

# Studies in Afrotropical Cleomenini (Coleoptera, Cerambycidae, Cerambycinae). VII. Revision of the genus *Zosterius* Thomson, 1864 with description of a new species

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The South African genus *Zosterius* Thomson, 1864 is revised. The genus till now has only been represented by its type species, *Zosterius laetus* Thomson, 1864. New material from Eastern and Western Cape Provinces, South Africa shows that another, closely related species occurs. The new species, *Z. tsitsikamma* sp. n., apparently seems confined to the isolated Tsitsikamma Forest, and is hereby described.

Key words: Coleoptera, Cerambycidae, Cleomenini, *Zosterius*, revision, *Z. tsitsikamma*, new species, South Africa.

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## Introduction

The genus *Zosterius* was described by Thomson (1864) with *Z. laetus* Thomson, 1864 from South Africa as the type species. The genus was placed by Thomson in his “*Callichromitæ Veræ*”: a mixture of what is now considered true Callichromatini and Cleomenini. In fact Thomson related *Zosterius* to *Euporus* Audinet-Serville, 1834, a typical Callichromatini genus. Later Lacordaire (1869) created the group Cleomenides to where *Zosterius* was transferred.

Thomson’s generic description (1864) is rather short (see below). A more comprehensive redescription will be given.

During the author’s study of Afrotropical Cleomenini (Bjørnstad 2013 a,b,c, 2014 a,b,c) requests were forwarded to different museums and collectors for material of this tribe. The genus *Zosterius* has till now been considered as a monotypic genus. Among the material received for study there were however, several specimens

which exhibited deviating characters compared to *Z. laetus* Thomson, 1864. All these specimens came from the Tsitsikamma Forest in the Eastern/Western Cape provinces in South Africa and seem to constitute a species of its own. A description of the new species is given below.

## Material and methods

The study has been based on material examined in the collections at the Iziko Museums of South Africa in Cape Town (SAMC) as well as museum specimens borrowed from Pretoria (SANC, TMSA), Brussels (IRSNB), Paris (MNHN) and London (NHM). Including material in the author’s own collection (ABS) altogether some 150 specimens of *Zosterius* have been examined for this study.

**Excluded specimens.** In the collection of TMSA there are two specimens marked as ‘Holotype’ resp. ‘Paratype’ of ‘*Zosterius*

*rubrobrunneus* F. Tippmann' both collected in Matetsi, S.Rhodesia in 1933 and 1934. This must be a manuscript name because there is no record of this taxon ever having been validly published. The two specimens do not however, belong to *Zosterius*, but are typical *Cordylomera filicornis* Duffy, 1952.

**Collections acronyms.** **ABS** = Coll. Anders Bjørnstad, Skien, Norway; **IRSNB** = Institut royal des Sciences Naturelles de Belgique, Brussels, Belgium; **MNHN** = Museum National d'Histoire Naturelle, Paris, France; **NHM** = Natural History Museum, London, U.K.; **NHMO** = Natural History Museum, Oslo, Norway; **SAMC** = Iziko Museums of South Africa, Cape Town, South Africa; **SANC** = South African National Collection of Insects, Pretoria, South Africa; **TMSA** = Ditsong: National Museum of Natural History, Pretoria, South Africa

### The genus *Zosterius* Thomson, 1864

*Zosterius* Thomson, 1864: 181  
= *Eutactus* Fähræus 1872: 68  
= *Agnoristus* Fähræus 1872a: 194

Type species: *Zosterius laetus* Thomson, 1864

**Original description.** *G[enus]Eupori affinis, sed frons vix concava, ♂ antennæ corpore longiores graciles, ♀ paulo breviores et articulis 3-10 extus spiniformibus; prothorax sat elongatum; femora paulo, (haud valde et abrupte) clavata, postica corporis extremitatem vix transientia; corpus non depressum, parallelum, vix elongatum.*

#### Redescription of the genus *Zosterius*.

**Head.** Mandibles with broad base and slightly hooked apex. Ultimate segment of palpi terete with rounded apices. Frons rectangular, concave, punctate and with raised lateral margins. Eyes emarginated with narrow superior lobes set wide apart. Inferior lobes reniform, strongly convex, fine-faceted. Antennal tubercles only weakly raised, rounded. Vertex densely punctate.

**Antennas.** Long and slender, 11-jointed reaching well beyond elytra apices in males, slightly shorter in females. Scapus relatively long, reaching well beyond anterior margin of pronotum. Further the scapus has a narrow base, gradually thickened towards the rounded apex. Basal four or five antennomeres terete, but from

then onwards each joint faintly dilated apically thus appearing weakly dentate ('*spiniformibus*' in original diagnosis), more so in females.

**Pronotum.** Unarmed, longer than wide; L/W ratio 1.1 to 1.2, the smaller ratio pertaining to females. Anterior margin slightly wider than the posterior. Laterally the pronotum is bumped just behind the middle. There are weak constrictions both in front of and behind these bumps.

**Scutellum.** Small, ligulate with fine adpressed tomentum.

**Elytra.** Elongate, nearly parallel-sided, densely punctate, weakly unicastate and with rounded apices.

**Legs.** Long and slender with pedicellate, weakly clavate femora; the clavation strongest in the profemora, only weak in meso- and metafemora. Tibiae straight, slightly widened apically. Tarsi with first joint longer than the second, most pronounced in the metatarsi where first joint is twice as long as the second.

**Ventral surface.** Gula transversally, but irregularly folded. Prosternum glabrous in anterior part, posteriorly pubescent towards the prominent procoxae. These procoxae are situated very close together, thus leaving only a very narrow slit for the prosternal process. This process however, is very strongly widened towards its truncate apex. The mesosternum only sparsely tomented in the middle, but densely covered with matted silvery tomentum laterally. The mesosternal process has a bifid apex. Metasternum is shallowly punctate and with scattered and short tomentum and a narrow median fissure. Metacoxae hardly raised at all, but with some silvery bristles. The visible abdominal sternites 1-5 practically without indumentum – or only sparsely so – and faintly punctate.

#### Diagnostic characters and related genera.

The members of the genus *Zosterius* show similarity to *Dere*, *Hexarrhopala*, *Brachysarthron* and *Apiogaster*, but can be separated by the following diagnostic characters: (1) antennae long and filiform, reaching well beyond elytra apices, at least in males (short and more or less incrassate in distal part in *Dere*, *Apiogaster* and *Hexarrhopala*); (2) scutellum longitudinally ligulate (bifid in *Apiogaster*, broadly transversal in *Hexarrhopala*, sharply triangular in

*Brachysarthron*); (3) scutellum tomentose (glabrous in *Brachysarthron*); (4) pronotum without lateral bands of silky tomentum (present in *Dere*); (5) pronotum acarinate (carinate in *Hexarrhopala* and *Apiogaster collare*); (6) elytra apices rounded (excavate or truncate in *Dere* and *Apiogaster*); and (7) femora only weakly clavate (strongly clavate in *Brachysarthron*)

The bicolorous elytra with one yellow/orange/rufous longitudinal band on each elytron against a more or less metallic green to blue background, easily distinguishes the species of *Zosterius* from all the other Cleomenini genera mentioned.

### Description of the species

#### *Zosterius laetus* Thomson, 1864 (Figures 1–2)

*Zosterius laetus* Thomson, 1864: 181

*Zosterius laetus* Gahan 1904: 125

*Zosterius laetus* Aurivillius 1912: 427

*Zosterius laetus* Ferreira & Veiga Ferreira 1957: 154

= *Eutactus lineatus* Fähræus 1872: 68

**Examined specimens.** Holotype: ♂ Th. TYPE/*Lætus* Thoms. Type. Cap/*Zosterius laetus* T.z./Ex Musæo James Thomson/TYPE (red label) in Coll. MNHN. **Other material.** 1♂2♀ REPUBLIC OF SOUTH AFRICA (RSA) Cape: Beacon Bay EL. 21.IX.1979, 10.X.1979 and 25.X.1979. Leg. N.J.Duke in Coll. TMSA; 1♂1♀ Cape: Buffalo Pass EL. 22.IX.1979 and 15.XI.1979. Leg. N.J.Duke in Coll. TMSA; 1♀ Cape: Kubusie Forest, Stutterheim 3.I.1980. Leg. N.J.Duke in Coll. TMSA; 1♀ S.Afr.:Cape Prov.: Alexandria 33.39 S- 26.24 E. 13.X.1984 Leg. R.Müller in Coll. TMSA; 1♂ [RSA: KZN] Muden. VII.1936. Leg. H.Millar in Coll. TMSA; 1♂ [RSA: KZN] Weenen. 1925. Leg. H.P.Thomasset in Coll. TMSA; 1♀ [RSA] St. Lucia Lake 10.X.1931. Leg. H.W.Bell Marley in Coll. TMSA; 1♂ S.Afr.: Zululand: Charters Creek 28.12 S – 32.25 E. 24.X.1970 leg. O. Bourquin in Coll. TMSA; 1♂3♀ S.Afr.: Zululand: Hluhluwe Game Res. 28.05 S – 32.04 E. 12-31.X.1970 leg. O. Bourquin in Coll. TMSA; 1♂1♀ RSA: Mpumalanga Pr.: Ohrigstaddam N.R.: 30 km NE Lydenburg 22. –25.XI.2003 A.Kudrna jr. legit in Coll. ABS (AB 48055, AB 50282); 1♀ RSA: no data (ex IRSNB) in Coll. ABS (AB 46691); 2♀

RSA: KwaZulu-Natal: Dlinza Forest, Eshowe 07.XI.1985 Leg. P. Reavell in Coll. SANC; 1♂1♀ RSA: Eastern Cape: Hogsback Mnt. 03.XII.1983 Leg. R. Oberprieler in Coll. SANC; 1♂ RSA: Eastern Cape: Katberg Pass 1200m 23.XI.1988 Leg. R. Oberprieler in Coll. SANC; 1♀ RSA: Eastern Cape: Katberg Pass 1200m 30.XI.1992 Leg. R. Oberprieler in Coll. SANC; 1♂1♀ RSA: Eastern Cape: Alexandria Ex *Strychnos decussata*. 6.X.1959 Leg. J.H. Grobler in Coll. SANC; 1♂ RSA: Eastern Cape: Alexandria Ex unbarked log of *Eugenia zeyheri*. 12.XI.1962 in Coll. SANC; 1♂ RSA: Eastern Cape: Alexandria Ex unbarked log of *Eugenia zeyheri*. 18.I.1968 in Coll. SANC; 3♀ RSA: Eastern Cape: Suurberg Pass 28.XI.1988 Leg. B. Grobbelaar in Coll. SANC; 1♂ RSA: Eastern Cape: Kowie in Coll. SANC; 1♀ RSA: Gauteng: Bronkhorstspuit Ex *Peltophorum africanum*. 16.X.1959 Leg. J.H. Grobler in Coll. SANC; 1♂ RSA: Eastern Cape: Port Elizabeth 29.X.1958 Leg. J.S. Taylor. On compositae flower. in Coll. SANC; 1♂1♀ RSA: Eastern Cape: Wolfridge Ex unbarked logs of *Curtisia dentata* and *Zanthoxylum capense*. 18.VI.1960 Leg. G.A.Hepburn in Coll. SANC; 1♀ RSA: Eastern Cape: Wolfridge Ex unbarked log of *Zanthoxylum capense*. 9.II.1963 in Coll. SANC; 1♂ RSA: KwaZulu-Natal: Durban, Happy Valley, Bluff 07.XI.1979 in Coll. SANC; 1♀ RSA: KwaZulu-Natal: Durban, Glenwood 27.XI.1986 in Coll. SANC; 1♂ RSA: KwaZulu-Natal: Durban, Botanical Garden XI.1905 Leg. B. Marley in Coll. SANC; 1♀ RSA: KwaZulu-Natal: Malvern X.1897 Leg. B. Marley in Coll. SANC; 2♂ RSA: KwaZulu-Natal: Reenen's Pass 1908 Leg. C.N. Barker in Coll. SANC; 1♂ RSA: Eastern Cape: Grahamstown 29.XI.1983 Leg. R. Oberprieler in Coll. SANC; 1♀ RSA: Eastern Cape: Grahamstown 18.XII.1975 Empey Collection in Coll. SANC; 1♀ RSA: Limpopo: The Downs XII.1985 Leg. C.H. Scholtz in Coll. SANC; 1♀ RSA: Eastern Cape: Mooiplaas, 45 km N East London 26.XI.1988 Leg. R. Oberprieler in Coll. SANC; 1♀ RSA: Eastern Cape: Bathurst Ex unbarked log of *Pterocelastrus echinatus* 1.XII.1961 in Coll. SANC; 1♀ RSA: Eastern Cape: Bathurst Ex unbarked log of *Pterocelastrus echinatus* 15.I.1962 in Coll. SANC; 1♂ RSA:



**FIGURE 1.** *Zosterius laetus* Thomson, 1864 ♂ 9.8 mm (TMSA).



**FIGURE 2.** *Zosterius laetus* Thomson, 1864 ♀ 8.8 mm (ABS).

Eastern Cape: Bathurst Ex unbarked log of *Elaeodendron zeyheri* 2.X.1961 in Coll. SANC; 1♂2♀ RSA: Eastern Cape: Bathurst Ex unbarked log of *Elaeodendron zeyheri* 10.XI.1961 in Coll. SANC; 3♂3♀ RSA: Eastern Cape: Bathurst Ex unbarked log of *Schotia latifolia* 10.XI.1961 in Coll. SANC; 4♀ RSA: KwaZulu-Natal: Ngome State Forest 17–19.X.1993 Leg. R. Stals. Light trap in forest. in Coll. SANC; 1♂ RSA: Eastern Cape: Hogsback Peak slopes 20.XII.1991 Leg. R.H. Watmough in Coll. SANC; 1♀ RSA: KwaZulu-Natal: Empangeni, c. 150m. 12.XI.1989 Leg. P.E. Reavell in Coll. SANC; 1♀ RSA: KwaZulu-Natal: Rosetta 15.XI.1981 Leg. S.J. van Tonder, C. Kok in Coll. SANC; 1♂ RSA: KwaZulu-Natal: Pietermaritzburg, Town Bush XI.1976 Leg. R. Miller. Malaise trap in Coll. SANC; 2♂2♀ RSA: KwaZulu-Natal: Empangeni 5.IX.1979 Leg. R. Oberprieler in Coll. SANC; 1♀ RSA: Sycamore,

Transvaal 04.XI.1927 Leg. G.A.H. Bedford in Coll. SANC; 1♂ RSA: Sycamore, Transvaal 05.XI.1927 Leg. G.A.H. Bedford in Coll. SANC; 1♂ RSA: Sycamore, Transvaal 30.X.1927 Leg. G.A.H. Bedford in Coll. SANC; in Coll. SAMC: 1♂ Uitenhage (SAM-COL-A060 197); 1♀ Lovedale, C.P. S. Haughlin (SAM-COL-A060 198); 1♂ Natal: Durban 1892 (SAM-COL-A060 199); 1♀ Grahamstown 18.XI.1956 F. Gess (SAM-COL-A060 200); 1♂ '441' (SAM-COL-A060 201); 6♂4♀ Walmer. Dec. 1964-Jan. 1965 F.W.Gess (SAM-COL-A060 202); 1♀ Natal, D'Urban (SAM-COL-A060 203); 1♂1♀ South Africa, Eastern Cape, Grahamstown 33° 19' S 26° 31' E S. van Noort (SAM-COL-A060 204); in Coll. NHM: 1♂3♀ Port Natal; 2♀ Pt. Natal; 3♂3♀ C. Bon Spei; 1♀ Cape Gd. Hope; 3♂3♀ Natal; 1♂ Schrappeel [?]; 1♂ S. Afric. Zululand; 3♂3♀ Pt. Eliz.; 2♀ Pirie Bush, S. Africa; 1♂ Walenval

[?]; 3♂ Bell-Marley, Durban, Natal; 1♀ Malvern, Natal; 1♂ Natal: Weenen 1925 H.P. Thomasset; 1♀ Natal: Weenen x-xi.1924 H.P. Thomasset; in coll. IRSNB: 2♀ Natal; Ca. B. Sp.; 1♂ Natal – Durban. Polser-Berendsberg; 2♀ Malvern, Natal; 1♀ Simon, Algoa Bay; 1♀ SWAZILAND: Mbabane IV.1977 Leg. I. Walraven in Coll. SANC

**Original description.** Long. 12 Mill. Lat. 3 Mill. *Brunneus*; *caput prothoraxque quasi laevia*; *elytra viridi-metallica, fasciis mediis longitudinalibus flavis 2 basim et extremitatem haud capientibus ornata, confertim punctata et 2 carinata*; *corpus subtile laeve, subalbopubescens*; *pedes nigri, laeves. Cap.*

### Redescription of *Zosterius laetus*

*Length.* 8.2–13.0mm.

*Habitus.* Dark, slender, shiny metallic with long legs.

*Coloration.* Mandibular apices, antennae and legs black, head and pronotum very dark purplish brown. Elytra basically metallic green with a shiny blue lustre and with yellow to orange stripes along costae.

*Surface and integument.* All surfaces punctate, especially the elytra which have deep and heavy sculpturation, nearly rugose. Genae, pronotum, antennae and legs with a mixture of short, silvery adpressed tomentum and long, stiffly erect hyaline bristles. Also elytra with erect bristles scattered over most of the surface, but denser in apical part. In fresh specimens the ventral surface has patches of a densely matted silvery tomentum, especially on prosternum in front of procoxae, on mesepisternum and on metepisternum. Other ventral parts, including the abdominal sternites with only scattered, short bristles.

*Antennas.* More or less filiform in males, dentate and somewhat flattened in females (Figures 1–2). Antennomere 3 the longest, no. 4 shorter than no. 5.

*Elytra.* Thick and opaque even in posterior part.

**Distribution.** Zimbabwe, South Africa, Swaziland

**Diagnostic characters:** see under *Z. tsitsikamma* sp.n.

### *Zosterius tsitsikamma* sp. n. (Figures 3–4)

**Holotype:** ♂ RSA: EC [Eastern Cape], Stormsriver 15.XII.2013 Leg. R. Perissinotto & L. Clennel in Coll. NHMO (AB 50372). **Paratypes:** 1♂ RSA: Eastern Cape: 5 km S Stormsriver 08.-09.I.2010. 180 m. S 34° 01 E 23° 53. A. Kudrna j. legit in Coll. ABS (AB 50283) 1♀ RSA: Cape Prov.: Tsitsikamma 33.58 S 24.10 E For. & coastal Nat.Park 7.III.1992. Leg. J. Klimaszewski in Coll. TMSA; 1♂ South Africa: EC [Eastern Cape], Stormsriver 15.XII.2013 Leg. R. Perissinotto & L. Clennel in Coll. ABS (AB 50373); 1♂ Storms River Mouth 18.II.1966. Leg. A.L. Capener in Coll. SANC; 1♀ Stormsriver, C.P. 8.II.1963 Ex unbarked log of *Ocotea bullata*, cut 19.X.1961 and left in forest till 5.III.1962 in Coll. SANC; 1♀ Stormsriver, C.P. 20.XII.1962 Ex unbarked log of *Platylophus trifoliatus*, cut 19.X.1961 and left in forest till 5.III.1962 in Coll. SANC; 1♂ Stormsriver, C.P. 8.II.1963 Ex unbarked log of *Pterocelastrus tricuspidatus*, cut 19.X.1961 and left in forest till 5.III.1962 in Coll. SANC.

### Description

*Length.* 6.5–9.3mm

*Habitus.* Small and pale, with slender body and long legs with weakly clavate femora.

*Coloration.* Eyes and apical part of mandibles black, head and pronotum rusty brown (pale sepia), mandibles, antennae and legs beige. Also elytra basically beige, but with a slightly metallic, pale greenish stripe along the margins both suturally and laterally.

*Surface structure and integument.* Most surfaces punctate, coarsely and densely so on elytra, more finely on other parts. Tomentum generally rather poorly developed. The frons of the head and pronotum with few and scattered bristles. Elytra practically glabrous except for a few stiff and short bristles along lateral margin of apical fifth. Legs with little tomentum on femora, but tibiae and tarsi rather densely covered with yellowish adpressed bristles. Ventral surface generally with only reduced integument, but there is a patch of densely matted silvery white tomentum laterally on either side of the mesosternum just in front of the mesocoxae.

*Antennas.* Nearly filiform, but with



FIGURE 3. *Zosterius tsitsikamma* sp. n. HT ♂ 9.3 mm (NHMO).



FIGURE 4. *Zosterius tsitsikamma* sp. n. PT ♀ 6.8 mm (TMSA).

antennomeres 5 or 6–10 faintly dilated apically thus appearing weakly dentate. In the male antennomere 4 is of the same length as the scapus, while joints 3, 5 and 6 are 1.5 times this length and from then onwards gradually shortening towards apex. In the female antennomere 4 is shorter than scapus, while joints 3, 5 and 6 have the same length as the scapus, then gradually shortening.

*Elytra.* Very thin, especially in posterior half, nearly translucent.

*Diagnostic characters.* Smaller, more slender and more pale than *Z. laetus*. Its size, based on the 8 known specimens of the type series, varies from 6.5–9.3 mm (vs. 8.2–13.0 mm in *laetus*) and more slender (ratio L/W = 4.7 vs. 4.4 in *laetus*). Pronotum with less bulging sides (more bulging in *laetus*). Antennas more slender and only weakly dentate. Elytra practically without bristles

(scattered yellowish erect bristles all over in *laetus*), and with only weak sculpturation of elytra surface (deeply sculptured in *laetus*). Ventrally there is the difference in colour (dark reddish brown in *Z. laetus*, beige in *Z. tsitsikamma*), but there appears to be no structural difference between the two.

**Distribution.** Only known from the Tsitsikamma Forest, Western/ Eastern Cape Prov., RSA

**Etymology:** *tsitsikamma* referring to the type locality in the Tsitsikamma Forest.

### Discussion

**Biology.** Judging from label information from SANC the larvae of *Zosterius* are polyphagous.

*Z. laetus* has been bred from a wide variety of tree species from a wide variety of families like *Strychnos decussata* (Loganiaceae / Strychnaceae), *Eugenia zeyheri* (Myrtaceae), *Peltophorum africanum* and *Schotia latifolia* (Caesalpinaceae), *Curtisia dentata* (Cornaceae), *Pterocelastrus echinatus* and *Elaeodendron zeyheri* (Celastraceae), and *Zanthoxylum capense* (Rutaceae).

Similarly, *Zosterius tsitsikamma* has been bred from unbarked logs of *Platylophus trifoliatus* (Cunoniaceae), *Pterocelastrus trifoliatus* (Celastraceae), and *Ocotea bullata* (Lauraceae).

Both species appear to be both nocturnal and diurnal in activity pattern since they have been caught both at daytime walking on dead tree trunks as well as in light traps.

**Geographical distribution.** *Z. laetus* has a relatively large distribution with records from Zimbabwe, RSA and Swaziland. The only published Zimbabwean record is from Penkrige (Ferreira & Ferreira 1957) which is near present-day Mutare in eastern Zimbabwe. Examined specimens (n = 136) are from the northeastern and eastern South Africa from Limpopo and Mpumalanga Provinces, then continuing further south through Swaziland into KwaZulu-Natal and following the coast into Eastern Cape Province as far west as Port Elizabeth and Uitenhage. To the author's knowledge there are no confirmed records from Western Cape Province.

On the other hand *Z. tsitsikamma* seems to be limited to the relict Tsitsikamma Forest. This is situated on the border between Eastern and Western Cape with parts in both provinces. According to Renzo Perissinotto (pers. comm.) the Tsitsikamma “is a very isolated environment with its own vegetation and climate. The insect diversity here is relatively low, but most species found appears to be endemic to this forest.” The ecogeographical isolation is due to the Tsitsikamma Mountains causing a rainshadow for the areas immediately to the north, resulting in a climate too dry to maintain a forest.

The two species of *Zosterius* hence are allopatric with *Z. laetus* occupying the southeastern part of what White (1983) termed the Zambezi Regional Centre of Endemism and then into the

Tongaland-Pondoland Regional Mosaic. It is therefore a species of the Savanna Biomes and reaching into the Albany Thicket Biome of Mucina & Rutherford (2006). *Z. tsitsikamma* on the other hand is a forest species with its only known occurrence in the Southern Afrotemperate Forest, FOz 1, vegetation unit (Mucina & Rutherford l.c.). The reduced tomentum and generally more delicate body of *Z. tsitsikamma* may be a result of it living in sheltered forest condition, as opposed to the more exposed conditions of the savanna environment of *Z. laetus*.

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