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Cyphogastra farinosa (F.):

black Malay, bicolourous Australian, or coleopterous version of chimaera?

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Introduction

The taxonomic/nomenclatural/biogeographical structure of the genus *Cyphogastra* DEYR., despite (and partly just because of) highly attractive appearance of its large, usually colourful species, remains a hardly disentangleable mess, full of mysterious descriptions, phantastic synonymizations, incredible geographical distributions. Unraveling of one of such muddled puzzles – clarification of the true identity of *Cyphogastra clara* KERR. – has been attempted by me few months ago (HOLYŃSKI 2020), the present paper is devoted to solve another similar riddle.

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 **Coraebina** BED.) are (or may easily become) “homonymous” (but valid!) with generic or subgeneric ones (*Buprestina* OBB., *Melobasina* KERR., *Coraebina* KERR.)]

Explanation of terminology

Dfp: very densely and finely punctulate

Fossae: deep laterobasal depressions of pronotum

Perisutural sulcus: depressed dfp furrow subparallel to the elytral suture

Perimarginal sulcus: depressed dfp furrow subparallel to the lateral margin of elytra

BP*** (*e.g.* BPehk): specimen-identifying signature in my collection

Collection acronyms:

BMNH = Natural History Museum, London, ENGLAND

RBH = Roman B. HOLYŃSKI, Milanówek, POLAND

ZMK = Zoologisches Museum, Kiel, GERMANY

The nominotypical subgenus of *Cyphogastra* DEYR. is abundantly represented in and around New Guinea: from New Hebrides, Solomons and Bismarck Archipelago to Lesser Sunda Is., Moluccas and northern peripheries of Australia (native occurrence on Samoa and Celebes needs confirmation), but the distribution of only one species assuredly extends beyond the Wallace Line, to Bali, Java, Borneo and – perhaps – Sumatra. It is a dorsally black (except for pronotal dfp depressions, pair of elytral dfp sulci, and more or – usually – less discernible greenish hue at middle of elytral sides), middle sized beetle [Fig. 4] keying in the latest (more than century old...) relevant taxonomic publication (KERREMANS 1910) to *C. farinosa* (F.), and indeed almost invariably so determined in collections; having no apparent reason to deny what seemed to be a firm consensus, hitherto I also have uncritically put this name on labels of the examined specimens. However, the preparation of the fifth part of my review of the genus prompted me to check the original description, and... what I had initially treated as little more than empty “bureaucratic” formality, has revealed a surprise transforming routine citation into intriguing puzzle! Here the original description (FABRICIUS 1775: 219):

“B. elytris serratis, viridibus: sulco abbreviato suturali impresso.

Habitat in nova Hollandia. *Mus. Dom. Banks.*

Magnitudo media. Antennae nigrae. Caput canaliculatum, fuscum, orbita oculorum aurea. Thorax obscure aeneus, dorso canaliculato, marginibus lunula impressis. Elytra rugosa, viridia, sulco longitudinali a medio ad apicem impressa. Corpus aeneum, polline ferrugineo adpersum.”

So, neither body black, nor distributed in Malay Archipelago, but “*elytris ... viridibus*” and “*Habitat in nova Hollandia*”! Well, up to the late XIX c. geographical distribution (and, so, exact localities) were generally not considered important, and it was frequent custom to quote the island or port from where the collected specimens had been dispatched to Europe rather than the actual collecting place, therefore old labels like “*Java*”, “*Batavia*”, “*Bombay*”, “*Malacca*” &c. are notoriously unreliable. However, this does not concern “*nova Hollandia*” [=Australia]: at BANKS’ or FABRICIUS’ times barely known to anybody, from where hardly any shippings could have arrived, perhaps the last geographical name likely to come to FABRICIUS’ mind if not by the information from BANKS. On the other hand, just the provenience from BANKS’ collection makes the locality highly probable: BANKS took part in COOK’s first Pacific voyage, when one of the longest stop-overs was in what is now Endeavour river mouth, whereas the only (as far as I am aware) place where they stopped in Malay Archipelago was Batavia (=Jakarta) at the very end of the expedition.

Still more enigmatic is the discrepancy in colour description: unless we assume that FABRICIUS (1775) has described black elytra as green (rather unlikely supposition...), evidently the confusion has been introduced by later authors – by whom and how? FABRICIUS’ contemporaries (OLIVIER 1790, HERBST 1801) almost literally repeated his original diagnosis, but already CASTELNAU & GORY’s (1835) *Monographie* brings a surprise: here *Chrysodema farinosa* C.G., described from a specimen “*Du cabinet de M. Chevrolat*”, is said to inhabit “*Java*” and have... “*Corps ... d’un vert peu obscur ... Elytres noirs*” – exactly **opposite** to FABRICIUS’ (1775) description and, at that, not matching any of known species of *Cyphogastra* DEYR. with sulcate elytra [perhaps they described some composite (not so rare in collections...) ”created” from parts of two different species?! In the same publication CASTELNAU & GORY (1835) described – also from “*Java*” and also “*Du cabinet de M. Chevrolat*” – *Chrysodema auro-impressa* C.G., generally (THÉRY 1926, OBENBERGER 1926, BELLAMY 2008) listed as a variety or synonym of *C. farinosa* (F.), although already KERREMANS (1910) observed that “*d’après le texte*” its characters do not fit any *Cyphogastra*

DEYR. and the respective specimen “*serait plutôt un Chrysodema*” [nevertheless, KERREMANS (1910) himself considered *C. auroimpressa* (C.G.) a colour variety of *C. farinosa* (F.) because – according to him – unlike the text, “*La figure représente bien un Cyphogastra du groupe farinosa et différent de celui-ci par la coloration*” [in fact, the respective fig. is hopelessly indeterminate as to the colour... – RBH]] and “*L'exemplaire nommé auroimpressa dans la collection Chevrolat est aussi un Cyphogastra et concorde avec la figure de l'ouvrage de Cast. et Gory*”. Anyway, *C. farinosa* sensu CASTELNAU & GORY is evidently irrelevant to the question of the identity of *C. farinosa* (FABRICIUS), and the eventual relevance of *C. auroimpressa* (C.G.) remains but a possibility pending examination of the – currently inaccessible to me – type-specimen (but see below!).

Another name invariably considered a synonym of *C. farinosa* (F.) is *C. impressa* KERR. [type locality: Ombay (Pantar I. in the Lesser Sunda chain)], whose description (KERREMANS 1898) seems to provide the first definite suggestion of the transformation of Australian *Buprestis farinosa* F. with green elytra into the entirely (except dfp depressions) piceous-black inhabitant of the Malay Archipelago: its colouration is characterised as “*d'un brun de poix brillant en dessus avec le fond des dépressions thoraciques et élytrales bronzé*”, and it is said to be “*assez voisine de*” *C. farinosa* (F.), differing in few trifling, certainly purely individual details (“*pronotum moins carré, ses angles moins nets and moins saillants, les fossettes plus larges et plus accentués, le sillon élytral ... plus profond*” – lack of any indication of difference in colour suggests that the Author considered *C. farinosa* (F.) also “*d'un brun de poix brillant en dessus*”, i.e. already applied the name to what it has been applied nowadays: to the common Malayan species! And indeed, few years later in the *Monographie...* (KERREMANS 1910) *C. farinosa* (F.) is presented as “*d'un bronzé obscur avec quelques espaces clairs le long de la marge latérale*” and its distribution as “*Java ...; Bornéo; Sumbawa*”, contrary to the original description but in full accord with the current usage! But what could have led Belgian author so much astray?

One possibility is that the confusion originated from FABRICIUS' collection: perhaps the text of original description is, similarly to the above described case of *C. auroimpressa* C.G., incongruent with what seems to be the type-specimen[-s] (well, the concept of name-bearing type was not yet known to FABRICIUS and his contemporaries, but customarily – with no evidence to the contrary – the specimens in their collections are accepted as types): perhaps (e.g. as the result of later replacement) *Buprestis farinosa* in coll. FABRICIUS is now represented by the all-black inhabitant of Java? To check this hypothesis I applied to Dr. Michael KUHLMANN for help; according to his kind information there were two specimens marked as *C. farinosa* in FABRICIUS collection, both received (in accord with the original description) from BANKS: one is now in the Zoological Museum, University of Kiel (ZMK), the other in the Natural History Museum in London (BMNH). By courtesy of (respectively) Dr. KUHLMANN and Dr. BARCLAY I have received colour photographs of these syntypes [Figs. 1-3]: both have elytra definitely green! Thus the transmogrification of green-elytrous Australian into all-black Malay was apparently the original doing of KERREMANS.

His interpretation is made especially difficult to understand by the fact of the existence of a species closely related to *C. farinosa* (F.) sensu KERREMANS and deceptively similar in almost all characters except – just – colouration: blackish head and pronotum, variably (from cupreous through green to blue) metallic elytra! This common species, widely distributed around the Arafura Sea and Gulf of Papua, is in collections usually determined as *C. venerea* (THS.), but labels such as *C. macfarlani* WATH., *C. sodalis* WATH., *C. nigrolineata* THY. and... *C. farinosa* (F.) are also not so rare. In the most recent catalogue (BELLAMY 2008) *C. venerea* (THS.) is considered (apparently after THÉRY 1926) a subspecies of *C. farinosa* (F.) and the



Fig. 1

Syntype of *Buprestis farinosa* FABRICIUS
coll. Nat. Hist. Mus. London
specimen [phot. K. MATSUMOTO]



Fig. 2

Syntype of *Buprestis farinosa* FABRICIUS
coll. Nat. Hist. Mus. London
label [phot. K. MATSUMOTO]



Fig. 3

Syntype of *Buprestis farinosa* FABRICIUS in coll. Zool. Mus. Univ. Kiel
[phot. F. HAAS]

remaining three names as synonyms or varieties of these, but interestingly, KERREMANS (1910) treats them all as separate species, distinguishing the New Guinean/Australian forms from *C. farinosa* (F.) by... green colour of elytra!

I admit, I am unable to imagine an easily understandable way of reasoning that could have led KERREMANS to effectively the conclusion that green means black and Australia means Malay Archipelago – but if there is no likely explanation, some unlikely must be true. The least unlikely I can conceive is based on his [signalized already in my earlier “taxonomic thriller” (HOLYŃSKI 2020)] underestimation of colour characters: cf. e.g. his (KERREMANS 1910) remark “*Il n'existe entre le farinosa F. et l'auroimpressa C. et G. que les différences de coloration, ce qui est insuffisant pour les séparer*” – so much “*insuffisant*” that he did not even feel advisable to specify these differences concretely! As mentioned above, the green elytrous eastern relative – let us provisionally call it *C. venerea* s.l. – is deceptively similar to *C. farinosa* sensu KERREMANS, the only conspicuous difference being metallic (usually green) elytra; it seems conceivable that initially the Belgian author, as in the case of *C. auroimpressa* (C.G.), found colouration *insuffisant pour les séparer* and considered them single species, referred to (correctly!) as *C. farinosa* (F.). Later he realized that hypothesis of conspecificity is untenable, subdivided the complex into five taxa, but having also noticed that all green elytrous forms had already been separately named, left (incorrectly) the senior, FABRICIUS' name with the only remaining one: all-black Malayan – the decision not acceptable according to the Code, but at that times detailed nomenclatural regulations had not yet been established!

Whether the above “reconstruction” of KERREMANS' reasoning is correct or not, anyway currently the name *C. farinosa* (F.) is almost universally applied to what is not *C. farinosa* (F.) [Fig. 4], while the true *C. farinosa* (F.) has been camouflaged under some invalid name. So, what really does FABRICIUS' description refer to? First of all, we can safely confine our search to *C. venerea* s.l.: all other *Cyphogastra* DEYR. species with sulcate elytra have the elytral disk concolorous with pronotum: either both are black or (*Ventricosa*-circle) both are metallic. But *C. venerea* s.l. is highly variable in details of elytral colouration (from cupreous through golden, green, to dark blue) and – especially – in development of elytral sulci; these variants (in my interpretation: subspecies) show a clear (“statistically”: the ranges of variability are partly overlapping) geographical pattern – which of them has FABRICIUS had before eyes describing *Buprestis farinosa*? Both the text of description and images of the syntypes constrain the choice to those with green elytra and but a single – perisutural – sulcus on each. The lateral (perimarginal) sulcus is [almost?] always lacking in *C. venerea* (THS.) s.str., but this race is endemic to Aru Is. – a not likely candidate for the collecting locality of BANKS' material... – and its elytra are usually [greenish-]blue. The only other possibility is what I hitherto considered, determined in some collections, and planned to formally describe as a new subspecies of *C. venerea* (THS.): its elytra are almost invariably definitely green, perimarginal sulcus is lacking or (with rare exceptions) much less conspicuous than perisutural, and it inhabits northern Queensland (York Peninsula) [the majority of the specimens examined by me have been collected just at the Endeavour River: the very place of one of the longest stop-overs during COOK's expedition]! And indeed, the comparison of FABRICIUS' syntypes [Figs. 5-6] with “*C. v. cooki* ssp.n.” [Fig. 7] leaves little doubt as to their identity.



Fig. 4

Cyphogastra "farinosa (F.)"
♀ [BPehb] E-Java: Blitar



Fig. 5

Buprestis farinosa F.
♀ ST [ZMK] N.Hollandia



Fig. 6

Buprestis farinosa F.
ST [BMNH] N. Hollandia



Fig. 7

Cyphogastra "venerea cooki HOL. i.l."
♀ [BPehk] Queensland: Endeavour R.

And what about *C. farinosa sensu KERREMANS*? The earliest name eventually eligible for the senior synonym seems to be *C. auroimpressa (C.G.)*, but the serious (detailed above) uncertainties as to its identity make it effectively a *nomen dubium*. Instead, *C. impressa KERR.* certainly refers to the black Malayan species and, in my opinion, should be considered the valid name of that taxon.

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