra) led to [D], which invaded Ternate to become entirely black *C. carbonaria THY.*, and thereafter, practically (except the appearance of blackish sutural interstria of elytra) apparently spread over almost all the Moluccan archipelago as [C] = *C. satrapa (SCHH.)*, with more apparently than really differentiated (somewhat darker elytral costae, anteriorly widened lateral ridge of pronotum, partly dfp proepisterna, reduced dfp areas on abdominal sides) *ssp. obiensis THY.*

The present, partial analysis (like those performed in other parts of the Review) has aimed only at the *preliminary* resolution of *internal* relationships *within* particular circles, as preparation to the final, comprehensive reconstruction of the genus phylogeny at the end – as

already observed in previous parts, the reliable reconstruction of branching sequence and, consequently, characteristics of ancestors *among* circles, and even the clarification of doubtful (poorly resolved, contra-intuitive, contradicting external – e.g. biogeographical – evidence, &c.) within-circle patterns will be possible only in that concluding part, when the defensible hypotheses as to the structure of *all* subgroups of *Cyphogastra* DEYR. *s.str.* will be available.

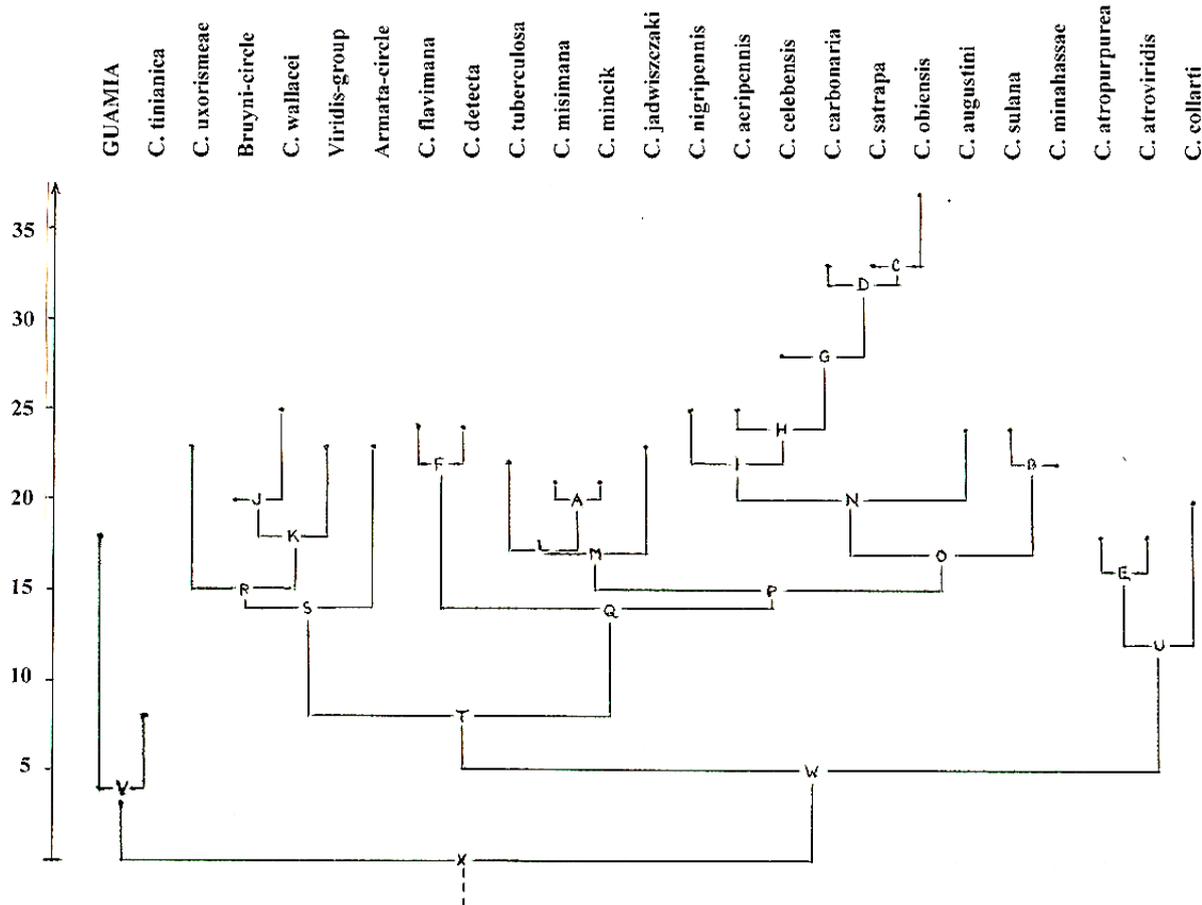


Fig. 22

Phylogenetical relations between and within the analysed circles

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Appendix

Character definitions

Upper line – codes of traits [“character-states”]; [***bold italics***] – terminals of a transformation chain

Lower line – weights (costs of transformation) [$0 \leftrightarrow 1 \leftrightarrow 2 = 1$: additively equidistant (distance between 0 and 1 the same (=1) as between 1 to 2, that between 0 and 2 = 1+1 = 2); (***abc***)=1: equidistant [distance $a \leftrightarrow b = b \leftrightarrow c = c \leftrightarrow a = 1$]; $a \leftrightarrow (x/y) = 2$: alternatively equidistant [$a \leftrightarrow x = a \leftrightarrow y = 2$; $x \leftrightarrow y = (x \leftrightarrow a) + (a \leftrightarrow y) = 2 + 2 = 4$]

Proportions

1. Body proportions (L:W): [***0***] <3.0; [***1***] >3.0
 $0 \leftrightarrow 1 = 2$

Colour

2. Elytra (disk): [***g***] green; [***c***] cupreous; [***b***] bronzed; [***n***] black
(gcbn)=1
3. Elytra (lateroapical streak): [***0***] none; [1] distinct; [***2***] very broad
 $0 \leftrightarrow 1 \leftrightarrow 2 = 2$
4. Elytral costae: [***0***] concolorous; [***1***] darker
 $0 \leftrightarrow 1 = 1$
5. Elytral sutural interstria: [***0***] concolorous; [***1***] bluish-black
 $0 \leftrightarrow 1 = 2$
6. Pronotum: [***0***] concolorous; [***1***] contrasting
 $0 \leftrightarrow 1 = 1$
7. Sternum: [e] concolorous; [***g***] contrasting green; [***c***] contrasting cupreous
(gce)=1
8. Tarsi: [***0***] dark; [***1***] yellow
 $0 \leftrightarrow 1 = 2$

Pronotum

9. Side margins: [***0***] subparallel; [***1***] distinctly convergent
 $0 \leftrightarrow 1 = 2$
10. Anterior foveolae: [***0***] none or inappreciable; [1] distinct; [***2***] prominent, joining fossae
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
11. Anterolateral angles: [***0***] barely marked; [1] well developed; [***2***] projecting outwards
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
12. Lateral fossae: [***f***] deep furrow; [c] c-shaped; [***d***] broad, inner margin straight; [***b***] broad, inner margin incised
 $f \leftrightarrow c = 1$; $d \leftrightarrow b = 1$; $c \leftrightarrow (d/b) = 2$
13. Lateral fossae: [***0***] not dfp; [1] slightly dfp; [***2***] extensively dfp
 $0 \leftrightarrow 1 = 1$; $1 \leftrightarrow 2 = 2$
14. Lateromarginal rims: [***0***] not differentiated; [1] narrowly parallelsided; [***2***] widened anteriorly
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
15. Prescutellar lobe (basal margin): [***0***] simple; [***1***] smooth, laterally swollen
 $0 \leftrightarrow 1 = 1$

Elytra

16. Subhumeral protrusion: [***0***] none; [1] discernible; [***2***] prominent
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
17. Apical half: [***0***] not caudate; [1] slightly caudate; [***2***] strongly caudate
 $0 \leftrightarrow 1 = 1$; $1 \leftrightarrow 2 = 2$
18. Sculpture: [***0***] very fine; [1] moderate; [***2***] relatively coarse
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
19. Dfp depressions: [***0***] none; [***1***] prominent
 $0 \leftrightarrow 1 = 3$

Ventral side

20. Proepisterna: [***0***] entirely dfp; [1] partly dfp; [***2***] entirely lustrous & relieved
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
21. Abdominal plaque: [***0***] none; [1] low; [***2***] prominent
 $0 \leftrightarrow 1 \leftrightarrow 2 = 2$
22. Midlateral dfp stripes on abdomen: [***0***] none/inconspicuous; [***1***] distinct at least on anal sternite (often confluent with lateral)
 $0 \leftrightarrow 1 = 1$
23. Lateral dfp depressions on abdomen: [***0***] none or inconspicuous; [1] extensive; [***2***] entire sides
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$
24. Anal sternite female (apical incision): [***0***] depth subequal to width; [1] wider than deep; [***2***] very shallow, indistinct
 $0 \leftrightarrow 1 \leftrightarrow 2 = 1$

Character matrix

red italics – apomorphies; pink – uncertain apomorphies;
last two columns: distance from immediate ancestor [S/Q]

	1		2		
	12345	67890	12345	67890	1234
GUAMIA	1c200	<i>1e10</i>	1c010	<i>01002</i>	<i>0102=14</i>
C. tinianica	1b100	0e100	<i>2c100</i>	<i>22101</i>	2112= 4
C. uxorismeae	1g000	<i>0c101</i>	1f011	12102	<i>2002= 8</i>
Bruyni-circle	1g000	0e012	0f100	12201	2102= 0
C. wallacei	1g000	0e012	0f001	12101	2100= 5
Viridis-circle	1g000	0e001	1c110	12201	2101= 5
Armata-circle	1b000	0e010	<i>0b001</i>	12001	<i>1112= 9</i>
C. flavimana	1b000	0e100	1d010	00100	<i>1120= 2</i>
C. detecta	1n000	0e100	<i>2d010</i>	00000	2120= 2
C. tuberculata	1n000	<i>0c000</i>	2f021	<i>01001</i>	<i>3011= 5</i>
C. misimana	1n100	0e000	2f021	<i>00200</i>	2111= 2
C. mincik	<i>1g100</i>	0e000	2f021	01200	2111= 3
C. jadwiszczaki	1n000	0e101	2f021	01101	<i>1112= 6</i>
C. nigripennis	1n100	1e000	1c010	01001	2112= 3
C. aeripennis	1b100	1e000	1c011	00000	2111= 1
C. celebensis	1b100	0e000	1c011	00000	2120= 0
C. carbonaria	1n100	0e000	1c111	01100	2120= 1
C. satrapa	1g101	0e000	1c111	01100	2120= 0
C. obiensis	1g111	0e000	1c121	01101	2110= 4
C. augustini	1g100	0e000	1c111	<i>02200</i>	2112= 4
C. sulana	1g001	0e000	1c221	01101	2111= 2
C. minahassae	1g001	0e000	1c211	01100	2111= 0
C. atropurpurea	0n000	<i>0c002</i>	1d210	<i>22101</i>	2112= 2
C. atroviridis	0n000	<i>0g002</i>	1d210	12100	<i>3122= 2</i>
C. collarti	<i>0g200</i>	<i>1e000</i>	<i>1b221</i>	<i>02200</i>	2112= 8
A	1n000	0e000	2f021	<i>01200</i>	2111= 1 [2/ 8]
B	1g001	0e000	1c211	01100	2111= 5 [2/ 5]
C	1g101	0e000	1c111	01100	2120= 1 [3/ 7]
D	1n100	0e000	1c111	<i>01100</i>	2120= 4 [3/ 4]
E	<i>0n000</i>	<i>0c002</i>	1d210	<i>12100</i>	2112= 4 [4/13]
F	1n000	<i>0e100</i>	1d010	<i>00100</i>	2120= 8 [4/ 9]
G	1b100	<i>0e000</i>	1c011	00000	2120= 4 [4/ 4]
H	1b100	1e000	1c011	<i>00000</i>	2112= 2 [4/ 5]
I	1g100	<i>1e000</i>	1c011	<i>01000</i>	2112= 2 [5/ 8]
J	1g000	0e012	<i>0f100</i>	12201	2102= 2 [5/ 7]
K	1g000	0e012	<i>1f110</i>	12201	2102= 3 [7/ 8]
L	1n000	0e000	2f021	01100	2111= 0 [6/ 8]
M	1n000	0e000	<i>2f021</i>	01100	2111= 2 [7/ 8]
N	1g100	0e000	1c011	01100	2112= 3 [9/ 9]
O	1g000	0e000	1c011	01100	2111= 2 [9/ 9]
P	1n000	0e000	1f011	01100	2111= 1 [8/12]
Q	1n000	0e000	1f010	<i>01100</i>	2111= 6 [9/12]
R	1g000	0e012	1f011	12101	2102= 1 [13/13]
S	1g000	0e012	<i>1f011</i>	<i>12101</i>	2112= 6 [12/13]
T	1n000	0e002	1f110	02100	2112= 3 [13/13]
U	<i>0n100</i>	0e002	<i>1d210</i>	02100	2112= 7 [12/12]
V	1b100	0e100	1c110	02101	2112= 4 [11/12]
W	1n100	0e002	1f110	02100	2112= 5 [7/ 7]
X	1g100	0e100	1d110	02101	2112
	n	0 1	f	0	

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