

On the South African genus *Heisonyx* (Coleoptera: Curculionidae: Entiminae)

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Abstract. Six new species of the genus *Heisonyx* Marshall, 1947 from South Africa (*H. barclayi* sp. nov., *H. danielssoni* sp. nov., *H. fuscus* sp. nov., *H. giustocaroli* sp. nov., *H. hexarthrum* sp. nov., and *H. jelineki* sp. nov.) are described, illustrated and keyed. The genus is redescribed and its taxonomic position is briefly discussed. *Heisonyx* and *Lalagetes* Schoenherr, 1842 are newly transferred from the Oosomini Lacordaire, 1863 to the Embrithini Marshall, 1942. Male and female genitalia of *Heisonyx* are studied and illustrated for the first time.

Key words. Coleoptera, Curculionidae, Entiminae, *Heisonyx*, South Africa, taxonomy, new species

Introduction

The present knowledge of the Curculionidae from southern Africa (i.e., Namibia, Botswana, Zimbabwe, Mozambique south of the Zambezi river, South Africa, Swaziland and Lesotho) is still at the very beginning, even if there are many entomologists active in South Africa and collections in some local natural history museums and universities available for study. In spite of the large number of species of weevils that can be collected in this area (E. Colonnelli and G. Osella, pers. observ.), only a limited number of them have been named or indicated from the region to date (e.g., OBERPRIELER 1988). It means that most of them await description.

One reason that might have prevented intensive work on the weevil fauna of this region is the scattering of the types among various European museums. To have all of them simultaneously available for a direct comparison is essential, since many of the species are very closely related, and even long descriptions are often useless. This is particularly true for the broad-nosed weevils of the subfamily Entiminae. Among them, the genus *Heisonyx* Marshall, 1947, from the tribe Embrithini had only a single species, *H. vitticollis* Marshall, 1947, but three undescribed species of the genus were collected by two of us (L. Colonnelli and G.

Osella) during recent surveys in South Africa and three others were found among unidentified Entiminae in the Natural History Museum in London and the Museum of Zoology in Lund.

Here we present the descriptions of these six new species, along with the redescription of *H. vitticollis*, as the first step toward our planned revision of the Southern African entimines.

Material and methods

Body length of specimens was measured in lateral view from the anterior margin of eye to the apex of elytra, thus excluding the rostrum as customary for curculionids. We also measured the ratio between maximum width and length of the rostrum in dorsal view, the length being measured from the anterior margin of eyes to the anterior margin of the epistome. Pronotal and elytral ratio was calculated from the maximum width and length in dorsal view. Dissected female genitalia were embedded in Solakryl and male genitalia were glued dry to the same label bearing the insect. Line drawings were made using a Rathenow microscope with an ocular grid at magnification 200×. Pictures were taken with a JVC-GC-X1 camera mounted on a Wild M5 microscope and processed with the freeware program Combine Z5 by Alan Hadley and with Adobe Photoshop® 7.0. The terminology of the rostrum follows OBERPRIELER (1988) and that of female genitalia follows BOROVEC (2006).

Acronyms for depositories of the material are as follows:

AMGS	Albany Museum, Grahamstown, South Africa;
BMNH	Natural History Museum, London, United Kingdom;
ECRI	Enzo Colonnelli collection, Rome, Italy;
GOAI	Giuseppe Osella collection, L'Aquila, Italy;
MCZR	Museo Civico di Zoologia, Rome, Italy;
MZLU	Museum of Zoology, Lund, Sweden;
MZUR	Entomological Museum of the Rome University "La Sapienza", Italy;
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
TMSA	Transvaal Museum, Pretoria, South Africa.

Results

Heisonyx Marshall, 1947

Type species. *Heisonyx vitticollis* Marshall, 1947 by original designation.

Redescription. Body length: 1.6–2.8 mm.

Integument black, legs and antennae sometimes brownish. Whole body very densely covered by regularly rounded, recumbent, longitudinally striate scales. Elytra with one regular row of slanted to erect, hairlike to clavate scales. Scales whitish, greyish or light brownish with irregular or V-shaped dark brownish spots (Figs. 1, 2, 4–8).

Rostrum wider than long, feebly tapering apically. Epifrons narrowing toward apex, with straight sides, at base only slightly narrower than distance between anterior edges of eyes, with feebly or even hardly visible V-shaped transversal groove separating it from rest of head in dorsal and lateral view. Epistome very small, sometimes hardly visible, U-shaped, separated from densely scaled frons by narrow raised line. Antennal scrobes in dorsal view open, clearly visible apically from above, in lateral view appearing as clearly limited furrows,

feebly curved, directed toward dorsal half of eyes without reaching eyes and separated from them by wide stripe of scales (Fig. 2). Eyes large, convex, more or less protruding from outline of head.

Antenna usually short and robust, scape strongly thickened in apical part, reaching anterior border of pronotum. Antennal funicle 5-, 6- or 7-segmented.

Pronotum wider than long, with arcuate sides. Disc without any sculpture, regularly convex.

Procoxal cavities contiguous, globular, placed at middle of prosternum.

Scutellum very small, almost invisible.

Elytra shortly oval, striae very narrow, intervals flat, elytra sometimes angulate and narrowed toward apex.

Mesocoxae semiglobular, mesosternal process narrow. Metacoxae transversal, separated by a distance wider than transversal diameter of metacoxa.

Femora edentate. Mesal edge of protibia sinuate. Apex of protibia rounded, mesally enlarged, laterally arcuate, with row of short spines and with 2–3 hook-shaped spines at mesal angle (Fig. 16). Meso- and metatibia in both sexes with one short mesal spine. Metatibial corbels opened, usually with very narrow external squamose bevel. Tarsi short, last tarsomere very short with only one claw, in one of the species with trace of second claw in the form of minute basal spur.

Ventrite 1 as long as ventrite 2 and somewhat longer than ventrites 3 and 4 combined. Suture between ventrites 1 and 2 fine, sinuose, other sutures deeply impressed, straight. Metasternal process obtuse. Entire ventral side of body densely covered by the same recumbent scales as dorsal part.

Male genitalia well sclerotised. Tegmen with long manubrium and parameroides, without armatures. Temones long.

Female genitalia. Apodeme of sternum 8 of medium length, slender, apically terminated just inside of plate. Plate narrow, umbrella-shaped, longer than wide, without margo basalis and with very slender margo apicalis with short apical setae (Fig. 19). Spermatheca C-shaped, with differentiated ramus and nodulus, in most species with large corpus (Figs. 18, 21, 22, 25, 27). Ovipositor with wide, feebly sclerotised hemisternite and with short or long stylus (Figs. 17, 23, 26), or slender, curved, well sclerotised and without stylus (Figs. 20, 24).

Differential diagnosis. *Heisonyx* is very similar to the genus *Lalagetes* Schoenherr, 1842, sharing with it the following characters: metatibial corbels with a narrow external bevel in the sense of THOMPSON (1992), antennal scrobes visible in the anterior half from above and appearing as feeble curved furrows directed toward dorsal half of eye and not reaching it in side view, epifrons at base only slightly narrower than the space between anterior edge of eyes, and sometimes with the presence of a hardly visible, narrow, V-shaped transversal sulcus separating the rostrum from the rest of head.

Heisonyx readily differs from *Lalagetes* by the single tarsal claw, presence of 2–3 hook-shaped spines at the mesal part of the protibia and ventrite 2 longer than the combined lengths of ventrites 3 and 4. The first two characters are exceptional in Entiminae and no other Ethiopian or Palaearctic genus that would have both of them is known to us.

Lalagetes has two claws fused in the basal half, the protibia at the mesal part with only one hook-shaped spine, and ventrite 2 as long as ventrite 3 or 4.

Tribal placement. Although MARSHALL (1947) did not assign *Heisonyx* to a tribe, one can infer that his intention was to include it in the Oosomini Lacordaire, 1863, since *Lalagetes* was listed by LACORDAIRE (1863) and LONA (1937) in the Oosomini and was the only genus to which MARSHALL (1947: 206) compared *Heisonyx*. ALONSO-ZARAZAGA & LYAL (1999) listed both genera in the tribe Peritelini Lacordaire, 1863 without giving any reasons for doing so. GROBBELAAR et al. (2000) included an unnamed species, possibly a *Lalagetes*, in the Embrithini Marshall, 1942, also without comments.

A better understanding of the relationships of these two genera is difficult given the unclear phylogeny of the tribes in the Entiminae, particularly outside the Palaearctic Region. MARSHALL (1942) described the tribe Embrithini and included in it the genera of the then Oosomini with tarsal claws fused, leaving those with free claws in the Oosomini. It is evident that *Lalagetes* and *Heisonyx* clearly differ from all Palaearctic genera of the Peritelini by having a V-shaped transversal sulcus on the base of the rostrum, different shape of the antennal scrobes in dorsal and lateral view and possessing the metatibial external bevel. These characters plus the connate claws of *Lalagetes* are very much like those of the Embrithini, although MARSHALL (1942) did not list *Lalagetes* among the Embrithini. The single claw of *Heisonyx*, very probably resulting from a complete fusion, and its close relationship with *Lalagetes* allows us to consider both genera as belonging to the Embrithini (new placement).

The tribe Episomini Lacordaire, 1863 is characterized by a similar set of characters as *Heisonyx* and *Lalagetes*, in particular the V-shaped sulcus at the epifrons and the closed metatibial corbels with a squamose bevel. However, the Episomini contain large species in which the rostrum is at least slightly longer than wide and with protruding pterygia or has clear longitudinal sulci on the dorsum of rostrum and the metatibiae are often modified in males.

Heisonyx vitticollis Marshall, 1947

(Figs. 1–3, 10, 16–19)

Type material. LECTOTYPE: ♂ (BMNH) (Fig. 1, 3): ‘SYNTYPE [circular label with bluish margin, printed] // S. AFRICA Grahamstown 26.III.1947 Miss M. Farquhar From soil on golf course [handwriting] // *Heisonyx vitticollis*, Mshl. COTYPE [Marshall’s handwriting] // G. A. K. Marshall Coll. B. M. 1950-255 [printed] // LECTOTYPUS ♂ *Heisonyx vitticollis* Marshall, E. Colonnelli des., 2008 [red, handwriting]’.

PARALECTOTYPES: 2 ♀♀ (BMNH), the same data as lectotype; 1 ♂ 1 ♀, ‘Cotype [circular label with yellow margin, printed] // Grahamstown C. P. Golf Course grass 3/4/47 M. F. [Marshall’s handwriting] // Curculionid 24.3.47 G. C. [7.4.47 in second specimen, Marshall’s handwriting] // *Heisonyx vitticollis*, Mshl. COTYPE [Marshall’s handwriting] // Pres. by Imp. Inst. Ent. B. M. 1947-357 [printed]. The appropriate labels: ‘PARALECTOTYPUS ♂ (or ♀) *Heisonyx vitticollis* Marshall, E. Colonnelli des., 2008 [red, handwriting]’ were added.

We have examined five syntypes from Marshall’s collection (BMNH). The lectotype is designated here. All these specimens are freshly emerged and one paralectotype is teneral with one elytron missing.

Redescription. Body length: 2.0–2.1 mm (lectotype 2.0 mm).

Black, femora, tibiae and antennae dark brownish. Whole body covered by dense greyish scales, pronotum with four longitudinal dark brownish stripes, elytra with irregular brownish spots, one female with two indistinct, V-shaped bands in the middle and posterior third of elytra (Fig. 1). Recumbent elytral scales rounded, very dense, partly overlapping, finely longitudinally striate, leaving only punctures of striae visible. Semierect elytral scales wide, clavate, slightly longer than half of elytral interval and twice as wide as the diameter of one

recumbent scale, densely arranged in one row on each interval. Pronotum, head and rostrum thickly covered by the same kind of recumbent scales as those on elytra and intermingled with shorter semierect setae, head with dense row of semierect setae above each eye. Legs and antennae except club entirely covered by dense and round recumbent scales and short, scale-shaped semierect setae.

Rostrum 1.29–1.31 times as wide as long, very feebly tapered anteriorly. Epifrons also feebly tapered anteriorly, at base only slightly narrower than the distance between anterior edges of eyes, feebly longitudinally depressed along midline, with narrow longitudinal stria along the whole length and with very fine, sometimes barely visible V-shaped transversal stria at base. Rostrum convex, in lateral view separated from rest of head by indistinct and narrow transversal groove. Antennal scrobes in dorsal view clearly visible on anterior half of rostrum, in lateral view furrow-shaped, with distinct borders, feebly enlarged posteriorly, dorsal margin subparallel with dorsal border of epifrons, ventral margin directed toward middle of eye. Eyes large, moderately convex.

Antennae robust, scape distinctly curved at midlength, gradually thickened toward apex. Funicle 7-segmented, first funicular antennomere conical, robust, 1.4 times as long as wide, twice as long as the isodiametric second funicular antennomere, all funicular antennomeres closely adpressed, funicular antennomeres 3–7 gradually widening toward club, funicular antennomere 3 and 4 1.4 times as wide as long, funicular antennomere 5 1.5 times as wide as long, funicular antennomere 6 1.6 times as wide as long, funicular antennomere 7 1.7–1.8 times as wide as long, club as wide as scape at apex.

Pronotum 1.39–1.46 times as wide as long, widest in posterior third, in anterior half strongly narrowing toward anterior margin, constricted immediately behind it. Disc in lateral view only very feebly convex.

Elytra oval, 1.21–1.23 times as long as wide, widest at middle. Intervals almost flat, striae very narrow, appearing as rows of fine punctures.

Tibiae short and robust, apex of protibia with inner margin enlarged and lateral margin rounded, apex with five short blackish spines and two hook-shaped brownish spines at inner angle and short fringe of fine and very dense black bristles on inner edge near apex (Fig. 16). Tarsi short. Tarsomere 2 1.3–1.4 times as wide as long; tarsomere 3 1.4 times as wide as long and 1.2–1.3 times as long as tarsomere 2. Ungular tarsomere 1.2 times as long as tarsomere 3, claw black.

Male genitalia. Aedeagus in basal half parallel-sided, apical half triangular with straight, regularly tapering sides (Fig. 10).

Female genitalia. Spermatheca C-shaped with regularly curved cornu, large corpus, short and wide nodulus and very short, wide ramus (Fig. 18). Ovipositor with wide, long-oval hemisternite, apex dull with very short stylus with apical setae (Fig. 17).

Differential diagnosis. *Heisonyx vitticollis* can be confused only with *H. jelineki* sp. nov. and *H. giustocaroli* sp. nov., both with 7-segmented antennal funicle. The distinguishing characters are given in the differential diagnoses of the latter two species and in the key.

Bionomics. MARSHALL (1947) stated in the original description: ‘The weevils were all found in soil samples taken in the upper four inches of soil on the fairway of a golf course, after the surface vegetation had been scraped away.’

Distribution. South Africa: Eastern Cape.

Heisonyx barclayi sp. nov.

(Figs. 4, 11, 20–21)

Type material. HOLOTYPE: ♂ (BMNH), 'South Africa, E Cape, near Kenton-on-Sea, 33.42.40 S, 26.35.64 E, 6.XI.2006, E. Colonnelli lgt.' ALLOTYPE: ♀ (ECRI), same data as holotype. PARATYPES: Same data as holotype, 14 specimens (AMGS, ECRI, GOAI, RBSC), 'South Africa, E Cape, Paterson, 300 m, 33.26.55 S, 25.58.12 E, 17.XI.2006, E. Colonnelli lgt.', 3 specimens (ECRI, MCZR, MZUR).

Description. Body length: 1.6–2.1 mm (holotype 2.0 mm).

Integument black, legs and antennae brownish to dark brownish, tarsi and antennal club sometimes darker. Whole body except tarsi, funicle and club very densely covered by regularly rounded, shallowly longitudinally striate scales. Coloration of scales light greyish with large dark brownish area on most of pronotal disc and with irregularly spotted elytra (Fig. 4). Each elytral interval with one regular row of two types of setae: long and slender, parallel-sided, erect setae about as long as width of one interval present in apical half of interval 1, 3 and 5 and very shortly clavate, inconspicuous, semierect setae slightly narrower than the diameter of one recumbent scale present on basal half of intervals 1, 3 and 5 and throughout on other intervals. Pronotum and head with irregularly scattered, short, semierect setae. Femora, tibiae and antennal scape densely covered by recumbent scales intermingled with scarce short and slender, semiadherent, scale-like setae.

Rostrum 1.24–1.31 times as wide as long, feebly narrowing toward apex. Epifrons more tapered than rostrum, almost flat, with narrow longitudinal stria along the whole length and in some specimens reaching behind posterior borders of eyes. Epifrons in dorsal as well as in lateral view separated from rest of head by very narrow V-shaped transversal stria at base, in lateral view convex. Antennal scrobes in dorsal view clearly visible on anterior half of rostrum, in lateral view short, distally enlarged, dorsal border directed towards dorsal edge of eye, ventral border directed towards middle of eye, separated from eyes by wide stripe of scales. Eyes large, moderately convex.

Antennae short, scape almost straight, long, longer than funicle, in apical third gradually thickened toward apex. Funicle 5-segmented, first funicular antennomere robust, conical, 1.5–1.6 times as long as wide, 1.3 times as long as funicular antennomere 2, the latter slender and 1.6–1.7 times as long as wide, funicular antennomeres 3–5 1.3–1.4 times as wide as long, club as wide as scape at apex.

Pronotum 1.26–1.37 times as wide as long, widest behind middle, in anterior half strongly constricted toward anterior margin. Disc in lateral view feebly convex, anterior third flat.

Elytra almost globular to shortly oval in shape, 1.18–1.25 times as long as wide, widest in middle, humeri obliquely subtruncate. Intervals almost flat, striae narrow, clearly visible.

Tibiae short, apex of protibia enlarged at inner margin, laterally arcuate, rounded, apex with 4–5 short, brownish to blackish spines and three hook-shaped blackish-brown spines at inner angle, the shortest placed at inner part of protibia. Tarsi short, tarsomere 2 1.4–1.5 times as wide as long; tarsomere 3 1.5 times as wide as long and 1.4–1.5 times as wide as tarsomere 3, ungular tarsomere very short, 0.4–0.5 times as long as 3, claw blackish.

Male genitalia almost parallel-sided with feebly rounded sides. Apex rounded, very feebly angulate (Fig. 11).



Figs. 1–3. *Heisonyx vitticollis* Marshall, 1947. 1 – habitus of the male lectotype in dorsal view; 2 – female paralectotype in lateral view; 3 – labels of the lectotype. Scale bar: 1 mm (Figs. 1, 2).

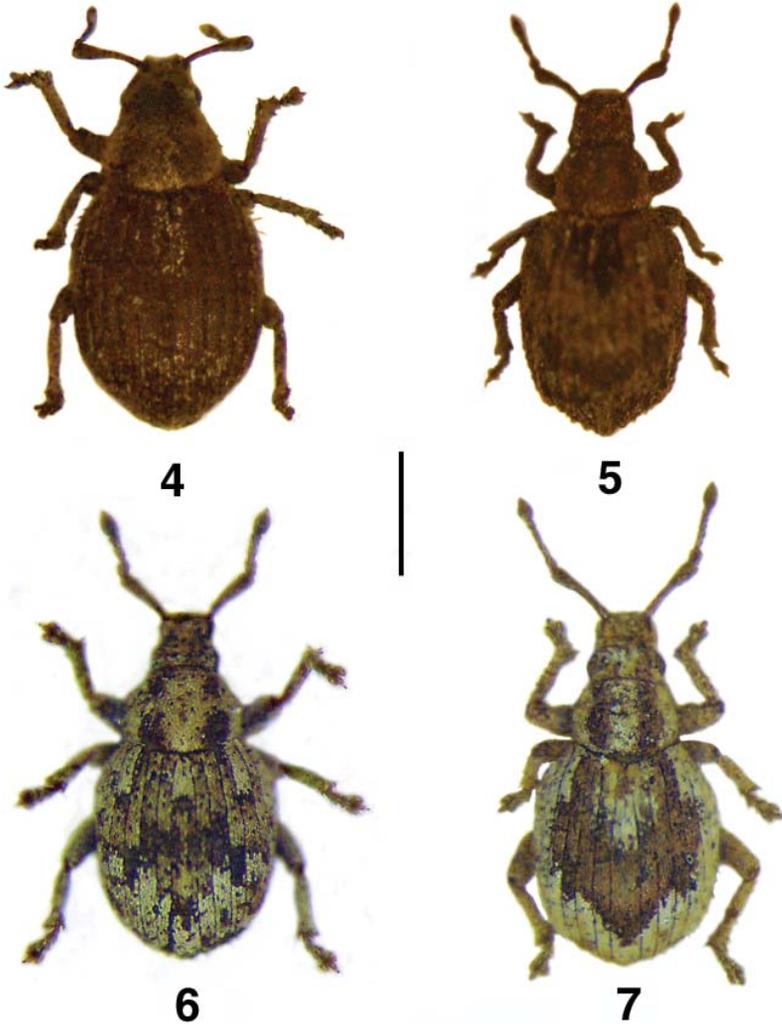
Female genitalia. Spermatheca with short, regularly curved cornu, very short and very wide ramus and short and wide nodulus, at apex obtuse (Fig. 21). Ovipositor with well-sclerotised, slender, pointed and regularly curved hemisternite, without stylus (Fig. 20).

Differential diagnosis. The 5-segmented antennal funicle, elytral vestiture and shape of the rostrum make *H. barclayi* sp. nov. very similar to *H. danielssoni* sp. nov. In addition to the characters in the key below, the new species differs by the longer rostrum, which is only 1.24–1.31 times (instead of 1.53–1.57 times) as wide as long, and feebly concave (instead of feebly rounded) sides of the rostrum and epifrons and the nodulus of the spermatheca obviously wider than long and obtuse (rather than clearly longer than wide and pointed as in *H. danielssoni* sp. nov.).

Etymology. The species is dedicated to Maxwell Barclay (BMNH) for his kind help during our stay in London.

Bionomics. All the specimens were collected by beating low herbs.

Distribution. South Africa: Eastern Cape.



Figs. 4–7. Habitus. 4 – *Heisonyx barclayi* sp. nov., paratype; 5 – *H. fuscus* sp. nov., holotype; 6 – *H. danielssoni* sp. nov., holotype; 7 – *H. hexarthrum* sp. nov., holotype. Scale bar: 1 mm.

***Heisonyx danielssoni* sp. nov.**

(Figs. 6, 12, 22)

Type material. HOLOTYPE: ♂ (MZLU), 'RSA [South Africa], Cape Prov. De Hoop Nature Reserve, 34.27.S, 20.25 E, 10.-13.X.1994, 0-200 m, loc. 12, R. Danielsson lgt.' ALLOTYPE: ♀ (MZLU), same data as holotype.

Description. Body length: 1.7–1.8 mm (holotype 1.7 mm).

Integument black, legs and antennae brownish to dark brownish, antennal club darker. Whole body except antennal club very densely clothed by striate, weakly longitudinal scales,

their shape regularly rounded on pronotum and head including rostrum and somewhat polygonal on elytra. Coloration of scales greyish, with four longitudinal stripes on pronotum and with light brownish to brownish-black spots forming an irregular transverse stripe in the middle of elytra in male (Fig. 6), elytra in female light brownish with small greyish spots behind scutellum and on shoulders. Each elytral interval with one regular row of semierect hair-like scales, somewhat narrower and hardly longer than the diameter of one recumbent scale. Pronotum and head with irregularly scattered setae. Legs and antennae with scarce short and erect scale-like setae.

Rostrum short, 1.53–1.57 times as wide as long, with feebly arcuate sides. Epifrons feebly tapering with feebly arcuate sides, feebly impressed along midline, with narrow longitudinal stria along the whole length reaching the level of posterior edges of eyes. Epifrons in both dorsal and lateral view separated from the rest of head by very narrow V-shaped transversal stria at base, in lateral view convex. Antennal scrobes in dorsal view clearly visible on anterior two thirds of rostrum, in lateral view enlarged distally, dorsal border directed towards dorsal margin of eye, ventral one directed towards middle of eye, separated from each eye by narrow stripe of scales. Eyes large, moderately convex.

Antennae short, scape almost straight, longer than funicle, gradually thickening from base to apex. Funicle 5-segmented, funicular antennomere 1 robust, conical, 1.3 times as long as wide, 1.5 times as long as funicular antennomere 2, the latter 1.2–1.3 times as long as wide, funicular antennomeres 3 and 4 1.5 times and antennomere 5 1.6 times as wide as long, club as wide as scape at apex.

Pronotum 1.25–1.36 times as wide as long, widest just behind middle, sides strongly converging toward anterior margin and shallowly constricted behind it. Disc feebly convex in lateral view with anterior part just behind anterior margin of pronotum sunk below the rest of disc in lateral view and appearing as narrow transverse depression in dorsal view.

Elytra short and wide, shortly ovate, 1.22–1.27 times as long as wide, widest in middle. Intervals almost flat, striae narrow, interval 1 at base much narrowed and in apical third feebly enlarged and indistinctly elevated.

Tibiae short, apex of protibiae with inner margin enlarged, lateral margin arcuate and feebly lobed, with two hook-shaped brownish spines at inner angle and three short brownish to blackish spines, two larger ones on median lobe and one small on very small lateral lobe, emargination between lobes shallow and indistinct; two hook-shaped spines present at inner angle of tibial apex: the shorter one placed on inner lobe and larger one placed between this small one and other spines placed at the median lobe of apex of protibia. Tarsi very short, tarsomere 2 1.7–1.8 times as wide as long, tarsomere 3 1.3 times as wide as long and 1.3–1.4 times as wide as tarsomere 2, ungular tarsomere very short, 0.3–0.4 times as long as tarsomere 3, claw blackish.

Male genitalia. Aedeagus widest near apex, feebly narrowed basally and with feebly rounded sides. Apex very irregularly rounded with small concavity at the tip (Fig. 12).

Female genitalia. Spermatheca with slender, regularly curved cornu. Ramus short, very wide; nodulus long, regularly tapered apicad (Fig. 22). Ovipositor not examined.

Differential diagnosis. The 5-segmented antennal funicle puts *H. danielssoni* sp. nov. near to *H. fuscus* sp. nov. and *H. barclayi* sp. nov.; see the differential diagnoses of the latter two species and the key below for the distinguishing features.

Etymology. We name this species with great pleasure after Roy Danielsson (MZLU) for his usual kindness in sending important material to make this study more complete.

Bionomics. Unknown.

Distribution. South Africa: Western Cape.

Heisonyx fuscus sp. nov.

(Figs. 5, 13, 23)

Type material. HOLOTYPE: ♂ (BMNH), 'Willowmore, Cape Colony, S. Brauns'. ALLOTYPE: ♀ (BMNH), 'Uitenhage, Cape Colony, Oct. 1898, T. O'Neil'. PARATYPES: 3 ♂♂ (BMNH), 'Willowmore, Cape Colony, S. Brauns'.

Description. Body length: 1.8–2.1 mm, holotype 1.8 mm (males); 2.4 mm (female).

Integument black, tarsi, antennal funicle and club reddish-brown. Coloration of scales light brownish, pronotal disc with large dark brownish area, elytra with irregularly scattered small dark brownish spots (Fig. 5). Recumbent elytral scales regularly rounded, weakly longitudinally striate, very dense, leaving only stria punctures visible. Lifted elytral scales short and wide, only somewhat longer and slightly narrower than recumbent ones, arranged in one dense inconspicuous row on each interval. Pronotum and head with similar double type of scales, lifted scales irregularly scattered. Femora, tibiae and antennal scapes densely covered by recumbent scales and slanted long and slender scale-like setae.

Rostrum 1.22–1.26 times as wide as long, feebly tapered anteriorly with feebly rounded sides. Epifrons with straight sides, strongly narrowed anteriorly, at base almost as wide as space between anterior edges of eyes, very shallowly depressed along midline, with very narrow and short longitudinal stria present only between antennal insertions and with another longitudinal stria running parallel with margin of epifrons and distally almost reaching the level of posterior border of eyes. Epifrons densely covered by recumbent scales, separated from head by very fine, hardly visible transversal V-shaped stria. Rostrum in lateral view convex. Antennal scrobes in dorsal view appearing on apical half of rostrum as narrow furrows, in lateral view feebly curved and feebly enlarged distally, with distinct borders, dorsal margin directed toward dorsal edge of eyes, lateral border directed toward middle of eyes. Eyes rather small, almost flat, hardly protruding from outline of head.

Antennae short and robust. Scape short, about as long as funicle, curved in midlength, in apical half gradually but strongly thickened towards apex. Funicle 5-segmented, funicular antennomere 1 conical, robust, 1.3–1.4 times as long as wide and 1.2–1.3 times as long as funicular antennomere 2, the latter 1.5 times as long as wide, funicular antennomeres 3 and 4 1.4 times as wide as long, funicular antennomere 5 1.5–1.6 times as wide as long, club narrower than scape at apex.

Pronotum 1.26–1.33 times as wide as long, widest behind middle, in anterior half strongly narrowed. Disc regularly convex, in some specimens with short and very narrow longitudinal stria on anterior half. Pronotum in lateral view feebly convex, in anterior third flat.

Elytra oval, 1.19–1.21 times as long as wide, widest in middle, with feebly obliquely sub-truncated humeri, angulate and narrowing toward apex. Interval 1 near elytral base strongly narrowed, at apex enlarged and elevated, intervals 3 and 5 at apex feebly enlarged, interval 5 weakly elevated, other intervals almost flat. Striae very narrow, appearing as a row of fine punctures.

Tibiae short and robust, internal margin of protibia enlarged at apex, laterally rounded, with 6–7 short, dark brownish to blackish spines and with two short hook-shaped brownish spines at inner angle, sometimes barely visible through dense fringe of yellowish bristles on inner angles. Tarsi short, tarsomere 2 1.4–1.5 times as wide as long, tarsomere 3 1.4 times as wide as long and 1.3–1.4 times as wide as tarsomere 2, ungular tarsomere short, as long as tarsomere 3, claw reddish-brown.

Male genitalia. Aedeagus short with feebly rounded sides, at apex narrowed with large triangular concavity, so that apex looks bidentate (Fig. 13).

Female genitalia. Spermatheca not examined. Ovipositor with short and wide, long-oval hemisternite, at apex obliquely subtruncated, with short, apically setose stylus (Fig. 23).

Differential diagnosis. *Heisonyx fuscus* sp. nov., *H. barclayi* sp. nov. and *H. danielssoni* sp. nov. share the 5-segmented antennal funicle; the main distinguishing characters are given in the key below. Other characters allowing distinction of *H. fuscus* sp. nov. from the above two species are as follows: rostrum with very short longitudinal stria present only between antennal insertions (present along the whole length in *H. barclayi* sp. nov. and *H. danielssoni* sp. nov.), apex of aedeagus with triangular concavity (apex rounded and feebly angulate in *H. barclayi* sp. nov.), and apex of protibia rounded with 6–7 short spines (feebly lobed with three spines in *H. danielssoni* sp. nov.).

Etymology. The colour of the new species suggested its name, meaning dark in Latin.

Bionomics. Unknown.

Distribution. South Africa: Eastern Cape.

Heisonyx giustocaroli sp. nov.

(Fig. 8)

Type material. HOLOTYPE: ♀ (ECRI, to be deposited in MZUR in future), 'South Africa, W Cape, Cape Town, Kirstenbosch, 33.58.35 S 18.26.15 E, 400 m, 23.XI.2007, E. Colonnelli lgt.'

Description. Body length: 2.8 mm.

Integument black, antennae, tibiae and tarsi rusty-red. Whole body very densely covered by round recumbent scales. Vestiture on elytra grey with nebulose pattern of brown large spots, light grey scales forming a spot on elytral intervals 6 and 7 at base and a stripe on interval 10, pronotum brownish with rather wide, curved whitish-grey lateral stripe along each side and a trace of median light grey longitudinal band (Fig. 8). Head and rostrum with greyish scales. Semierect clavate elytral scales about as long as half of the width of one interval and about as wide as the diameter of one recumbent scale; the latter clearly longer and more erect at base of intervals 5–7. Similar rather long erect scales scattered on pronotum and head. Femora, tibiae and antennal scape covered by recumbent and semierect seta-like scales smaller than those on elytra; tarsi, funicle and club devoid of recumbent scales.

Rostrum convex, quite short, 1.33 times as wide as long, feebly tapered anteriorly. Epifrons tapered towards apex, with rather feebly concave sides, at base slightly narrower than distance between anterior margins of eyes, longitudinally depressed along midline, separated from the rest of head by deep transverse V-shaped groove, separating in lateral view rostrum from the rest of head. Antennal scrobes in dorsal view clearly visible for a little more than apical two thirds of rostrum, in lateral view feebly curved, moderately enlarged distally, their dorsal

margin directed toward upper border of eye and ventral margin toward middle of eye. Eyes very large, rather strongly protruding from outline of head.

Antennae slender. Scape distinctly curved, apical third gradually and rather moderately thickened toward apex. Funicle 7-segmented, first funicular antennomere 1.5 times as long as wide, 1.5 times longer than funicular antennomere 2, the latter 1.65 times as long as wide, funicular antennomeres 3–6 moniliform and about as wide as long, funicular antennomere 7 not transverse, club fusiform and elongate, 2.28 times as long as wide.

Pronotum 1.5 times as wide as long, widest behind middle, in anterior half a little constricted. Disc in lateral view moderately convex.

Elytra elongate-oval, 1.33 times as long as wide, widest in middle, with moderately rounded sides. Intervals almost flat, striae very narrow, line-shaped.

Tibiae moderately elongate, apex of protibia straight and truncate with enlarged internal margin and very slightly arcuate lateral margin, with single hook-shaped spine at inner angle and some fine translucent bristles at apex. Tarsi comparatively elongate, tarsomere 2 about as wide as long, tarsomere 3 1.4 times as wide as long and 1.8 times as wide as tarsomere 2, ungular tarsomere very elongate, twice as long as tarsomere 3 and surpassing it by 1.28 times the length of tarsomere 3; claw brownish with rudimentary trace of second claw in the form of minute basal black spur. Fore tarsi and left middle tibia and tarsus missing in the holotype.

Genitalia. Spermatheca not examined. Ovipositor with almost triangular, apically tapered hemisternite, at apex obliquely subtruncate with long and slender styli with apical setae, shape very similar to that of *H. jelineki* sp. nov. (Fig. 26).

Differential diagnosis. The new species is close to both *H. vitticollis* and *H. jelineki* sp. nov., with which it shares the 7-segmented funicle. Differences from *H. vitticollis* are the same listed in the key below. *Heisonyx giustocaroli* sp. nov. can be distinguished from the very similar *H. jelineki* sp. nov. by the larger size (2.8 mm instead of 1.7–2.6 mm), blackish colour of the femora contrasting with the rusty-red tibiae, narrower rostrum (1.33 times instead of 1.38–1.53 times as wide as long), elongate antenna with funicular segment 7 not transverse, the presence of a deep groove separating the rostrum from the rest of head, larger and more convex eyes, more elongate elytra (1.33 times instead of 1.19–1.26 times as long as wide), different pronotal and elytral colour pattern, the presence of a single hook at the inner apex of protibia, elongate tarsal segment 4 and the minute basal spur on the claws.

Etymology. This new species is named after Carlo Giusto (Varazze (Savona), Italy), who was of great help when collecting together in South Africa, to commemorate our friendship.

Bionomics. The holotype was collected from a tussock of grass at the edge of a path at a small forest clearing.

Distribution. South Africa: Western Cape.

Heisonyx hexarthrum sp. nov.

(Figs. 7, 14, 24–25)

Type material. HOLOTYPE: ♂ (BMNH), 'South Africa, Cape Province, Mossel Bay, 15.iii.-20.iv.1932, R. E. Turner'. ALLOTYPE: ♀ (BMNH), same data as holotype. PARATYPES: the same data as holotype, except of date: 3 spec. 15.iii.-20.iv.1932; 17 spec. x.1933; 1 spec. 20.x.1938; 2 spec. 25.x.1938; 1 spec. 31.x.1938; 1 spec. 28.xi.1938; 5 spec. 7.xii.1938; 1 spec. 10.xii.1938; 10 spec. 11.xii.1938; 1 spec. 14.xii.1938; 1 spec. 26.i.1939; 7 spec. June 1921 (all BMNH, except of 3 spec. in ECRI, GOAI, RBSC).

Description. Body length: 1.9–2.1 mm, holotype 1.9 mm (males); 2.0–2.3 mm (females).

Integument black, legs and antennae sometimes brownish. Whole body except antennal club very densely covered by regularly rounded, very shallowly longitudinally striate scales. Coloration of scales whitish with conspicuous, wide, V-shaped yellowish-brown spot with narrow, dark brownish-edged patch on middle of inner five elytral intervals and two very narrow, irregular, V-shaped stripes, sometimes reduced to small spots, on apical part of elytra. Intervals 3 and 4 on basal part of elytra with longitudinal brownish stripe (Fig. 7). Pronotum with four wide longitudinal brownish stripes. Head with brownish spot behind interocular space. Elytra with slanted, sparse and inconspicuous, hair-like whitish scales, only a little longer and somewhat narrower than the diameter of one recumbent scale and arranged in a row on each interval. Head and pronotum with irregularly scattered semierect hair-like scales. Legs and antennae with slanted setae, longer than those on elytra.

Rostrum 1.32–1.45 times as wide as long, very feebly tapered anteriorly. Epifrons strongly narrowing anteriorly, feebly depressed longitudinally along midline, with narrow median longitudinal stria parallel with border of epifrons and reaching posterior margin of eye. V-shaped stria at base of rostrum clearly visible. Rostrum in lateral view convex, separated from the rest of head by narrow transversal stria. Antennal scrobes in dorsal view clearly visible on anterior half of rostrum, in lateral view narrow, feebly curved, with dorsal margin directed towards dorsal edge of eye and ventral one towards middle of eye. Eyes large, moderately convex, protruding from outline of head.

Antennae slender, scape straight, from apical half gradually enlarged toward apex. Funicle 6-segmented. Funicular antennomere 1 robust, conical, 1.1–1.2 times as long as wide, 1.3–1.4 times as long as funicular antennomere 2, the latter 1.3–1.4 times as long as wide, funicular antennomeres 3 and 4 isodiametric, funicular antennomere 5 1.1 times as wide as long, funicular antennomere 6 1.2–1.3 times as wide as long, club as wide as scape at apex.

Pronotum wide, 1.42–1.53 times as wide as long, widest at posterior third, with arcuated sides, strongly narrowing toward anterior margin, without any sculpture on disc, feebly convex in lateral view, in anterior third flat.

Elytra short-oval, wide, 1.19–1.26 times as wide as long, widest at midlength. Interval 1 at base narrowed, in apical third enlarged. Striae clearly visible, narrow, intervals almost flat.

Tibiae slender, internal margin of protibia enlarged, laterally rounded, with row of 8–9 short and fine bristle-shaped brownish spines, sometimes obscured by several greyish setae, and with three hook-shaped blackish spines at internal angle. Tarsi short, tarsomere 2 1.4–1.5 times as wide as long, segment 3 1.4–1.5 times as wide as long and 1.3–1.4 times as wide as tarsomere 2, ungular tarsomere short, 0.7 times as long as tarsomere 3, claw black.

Male genitalia. Aedeagus with regularly, feebly rounded sides, regularly narrowing apically, with obtusely rounded apex (Fig. 14).

Female genitalia. Spermatheca C-shaped, with long and regularly curved cornu, large, wide and short ramus and small, grain-like nodulus (Fig. 25). Ovipositor with hemisternite well sclerotised, slender, pointed and curved laterally (Fig. 24).

Differential diagnosis. The 6-segmented antennal funicle and the contrasting whitish and brownish vestiture of fresh specimens make this new species easy to distinguish from all other known *Heisonyx*.

Etymology. The Greek noun *hexarthrum*, meaning 6-segmented, alludes to the fact that this is the only species known to have six funicular joints.

Bionomics. Unknown.

Distribution. South Africa: Western Cape.

***Heisonyx jelineki* sp. nov.**

(Figs. 9, 15, 26–27)

Type material. HOLOTYPE: ♂ (BMNH), 'South Africa, Eastern Cape, Zuurberg Pass road, 33.21.66 S, 25.44.56 E, 550 m, 17.XI.2006, E. Colonnelli lgt.' ALLOTYPE: ♀ (RBSC), same data as holotype. PARATYPES: same data as holotype, 92 specimens (AMGS, ECRI, GOAI, MCZR, MZUR, RBSC, TMSA).

Description. Body length: 1.7–1.9 mm, holotype 1.8 mm (males), 2.0–2.6 mm (females).

Integument black, legs and antennae dark rusty-red, sometimes tarsi and antennal club darker. Whole body densely covered by round, recumbent, very finely longitudinally striate scales. Colour of vestiture varying from light grey to dark brown, elytra with a greyish spot behind scutellum on intervals 4–6 and a stripe in lateral and apical parts, pronotal disc with narrow lateral greyish stripes along entire length (Fig. 9). Semierect elytral scales about as long as half of the width of one interval and about as wide as the diameter of one recumbent scale. Pronotum and head with irregularly scattered semierect hair-like scales. Femora, tibiae and antennal scape covered by similar, although sometimes barely visible, recumbent and semierect seta-like scales as those on elytra, tarsi, funicle and club without recumbent scales.

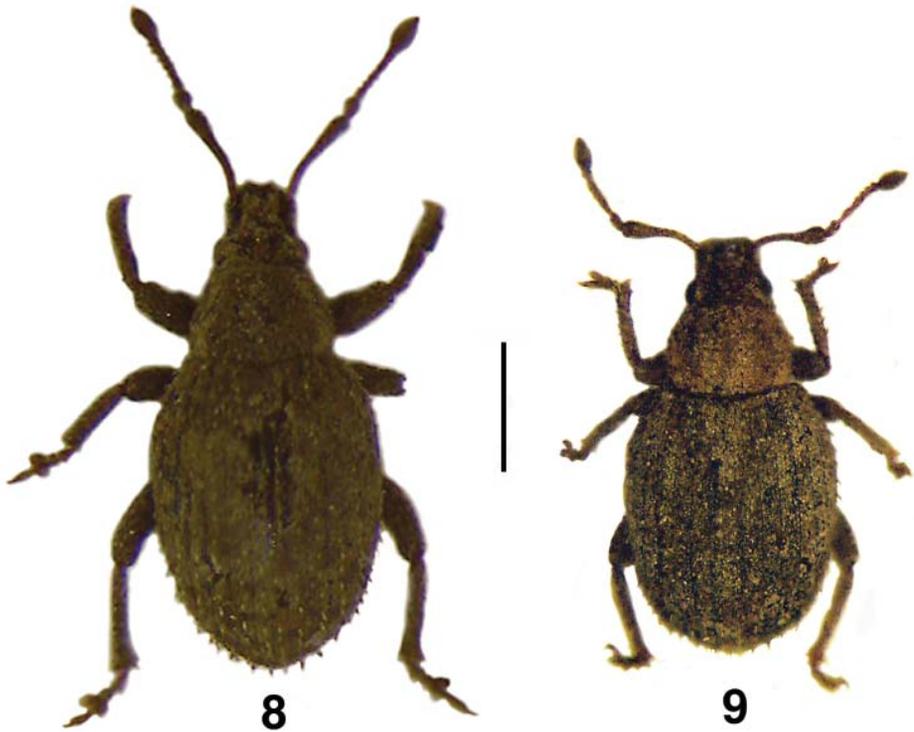
Rostrum convex, short, 1.38–1.53 times as wide as long, feebly tapered anteriorly. Epifrons tapered towards apex, with feebly concave sides, at base slightly narrower than the distance between anterior margins of eyes, weakly depressed longitudinally along midline, with narrow longitudinal stria along the whole length and with lateral stria running parallel with margin of epifrons and almost reaching the level of posterior margins of eyes. Epifrons separated from head by very fine, sometimes hardly visible transversal V-shaped stria separating rostrum from the rest of head in lateral view. Antennal scrobes in dorsal view clearly visible in apical two thirds of rostrum, in lateral view feebly curved, enlarged distally, with distinct margins, dorsal one directed toward dorsal border of eye, ventral one toward the middle of eye. Eyes quite large, moderately convex.

Antennae slender. Scape distinctly curved at midlength, apical third gradually thickened toward apex. Funicle 7-segmented, funicular antennomere 1 robust, 1.3–1.4 times as long as wide and 1.2–1.3 times longer than funicular antennomere 2 in males and slightly shorter than funicular antennomere 2 in females, funicular antennomere 2 1.6–1.8 times as long as wide in males and 2.0–2.1 times as long as wide in females, funicular antennomeres 3 to 6 1.2–1.3 as wide as long, funicular antennomere 7 1.4–1.5 times as wide as long, club as wide as scape at apex.

Pronotum 1.25–1.34 times as wide as long, widest just behind middle, in anterior half strongly tapered. Disc in lateral view feebly convex.

Elytra short oval, 1.23–1.31 times as long as wide, widest in middle, with strongly rounded sides. Intervals almost flat, striae very narrow, linear.

Tibiae short, internal margin of protibia enlarged at apex, laterally arcuate, rounded, with three hook-shaped brownish spines at internal angle and a fringe of 5–6 fine and indistinct,



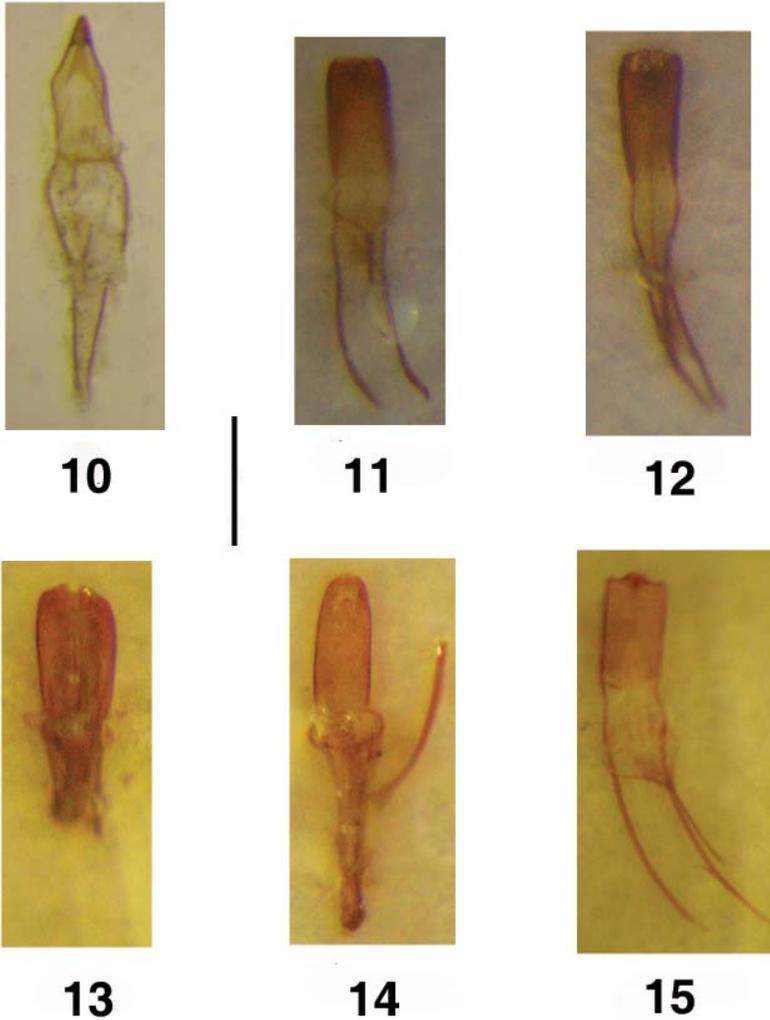
Figs. 8–9. Habitus. 8 – *Heisonyx giustocaroli* sp. nov., holotype; 9 – *H. jelineki* sp. nov., paratype. Scale bar: 1 mm.

almost translucent, short whitish bristles. The longest hook-shaped spine placed at middle, the shortest one at internal part of protibia. Tarsi short, tarsomere 2 1.3–1.4 times as wide as long, tarsomere 3 1.3–1.4 times as wide as long and 1.5 times as wide as tarsomere 2, unguar tarsomere short, 0.7 times as long as tarsomere 3 and surpassing tarsomere 3 by its length, claw short, brownish, with no trace of spur.

Male genitalia. Aedeagus of the same width at base and apex, parallel-sided or with feebly concave sides, apex widely obtuse with sharpened triangular point in middle (Fig. 15).

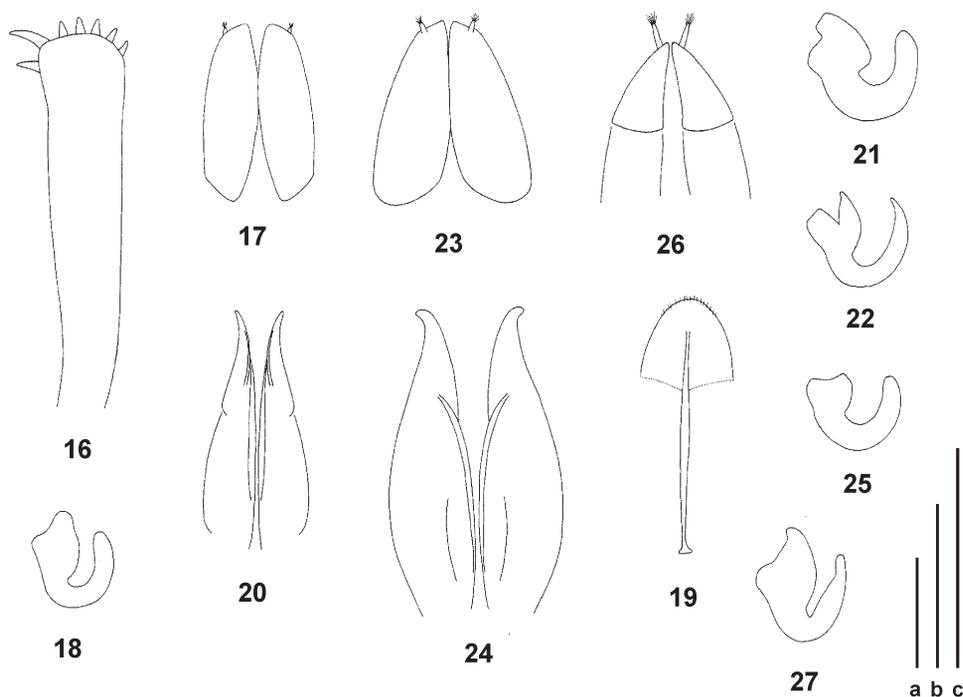
Female genitalia. Spermatheca C-shaped, with slender, subapically constricted cornu and very large corpus. Corpus large and triangular, nodulus very small and hook-shaped. Ramus very wide and short, rounded (Fig. 27). Ovipositor with almost triangular, apically tapered hemisternite, at apex obliquely subtruncate with long and slender styli with apical setae (Fig. 26).

Differential diagnosis. The 7-segmented funicle place *H. jelineki* sp. nov. close to *H. vitticollis*, from which it is readily distinguished by the characters listed in the key below. In addition, it differs from *H. vitticollis* also by having the legs and antennae rusty-red (dark brownish in *H. vitticollis*), rostrum 1.38–1.53 times as wide as long (1.29–1.31 times as wide



Figs. 10–15. Aedeagus. 10 – *Heisonyx vitticollis* Marshall, 1947, lectotype; 11 – *H. barclayi* sp. nov., paratype; 12 – *H. danielssoni* sp. nov., holotype; 13 – *H. fuscus* sp. nov., holotype; 14 – *H. hexarthrum* sp. nov., paratype; 15 – *H. jelineki* sp. nov., paratype. Scale bar: 0.3 mm.

as long in *H. vitticollis*), scrobes visible in dorsal view in apical two thirds (visible in apical half in *H. vitticollis*), recumbent elytral scales simply adpressed so that striae are visible as thin lines (scales overlapping so that striae appear punctate in *H. vitticollis*), semierect elytral scales on average as wide as one recumbent seta (twice as wide in *H. vitticollis*) and styli of ovipositor long (short in *H. vitticollis*). For differences from *H. gustocaroli* sp. nov. see the differential diagnosis of the latter.



Figs. 16–27. Protibia and female genitalia. 16–19 – *Heisonyx vitticollis* sp. nov., paralectotype: 16 – right protibia, 17 – ovipositor, 18 – spermatheca, 19 – sternum 8 in female; 20–21 – *H. barclayi* sp. nov.: 20 – ovipositor, 21 – spermatheca; 22 – *H. danielssoni* sp. nov., spermatheca; 23 – *H. fuscus* sp. nov., ovipositor; 24–25 – *H. hexarthrum* sp. nov.: 24 – ovipositor, 25 – spermatheca; 26–27 – *H. jelineki* sp. nov.: 26 – ovipositor, 27 – spermatheca. Scale bars: 0.25 mm (a – sternum 8; b – ovipositor and spermatheca; c – protibia).

Etymology. It is a pleasure for us to name this new species after our friend Josef Jelínek (National Museum, Prague, Czech Republic) as a special present for his 70th birthday.

Bionomics. All individuals were beaten off a flowering *Erica*, possibly *E. woodi* Bolus or a similar species, along the Zuurberg Pass road during a cloudy day after a night of heavy rain.

Distribution. South Africa: Eastern Cape.

Key to *Heisonyx* species

- 1 Antennal funicle 5-segmented. 2
- Antennal funicle 6- or 7-segmented. 4
- 2 Body light and dark brownish (Fig. 5). Elytra angulate at apex. Eyes almost flat, hardly protruding from outline of head. Antennal scape short, as long as funicle, at apex wider than club. Ungular tarsomere as long as tarsomere 3, claw reddish brown. Eastern Cape. *H. fuscus* sp. nov.

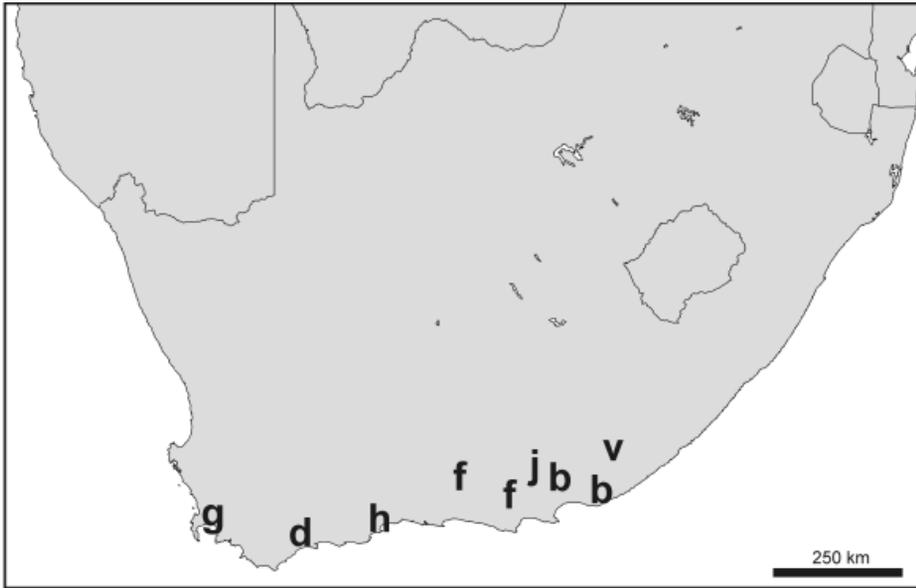


Fig. 28. Distribution of *Heisonyx* Marshall, 1947: b – *H. barclayi* sp. nov.; d – *H. danielssoni* sp. nov.; f – *H. fuscus* sp. nov.; g – *H. giustocaroli* sp. nov.; h – *H. hexarthrum* sp. nov.; j – *H. jelineki* sp. nov., v – *H. vitticollis* Marshall, 1947.

- Body greyish white with light and dark brownish spots (Figs. 4, 6). Elytra regularly rounded at apex. Eyes convex, somewhat protruding from outline of head. Antennal scape long, distinctly longer than funicle, at apex as wide as club. Ungular tarsomere at most half as long as tarsomere 3, claw black. 3
- 3 Setae on elytral declivity raised, as long as the width of one interval. Antennal funicle longer, first funicular antennomere 1.5–1.6 times and second funicular antennomere 1.6–1.7 times as long as wide, funicular antennomeres 3–5 1.3–1.4 times as wide as long. Apex of aedeagus rounded, feebly angulate (Fig. 11). Eastern Cape. ***H. barclayi* sp. nov.**
- Setae on elytral declivity slanted, obviously shorter than half of the width of one interval. Antennal funicle shorter, first funicular antennomere 1.3 times and second funicular antennomere 1.2–1.3 times as long as wide, funicular antennomeres 3–5 1.5–1.6 times as wide as long. Apex of aedeagus distinctly concave (Fig. 12). Western Cape.
..... ***H. danielssoni* sp. nov.**
- 4 Funicle 7-segmented. 5
- Funicle 6-segmented. Elytra whitish with conspicuously wide, V-shaped brownish patch on five inner intervals (Fig. 7). Raised elytral setae inconspicuous, very short, clearly shorter than one-fourth of the width of one interval. Ungular tarsomere 0.7 times as long as tarsomere 3, claw black. Apex of aedeagus regularly rounded (Fig. 14). Western Cape.
..... ***H. hexarthrum* sp. nov.**

- 5 First funicular antennomere twice as long as second, the latter isodiametric. Protibia at apex with five blackish spines and two hook-shaped spines at inner angle. Ungular tarsomere 1.2 times as long as tarsomere 3, claw black. Apical half of aedeagus tapering, triangular (Fig. 10). Eastern Cape. *H. vitticollis* Marshall, 1947
- First funicular antennomere at most 1.65 times as long as second, the latter at least 1.5 times as long as wide. Protibia at apex with translucent spines and one or three hook-shaped spines at inner angle. Claw rusty brownish. 6
- 6 Rostrum separated from the rest of head by deep transverse groove. Antenna elongate, funicular antennomere 7 not transverse, club fusiform and elongate. Elytra elongate-oval, 1.33 times as long as wide. Pronotum with wide and curved whitish-grey lateral stripe. Protibia with single hook at inner apical margin. Tarsi elongate, unguar tarsomere exceeding by 1.28 times of its length tarsomere 3, claw elongate and with trace of second rudimentary claw in the form of minute black spur. Larger species, 2.8 mm long. Male unknown. Western Cape. *H. giustocaroli* sp. nov.
- Rostrum separated from the rest of head by very fine and often indistinct line. Antenna short, funicular antennomeres 3–7 transverse, club shortly fusiform. Elytra shortly oval, 1.23–1.31 times as long as wide. Pronotum with narrow grey lateral stripe. Protibia at apex with three hook-shaped spines at inner angle. Tarsi short, unguar tarsomere exceeding tarsomere 3 only by its length, claw short and with no trace of spur. Smaller species, 1.7–2.6 mm long. Aedeagus parallel-sided, apex widely obtuse with sharp triangular point at the end (Fig. 15). Eastern Cape. *H. jelineki* sp. nov.

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References

- ALONSO-ZARAZAGA M. A. & LYAL C. H. C. 1999: *A world catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (Excepting Scolytidae and Platypodidae)*. Entomopraxis S. C. P. Edition, Barcelona, 315 pp.
- BOROVEC R. 2006: Taxonomic notes on the tribe Omiini, with description of one new genus and species, and with revision of genera *Anemophilus* and *Euplatus* (Coleoptera: Curculionidae: Entiminae). *Klapalekiana* **42**: 1–44.
- GROBBELAAR E. J., BALCIUNAS O., NESER C. & NESER S. 2000: A survey in South Africa for insects with potential as biological control agents for Cape ivy (*Delairea odorata* Lemaire). *Proceedings, California Exotic Pest Plants Council Symposium* **6**: 16–28.
- LACORDAIRE T. 1863: *Histoire Naturelle des Insectes. Genera des Coléoptères ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet ordre d'insectes. Vol. 6*. Roret, Paris, 637 pp.
- LONA C. 1937: *Coleopterorum Catalogus auspiciis et auxilio W. Junk editus a S. Schenkling. Pars 162. Curculionidae: Otiorrhynchinae II*. Junk, Berlin, pp. 227–412.
- MARSHALL G. A. K. 1942: On some East African Otiorrhynchinae (Col., Curcul.). *Annals and Magazine of Natural History, Series II* **9**: 1–26.
- MARSHALL G. A. K. 1947: New South African Curculionidae (Col.). *Annals and Magazine of Natural History, Series II* **14**: 197–209.
- OBERPRIELER R. G. 1988: Revision of the Tanyrhynchini of continental Africa (Coleoptera: Curculionidae). 1. Introduction and review of the genera, revision of the genus *Brachytrachelus* Schönherr and description of *Afroleptops* gen. nov. *Entomology Memoir of Department of Agriculture and Water Supply* **71**: 1–50.
- THOMPSON R. T. 1992: Observations on the morphology and classification of weevils (Coleoptera, Curculionoidea) with a key to major groups. *Journal of Natural History* **26**: 835–891.