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Descriptions of Two New Species of *Calathus* Bonelli (Coleoptera: Carabidae: Harpalinae) from Ethiopia

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Abstract

Two **new species** of *Calathus* Bonelli are described from the Ethiopian Highlands, Ethiopa: *Calathus kebedei* Novoa, Gañán and Baselga [type locality = Ethiopia, Gojjam, Debre Markos at Danghle, near Robu Gebeya, Mt. Choke, 3,793 m altitude, 10°38′19″ N 37°50′04″ E] and *Calathus balli* Novoa, Gañán and Baselga [type locality = Ethiopia, Wello, Dessie at Guguftu, near Mt. Amba Farit, 3,600 m altitude, 10°57′31″ N 39°27′49″ E]. *Calathus kebedei* and *C. balli* are easily distinguished from all other known species of Ethiopian *Calathus* by pronotal shape and number and location of elytral setae. Males of both species have singular forms of the median lobe of aedeagus and paramera. The two new species are lapidicolous living in Afroalpine grassland, sometimes at the base of the giant *Lobelia rhynchopetalum* Hemsley.

Key Words: ground beetles, taxonomy, Ethiopian Highlands, Afroalpine grasslands

The genus *Calathus* Bonelli (Carabidae: Harpalinae: Sphodrini) is found mainly in the Holarctic region. It includes 125 species from the Palaearctic region (with the addition of *Calathus atitari* Novoa to the 124 species in Hovorka and Sciaky's (2003) catalogue) and 24 in the Nearctic region (Ball and Nègre 1972). Some species have also been found in the Ethiopian and Oriental regions (Schatzmayr 1935; Hürka 1996). Ball and Bousquet (2001) indicated that approximately one-third of all described *Calathus* species have not been assigned to a subgenus and stress that "a worldwide revision of this genus is called for".

In the Ethiopian region, *Calathus* species are only known from Ethiopia, specifically from the mountains of the Ethiopian Highlands. Lindroth (1956) pointed out that Ethiopian *Calathus* differ from all other *Calathus* in having more or less developed pubescence on the apical half of the third antennomere, although in some species it is almost lacking. However, this character is not specific to Ethiopian *Calathus*, as some *Lauricalathus* Machado from the Canary Islands (Machado 1992) and *C. atitari* from Morocco (Novoa 1999) also have pubescence on the third antennomere.

Currently, 19 endemic species of *Calathus* are known from the Ethiopian Highlands, but none have been found south of Ethiopia. Ancey (1882) described *Calathus theodori* from a male specimen collected by Raffray with "Abyssinie" as the type locality. In the same year, Fairmaire (1882) described *Calathus parvicollis* and *Calathus vagestriatus*, also from Raffray's material and labelled "Abyssinie". Publications on new species of Ethiopian *Calathus* consist of three by Alluaud (1918, 1932, 1937) and two by Basilewsky (1953, 1957). The material used for the description of most of these species (up to 10) was collected by Scott (1927, 1952, 1958) during three expeditions to Ethiopia. Recently, two new *Calathus* species have been described from the Ethiopian Highlands (Novoa and Gañán 2014).

The purpose of this paper is to describe two new species of *Calathus*, one from the Choke Mountains and another from the Amba Farit Mountains and Termaber Pass (Ethiopian Highlands, Ethiopia), and include geographical distribution and ecological notes. We provide a key to the Ethiopian species characterized by having well-marked pronotal hind angles and rounded elytral shoulders, based upon the keys of Ethiopian *Calathus* by Basilewsky (1953, 1957).

Material and Methods

Specimens of the new species described here were collected by the first two coauthors during 2005 and 2007 in the Choke Mountains, Mt. Amba Farit and Termaber Pass located in the Ethiopian Highlands. These expeditions were made possible by two Memoranda of Understanding between the Wildlife Conservation Department (Ethiopia) and the University of Santiago de Compostela, signed in Addis Ababa in 2005 and 2007, concerning projects for prospecting species of Carabidae in several zones of Ethiopia. Geographic names were derived from a 1:1,800,000 Ethiopia, Eritrea, Somalia, and Djibuti topographic map by Reise-Know-How Publishing Company and local references. Geographic coordinates and elevations for collecting sites were determined

using a GPS Garmin eTrex Vista C and Google Earth (www.earth.google.com).

Specimens were collected by turning over stones and by searching under mats of vegetation and in the leaf litter. Aedeagi were extracted from the abdomen, and parameres were separated from the surface of the median lobe and immersed in lactic acid for cleaning. After examination, the genital preparations were put in dimetyl-hydroxy-furanone on an acetate sheet. Drawings of dorsal habitus, pronota, and male genitalia were made using digital photographs captured by an Olympus E-520 on an Olympus SZH10 stereomicroscope. Drawings of the habitus of both species were performed by the third coauthor.

We also studied a collection of Ethiopian *Calathus* collected on expeditions led by R. Clarke and G. de Rougemont to the provinces of Gojjam and Shewa in 1972 and 1973. This material belongs to the Royal Museum for Central Africa, Tervuren (RMCA). Some specimens in the private collection of Peter Schüle were also studied. In addition, we examined specimens of Ethiopian *Calathus*, including some types (*C. theodori* and *Calathus orthomoides* Alluaud), provided by T. Deuve from the Muséum national d'Histoire naturelle, Paris (MNHN).

Specimens examined in the course of this study are deposited in the following collections:

MNCN	Museo Nacional de Ciencias Naturales, Madrid, Spain
RMCA	Royal Museum for Central Africa, Tervuren, Belgium
MNHN	Muséum national d'Histoire naturelle, Paris, France
PS	Peter Schüle Collection, Herrenberg, Germany

We follow Puff and Neomissa (2005) in the descriptions of vegetation types.

Results

Calathus kebedei Novoa, Gañán, and Baselga, new species

(Figs. 1, 3A, 4A)

Type Locality. ETHIOPIA: Gojjam, Debre Markos at Danghle, near Robu Gebeya, Mt. Choke, 3,793 m altitude, 10°38′19″ N, 37°50′04″ E.

Type Material. Holotype: male, deposited in MNCN; labelled: Ethiopia, Gojjam, Debre Markos at Danghle, near Robu Gebeya, Mt. Choke, 3,793 m altitude, 10°38′19″ N – 37°50′04″ E. Collected by F. Novoa, 24 March 2005. Paratypes: 44 males and 33 females with the same data as the holotype, and a male and four females labelled: Ethiopia, Gojjam, Debre Markos at Waybein near Robu Gebeya, Mt. Choke, 3,264 m altitude, 10°34′56″ N – 37°47′18″ E. Collected by F. Novoa, 23 March 2005. All deposited in MNCN; 16 males and nine females labelled: Ethiopia, Gojjam, campsite to top, Mt. Coche, 3,500–4,000 m altitude, 10°44′ – 45′ N, 37°55′– 58′ E. Collected by R.O.S. Clarke, 17 December 1972, and 18 males and nine females labelled: Ethiopia, Gojjam, Ambagir, Mt. Coche, 3,200–3,500 m altitude, 10°44′ N, 37°58′ – 38°01′ E. Collected by R.O.S. Clarke, 17 December 1972. All deposited RMCA.

Etymology. The species is named for Samson Kebede in tribute to his extraordinary assistance as a guide during the different expeditions to collect Coleoptera in the Ethiopian Highlands.

Diagnosis. Body black, shiny, elytra with a faint bluish hue. Elytra with 3–5 dorsal setigerous pores, moderately foveate on third stria.

By the elytra with the setigerous pores located on little foveae of the third stria, *C. kebedei* is differentiated from the closest species *C. theodori* and *Calathus juan* Novoa and Gañán, which both lack foveae with setigerous pores on the third stria. *Calathus kebedei* is also separated from *C. theodori* by differences in configuration of the pronotum (Fig. 3A, B) and aedeagus (Fig. 4A, B). *Calathus kebedei* can be separated from *C. juan* by the prosternal process, unbordered at the apex in the former but bordered at the apex in the latter. The different configurations of the aedeagi are well marked between both species.

Description. Length: 10.0–11.0 mm. Forebody black, shiny, with antennae, palpi, legs, and lateral margins of prothorax paler. Elytra black, shiny, but with a faint bluish hue in males. Hind wings absent. Dorsal habitus as in Fig. 1. **Head:** Antenna filiform with antennomeres 1 and 2 glabrous except for the ordinary apical setae. Antennomere 3 covered with obliquely oriented pubescence except on basal third. Other antennomeres with oblique pubescence. Cephalic chaetotaxy: 6 setae on labrum, lateral setae more elongate; 1 seta on both sides of clypeus; 2 pairs of supraocular setae (anterior and posterior); posterior setae located behind posterior margin of eye. **Thorax:** Prothorax transverse, 1.5 times as broad as long, greatest width slightly before middle; disc divided lengthways by a medial sulcus, basally poorly marked; front angles little prominent; sides rounded in anterior part, parallel-sided in basal third, slightly sinuate in front of well-marked, squared hind angles; latero-basal impression double, not punctate, outer impression shorter but well-delimited by feeble convexity. Basal surface between impressions corrugated. Pronotal chaetotaxy: 1 anterior seta on each side (located in the anterior third) and 1 posterior seta next to each hind angle. **Elytra:** Wider than pronotal base. Microsculpture isodiametric, consisting of polygonal meshes with reticulation approximately as long as wide. Shoulders rounded,

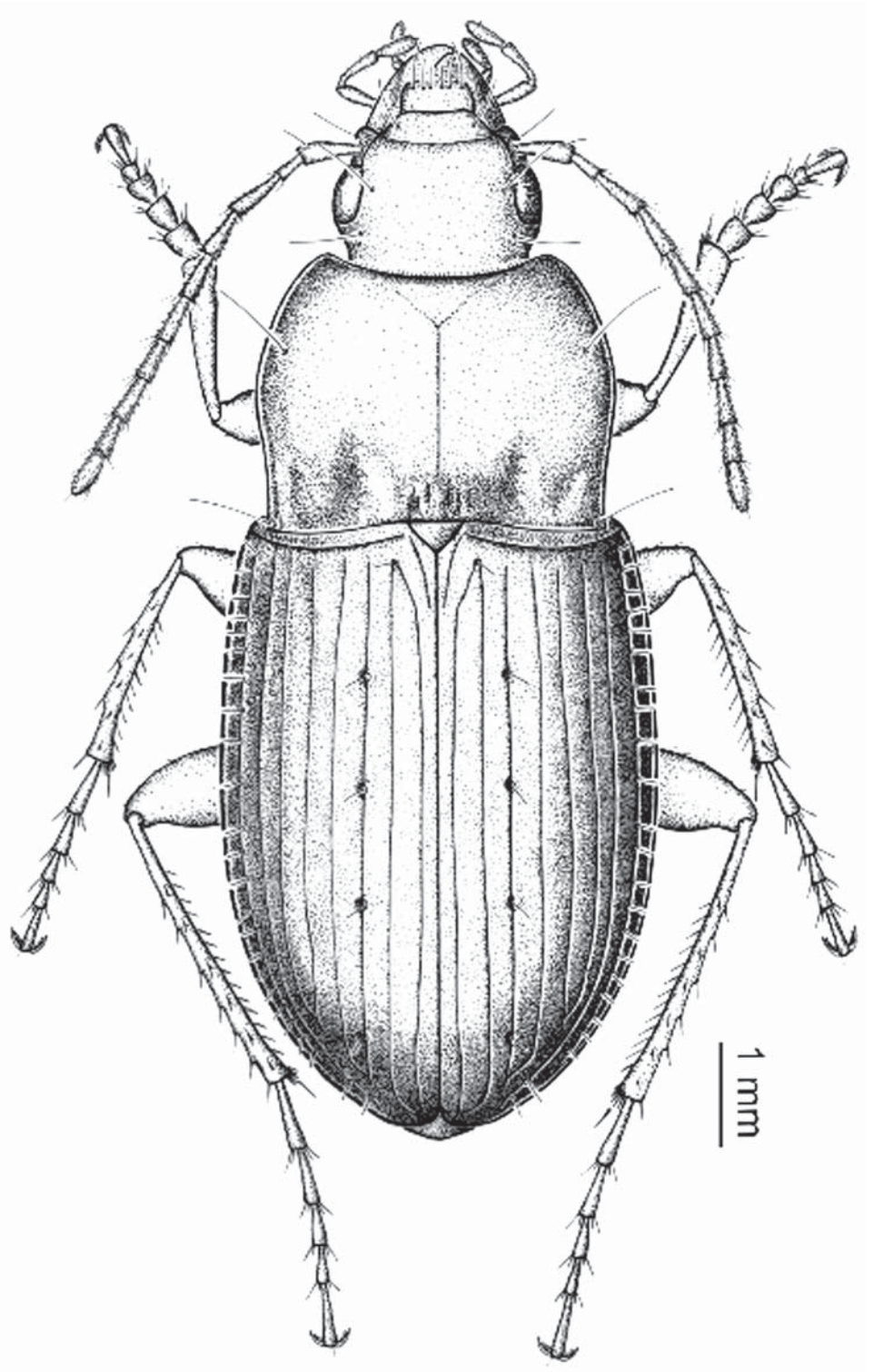

Fig. 1. Habitus of *Calathus kebedei*, holotype.

not toothed. Striae well-marked. Parascutellar stria present. Elytral chaetotaxy: 1 basal seta near origin of stria 1; interval 3 with 4 setigerous punctures, moderately foveate, first 3 adjoining stria 3, last one adjoining stria 2 or 3 (occasionally 3–5 setigerous punctures present); stria 7 with 2 apical setae in apical part and an umbilicate series on stria 8. **Venter:** Prosternum with apex of intercoxal process not bordered at extremity. Metaepisterna with anterior border slightly longer than outer border. **Legs:** Male protarsus with first 3 segments dilated, carrying 2 rows of adhesive setae underneath. **Male genitalia:** Aedeagus with finely keeled basal bulb, median lobe arched and apex slightly arcuate downwards (Fig. 4B). In dorsal view, straight apex is broad and rounded. Right paramere with hooked apex (Fig. 4Bc). Left paramere quadrangular, with apical membranous lobe (Fig. 4Bd).

Sexual Dimorphism. Male: protarsus with first three segments dilated and elytra black with a faint bluish hue. Female: protarsus with no dilated segments and elytra without bluish hue.

Distribution. This species is known from several locations in the Choke Mountains Range, as indicated in the type material. The Choke Mountains are located south of Lake Tana in the province of Gojjam. This large mountain block rises gradually from the surrounding plateau, with the highest peak, Mount Choke, at 4,070 m.

Ecological Note. This species was found in the Afroalpine grassland of Mount Choke at 3,250–4,000 m altitude, where *Lobelia rhynchopetalum* Hemsley (Campanulaceae) forms isolated stands of plants. The specimens were found under stones and mosses.

Calathus balli Novoa, Gañán, and Baselga, new species
(Figs. 2, 3C, 4C)

Type Locality. ETHIOPIA: Wello, Dessie at Guguftu, near Mt. Amba Farit, 3,600m altitude, 10°57′31″ N, 39°27′49″ E.

Type Material. Holotype: male, deposited in MNCN; labelled: Ethiopia, Wello, Dessie at Guguftu, near Mt. Amba Farit, 3,600 m altitude, 10°57′31″ N, 39°27′49″ E. Collected by F. Novoa, 7 January 2007. Paratypes: 52 males and 24 females with the same data as the holotype; one male and two females labelled: Ethiopia, Wello, Dessie at Aroye, Guguftu near Mt. Amba Farit. 3,350 m altitude, 10°53′50″ N, 39°32′12″ E. Collected by F. Novoa, 5 January 2007; 20 males and 16 females labelled: Ethiopia, Shewa, Debre Birham near Ankober, 3,120 m altitude, 9°37′ N, 39°44′. Collected by F. Novoa 20 March 2005. All deposited in MNCN; eight males and two females labelled: Ethiopia, Shewa, Debre Birham, Termaber Pass. 3,100–3,200 m altitude, 9°48′ N, 39°43′ E. Collected by R.O.S. Clarke, 11 August 1973. All deposited in RMCA; one male and one female labelled: Ethiopia, Shewa, Debre Birham, Mt. Termaber. Collected by Werner, 11 September 2006. Both deposited in PS.

Etymology. The species is named for Professor George Ball of Edmonton (Alberta, Canada), who suggested to us the study of the Ethiopian *Calathus*.

Diagnosis. Body brown, shiny. Elytra usually with two setigerous pores not foveate, anterior adjoining third stria and posterior close to second. This is a species with an *Orthomus*-like facies, as its close relative *C. orthomoides*.

Calathus balli is differentiated from *C. theodori*, *C. kebedei,* and *C. juan* by its pronotum, which is non-sinuate basally, and smaller size (up to 9 mm). *Calathus balli* can be separated from *C. orthomoides* by the different configurations of the pronota (Fig. 3C, D) and aedeagi (Fig. 4C, D).

Description. Length: 7.5–9.0 mm. Forebody and elytra brown, shiny, with antennae, palpi, and legs paler. Hind wings absent. Dorsal habitus as in Fig. 2. **Head:** Antenna filiform with antennomeres 1 and 2 glabrous except for the ordinary apical setae. Antennomere 3 covered with oblique pubescence except on basal half. Other antennomeres with oblique pubescence. Cephalic chaetotaxy: 6 setae on labrum, lateral setae more elongate; 1 seta on both sides of clypeus; 2 pairs of supraocular setae (anterior and posterior); posterior setae located behind posterior margin of eye. **Thorax:** Prothorax transverse, 1.45 times as broad as long, greatest width before middle; disc divided lengthways by a fairly well-marked medial sulcus; front angles little prominent; sides rounded anteriorly, slightly narrowing in basal half; hind angles squared and well-marked; latero-basal impression double, not punctate, outer impression scarcely delimited. Basal surface between impressions not corrugated. Pronotal chaetotaxy: 1 anterior setae on each side (located in anterior third) and 1 posterior seta next to each hind angle. **Elytra:** Wider than pronotal base. Microsculture consisting of isodiametric meshes. Shoulders rounded, without tooth. Striae well-marked. Parascutellar stria present. Elytral chaetotaxy: 1 basal seta near origin of stria 1; interval 3 with 2 setigerous punctures, anterior one adjoining stria 3, posterior one adjoining stria 2; exceptionally with 3 setigerous punctures; stria 7 with 2 apical setae and an umbilicate series on interval 8. **Venter:** Prosternum with apex of intercoxal process not bordered at extremity. Metaepisterna with anterior border slightly longer than outer one. **Legs:** Male protarsus with first 3 segments dilated, carrying 2 rows of adhesive setae underneath. **Male genitalia:** Aedeagus with keeled basal bulb and median lobe strongly arched (Fig. 4C). Eversion area of internal sack long. In dorsal view, median lobe enlarged basally and apex

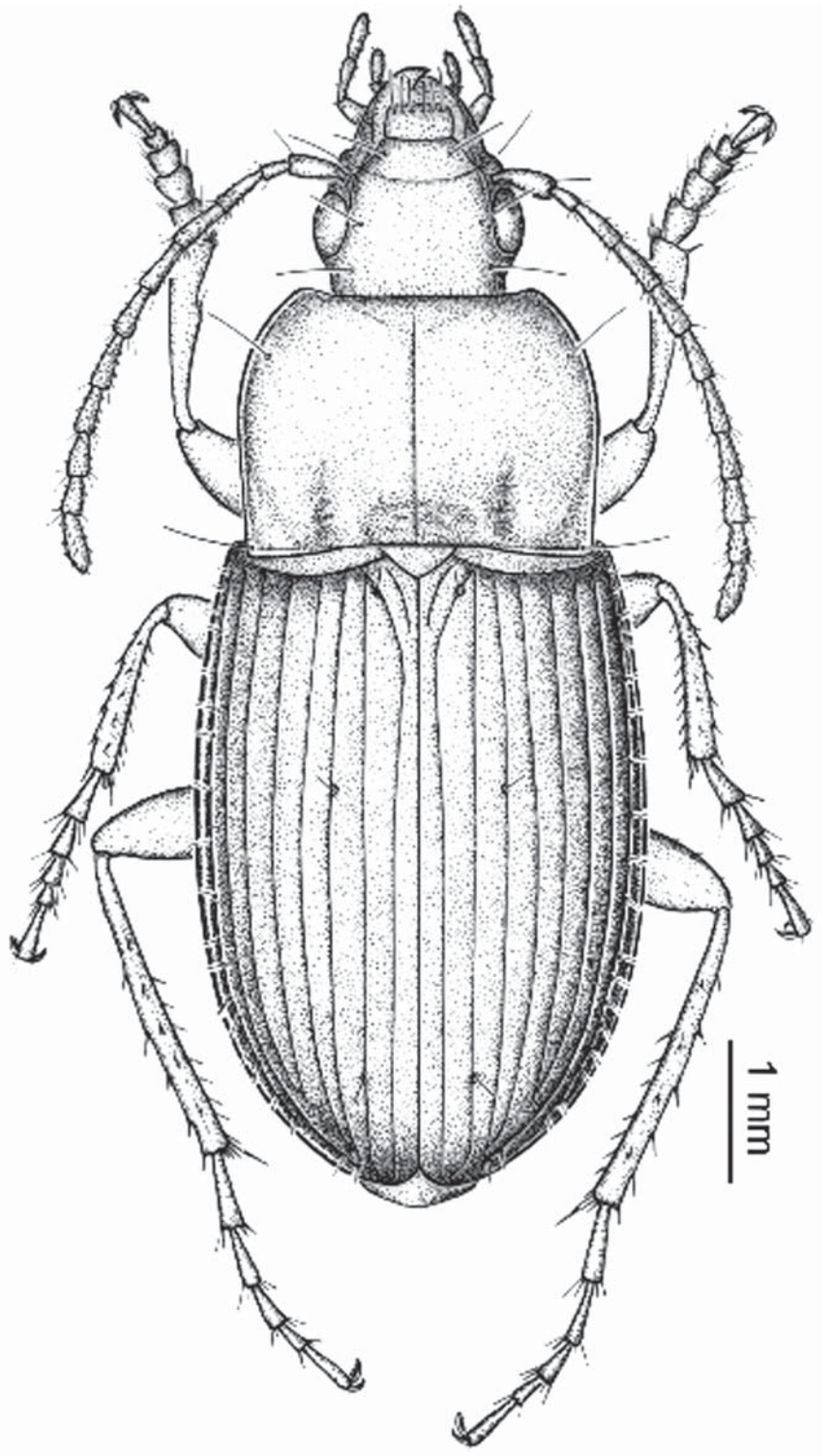

Fig. 2. Habitus of *Calathus balli*, holotype.

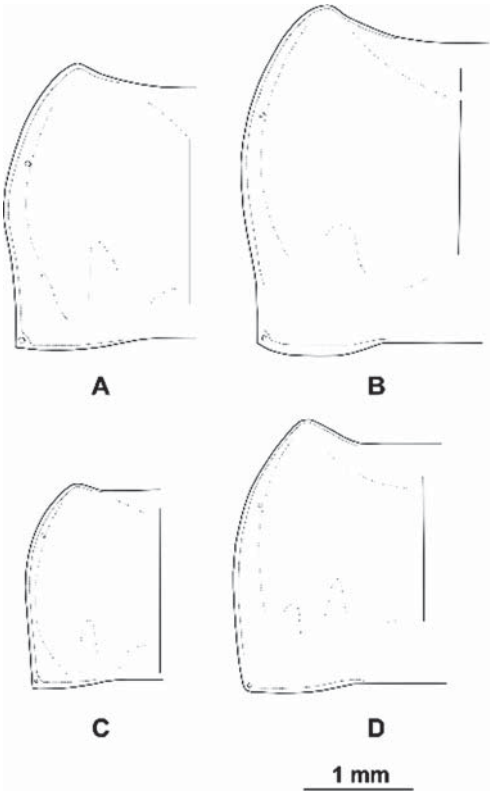

Fig. 3. *Calathus* species, pronota, dorsal view: A) *C. kebedei*, B) *C. theodori*, C) *C. balli*, D) *C. orthomoides*.

somewhat turned leftwards. Right paramere with hooked apex (Fig. 4Cc). Left paramere semicircular, with small apical lobe (Fig. 4Cd).

Sexual Dimorphism. Male: protarsus with first three segments dilated. Female: protarsus with no dilated segments.

Distribution. This species is known from several sites in the Amba Farit Massif such as Guguftu (type locality). The Mountains of Amba Farit are located southwest of Dessie (Wello). The species was found also in the Termaber Pass near Debre Shina and close to Ankober in the vicinity of Debre Birham.

Ecological Note. *Calathus balli* is a lapidicolous species. At the type locality, the specimens were only found under small stones in the Afroalpine grassland where *L. rhynchopetalum* forms isolated sets of plants. In other localities, it is an inhabitant of moderately dry and sparse grasslands, living under stones.

Calathus orthomoides Alluaud, 1932

Material Examined. Gorobela (today Ankober), Shewa, Ragazzi leg.1885 (Museo Civ. Genova) 1 ♀ (holotype); Ethiopia, Shewa, Debre Birham, to 5 km from Ankober. 9°37′ N, 39°44′, 3,100 m altitude, G. de Rougemont leg., January 1971 (RMCA) 24 ♂♂ and 25 ♀♀, same data except F. Novoa leg., 20 March 2005, 4 ♂♂ and 5 ♀♀; Mussolini Pass (today Termaber Pass), Shewa, R.O.S. Clarke leg., 11 August 1973, 68 ♂♂ and 63 ♀♀; Ethiopia, Shewa, Debre Shina, Termaber Pass. 9°50′50″ N, 39°44′60″ E, 3,100 m altitude, F. Novoa leg., 9 March 2005 and 8 January 2007, 22 ♂♂ and 14 ♀♀; Ethiopia, Shewa, Debre Shina, Gemusa Gedel. 9°51′ N, 39°45′ E, 3,000 m altitude, F. Novoa leg., 19 March 2005, 25 ♂♂ and 21 ♀♀; Ethiopia, Shewa, Sembo. 9° 25′ N, 39° 21′ E, 2,948 m altitude, F. Novoa leg., 19 March 2005, 6 ♂♂ and 4 ♀♀.

Distribution. This species was known only from Ankober, including Termaber Pass, at 3,000–3,200 m (Shewa Province, Ethiopia). With the collection of specimens from Sembo (80 km southwards from Termaber Pass), the known distribution range of this species is significantly increased.

Key to Species of Ethiopian *Calathus* with Well-Marked Pronotal Hind Angles and Completely Rounded Elytral Shoulders

The two new species belong to the group of Ethiopian *Calathus* characterized by having a pronotum with well-marked, almost rectangular hind angles, and rounded elytral shoulders (with no trace of tooth or callosity). We provide a key to separate these five species:

1. Length at least 10 mm. Pronotum sinuate in front of hind angles (Fig. 3A, B).....2
1′. Length at most 9 mm. Pronotum non-sinuate in front of hind angles. (Fig. 3C, D).....4
2. Pronotum with hind angles slightly obtuse but sharp (Fig. 3B). Prosternal process bordered at apex. Aedeagus (Fig. 4B) in dorsal view with apex long and turned rightwards; left paramere without membranous lobe. Length 11.0–12.0 mm .....***C. theodori* Ancey, 1882**
2′. Pronotum with hind angles squared 90° (Fig. 3A) 3
3. Elytra with 4 dorsal pores (occasionally 3 or 5) moderately foveate on third interval, usually adjoining stria 3 (Fig. 1). Elytra in males with faint bluish hue. Prosternal process unbordered at apex. Aedeagus (Fig. 4A) in dorsal view with apex broad and straight, not turned; left paramere quadrangular with membranous lobe. Length 10.0–11.0 mm .....***C. kebedei* Novoa, Gañán, and Baselga, new species**
3′. Elytra with 4 dorsal pores (occasionally 3 or 5) non-foveate on third interval, usually adjoining stria 3. Elytra in males without faint bluish hue.

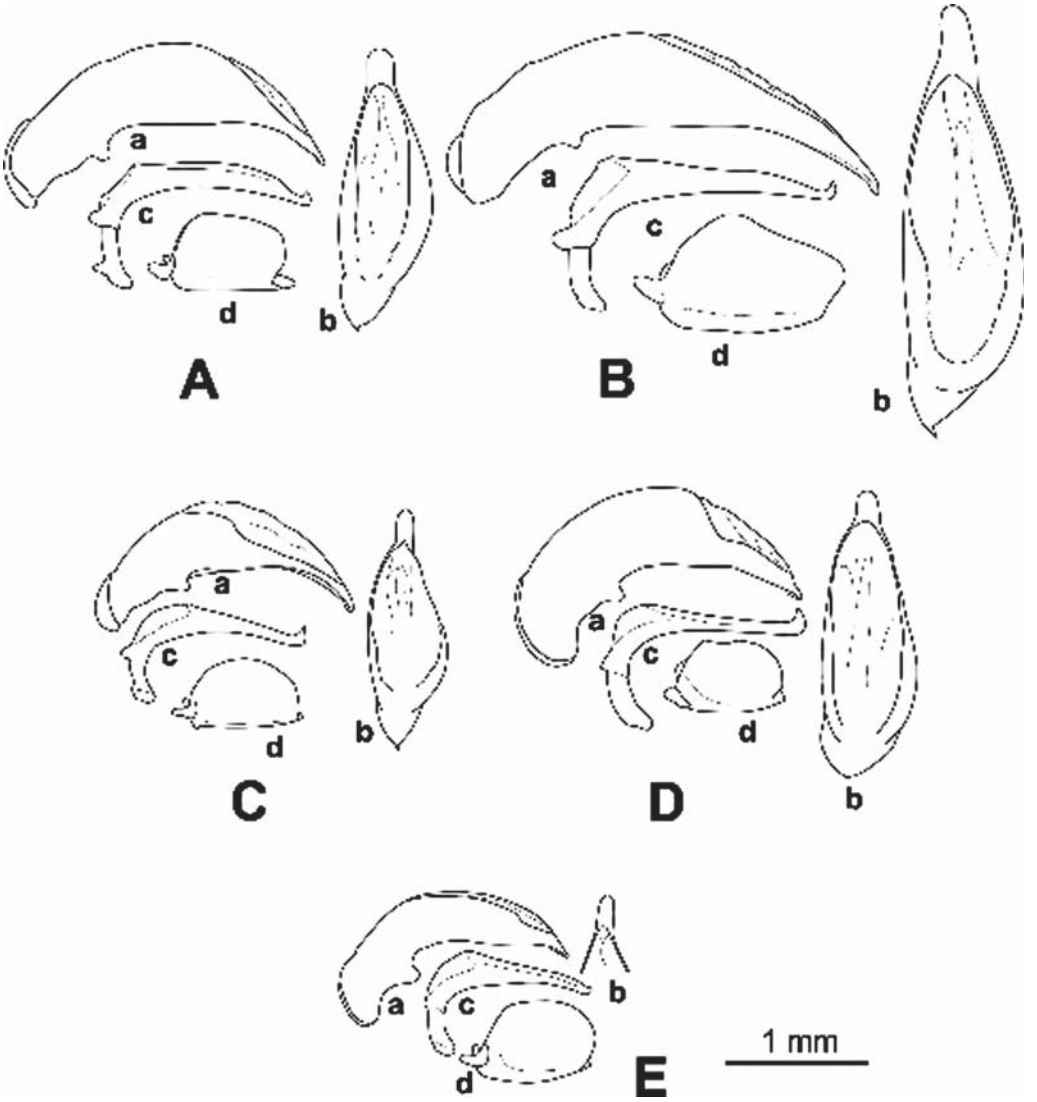

Fig. 4. *Calathus* species, male genitalia. A) *C. kebedei*, B) *C. theodori*, C) *C. balli*, D) *C. orthomoides*, E) *C. juan*. a = penis, lateral view; b = apex of penis, dorsal view; c = right paramere, lateral view; d = left paramere, lateral view.

Prosternal process bordered at apex. Aedeagus (Fig. 4E) in dorsal view with apex narrow and blunt; left paramere oval with membranous lobe. Length 10.0–11.0 mm..... ..... ***C. juan*** **Novoa and Gañan, 2014**

4. Pronotum with sides almost straight in basal half and greatest width before middle (Fig. 3C). Aedeagus (Fig. 4C) with broad, keeled basal bulb; in dorsal view, with apex long and not turned laterally. Length 7.0–9.0 mm ....***C. balli*** **Novoa, Gañán, and Baselga, new species**

4′. Pronotum with sides evenly rounded in basal half and greatest width of pronotum behind middle (Fig. 3D). Aedeagus (Fig. 4D) with thin, keeled basal bulb; in dorsal view, with apex short and somewhat turned rightwards. Length 7.5–9.0 mm.... ***C. orthomoides*** **Alluaud, 1932**

Checklist of Ethiopian *Calathus* Species

A checklist of the species of the Ethiopian *Calathus* is given in chronological order of description, including the two new species. The geographical

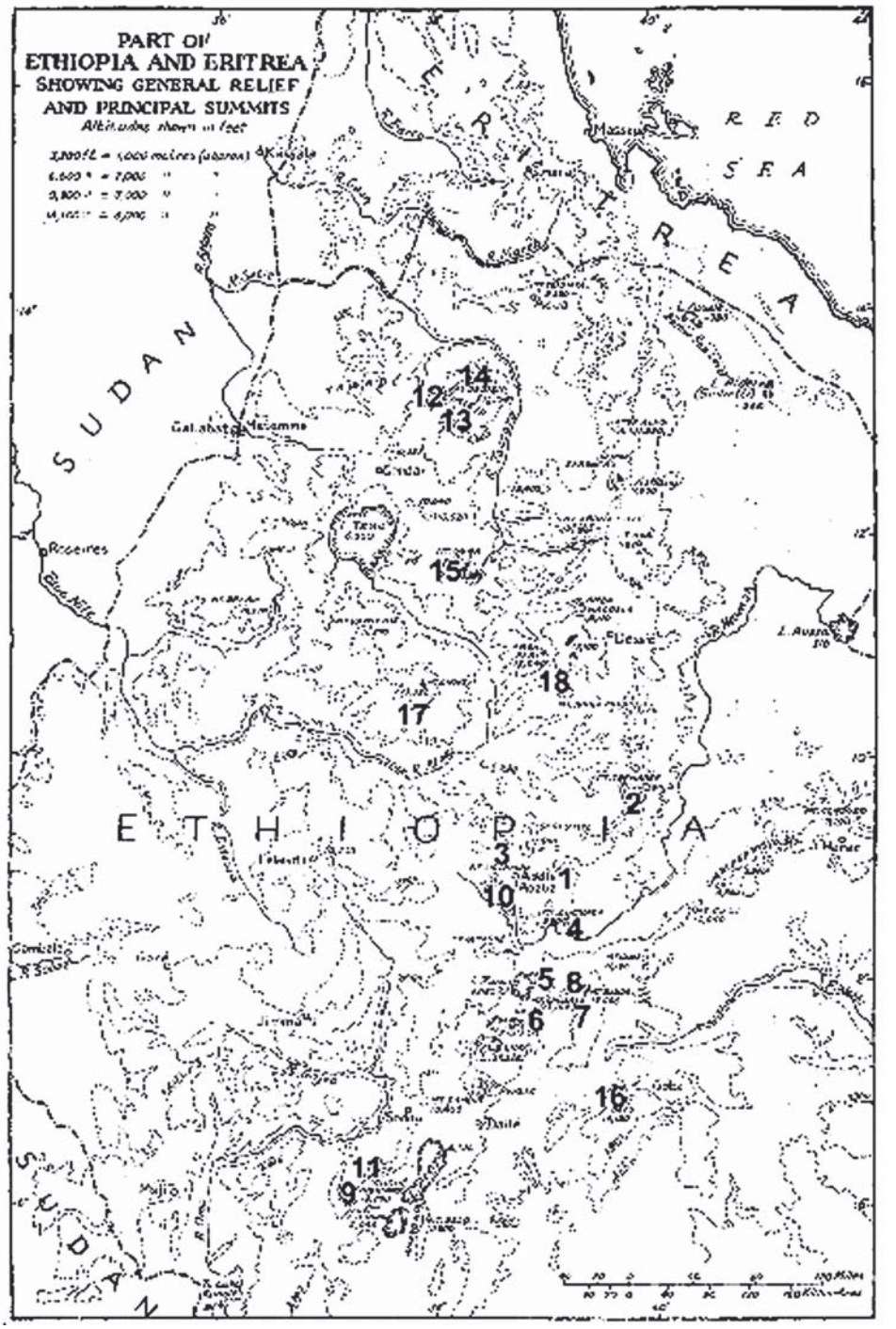

Fig. 5. Map of Ethiopia and Eritrea, adapted from Scott (1952). Type localities of Ethiopian *Calathus* species are indicated by Arabic numerals: 1) *C. aethiopicus*; 2) *C. orthomoides*; 3) *C. shoanus*; 4) *C. aethiops*; 5) *C. montanus*; 6) *C. oreobius*; 7) *C. scotti*; 8) *C. trapezicollis*; 9) *C. gugheensis*; 10) *C. patrizii*; 11) *C. scottianus*; 12) *C. nitidus*; 13) *C. simienensis*; 14) *C. ras*; 15) *C. juan*; 16) *C. carballalae*; 17) *C. kebedei*; 18) *C. balli*. *Calathus theodori*, *C. parvicollis*, and *C. vagestriatus* are not marked owing to inaccuracy of their type localities.

distribution of the types are indicated. A map of Ethiopia and Eritrea (Fig. 5), showing general relief and principal summits, facilitates their locations. The map is adapted from Scott (1952).

Calathus theodori Ancey, 1882 – Abyssinia
Calathus parvicollis Fairmaire, 1882 – Abyssinia
Calathus vagestriatus Fairmaire, 1882 – Abyssinia
Calathus aethiopicus Alluaud, 1918 – Addis Ababa, Shewa
Calathus orthomoides Alluaud, 1932 – Gorobela (nowadays Ankober) Shewa
Calathus shoanus Alluaud, 1932 – Entoto, near Addis Ababa, Shewa
Calathus aethiops Alluaud, 1937 – Mt. Zukouala, near Addis Ababa, Shewa
Calathus montanus Alluaud, 1937 – Mt. Chillàlo, Arsi
Calathus oreobius Alluaud, 1937 – Mt Chillàlo, Arsi
Calathus scotti Alluaud, 1937 – Mt. Chillàlo, Arsi
Calathus trapezicollis Alluaud, 1937 – Mt. Chillàlo, Arsi
Calathus gugheensis Basilewsky, 1953 – Mt. Tola, Gughé Highlands, Goma-Gofa
Calathus patrizii Basilewsky, 1953 – Near Addis Ababa, Shewa
Calathus scottianus Basilewsky, 1953 – Mt. Tola, Gughé Highlands, Goma-Gofa
Calathus nitidus Basilewsky, 1957 – Lori, Mt. Simien, Gonder
Calathus simienensis Basilewsky, 1957 – Derasghié, Mt Simien, Gonder
Calathus ras Basilewsky, 1957 – Ras Degien, Mt. Simien, Gonder
Calathus juan Novoa and Gañán, 2014 – Gebga, Mt. Guna, Debre Tabor, Gonder
Calathus carballalae Novoa and Gañán, 2014 – Mt. Batu, near Dinsho, Bale
Calathus kebedei Novoa, Gañán, and Baselga, new species – Danghle, Robu Gebeya, Mt. Choke, Gojjam
Calathus balli Novoa, Gañán, and Baselga, new species – Guguftu, near Mt. Amba Farit, Dessie, Wello

Discussion

Despite the inherent difficulties to prospect its fauna, the Ethiopian Highlands were explored by a good number of entomologists from the end of the 19th century onwards. Mani (1968) reviewed the most important of these expeditions. Raffray (1885), Alluaud (1918, 1932, 1937), Jeannel (1936, 1950), and Basilewsky (1953, 1957) described most of the Carabidae of the Ethiopian Highlands. Some of these authors (Alluaud 1908; Jeannel 1950; Basilewsky 1951) have remarked that amongst the Carabidae and other hypsobiont Coleoptera occurring at elevations between 3,500 and 4,000 m in the Abyssinan mountains, there are also a number of boreal elements belonging to genera such as *Trechus* Clairville, *Bembidion* Latreille, *Amara* Bonelli, *Calathus*, *Cymindis* Latreille, and *Otiorrhynchus* Germar.

Nineteen species of *Calathus* have been described to date from the Ethiopian mountains. Alluaud (1939) indicated that the southern limit of the genus *Calathus* in Africa is 8° N. That is, the geographical distribution of *Calathus* does not extend farther south to Kenya or Uganda. Scott (1958) pointed out that the hypsobiont Coleoptera of the Ethiopian Highlands have a tendency to be endemic to this region. Each mountain block within the Highlands has his own endemic *Calathus* species, which lives side-by-side with other *Calathus* with broader distributions, but still limited to this region. *Calathus kebedei* seems to be endemic to the Choke mountains. *Calathus balli* is known from several sites in the Amba Farit Massif and also in the Termaber Pass near Debre Shina and close to Ankober, in the vicinity of Debre Birham.

Two groups of species stand out among the 19 Ethiopian *Calathus* described to date. One group has rounded and obtuse hind angles of the pronotum, while the other has well-marked, tending-to-rectangular hind angles of the pronotum. Alluaud (1932, 1937) and Basilewsky (1953) used these characters to draw up their keys to the *Calathus* of Ethiopia. *Calathus kebedei* and *C. balli* are characterized by having well-marked pronotal hind angles and elytra with completely rounded shoulders.

Our knowledge of the *Calathus* of the Ethiopian Highlands is not complete. More study is still required of existing collections and further field work should be carried out where prospections have not yet been conducted in order to complete the descriptions of unknown taxa. Only in this way will we be able to make a comprehensive study of the subgenera of the Ethiopian *Calathus* and establish their links with the Holarctic species.

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