The Afrotropical cylindromorphines: subfamilial placement, phylogenetic affinities, generic synonymy and species lists (Coleoptera Buprestidae Agrilinae)

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The Cylindromorphini is reduced to tribal status under Agrilinae. The Trachyinae is not considered as a necessary subfamily and thus the six inclusive tribes are considered under Agrilinae and thus equivalent to Cylindromorphini. A key is given to separate the six tribes present in the Afrotropical region. The phylogenetic affinities and possible related lineages of the cylindromorphines are discussed briefly. The generic synonymy for two of four Afrotropical genera is changed: Franchetia Théry 1947 (= Capeneria Cobos 1953), n. syn. and Zita Théry 1947 (= Neomorphus Cobos 1953), n. syn. The four continental African genera are separated in a key and species lists are given for each. Type species are newly designated for Paracylindromorphus Théry 1928, Zita Théry 1947, Neomorphus Cobos 1953 and Zitella Théry 1954.

KEY WORDS: Cylindromorphini, Afrotropical, new synonymy, species lists.
INTRODUCTION

The Cylindromorphini Portevin is composed of seven genera which are restricted to various regions of the Old World with the exception of Australasia. The Afrotropical cylindromorphine fauna is currently classified into four genera from continental Africa: Paracylindromorphus Théry 1928, Capeneria Cobos 1953 (= Franchetia Théry 1947), Neomorphus Cobos 1953 (= Zita Théry 1947) and Zitella Théry 1954 and the monotypic Heromorphus Obenberger 1916 from Madagascar. A key to all cylindromorphine genera was given by Cobos (1953) and further refined by him (1960). Revisions of the African species were done by Obenberger (1928) with all species being classified under Cylindromorphus Kiesenwetter 1857 and by Théry (1954) using four subgenera under Paracylindromorphus. The new type-species designations which follow result from the failure of the original authors to provide any such clear distinctions as discussed below.

GENERIC SYNONYMY

Cobos' (1960) synonymy of Théry's subgeneric names assumes subsequent description to those of his (Cobos 1953). A footnote in his paper (Cobos 1960) notes that Théry originally used the names Franchetia, Zita and Zitella as subgenera in his work on the buprestids of Angola (1946, 1947), both prior to Cobos (1953) and Théry's revision of Paracylindromorphus (1954). In the first paper, Théry (1946) provided a checklist of Angolan buprestids and in the second (Théry 1947), he differentiated the subgenera in a key and transferred, or described as new, species to Zita and Franchetia. In none of the three papers by Théry are the proposed subgenera described other than in the expanded couplets of the key, which is repeated in the later two works (1947, 1954). Also of interest is the fact that in the 1954 paper, the three «new» subgenera are all listed as «nov.» or «n. subg.», while in the 1947 paper, no such qualifiers are present. Since the 1954 paper discussed material collected during an expedition to Zaire during the years 1933-1935, I might assume that Théry intended this work (1954) to be published before his consecutive works on the Angolan buprestids (1946, 1947).

The footnoted commentary by Cobos (1960) indicates that he would have preferred to leave the Théry taxa as the senior synonyms, but that such would contravene the international rules. This was, however, one year before the appearance of the first edition of the International Code of Zoological Nomenclature of 1961. According to the most recent edition (3rd, 1985) of the ICZN, the distinction of the subgenera in a key certainly agrees in spirit to a «definition that states in words characters that are purported to differentiate the taxon» (Article 13a). In addition, Théry failed to comply with Article 13b by not designating type species in either 1947, or 1954, even though Franchetia was originally monotypic and defined for P. (F.) monardi Théry 1947 and thus fulfills the requirement of Article 13c, while Cobos (1953) only complied in the case of Capeneria, since he designated two! type species for Neomorphus. Finally, while it will remain debatable about which author’s taxa should be retained as senior synonyms, the situation with Zitella Théry perhaps provides the best clue for the most objective solution to these names and priority. The
name Zitella first appeared in the key (Théry 1947), but with no species assigned nor type designated. In the later work (Théry 1954), Zitella is once again separated in a key, but is neither described nor has a type species designation; four species are included with three described as new. Why did Cobos not make a case against the validity of this name as it obviously falls short of validity by the same criteria he argued with for the other two taxa, instead Cobos (1960) accepts Zitella. If Zitella is valid, so are Zita and Franchetia.

Therefore, in line with the concepts of priority and stability, I propose that the names of Théry’s taxa be reinstated and those of Cobos reduced to junior synonyms as indicated in the following species lists. I think that stability is best served by accepting all three of Théry’s names based on the distinctions made in the repeated key and by my completing the task of designating types species for Zita and Zitella from the original choices as listed below.

SUBFAMILIAL PLACEMENT

Following the reduction of the number of buprestid subfamilies started by Toyama (1987) and Holyński’s (1988) more recent comments on four major buprestoid lineages (i.e. schizopodids, julodines, buprestines and agrilines), it appears overly generous to accord the cylindromorphines subfamilial status as was done in the last higher level consideration of the group by Cobos (1980). With no compelling reason for such a rank, I prefer to recognize the taxon at no more than the tribal level. Nothing about the cylindromorphone larva discussed and illustrated by Bílý (1983) distinguishes them significantly from the basic agriline groundplan. With the most logical a priori statement of relationships involving taxa currently placed within two diverse tribes of Trachyinae (sensu Cobos 1980) (see Bellamy & Hespenheide 1988), it seems prudent to also consider that subfamilial concept as null and consider the «trachyne» tribes utilized by Cobos (1979) as equivalent to those in the narrowly defined Agrilinae (i.e. Agrilini, Coroebini) and thus also to this concept of Cylindromorphini. Following a more comprehensive analysis, at least some of the tribes below may require further reduction to subtribal status.

Tribes of the reconstituted Agrilinae (sensu novo) and their distribution:

Agrilini Laporte & Gory 1837 [Cosmopolitan]
Coroebini Bedel 1921 [Cosmopolitan]
Cylindromorphini Portevin 1931 [Old World, except Australasian]
Aphanisticini Jacquelin du Val 1863 [Old World]
Brachyini Cobos 1979 [New World]
Germaricini Cobos 1979 [Australasian]
Cylindromorphoidini Cobos 1979 [Neotropical]
Pachyschelini Böving & Craighead 1931 [New World, Oriental]
Trachyini Gory & Laporte 1840 [Old World, Neotropical]
Galbellini Cobos 1986 [Old World, except Australasian]

In context to the topic of this paper, a key to the tribes of Agrilinae present in the Afrotropical region is presented below.
KEY TO THE AFROTROPICAL TRIBES OF AGRILINAE

1. Prosternum with well defined, ventrally produced disc, marginal sutures apparently doubled; sternal cavity with mesosterna reduced, prosternal process thus apparently «free»; small, black, mostly cylindrical; eyes small, posterior margin not «touching» pronotum. Cylindromorphini

   — Prosternum without disc as such, sutures clearly single; sternal cavity generally with mesosterna more prominent, sometimes partially hidden beneath prosternal process; otherwise not as above.  

2. Hypomeron with deep groove for reception of distal antennomeres in repose. Galbellini

   — Hypomeron without such groove, although antennomeres often received in longitudinal depression.  

3. Mesocoxae more widely separated than procoxae; tarsi short, one third the length of tibiae.  

   — Distances between procoxae and mesocoxae more or less equal (Fig 3); tarsi longer, at least one half the length of tibiae.  

4. Femora dilated, excavated on ventral surface for reception of tibiae in repose; body elongate or if triangular, with saltatorial metamorpha. Aphanisticini

   — Femora normal, not dilated or excavated, tibiae free in repose; body triangular, flattened, metamorpha not saltatorial.  

5. Wing without radial cell; pronotum with two lateral carinae, at least in apical 1/2; metatarsi usually with first tarsomere elongate, generally longer than 2 and 3 together. Agrilini

   — Wing with radial cell, although it may be partially open; pronotum without or with one lateral carina; metatarsi with first tarsomere short, generally equal or only slightly longer than 2 or 3. Coroebini

PHYLOGENETIC AFFINITIES

The cylindrical body shape, partial atrophy of the sternal cavity and the assumed advanced state of the biological association of cylindromorphines with grasses point to several areas of possible relationship. Firstly, *Aphanisticus* Latreille 1829 of the Aphanisticini generally has a subcylindrical body and is also usually associated with grasses, although the species seem to mine the flattened grass blades rather than the central flower stalk. With the Cylindromorphini and Aphanisticini both restricted to the Old World, an approximate age can be assigned to their separate lineages. The Aphanisticini must be older with the successful radiation of both *Aphanisticus* and *Endelus* Deyrolle 1864 into the Australasia region.

A second possible relationship, although perhaps more ancient or maybe simply convergent may exist with two widely separated Australian taxa, *Germarica* Blackburn 1887 (Germaricini) and some species of *Synechocera* Deyrolle 1864 (Coroebini). *Germarica* larvae are suspected to be miners of the reduced needle-like leaves of *Casuarina* Linnaeus 1759 (Casuarinaceae) and its cylindrical morphology may be induced by the larval biological requirements. Two species of *Synechocera*, *S. albohina* (Carter 1921), to a larger extent, and *S. setosa* Carter 1924 have a very cylindromorphine-like body shape but nothing is known of these two species biology (see Bellamy 1987).

The third possible avenue of relationship lies with various cylindrically-shaped Coroebini such as *Meliboetus* Deyrolle 1864 and *Kamosiella* Bellamy 1988 but because a cylindrical body seems to be a convergent or repeated autapomorphic character and
because examples of such occur within the Coroebini in the New World and Australia (see Bellamy 1988) as well, I feel that this possible relationship is not close, if it exists at all.

The fourth and last area of possible relationship certainly has caused the most confusion in the past. In Cobos' (1954) key to the cylindromorphine genera, he included *Pseudoclema* Théry 1938 and *Clema* Semenov-Tian-Shanski 1900, both Coroebini. In his later key, Cobos (1960) removed them and stated that their similarities were simply convergent. Superficially, the cylindromorphines more closely resemble *Promeliboeus* Obenberger 1924 (see Bellamy 1989) which is closely related to *Pseudoclema* but I feel that this is another «dead end» on the phylogeny trail.

A character that has only recently been noted (Wells et al. 1976) may well be the monophyletic clue needed to establish the relationship most closely to the Trachyinae. The so-called «belt-buckle setae» reported for a species of *Taphrocerus* Solier 1833 has also been found on several of the species of cylindromorphines and *Aphanisticus* that I have examined and were discussed by Bellamy & Hespéhenheide (1988). These setae were hypothesized to be used for orientation in an animal that spent its adult existence in a compressed life style. It is suggested that this adaptive character is more likely a synapomorphy and thus monophyletic indicator than the possibility of it being a convergent atavism and multiply evolved.

Beyond the generic key presented below are species lists for the four Afrotropical cylindromorphine genera. These lists have been assembled using the descriptive works for all cited authors, but was mainly prepared from the listing of Obenberger (1934) with subsequently described species added from the works of Théry (1946, 1947, 1954) and Cobos (1953, 1960). The specific synonymies found in the species lists are as first presented in Obenberger (1934), Burgeon (1941) or Théry (1954).

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**KEY TO THE AFROTROPICAL GENERA OF CYLINDROMORPHINI**
(modified from Théry 1954)

1. Pronotum anteriorly bordered by a smooth, more or less, wide band and sometimes reduced to a simple, small costa but always limited posteriorly by one simple stria and not by a groove; disc convex, more rounded in middle, widely and transversely impressed on the posterior 1/3, against the base, these impressions ascending each side, with the superior carinae and sometimes slightly evident
   - Pronotum without anterior marginal band, the disc transversely grooved and a slight distance posteriad the anterior margin, more widely grooved at the base, the space between the two grooves elevated and more or less distinctly carinate, interrupted in middle or shortened on each apex; head generally wide and excavated on the front and vertex, the eyes situated against the anterior margin of the frontal excavation; apex of elytra always, more or less, distinctly dentate
   2. Head, more or less, globular, not excavated in middle, more or less profoundly grooved and sometimes divided into two round lobes on the sides on which are placed the eyes; base of frons with fringe of bright setae, close together and directed to the base; form more often subcylindrical; more or less pubescent; apex of elytra dentate or not
      - Head, more or less, depressed on the apex of the frons and vertex; wide, generally projecting, more or less, past the apex of pronotum; form, more or less, short and depressed, sufficiently broad; body glabrous; apex of elytra not dentate
         - Paraclylindromorphus Théry 1928
         - Franchetia Théry 1947
Antennae with 11 antennomeres, 6 most distal serrate. Zita Théry 1947
Antennae with 10 antennomeres, 5 most distal serrate. Zitella Théry 1954

Genus Paracylindromorphus Théry 1928


Paracylindromorphus Cobos 1960: 264 (sic).

Type-species: Agrilus subuliformis Mannerheim 1837: 117 (New designation).
achardi (Obenberger) 1928: 110; Théry 1954: 8 Transvaal
africanus (Obenberger) 1924: 110; Théry 1954: 9 Transvaal
allucaudii (Kerremans) 1913: 120; Théry 1954: 9 Kenya, Zaïre

syn. nickeri (Obenberger) 1924: 110; Théry 1954: 12 Namibia
ssp. aereus Théry 1954: 12 Zaïre
bodongianus Théry 1954: 12 Zaïre
brauni (Obenberger) 1923: 119; Théry 1954: 14 Cape Province
burgeoni Théry 1954: 14 Rwanda
carinulosus Cobos 1953: 10 Transvaal
docilis (Kerremans) 1914a: 360; Théry 1954: 16 Zaïre
elongatus Cobos 1960: 267 Transvaal
grandis Cobos 1953: 5 Transvaal

ssp. exigus Cobos 1953: 7 Transvaal
jeanneli (Kerremans) 1914b: 236; Théry 1954: 17 Kenya
juvenilis (Kerremans) 1903: 297; Théry 1954: 19 Kenya
levicollis (Péringuey) 1908: 314; Théry 1954: 20 Zimbabwe
machulai Obenberger 1935b: 90; Théry 1954: 21 Kenya
munroi (Obenberger) 1928: 112; Théry 1954: 21 Transvaal
mutilloides Théry 1954: 22 Natal
nalakensis (Obenberger) 1928: 112; Théry 1954: 23 Transvaal
planithorax Cobos 1960: 270 Swaziland
puberulus Cobos 1960: 266 Zimbabwe
rhodesicus (Obenberger) 1924: 111; Théry 1954: 23 Zaïre
rivularis (Obenberger) 1924: 111; Théry 1954: 24 Zimbabwe
salisburyensis Théry 1954: 24 Namibia
sculpturatus Cobos 1953: 13 Transvaal
sericatus Théry 1954: 26 Somalia
similis Cobos 1953: 7 Cameroun
sonalicus (Kerremans) 1899b: 504; Théry 1954: 27 Bomba?
subcylindricus (Kerremans) 1899a: 296; Théry 1954: 27 Natal
tothomasseti (Obenberger) 1928: 111; Théry 1954: 30 Togo
togoensis (Obenberger) 1924: 111; Théry 1954: 30

syn. crampeli (Théry) 1927: 35; Théry 1954: 31
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transverserugosus (Obenberger) 1928: 115; Théry 1954: 34 Transvaal
ukerekwensis Obenberger 1935b: 90; Théry 1954: 34 Kenya
vanclaini Obenberger 1935a: 47; Théry 1954: 35 Kalahari
villiersi Descarpentries 1970: 713 Zaire

Genus Franchetia Théry 1947

Paracylindromorphus (Franchetia) Théry 1946: 19 (checklist); 1947: 71; Cobos 1960: 256.
Franchetia, Cobos 1960: 256 (as syn. of Capeneria); Bellamy 1985: 427.

Type-species: Paracylindromorphus (Franchetia) monardi Théry 1947: 71 (by original monotypy).

Paracylindromorphus (Capeneria); Cobos 1953: 1. New synonymy.

Type-species: Paracylindromorphus (Capeneria) obesus Cobos 1953: 1 (by original designation).
carrioni (Cobos) 1960: 257, n. comb. Transvaal
curtus (Théry) 1954: 38 Orange Free State
grossei (Obenberger) 1937: 122; Théry 1954: 40, n. comb. Kenya
marshalli (Théry) 1954: 40 Zimbabwe
monardi (Théry) 1946: 19; 1947: 71; 1954: 42 Angola
montivagus (Théry) 1954: 43 East Africa
notatus (Théry) 1954: 44 Utzungwe?
obesus (Cobos) 1953: 2, n. comb. Natal
turneri (Théry) 1954: 46 Namibia
viedmai (Cobos) 1960: 260, n. comb. Natal
wittei (Théry) 1954: 47 Rwanda, Zaïre

Genus Zita Théry 1947

Paracylindromorphus (Zita) Théry 1946: 19 (checklist); 1947: 68; Cobos 1960: 250.
Zita, Cobos 1960: 250 (as syn. of Neornorphus); Bellamy 1985: 427.

Type-species: Aphanisticus cylindrus Kerremans 1914a: 359 (New designation).


Type-species: Paracylindromorphus (Neornorphus) capeneri Cobos (New designation; Cobos 1953: 15 designated as «subgenotipos»: capeneri and parallellithorax, both Cobos 1953).
australis (Théry) 1954: 50 Orange Free State
capeneri (Cobos) 1953: 15, n. comb. Transvaal
capitatus (Kerremans) 1914a: 361; Théry 1954: 51
ssp. alberti (Obenberger) 1928: 109; Théry 1954: 54
ssp. cordicollis (Obenberger) 1928: 109; Théry 1954: 53
ssp. laetus (Obenberger) 1928: 109; Théry 1954: 54
ssp. lembanus (Obenberger) 1928: 109; Théry 1954: 53
collarti (Théry) 1954: 54
Zaïre

Kenya, Zaïre
cylindrus (Kerremans) 1914a: 359; Théry 1946: 19; 1947: 68; 1954: 56

Kenyza, Zaïre syn. perstriatus (Obenberger) 1928: 110; Théry 1954: 56

dolatus (Kerremans) 1914a: 360; Théry 1946: 19; 1947: 70; 1954: 58
cylindrus (Kerremans) 1914a: 359; Théry 1946: 19; 1947: 68; 1954: 56

Kenyza, Zaïre
filiformis (Théry) 1954: 61
Zaïre
fulleborni (Théry) 1954: 62
Malawi
kerremansi (Théry) 1954: 64
Zaïre
lineola (Obenberger) 1928: 110; Théry 1954: 65
Moçambique
malefdus (Théry) 1954: 65
Zaïre
parallelithorax (Cobos) 1953: 18, n. comb.

Zimbabwe?
parvulus (Fahraeus) 1851: 370; Théry 1954: 67
Natal
schroedieri (Théry) 1954: 68
Tanzania
transversus (Kerremans) 1903: 304; Théry 1954: 69
Kenya
trapezicollis (Cobos) 1960: 253, n. comb.
Swaziland
varii (Cobos) 1960: 250, n. comb.
Swaziland

Genus Zitella Théry 1954

Paracylindromorphus (Zitella) Théry 1947: 68 (key); 1954: 71.

Type-species: Paracylindromorphus (Zitella) denticulatus Théry 1954: 72 (New designation).

denticulatus (Théry) 1954: 72
Zimbabwe
gestroi (Théry) 1954: 73
Zaïre
obenbergeri (Théry) 1954: 75
Zaïre
strandii (Obenberger) 1928: 108; Théry 1954: 77
Moçambique

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Afrotropical Cylindromorphini


