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Revision of the African pollen beetle genera *Tarchonanthogethes* and *Xenostromylogethes*, with insect-host plant relationships, identification key, and cladistic analysis of the *Anthystrix* genus-complex (Coleoptera: Nitidulidae: Meligethinae)

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Abstract

The Afrotropical endemic pollen beetle genera *Tarchonanthogethes* Audisio & Cline and *Xenostromylogethes* Audisio & Cline, of the *Anthystrix* genus-complex, are revised. Eleven new species of *Tarchonanthogethes* (*T. autumnalis*, **sp. nov.**, *T. bisignatus*, **sp. nov.**, *T. fasciatus*, **sp. nov.**, *T. gratiellae*, **sp. nov.**, *T. hermani*, **sp. nov.**, *T. hystrix*, **sp. nov.**, *T. lilliputianus*, **sp. nov.**, *T. maasai*, **sp. nov.**, *T. manconiae*, **sp. nov.**, *T. pectinipes*, **sp. nov.**, *T. thalycrifformis*, **sp. nov.**) and one new *Xenostromylogethes* (*X. cychramoides*, **sp. nov.**) are described, illustrated and compared with related taxa. *Tarchonanthogethes hirtus* Kirejtshuk & Easton, 1988 is synonymized with *T. martini* (**syn. nov.**). *Meligethes assutus* Easton, 1960 from Kenya is transferred from *Afrogethes* Audisio & Cline to *Tarchonanthogethes* (**comb. nov.**). *Meligethes singularis* Grouvelle, 1919 from southern Africa is transferred from *Tarchonanthogethes* to *Meligethinus* Grouvelle, 1906 (**comb. nov.**). Larval host-plants for *Tarchonanthogethes* and *Xenostromylogethes* include dioecious bushes and trees of Tarchonantheae Asteraceae (genera *Brachylaena* R.Br. and *Tarchonanthus* L.). All species currently attributed to the genera *Anthystrix* Kirejtshuk, *Sebastiangethes* Audisio, Kirk-Spriggs & Cline, *Tarchonanthogethes* and *Xenostromylogethes* (*Anthystrix* genus-complex) are included in a morphology-based cladistic analysis to provide a rigorous hypothesis of phylogenetic relationships. An identification key to all 25 known species in the *Anthystrix* genus-complex, including all available data on insect host plant relationships, is presented.

Key words: Pollen beetles, new species, distribution, key to identification, Asteraceae, Africa

Introduction

Meligethinae, commonly known as ‘pollen beetles’, develop in flower buds of both monocot and dicot plants. Some species are of economic importance as feeders and pollinators of widely cultivated crops including mustard-oil plants (Brassicaceae), grass-clover and lucerne (Fabaceae), oil palms (Arecaceae), and bulrush millet (Poaceae) (Hatch 1957; Jourdhueil 1962; Kelm 1976; Kirk-Spriggs 1985, 1996; Jelínek 1992; Audisio 1993; Howard *et al.* 2001; Hansen 2003). However, other species are known pests of ornamental plants such as roses and blackberries (Rosaceae) (Ormerod 1874; Hayashi 1978; Audisio 1993).

Recently the generic classification of Meligethinae has been discussed and largely revised from results obtained by both morphological and molecular data analyses (Strika 2004; Mancini *et al.* 2008; Audisio *et al.* 2009a, b, 2011a, b, 2014; Lamanna 2009; Trizzino *et al.* 2009). In this context, Audisio *et al.* (2008, 2009b) proposed the ‘*Anthystrix* genus complex’ to include *Anthystrix* Kirejtshuk, 1981, and three closely related southern African genera, namely: *Sebastiangethes* Audisio, Kirk-Spriggs & Cline, 2008, *Tarchonanthogethes* Audisio and Cline, 2009, and *Xenostromylogethes* Audisio & Cline, 2009. A recent contribution (Kirejtshuk & Kirejtshuk 2012), mainly based on subjective and unsupported argumentation, suggested that the three latter genera should be included in a single, more comprehensive, and highly heterogeneous genus *Anthystrix*. However, the actual status of this generic complex and its close relationship with the Afrotropical *Chromogethes* Kirejtshuk, 1989 received strong support from molecular data based on mitochondrial and nuclear genes (Trizzino *et al.* 2009; Audisio *et al.* 2014). A comparative analysis of ITS2 sequences and secondary structures in Meligethinae highlighted a distinctive elongation (due to simple-sequence repeats) of the apical portion of ITS2 domain ‘D1’ in members of the ‘*Anthystrix* genus complex’ and *Chromogethes*, as well as the exclusive presence of a ‘signature sequence’ at the 3’ portion of the D1 insertion (‘GAUUCAC’), which was absent in all other Meligethinae (Lamanna 2009; Trizzino *et al.* 2009). Even the partial data from larval morphology of Meligethinae suggest a similar phylogenetic pattern. In fact, all examined members of the ‘*Anthystrix* genus complex’ and *Chromogethes* share mouthpart synapomorphies of 3rd instar larvae (e.g., shape of the inner mandibular edge: Reibaldi 2013; Audisio *et al.* unpublished data).

Tarchonanthogethes and *Xenostromylogethes* were originally erected to accommodate five and one species, respectively, from southern Africa, which were originally ascribed to *Anthystrix*, *Meligethinus* Grouvelle, 1906, *Pria* Stephens, 1830, and *Meligethes* Stephens, 1830. *Anthystrix* currently includes six southern African species, all associated with Asteraceae trees (Grouvelle 1899; Kirejtshuk 1981; Kirejtshuk & Easton 1988; Audisio *et al.* 2009a); *Meligethinus* includes numerous Palearctic and Palearctic species (Cooper 1980; Jelínek 1992; Audisio *et al.* 2009b; Kirejtshuk 2011), true examples of which are strictly associated with male inflorescences of palms (Arecaceae) in larval stages (Jelínek 1992; Audisio 1993; Audisio *et al.* 2009b); *Pria* includes approximately 100 described and undescribed species, mostly distributed in Palearctic areas and associated with flowers of several

different and unrelated plant families (e.g., Solanaceae, Mesembryanthemaceae, Ericaceae; Cooper 1982; Audisio 1993, and unpublished data); *Meligethes* is currently limited to members of the Palearctic *Meligethes atratus* and *M. denticulatus* species groups (revision in preparation by Audisio and Jelínek), which are strictly associated with Rosaceae flowers (Audisio *et al.* 2009b).

Species of the ‘*Anthystrix* genus-complex’ are poorly represented in museum collections, probably due to their association with bushes and trees, and not herbaceous vegetation as in most other Meligethinae. In fact, all included species possess larvae that are restricted to bushes and trees of the asteraceous tribe Tarchonantheae (Audisio *et al.* 2009a, 2009b; Audisio *et al.* 2014). These host trees exhibit a short floral phenology (*ca.* 3–5 weeks or less), mostly during Austral late summer/autumn/winter (February to August), which is atypical for host-plants of southern African Meligethinae in general.

This paper revises the species of *Tarchonanthogethes* and *Xenostromylogethes*, and provides the first-ever phylogenetic assessment of their constituent members, providing a rigorous cladistic analysis of genus-level classification for the group, answering the erroneous non-quantitative phyletic argumentation by Kirejtshuk & Kirejtshuk (2012). Host-plant associations of the ‘*Anthystrix* genus-complex’ are also presented in a phylogenetic context, and a brief discussion of the evolution of these beetles on asteraceous plants is given.

Material and methods

Examined material. Studied beetles include ~1200 specimens within 25 species representing four genera of the *Anthystrix* genus-complex. Multiple exemplars from selected outgroup taxa were also studied for comparative and phylogenetic analyses.

Abbreviations. Following is a listing of the South African institutions that loaned undetermined specimens for the project, and which now serve as depositories for type material of the newly described species herein: Transvaal Museum, Pretoria (TMSA); National Collection of Insects, ARC-Plant Protection Institute, Pretoria (SANC); Iziko South African Museum, Cape Town (SAMC); National Museum, Bloemfontein (NMBS). Additional material and type specimens of previously described species for ingroup and outgroup taxa were made available by various European museums, which also serve, in part, as depositories for type material of newly described species: Natural History Museum, London (BMNH); Muséum National d'Histoire Naturelle, Paris (MHNP); National Museum, Department of Entomology, Prague (NMP); Zoological Institute of the Russian Academy of Sciences, St. Petersburg (ZMSP); Zoologische Staatssammlung, Munich (ZSSM); Museo Civico di Zoologia, Rome (MZR). Finally, important additional material and bionomical records were obtained during intensive field work carried out in southern Africa between 1980–2012 by our late colleague Karl Spornraft, Penzberg (CSP, now in ZSSM), by the authors, and by other Italian entomologists. Material from these efforts is mostly preserved in the senior author's collection, Zoological Museum of the Sapienza University, Rome (CAR), in BMNH, in the Albany Museum, Grahamstown (AMG), in SAMC, and in TMSA.

Measurements and morphological terminology. Measurements of the pronotum and elytra were taken using a digital camera mounted on a MZ8 WILD stereomicroscope (40–80x), in conjunction with the image processing software package WINVISION (Delta Sistemi, Rome). Drawings were made with a drawing tube mounted on the same stereomicroscope. Measurements of tarsal, antennal, and genitalic characters were all made using the same device/software and from accurate drawings made with a drawing tube, both mounted on a BX50 OLYMPUS upright microscope (200–1000x).

Scanning electron micrographs were produced mostly in the Museo Nazionale d'Arte Orientale, Servizio di Bioarcheologia e Microscopia, Rome, using a Leo® model 435-VP SEM under ultrahigh vacuum or variable pressure (150–2000x); for high pressure conditions, adult specimens were mounted and coated with gold-palladium alloy, whereas for variable pressure conditions specimens were mounted without alloy coating. Most recent SEM observations were performed in the PI's institution (Sapienza Rome University) using a Hitachi® model 3000 ESEM under variable pressure conditions (150–5000x).

Specimens of most species recently observed and collected in the field were also preserved in tubes containing pure acetone for molecular analysis (Fukatsu 1999) or 100% ethanol for parallel molecular studies on the group (Trizzino *et al.* 2009; Audisio *et al.* 2014).

Morphological terminology follows Jelínek (1975, 2000a, 2000b), Audisio (1993), Audisio *et al.* (2009b),

Jelínek *et al.* (2010), and Kirejtshuk (2011). Total length of specimens is here defined as the distance between anterior margin of clypeus and posterior apex of pygidium. Maximum width is defined as the maximum (combined) width of elytra. Elytral length is considered the distance between posterior apex of scutellar shield and elytral distal apex. The ratio ACL/FAL is the ratio between the length of the antennal club and the length of the first antennomere.

Phylogenetic analysis. All species of *Tarchonanthogethes*, *Anthystrix*, *Sebastiangethes* and *Xenostromylogethes* (= *Anthystrix*-complex of genera, see Audisio *et al.* 2009b), as well as a selection of related described and undescribed Meligethinae taxa from African and Oriental regions, were included in a cladistic analysis. The southern African *Pria cinerascens* Erichson, 1843 was chosen to root the cladogram. The following taxa related to the *Anthystrix* generic complex were included in the analysis: **1)** *Meligethinus dolosus* Grouvelle, 1919 (from South Africa), as representative of a genus to which several previously described members of the *Anthystrix*-complex of genera were originally designated; **2)** *Chromogethes splendidulus* (Reitter, 1873) (from South Africa), as representative of an Afrotropical genus sharing the same family of host-plants (Asteraceae) as the *Anthystrix*-complex of genera (Audisio & De Biase 2004), and whose phylogenetic affinities with the *Anthystrix*-complex of genera were previously shown using molecular and morphological datasets (Lamanna 2009; Trizzino *et al.* 2009; Audisio *et al.* 2009b; Audisio *et al.* 2014); **3)** *Tarchonanthopria freidbergi* Audisio & Cline, 2014, a new taxon recently discovered in SW Kenya (Audisio *et al.* 2014), as representative of the only other known Meligethinae associated at larval stages with Asteraceae Tarchonantheae; **4)** *Cyclogethes aldridgei* Kirejtshuk, 1980 (from N India and Nepal), as representative of a small Oriental genus (from NE Indian subcontinent, Indochina, and SW China) with an unknown larval biology, but sharing several, likely derived, character states with members of the ‘*Anthystrix* genus complex’ (Kirejtshuk 1979, 1980; Jelínek 2000b; Audisio *et al.* 2009b).

A matrix of 41 morphological characters and character states (Appendix 1) from members of the *Anthystrix* genus-complex was produced and analyzed in TNT version 1.1 (Goloboff *et al.* 2003, 2008). Multistate characters were treated as unordered, and zero-length branches were collapsed. Parsimony analysis was run via ‘traditional search’ holding 1,000,000 trees in memory, setting 1,000 replicates with tree-bisection-reconnection (TBR) branch swapping and saving 1,000 trees per replicate. The analysis was conducted with equal weighting. Bremer support values were calculated in TNT from 50,000 trees up to 10 steps longer than the shortest as obtained from a ‘traditional search’, using the ‘trees from RAM’ setting. Character optimization and cladogram graphics were produced in Winclada version 1.00.08 (Nixon 1999).

Results

Taxonomy. The four genera of the *Anthystrix* genus-complex are all characterized by the following list of shared characters. A series of diagnostic characters allow distinction of each genus among the *Anthystrix* genus-complex, as noted in Table 1.

- pubescence golden to silvery-whitish, usually long and developed, setae of peculiarly large diameter and length (each pronotal and elytral discal seta as long as first antennomere, and exhibiting a diameter *ca.* 0.30 times the diameter of an ommatidium; Fig. 94) and partially or almost completely obscuring the orange-brown (rarely dark brown) dorsal body surface (Figs 1–2, 4–6); only four species [*Tarchonanthogethes assutus* (Easton, 1960), *T. bisignatus* **sp. nov.**, *T. fasciatus* **sp. nov.**, and *T. pectinipes* **sp. nov.**] possess relatively finer and shorter dorsal pubescence (each pronotal and elytral discal seta *ca.* 0.7 times as long as first antennomere, and exhibiting a diameter *ca.* 0.25 times the diameter of an ommatidium; Fig. 3);
- arched impressions on last visible abdominal ventrite distinct, large, and deeply impressed (Fig. 27g in Audisio *et al.* 2009b);
- tarsal claws simple (never toothed at base);
- pronotum always bearing a series of flat and moderately long microsetae, ‘hydroid’ and multifid distad, evenly distributed along entire pronotal posterior edge (Fig. 94);
- body surface never green or bluish-violet;
- most species with legs and antennae yellowish;
- elytral surface never with evidence of longitudinal and irregular rugosity;

- body length between 1.4 and 2.8 mm;
- larval development strictly associated with male inflorescences (capitula) of Asteraceae plants within the isolated tribe Tarchonantheae (genera *Tarchonanthus* L. and *Brachylaena* R.Br.).

***Tarchonanthogethes* Audisio & Cline, 2009**

Type species. *Pria martini* Grouvelle, 1899 (original designation by Audisio & Cline 2009, in Audisio *et al.* 2009b).

Diagnosis. Members of this group share the diagnostic combination of characters listed above in Table 1 (see also Audisio *et al.* 2009b). This group includes 16 southern and eastern African species, 11 of which are described herein as new.

1. *Tarchonanthogethes rotundiclava* (Kirejtshuk & Easton, 1988)

(Figs 1, 33–35, 42, 60, 73, 86, 97)

Anthystrix rotundiclava Kirejtshuk & Easton, 1988: 42, 46

Tarchonanthogethes rotundiclava: Audisio *et al.*, 2009: 442

Type material. ♂ Holotype from **SOUTH AFRICA: Eastern Cape:** Port St. John [*ca.* 31°36'S, 29°32'E, 20 m a.s.l.], R.E.Turner leg., deposited in BMNH (Kirejtshuk & Easton 1988) [examined].

Other examined material. **SOUTH AFRICA: Eastern Cape:** East London (*ca.* 33°00' S, 27°54'E, 30 m a.s.l.), x.1912, lighthfoot, 3 ♂ (SANC, CAR); Alexandria, 33°39'S, 26°24'E, 10/200 m a.s.l., 13.x.1984, by sweeping, R. Müller leg., 1 male (TMSA); ibidem, 14.x.1984, by sweeping, W. Wittmer leg., 1 ♂ (MHNG); Port Elizabeth area, Colchester, inner sandy area (*ca.* 33°41'S, 25°52'E), 50 m a.s.l., 3.xi.1993, on inflorescences of alien *Carduus* sp. (Asteraceae), P. Audisio leg., 5 ♂, 8 ♀ (CAR, TMSA, NMP); **KwaZulu-Natal:** Umtentweni (*ca.* 30°43'S, 30°28'E, 20 m a.s.l.), vii.1951, 1 ♂ paratype (BMNH) ('Natal, Umtentweni': Kirejtshuk and Easton 1988); 'Kwa-Zulu Natal' (no more detailed data), Dr. Martin leg., 1 ♂ syntype of *Pria martini* Grouvelle, 1899 (MHNP, under '*Pria* sp. ?, non *martini*', S. Endrödy-Younga det., 1966); N Enpangeni, near Kwambonambi, 28°35'58"S, 32°07'09"E, 70 m a.s.l., 7.ix.2009, on male inflorescences of *Brachylaena discolor*, P.Audisio and M.C.Angelici leg., 1 ♂ (CAR); Santa Lucia Estuary, Estuary Beach, 28°22'31"S, 32°25'36"E, 5 m a.s.l., 8.ix.2009, on male inflorescences of *Brachylaena discolor*, P.Audisio and M.C.Angelici leg., 1 ♀ (CAR); **Limpopo:** 12 km SE of Haenerstburg, 1200 m a.s.l., 10/11.ix.2009, 23°58'S, 30°00'E, on male inflorescences of *Brachylaena transvaalensis*, P.Audisio and M.C.Angelici leg., 1 ♂, 1 ♀ (CAR).

Description and diagnosis. Medium-sized (length 2.2–2.8 mm), body yellowish-brown to reddish-brown; pubescence long and dense, golden to silvery-whitish, partially obscuring the almost always reddish-brown (pronotal sides yellowish to orange) dorsal body surface (Fig. 1). Legs, antennae and mouth parts uniformly yellowish to orange in both sexes; antennae with peculiarly long whitish hairs along outer (anterior) edge of each flagellar antennomere (Fig. 1). Setae on lateral margin of pronotum peculiarly short, 0.2–0.4 times as long as those on elytral disc. Elytra with simple and moderately impressed punctation, never transversely strigose. Inner apices of female elytra slightly but distinctly prolonged posteriad in a short, blunt lobe (Fig. 86), males with inner elytral apices arcuately narrowed and subtruncate (Fig. 1).

Antennal furrows on ventral side of head almost straight, slightly uniformly convergent posteriad.

Male antennal club moderately flat, composed of last four antennomeres (Figs 1, 60), 1.5 times as long as wide, with last three antennomeres strongly enlarged. Female antennal club smaller, composed of last three moderately enlarged antennomeres.

Protibiae simple, minutely toothed along lateral margin (Figs 1, 73). Meso- and metatibiae slightly wider and more robust in males than females (Fig. 1).

Prosternal antennal ridges (raised proepisternal-prosternal sutures) long, distinct and raised, nearly reaching anterior edge of procoxal cavities.

Prosternal process relatively short and wide, slightly wider than protibiae (teeth excluded). Male ventral sexual characters expressed as slightly, flatly impressed posterior two-thirds of metaventricle; female metaventricle simple.

TABLE 1. Synoptic table of *Anthystrix*-complex genera characters (diagnostic character states are given in bold).

<i>Anthystrix</i>	<i>Tarchonanthogethes</i>	<i>Xenostromylogethes</i>	<i>Sebastiangethes</i>
anterior margin of clypeus truncate to subtruncate, and exhibiting a vaguely distinct border	anterior margin of clypeus truncate to slightly arcuately emarginate and distinctly bordered (Figs 1–5, 92)	anterior margin of clypeus slightly arcuately emarginate, exhibiting only a vaguely distinct border (Figs 6, 57)	anterior margin of clypeus deeply arcuately emarginate, and distinctly bordered (Fig. 1 in Audisio <i>et al.</i> 2008)
male antennal club compact and exceptionally enlarged (ratio ACL/FAL 2.5–4.5), without allometric development, composed of last five to nine antennomeres (Figs 6–11 in Audisio <i>et al.</i> 2009a)	male antennal club compact and not peculiarly enlarged (<i>Meligethes</i> -like: ratio ACL/FAL 1.3–1.7), without allometric development, composed of last three to four antennomeres (Figs 60–64, 67–69)	male antennal club compact and not peculiarly enlarged (<i>Meligethes</i> -like: ratio ACL/FAL 1.3–1.6), without allometric development, composed of last three to four antennomeres (Figs 65–66)	male antennal club loose and with markedly allometric development (<i>Pria</i>-like: ratio ACL/FAL 1.8–3.2), composed of last four to six antennomeres (Fig. 13 in Audisio <i>et al.</i> 2008)
antennal flagellum without allometric development (<i>Meligethes</i> -like: 5 th antennomere < 2 times as long as wide) (Figs 6–11 in Audisio <i>et al.</i> 2009a)	antennal flagellum without allometric development (<i>Meligethes</i> -like: 5 th antennomere < 2 times as long as wide) (Figs 60–64, 67–69)	antennal flagellum without allometric development (<i>Meligethes</i> -like: 5 th antennomere < 2 times as long as wide) (Figs 65–66)	antennal flagellum with allometric development (<i>Pria</i>-like: 5th antennomere <i>ca.</i> 3 times as long as wide) (Fig. 13 in Audisio <i>et al.</i> 2008)
protibiae less than 3.0 times as long as wide (teeth excluded), minutely denticulate, with small and more or less pointed teeth on distal half or two-thirds of their outer edges, and almost straight to distinctly convex inner edge (Figs 31–32 in Audisio <i>et al.</i> 2009a)	protibiae 2.8–4.0 times as long as wide (teeth excluded), dentate with variably developed, and more or less pointed teeth on outer edges, and almost straight or slightly convex inner edge (Figs 71–72, 73–78)	protibiae little less than 3.5 times as long as wide (teeth excluded), only with very small teeth on most of their outer edges, and more distinctly convex inner edge (Fig. 29b in Audisio <i>et al.</i> 2009b)	protibiae more than 3.5 times as long as wide (teeth excluded), with a rather even series of small teeth on most of their outer edges, and almost straight inner edge (Fig. 1 in Audisio <i>et al.</i> 2008)
prosternal process subparallel-sided and wider distad, its maximum width at most as wide as maximum width of first antennomere, at sides with moderately distinct and shallow marginal furrows (Fig. 35 in Audisio <i>et al.</i> 2009a); distal apex obtusely rounded (Fig. 35 in Audisio <i>et al.</i> 2009a)	prosternal process subparallel-sided and wide, its maximum width slightly wider than maximum width of first antennomere, at sides with quite distinct and deep marginal furrows (Fig. 90); distal apex widely rounded to subtruncate (Fig. 90)	prosternal process subparallel-sided and narrow, its maximum width narrower than maximum width of first antennomere (Fig. 29d in Audisio <i>et al.</i> 2009b), with barely distinct and shallow marginal furrows; distal apex narrowly and bluntly rounded (Fig. 29d in Audisio <i>et al.</i> 2009b)	prosternal process rather parallel-sided and peculiarly narrow, its maximum width distinctly narrower than maximum width of first antennomere (Fig. 16 in Audisio <i>et al.</i> 2008), without distinct marginal furrows; apex bluntly pointed (Fig. 29d in Audisio <i>et al.</i> 2009b)

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TABLE 1. (Continued)

<i>Anthystrix</i>	<i>Tarchonanthogethes</i>	<i>Xenostrongylogethes</i>	<i>Sebastiangethes</i>
proepisternal-prosternal sutures along anterior edge of prosternum raised to form an antennal ridge (<i>ca.</i> as elevated as diameter of antennomere 2), able to receive flagellar antennal portions when beetles immobile (Fig. 35 in Audisio <i>et al.</i> 2009a); ridges are extended proximad for a length of <i>ca.</i> 2/3 of the distance between the anterior edge of prosternum and procoxae	proepisternal-prosternal sutures along anterior edge of prosternum raised to form an antennal ridge (<i>ca.</i> as elevated as diameter of antennomere 2), able to receive flagellar antennal portions when beetles immobile (Fig. 88); their extension proximad towards procoxae is variable in length among different species	proepisternal-prosternal sutures along anterior edge of prosternum visible but partially obliterated, and not distinctly raised (as in Fig. 91)	proepisternal-prosternal sutures along anterior edge of prosternum almost obliterated, and not raised
distal edge of male tegmen exhibiting a deep, widely U-shaped emargination (Figs 14–24 in Audisio <i>et al.</i> 2009a), with large triangular processes along inner side of paramera	distal edge of male tegmen exhibiting a more or less deep, widely or narrowly U-shaped emargination (Figs 7–36), lacking any triangular processes along inner side of paramera	distal edge of male tegmen exhibiting a shallow, widely arcuate emargination (Figs 52, 55), lacking any triangular processes along inner side of paramera	distal edge of male tegmen exhibiting a shallow, widely U-shaped emargination (Fig. 3 in Audisio <i>et al.</i> 2008), lacking any triangular processes along inner side of paramera
deep median longitudinal de-sclerotization from proximal portion of tegmen (extending distad close to the bottom of the distal excision of tegmen) peculiarly long and narrow (Figs 14–24 in Audisio <i>et al.</i> 2009a)	deep median longitudinal de-sclerotization from proximal portion of tegmen (extending distad close to the bottom of the distal excision of tegmen) absent (Figs 7–36)	deep median longitudinal de-sclerotization from proximal portion of tegmen (extending distad close to the bottom of the distal excision of tegmen) absent (Figs 52, 55)	deep median longitudinal de-sclerotization from proximal portion of tegmen (extending distad close to the bottom of the distal excision of tegmen) absent (Fig. 3 in Audisio <i>et al.</i> 2008)
distal edge of the median lobe of aedeagus (dorsal view) exhibiting a distinct lance-like or upside-down cup-shaped projection (Figs 15–25 in Audisio <i>et al.</i> 2009a) presence of deep pockets on both sides of the proximal portion of median lobe of aedeagus (median lobe “violin-shaped”; Figs 15–25 in Audisio <i>et al.</i> 2009a)	distal edge of the median lobe of aedeagus (dorsal view) never exhibiting a distinct lance-like or upside-down cup-shaped projection (Figs 8–37) without any lateral pockets on both sides of the proximal portion of median lobe of aedeagus (median lobe not “violin-shaped”; Figs 8–37)	distal edge of the median lobe of aedeagus (dorsal view) never exhibiting a distinct lance-like or upside-down cup-shaped projection (Figs 53, 56) without any lateral pockets on both sides of the proximal portion of median lobe of aedeagus (median lobe not “violin-shaped”; Figs 53, 56)	distal edge of the median lobe of aedeagus (dorsal view) widely truncate-emarginate (Fig. 4 in Audisio <i>et al.</i> 2008) without any lateral pockets on both sides of the proximal portion of median lobe of aedeagus (median lobe not “violin-shaped”; Fig. 4 in Audisio <i>et al.</i> 2008)

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TABLE 1. (Continued)

<i>Anthystrix</i>	<i>Tarchonanthogethes</i>	<i>Xenostromylogethes</i>	<i>Sebastiangethes</i>
rods of internal sac of aedeagus small (< 0.3 times as long as aedeagus), linear, barely sclerotized (Fig. 33 in Audisio <i>et al.</i> 2009a)	rods of internal sac of aedeagus large (> 0.3 times as long as aedeagus), forceps-shaped, and well sclerotized (Fig. 35)	rods of internal sac of aedeagus large (> 0.3 times as long as aedeagus), forceps-shaped, and well sclerotized (Fig. 54)	rods of internal sac of aedeagus large (> 0.3 times as long as aedeagus), forceps-shaped, and well sclerotized (Fig. 5 in Audisio <i>et al.</i> 2008)
basicoxites of female ovipositor not indentate (Figs 26–30 in Audisio <i>et al.</i> 2009a)	basicoxites of female ovipositor not indentate (Figs 38–51)	basicoxites of female ovipositor not indentate (Figs 58–59)	basicoxites of female ovipositor distinctly indentate (Fig. 11 in Audisio <i>et al.</i> 2008)
arcuate outer subdivisions of gonocoxites (female ovipositor) simple (Figs 26–30 in Audisio <i>et al.</i> 2009a)	arcuate outer subdivisions of gonocoxites (female ovipositor) double (Figs 38–41, 43) or simple (Figs 42, 44–51)	arcuate outer subdivisions of gonocoxites (female ovipositor) simple (Figs 58–59)	arcuate outer subdivisions of gonocoxites (female ovipositor) simple (Fig. 11 in Audisio <i>et al.</i> 2008)
periocular dorsal furrows on head distinct, deep, and complete (as in Fig. 92)	periocular dorsal furrows on head distinct, deep, and complete (Fig. 92)	periocular dorsal furrows on head barely distinct, and obliterated distad	periocular dorsal furrows on head completely obliterated
no transverse tuft of short dark setae on first two abdominal ventrites in males	no transverse tuft of short dark setae on first two abdominal ventrites in males	markedly distinct transverse tuft of short dark setae on first two abdominal ventrites in males (Fig. 95)	no transverse tuft of short dark setae on first two abdominal ventrites in males
antennal furrows on ventral side of head convergent anteriorly and (<i>ca.</i> in the last fourth only) posteriorly	antennal furrows on ventral side of head almost parallel-sided (Fig. 88), or straight and only slightly and uniformly convergent posteriorly	antennal furrows on ventral side of head convergent anteriorly and (<i>ca.</i> in the last fourth only) posteriorly	antennal furrows on ventral side of head convergent anteriorly and (<i>ca.</i> in the last fourth only) posteriorly

Male genitalia (Figs 33–35) peculiarly large (ratio aedeagal length/total body length = 0.18–0.20) and wide, tegmen possessing widely V-shaped and deeply cleft apex, median lobe robust and evenly curved at apex, main sclerites of internal sac (flagellum) with lateral sclerites distinctly curved outward at middle, and central sclerite somewhat tear-drop shaped. Ovipositor (Fig. 42), moderately large, with gonocoxal outer subdivision singular, narrow, and moderately pigmented.

Variation. This species exhibits little variability in external morphology (length 2.2–2.8 mm), except for the above described sexually dimorphic characters. No allometric development is expressed in the male antennae. Some specimens exhibit vaguely defined, elongate discal darker spots (brown to dark brown) on elytra.

Comparative notes. This species was retrieved in the phylogenetic analysis (Fig. 101) in an unresolved basal polytomy in association with *T. hystrix*, *T. hermani*, and *T. flavus*, but can be easily distinguished from all other *Tarchonanthogethes* species by the following unique autapomorphies: male antennal club with four antennomeres, female elytral apices bluntly prolonged, antennal pubescence peculiarly long (e.g., longest setae on fifth antennomere nearly as long as first antennomere), and antennal furrows on ventral side of the head almost straight and slightly but regularly converging posteriad. There are some external affinities of *T. rotundiclava* with *T. martini* (Grouvelle) (e.g., body size, shape, and color, length of dorsal and ventral pubescence), despite not sharing the apomorphic shape of the female ovipositors, i.e. a double outer subdivision on each side of the gonocoxites (Figs 38–41, 43). *T. rotundiclava* is rather easily distinguishable chiefly by the different shape of the male antennal club (in *T. rotundiclava* markedly larger than in *T. martini*, and composed by the last four antennomeres: Fig. 60; in *T. martini* composed by the last three antennomeres: Fig. 61), by the different shape of female elytral apices (distinctly lobed in *T. rotundiclava*: Fig. 86; arcuately truncate in *T. martini*: Fig. 80), by the different shape of the antennal furrows on ventral side of the head (nearly straight and slightly and uniformly convergent posteriad in *T. rotundiclava*; subparallel in middle portion, and more abruptly convergent in posterior fourth in *T. martini*: Fig. 88), and by the markedly different shape of male and female genitalia (see Figs 33–35, 42 vs. 7–10, 38).

Biological notes. Biology of this species remains somewhat incompletely known. A small series of specimens, mostly represented by females, was collected in early September, 2009 (P. Audisio and M.C. Angelici, unpublished data) on flowering male bushes of the dioecious *Brachylaena discolor* DC. (Asteraceae) north of Enpangeni (South Africa, KwaZulu-Natal). At a second locality in the neighborhoods of Colchester (South Africa, Eastern Cape) in early November, 1993, several *T. rotundiclava* were found on inflorescences of an introduced *Carduus* sp. (Asteraceae) surrounded by several trees (just in fruit) of *Brachylaena discolor* (P. Audisio, unpublished data). *Tarchonanthogethes rotundiclava* is likely a typical inhabitant of sandy areas (coastal thicket vegetation on sand dunes near the sea, or on ‘fossil’ sub-coastal dunes in the interior), between 0 and 200 m a.s.l., where it is apparently associated with the same host-plants as *Tarchonanthogethes martini* (Grouvelle, 1899). A few additional specimens were also collected in a locality in southern Limpopo, on flowering male bushes of the closely related *Brachylaena transvaalensis* E.Phillips and Schweick. (Forest Silver Oak), at the edge of rocky forested habitats at intermediate altitudes (ca. 1200 m a.s.l.). The known activity period for *T. rotundiclava* is between late May and early November, with a peak period around September. Members of this species were collected on host-plants in conjunction with *Tarchonanthogethes martini* and *T. flavus* (*Brachylaena discolor*), and *T. martini*, *T. flavus*, and *T. lilliputianus* **sp. nov.** (*Brachylaena transvaalensis*).

Geographic distribution. This species is apparently confined to Eastern Cape Province, KwaZulu-Natal, and southern Limpopo in South Africa (Fig. 97), from the Port Elizabeth area eastwards and northwards to the Santa Lucia and Tzaneen areas northwards, in coastal and subcoastal areas. This species may also occur in southern Mozambique.

2. *Tarchonanthogethes martini* (Grouvelle, 1899)

(Figs 7–10, 38, 61, 74, 80, 83, 88–90, 92, 94, 96)

Pria martini Grouvelle, 1899: 147, 148

Anthystrix martini: Kirejtshuk & Easton, 1988: 46 (*partim*)

Meligethinus hirtus Kirejtshuk & Easton, 1988: 47, **syn.nov.**

Meligethinus uhligi Kirejtshuk & Easton, 1988: 48

Tarchonanthogethes hirtus: Audisio *et al.*, 2009b: 442

Tarchonanthogethes martini: Audisio *et al.*, 2009: 442

Type material. ♂ Lectotype of *Pria martini* Grouvelle, 1899 from **SOUTH AFRICA: KwaZulu-Natal** ('Natal, Dr. Martin leg. '; originally designated *in collectione* by Endrödy-Younga, 1966, designation later published by Kirejtshuk & Easton 1988), deposited in MHNP (Grouvelle 1899; Kirejtshuk & Easton 1988) [examined]; ♂ holotype of *Meligethinus uhligi* Kirejtshuk & Easton 1988, from South Africa, KwaZulu-Natal, Umtentweni (ca. 30°43'S, 30°28'E, 20 m a.s.l.), vii.1951, A.L. Capener leg., deposited in BMNH (Kirejtshuk & Easton, 1988, under 'Umtentweni': *sic* !) [examined]; ♂ holotype of *Meligethinus hirtus* Kirejtshuk & Easton, 1988, from South Africa, KwaZulu-Natal, Umtentweni, vii.1951, A.L. Capener leg., deposited in BMNH (Kirejtshuk & Easton 1988, under 'Umtentweni': *sic* !) [examined].

Other examined material. **SOUTH AFRICA: KwaZulu-Natal:** Umtentweni (ca. 30°43'S, 30°28'E, 20 m a.s.l.), vii.1951, 1 ♂ and 1 ♀ paratypes of *Meligethinus uhligi* Kirejtshuk & Easton, 1988 (BMNH) ('Natal, Umtentweni' (*sic*): Kirejtshuk & Easton 1988); *ibidem*, xii.1950, A. L. Capener leg., 2 ♂ (BMNH); same locality, xii.1950, A. L. Capener leg., 1 ♂ (BMNH); Umtentweni, vii.1951, 1 ♂ paratype of *Meligethinus hirtus* Kirejtshuk & Easton 1988 (BMNH) ('Natal, Umtentweni' (*sic* !): Kirejtshuk & Easton 1988); Scottburgh (ca. 30°17'S, 30°45'E, 20 m a.s.l.), 14.x.1951, 1 ♀ paratype of *Meligethinus hirtus* Kirejtshuk & Easton 1988 (BMNH) ('Natal, Scottburgh': Kirejtshuk & Easton 1988); Estcourt (ca. 29°00'S, 29°53'E, 1150 m a.s.l.), 11.v.1892, G.A.K. Marshall leg., 1 m paratype of *Meligethinus uhligi* Kirejtshuk & Easton, 1988 (BMNH; Kirejtshuk & Easton 1988); Santa Lucia Estuary, Estuary Beach, 28°22'31"S, 32°25'36"E, 5 m a.s.l., 8.ix.2009, on male inflorescences of *Brachylaena discolor*, P.Audisio and M.C.Angelici leg., 4 ♂, 30 ♀ (CAR, SANC, TMSA); 47 km N Enpangeni, near Kwa Msane, 28°28'24"S, 32°08'44"E, 83 m a.s.l., 7.ix.2009, on male inflorescences of *Brachylaena discolor*, P.Audisio and M.C.Angelici leg., 1 ♂, 2 ♀ (CAR); Richards Bay, 28°46'35"S, 32°04'36"E, 15 m a.s.l., 7.ix.2009, on male inflorescences of *Brachylaena discolor*, P.Audisio and M.C.Angelici leg., 5 ♂, 18 ♀ (CAR, SANC, TMSA); Durban Area, Mgeni (ca. 29°49'S, 31°05'E, 20 m a.s.l.), vii.1897, G.A.K. Marshall leg., 1 ♂ paratype of *Meligethinus uhligi* Kirejtshuk & Easton 1988 (BMNH; 'Natal, Umgeni': Kirejtshuk & Easton, 1988); **Limpopo:** Tzaneen (ca. 23°51'S, 30°07'E, 800 m a.s.l.), 15.vii.1965, P. Paliatseas leg., 2 ♂, 4 ♀ (SANC, CAR); 12 km SE of Haenerstburg, 23°58'S, 30°00'E, 1200 m, 10/11.ix.2009, on *Brachylaena transvaalensis* E.Phillips and Schweick. (Asteraceae), P.Audisio and M.C.Angelici leg., 9 ♂, 12 ♀ (CAR, TMSA, NMP); Orrie Baragwanath Pass, 24°08'57"S, 30°12'39"E, 1000-1250 m, 9.ix.2009, on *Brachylaena transvaalensis* E.Phillips and Schweick., P.Audisio and M.C.Angelici leg., 3 ♂, 12 ♀ (CAR, TMSA, NMP); **Mpumalanga:** Grootkloof, Uitsoek indigenous forest, 25°15'S, 30°33'E, ca. 1800 m a.s.l., 28.ix.1986, S. Endrödy-Younga leg., 1 ♀ (TMSA); Graskop, indigenous forest (ca. 24°57'S, 30°51'E, ca. 1400 m a.s.l., viii.1960, N. Leleup leg., 1 ♂ (CAR); Berlin Falls, gorge edge, 24°50'S, 30°46'E, ca. 1400 m a.s.l., 8. xii.1986, S. Endrödy-Younga leg., 1 ♀ (TMSA); **Eastern Cape:** Port Elizabeth area, Colchester, inner sandy area (ca. 33°41'S, 25°52'E), 50 m a.s.l., 3.xi.1993, on inflorescences of alien *Carduus* sp. (Asteraceae), P. Audisio leg., 4 ♂, 10 ♀ (CAR, TMSA, NMP).

Description and diagnosis. Medium-sized (length 1.9–2.8 mm), yellowish-brown to reddish brown or dark brown, with paler pronotal sides; pubescence long and dense, golden to silvery-whitish, partly obscuring the almost always reddish-brown dorsal surface of the body; ventral side reddish to dark brown except proepimera. Legs, antennae, and mouth parts uniformly yellowish to pale brown in both sexes. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra never transversely strigose, with simple and moderately impressed punctuation.

Antennal furrows on ventral surface of head distinct and nearly parallel-sided, slightly convergent in posterior fourth (Fig. 88).

Antennal club in both sexes composed of the last three, only moderately enlarged, antennomeres (Fig. 61).

Protibiae minutely toothed, with three or four slightly more developed and sharp teeth distad (Fig. 74).

Elytral apices arcuately narrowed in both sexes, without lobes (Figs 80, 83).

Prosternal process relatively narrow, nearly as wide as protibiae (teeth excluded) (Fig. 90). Ventral sexual characters in males indistinct with the posterior two-thirds of the metaventrite simple, not impressed, in both sexes. Posterior edge of last abdominal ventrite simple in both sexes.

Male genitalia with tegmen deeply, sharply incised at middle of apex, incision extending one-third length of tegmen; median lobe broadly to narrowly rounded at apex with small apical indentation (Figs 7–10). Ovipositor large and robust, with a double and peculiarly shaped outer pre-distal spicule on each side, larger and usually more pigmented in large specimens, smaller and more diaphanous in small ones, gonocoxites ~1.9 times longer than wide (Fig. 38).

Variation. This species shows marked variability in external morphology, chiefly in body size (length 1.9–2.8 mm) and coloration, as well as size and pigmentation of ovipositor, and clearly to barely distinct projection on distal portion of the inner side of paramera.

Comparative notes. This species is closely related to *Tarchonanthogethes autumnalis* **sp. nov.**, which is on average smaller (1.8–2.1 mm), exhibits a slightly shallower (with no projections) medial U-shaped excision of the paramera (Fig. 11), and smaller and differently shaped gonocoxites (Fig. 39). Some affinities to *T. lilliputianus* **sp. nov.**, and to a lesser extent *T. capeneri* (Kirejtshuk & Easton 1988), are also apparent due to a shared peculiar ovipositor shape, which exhibits a double outer subdivision on each side of the gonocoxites (Figs 38, 40–41). This species differs from both by a markedly different shape of male genitalia (Figs 7–10, 13–14, 21–22), and by the distinctly longer and sharper teeth on outer edge of protibiae in *T. capeneri* (Fig. 77).

Biological notes. Information on biology of this species is based on a long series of specimens, mostly represented by females, that were collected in early September, 2009 (P. Audisio and M.C. Angelici, unpublished data), on flowering male bushes of the dioecious *Brachylaena discolor* DC. (Asteraceae; locally known as Coast Silver Oak) in the neighborhood of Richards Bay and Santa Lucia (South Africa, KwaZulu-Natal). A few suspected larvae were also collected, despite co-occurrence on the same host-plants of several *T. flavus* Kirejtshuk & Easton, 1988, and *T. rotundiclava*. A pending DNA barcoding analysis of the collected larvae and adults for all species will clarify the true identity of the larvae (see Audisio *et al.* 2011c). Another long series of specimens, mostly represented by females, was also collected at the beginning of September, 2009 (P. Audisio and M.C. Angelici, unpublished data), on flowering male bushes of the dioecious *Brachylaena transvaalensis* E. Phillips and Schweick in the neighborhood of Tzaneen (South Africa, southern Limpopo). This species apparently lives on *Brachylaena discolor* in sandy habitats near the sea (coastal thicket vegetation on sand dunes near the sea, or fossil dunes in the interior), between 0 and 150 m a.s.l., while on *B. transvaalensis* it lives in rocky forested habitats and ravines at intermediate altitudes (between 500 and 1600 m a.s.l.). The species was collected between July and December, with a peak presence on host-plants in September. This species was collected on the same host-plants as other members of the *Anthystrix* genus-complex, chiefly *Tarchonanthogethes rotundiclava*, *T. lilliputianus* **sp. nov.**, and *T. flavus*.

Geographic distribution. This species is apparently widespread in coastal and subcoastal areas from northern KwaZulu-Natal and central-western portions of the Eastern Cape in South Africa, in the neighborhood of Port Elizabeth, and mountain habitats of southern Limpopo, Mpumalanga, as well as most of KwaZulu-Natal (Fig. 96).

Taxonomic notes. As previously discussed by Audisio *et al.* (2009a) in taxonomic notes on *Anthystrix endroedyi* Audisio & Cline, 2009, the male holotype (BMNH) of *Meligethinus uhligi* Kirejtshuk & Easton, 1988, is identical to the male lectotype of *Pria martini* Grouvelle, 1899, and the former taxon is now a junior synonym of *Tarchonanthogethes martini* (see also Audisio *et al.* 2009b).

Meligethinus hirtus Kirejtshuk & Easton, 1988, was described as a distinct species related to *M. uhligi* and from the same type locality. Kirejtshuk & Easton (1988) provided the following characters to distinguish *M. hirtus* from *M. uhligi*: smaller average size (reported 1.4–1.9 mm in *M. hirtus*, compared with 2.2–2.7 mm in *M. uhligi*); smaller and more acute ovipositor apex, with simple and unpigmented outer gonocoxite subdivisions (Fig. 9 in Kirejtshuk & Easton 1988), whereas in *M. uhligi* the ovipositor apex is double and gonocoxite subdivision is more strongly pigmented (Fig. 12 in Kirejtshuk & Easton 1988); male genitalia smaller overall, bearing a distinct projection along distal inner portion of paramera (Fig. 7 in Kirejtshuk & Easton, 1988), which is absent in *M. uhligi* (Fig. 10 in Kirejtshuk & Easton 1988). Audisio *et al.* 2009b transferred *M. hirtus* to the new genus *Tarchonanthogethes*. More abundant recently collected material from South Africa (KwaZulu-Natal and Limpopo; September, 2009), in combination with biological data on host-plants, allowed us to disentangle the extensive morphological variability present in certain populations of *Tarchonanthogethes martini*, involving body size, shape, colour, size and degree of ovipositor sclerotization, and shape of distal inner side of paramera (Figs 7–10, 38). Recent examination of the male holotype and a series of paratypes of *Meligethinus hirtus* (BMNH) enabled confirmation that *M. hirtus* and *M. uhligi* from Umtentweni, despite exhibiting a degree of differentiation, actually are indicative of a single species with high intraspecific (and intrapopulational) variability; *Meligethinus hirtus* is here synonymised with *T. martini*. One female paratype of *M. hirtus* is peculiarly small (1.4 mm length; ovipositor dissected), but it belongs to *T. lilliputianus* **sp. nov.** (this specimen was likely the basis for the *M. hirtus* ovipositor drawing by Kirejtshuk & Easton 1988).

Body size of *T. martini* is correlated with both geographic distribution and host plant. Studied populations

associated with *Brachylaena discolor* from Eastern Cape are represented by less variable, larger-on-average individuals (2.4–2.8 mm); while individuals from coastal areas of northern KwaZulu-Natal, on the same host plants, are more variable, and on average smaller (1.9–2.6 mm). Populations from mountain areas of KwaZulu-Natal and southern Limpopo associated with *Brachylaena transvaalensis* are also represented by smaller-on-average individuals (1.9–2.3 mm).

3. *Tarchonanthogethes autumnalis* Audisio & Cline, sp. nov.

(Figs 11–12, 39, 99)

Type material. ♂ Holotype from **SOUTH AFRICA: Eastern Cape:** road Grahamstown-Alexandria, 350 m a.s.l., roadsides, 33°23'97"S, 26°28'43"E, 3.V.2005, P. Audisio and E. Colonnelli leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae) (AMG). Paratypes: Same data as holotype, 18 ♂, 16 ♀ (CAR; AMG, TMSA, NMP, BMNH, MZR). Amathole Mts., Hogsback, waterfall, 1150 m a.s.l., 5.iv.2006, P. Audisio leg., general sweeping, 1 ♂ (CAR); near Salem, 300 m a.s.l., roadsides, 33°28'27"S, 26°28'43"E, 3.v.2005, P. Audisio and E. Colonnelli leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 1m #, 1 ♀ (CAR).

Description (male holotype). Small (length 1.8 mm), pale reddish-brown, pubescence moderately long and dense, golden to silvery-whitish, partially obscuring reddish-brown (pronotal sides yellowish) dorsal body surface; legs, antennae and mouth parts uniformly yellowish to orange. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as on elytral disc. Elytra not transversely strigose, with simple and strongly impressed punctation. Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third. Antennal club small, composed of last three antennomeres (as in *T. martini*: Fig. 61), 1.2–1.3 times as long as wide.

Protibiae minutely toothed along outer distal portion (similar to *T. lilliputianus* sp. n., Fig. 75).

Ventral sexual characters of male indistinct, with posterior two-thirds of the metaventrete nearly simple, not impressed.

Male genitalia as in Figs 11–12.

Female. Similar to male in most external characters, with posterior two-thirds of metaventrete simple and flat. Ovipositor as in Fig. 39, slightly but distinctly darkened distally, gonocoxites nearly 2.0 times longer than wide.

Variation. This species exhibits scarce variability in external morphology (length 1.6–2.0 mm); with body color yellowish-brown to reddish-brown.

Comparative notes. This species is closely related to *T. martini* (Grouvelle, 1899) and *T. thalycriformis* (Fig. 101), and similar in appearance to *T. lilliputianus* sp. nov., and to a lesser extent *T. capeneri* (Kirejtshuk & Easton, 1988). These species share a peculiar synapomorphic shape of the female ovipositor, exhibiting a double outer subdivision on each side of the gonocoxites (Figs 38–41, 43). *Tarchonanthogethes autumnalis* sp. nov. is not easily distinguishable from the smallest specimens of the hypervariable *T. martini*, except by the different ovipositor shape and the consistently simple (i.e. no inner projection) and slightly shorter paramera of the former, combined with a markedly different phenology and distinct ecology (see below) exhibited by these two partially sympatric and allochronic species. Molecular analyses of both taxa will help discern the actual level of genetic differentiation.

Biological notes. This species appears to be monophagous as larvae on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), which is where copulation occurs. The habitat includes bushy rocky and gravel areas with karroid vegetation at low and intermediate altitudes (100–1200 m). Adults are likely active between March and May (collected in April and May). This species was collected on the same host plant with a few specimens of *Tarchonanthogethes flavus* and *T. thalycriformis* sp. nov., but were much more abundant than the two latter taxa.

Geographic distribution. This species is only known from South Africa, in the central portion of Eastern Cape Province (Fig. 99).

Etymology. The specific epithet is derived from the latin *autumnalis*, meaning autumnal, to emphasize its larval and imaginal phenology in the Eastern Cape during Austral autumn, which is in contrast to the spring phenology of the closely related and partially sympatric *Tarchonanthogethes martini*.

4. *Tarchonanthogethes lilliputianus* Audisio & Cline, sp. nov.

(Figs 13–14, 40, 75, 87, 97)

Type material. ♂ Holotype from **SOUTH AFRICA: Limpopo:** 12 km SE of Haenerstburg, 23°58'S, 30°00'E, 1200 m, 10/11.ix.2009, on *Brachylaena transvaalensis* E.Phillips and Schweick. (Asteraceae), P.Audisio and M.C.Angelici leg. (TMSA). Paratypes: 20 ♂, 33 ♀; same locality and data as holotype, 12 ♂, 18 ♀ (CAR, TMSA, NMP, BMNH); Orrie Baragwanath Pass, 24°08'57"S, 30°12'39"E, 1000–1250 m, 9.ix.2009, on *Brachylaena transvaalensis* E.Phillips and Schweick., P.Audisio and M.C.Angelici leg., 8 ♂, 15 ♀ (CAR, TMSA, NMP).

Other examined material. **SOUTH AFRICA: Eastern Cape:** 9 km SW Grahamstown, 450 m a.s.l., roadsides, 33°21'23"S, 26°29'27"E, 5.iv.2006, P. Audisio and A. Kirk-Spriggs leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 1 ♂ (AMG); **KwaZulu-Natal:** Umtentweni, vii.1951, 1 ♀ paratype of *Meligethinus hirtus* Kirejtshuk & Easton 1988 (BMNH) ('Natal, Umtentweni' (*sic* !): Kirejtshuk & Easton, 1988); **Limpopo:** Tzaneen (*ca.* 23°51'S, 30°07'E, 800 m a.s.l.), vi/vii.1963, Studdert leg., 1 ♂, 1 ♀ (CAR, AMG); **Mpumalanga:** Graskop, indigenous forest *ca.* 24°57'S, 30°51'E, *ca.* 1400 m a.s.l, viii.1960, N. Leleup leg., 1 ♀ (CAR).

Description (male holotype). Small (length 1.5 mm), brown, pubescence long and dense (each seta nearly as long as fourth antennomere), silvery-whitish, partially obscuring dark brown dorsal body surface (pronotal sides markedly paler, yellowish); legs, antennae and mouth parts uniformly yellowish to orange. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra not transversely strigose, with simple strongly impressed punctuation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small, composed of last three antennomeres (similar to *T. martini*, Fig. 61), 1.2–1.3 times as long as wide.

Protibiae relatively narrow, and minutely triangularly toothed distad (Fig. 75).

Ventral sexual characters in male absent, posterior two-thirds of metaventrite appearing simple, not impressed.

Male genitalia as in Figs 13–14.

Female. Similar to male in most external characters, with posterior two-thirds of metaventrite simple and flat. Ovipositor as in Fig. 40, obtusely rounded and not darkened distad, gonocoxites nearly 2.5 times longer than wide.

Variation. This species exhibits little variability in external morphology (length 1.4–1.8 mm); body colour orange-brown to dark brown, usually with markedly contrasting pronotal coloration (paler sides, darker discal portion); pubescence golden to silvery-whitish, usually suberect.

Comparative notes. As evidenced in the cladogram (Fig. 102), this species is likely related to *T. autumnalis* sp. nov. and *T. martini* (Grouvelle, 1899) (in fact, the overall shape of both male and female genitalia are similar), and more distantly to *T. capeneri* (Kirejtshuk & Easton, 1988), but sharing with each of these species the peculiar synapomorphic shape of the female ovipositor, i.e. a double outer subdivision of the gonocoxites (Figs 38–41). This species is easily distinguished from *T. martini* by the small body size, the characteristic paler pronotal sides (markedly contrasting to the frequently dark brown dorsal color), the markedly contrasting long whitish dorsal pubescence, the relatively narrow protibiae with few, minute, triangular teeth, and different shape of male and female genitalia (Figs 13–14, 40).

Biological notes. In Limpopo this species was collected in high numbers (see data above) on male inflorescences of the widespread *Brachylaena transvaalensis*, in forested rocky areas at intermediate altitudes (800–1700 m). A single male specimen was also collected in Eastern Cape near Grahamstown on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), in bushy habitats with karroid vegetation at low altitude (400–500 m); however, its isolated presence on these inflorescences suggests the true local host-plant may be a different *Brachylaena* species, e.g. *Brachylaena discolor* DC., which is closely related to *B. transvaalensis*, but flowers later in the year in the same areas and habitats. In Limpopo, on *Brachylaena transvaalensis*, it was collected in combination with several specimens of *T. martini* and a few *T. rotundiclava*. Adult activity is likely to be between late April and late September.

Geographic distribution. This species is known from South Africa in the central portion of Eastern Cape Province northwards to Limpopo Province (Fig. 97).

Etymology. The specific epithet is derived from the name Lilliput (introduced by J. Swift in his famous novel

Gulliver's Travels, where the island country of Lilliput was inhabited by a race of peculiarly tiny people), to emphasize the small body size. This species is the smallest known representative of the *Anthystrix* genus-complex.

5. *Tarchonanthogethes capeneri* (Kirejtshuk & Easton, 1988)

(Figs 21–22, 41, 69, 77, 81, 97)

Meligethinus capeneri Kirejtshuk & Easton, 1988: 49

Tarchonanthogethes capeneri: Audisio *et al.*, 2009b: 442

Type material. ♂ Holotype from **SOUTH AFRICA: North West Province:** Rustenburg (ca. 25°41'S, 27°12'E, 1250 m a.s.l.), 4-7.xii.1951, A.L. Capener leg., preserved in BMNH (Kirejtshuk & Easton 1988, under 'Transvaal, Rutenburg': *sic* !) [examined].

Other examined material. **SOUTH AFRICA: Gauteng:** Pretoria, 25°46'S, 28°17'E (ca. 1350 m a.s.l.), 20.viii.1988, T. van Viegen leg., 2 ♂ (TMSA, CAR); *ibidem*, 28.xi.1992, W. Wittmer leg., 2 ♂ (MHNG, CAR); 'Afrique Australe', Peringuey leg., 1 ♂ (MHNP); **Mpumalanga:** Middelburg, *Cycas* farm, 25°31'S, 29°16'E (ca. 1350 m a.s.l.), 19.xi.1985, S. Endrödy-Younga leg., 1 ♂, 1 ♀ (TMSA, CAR).

Description and diagnosis. Small (length 1.9–2.2 mm), body narrow and elongate (Fig. 81), yellowish-brown to reddish-brown, pubescence long and dense, golden to silvery-whitish, partially obscuring the consistently reddish-brown dorsal body surface (pronotal sides yellowish to orange, ventral side brown to blackish except paler proepimera); legs, antennae and mouth parts uniformly yellowish to orange-brown in both sexes. Setae on lateral margin of pronotum relatively long, 0.5–0.8 times as long as those on elytral disc. Elytra never transversely strigose, with simple and moderately impressed punctuation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club in both sexes composed of last three, moderately enlarged, antennomeres (Fig. 69).

Protibiae (excluding lateral teeth) peculiarly narrow, strongly and acutely toothed along most of outer edge (Fig. 77).

Ventral sexual characters in males indistinct, metaventrite nearly unmodified in both sexes.

Male genitalia as in Figs 21–22. Ovipositor as in Fig. 41, large, acute at apex, with narrowly and deeply separated distal gonocoxal apices, styli long and narrow, with heavily pigmented double outer subdivision on each side.

Variation. This species shows low variability in external morphology (length 1.9–2.2 mm), except for some variable body coloration.

Comparative notes. This species is related to *T. martini*, *T. autumnalis* **sp. nov.**, and *T. lilliputianus* **sp. nov.** based on the shared synapomorphic shape of the female ovipositor, i.e. a double outer subdivision on each side of the gonocoxites (Figs 38–41), as well as a narrow body shape. This species is easily distinguishable by the elongate and narrow body shape, the strongly and acutely toothed protibiae resembling the shape and size of the Palearctic *Lamiogethes serripes* (Gyllenhal, 1827), the longer setae along the lateral margin of pronotum, and the different shape of male and female genitalia (Figs 21–22, 41).

Biological notes. The biology is thus far unknown, despite some clues obtained from available information on syntopically collected species that suggest it could probably be associated with male capitula of *Brachylaena* sp. at intermediate altitudes (between 1000 and 1500 m a.s.l.). Kirejtshuk & Easton (1988) report that type material was collected on a small tree tentatively identified as *Tapiphyllum parvifolium* (Sond.) Robins (= *Vangueria parvifolia* Sond.) within the Rubiaceae. This plant species exhibits a general aspect, including shape of the leaves and inflorescences that is vaguely similar to those exhibited by several species of *Brachylaena* and *Tarchonanthus*. This species was collected between August and December at Rustenburg probably on the same host plants (see Kirejtshuk & Easton 1988) in combination with *Tarchonanthogethes flavus*.

Geographic distribution. This species exhibits a relatively narrow range in highveld areas of northern South Africa (Gauteng, Mpumalanga, and North West Province; Fig. 97).

6. *Tarchonanthogethes thalycriformis* Audisio & Cline, sp. nov.

(Figs 5, 19–20, 43, 68, 72, 96)

Type material. ♂ Holotype from **SOUTH AFRICA: Eastern Cape:** Zuurberg Mts., southern slope of the Zuurberg Pass (= Suurberpas), 33°18'S, 25°42'E, 700 m a.s.l., 4.iv.2006, P. Audisio, R. Fochetti and R. Manconi leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae) (AMG). Paratypes: same data as holotype, 1 ♂, 2 ♀ (CAR, TMSA); road Grahamstown-Alexandria, 350 m a.s.l., roadsides, 33°23'58"S, 26°28'26"E, 3.v.2005, P. Audisio and E. Colonnelli leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 1 ♀ (CAR); 4 Km E of Komga, 32°36'40"S, 27°55'13"E, 560 m a.s.l., roadsides, 3.v.2005, P. Audisio and E. Colonnelli leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 1 ♂ (CAR).

Description (male holotype). Small (length 1.9 mm, width 1.0 mm), and markedly convex dorsally (Fig.5), yellowish-brown, pubescence moderately long, golden, only partially obscuring dorsal body surface (Fig.5); legs, antennae and mouth parts uniformly yellowish to orange. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra not transversely strigose, with simple and moderately impressed punctation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior fourth.

Antennal club small, composed of last three antennomeres (Fig. 68), 1.2–1.3 times as long as wide.

Protibiae relatively small and minutely toothed (Figs 5, 72).

Prosternal process short and wide, distinctly wider than antennal club distad.

Ventral sexual characters absent, both sexes with metaventrite flat, simple, not impressed.

Male genitalia as in Figs 19–20.

Female. Similar to male in most external characters. Ovipositor peculiarly shaped distad as in Fig. 43.

Variation. This species shows little variability in external morphology (length 1.6–2.0 mm), except for dorsal coloration (entirely yellowish-orange to orange-brown, but in some specimens with pronotal discal area, circum-scutellar elytral area, and scutellar shield markedly darker); pubescence golden to silvery-whitish.

Comparative notes. This species is morphologically isolated in the genus and easily distinguishable from other *Tarchonanthogethes* species by autapomorphic characters: the body short and convex dorsally, tegmen and median lobe of aedeagus slender, female ovipositor gonocoxites with peculiar and strongly narrowed pre-distal “neck”, and four predistal sensorial setae (Fig. 43).

Biological notes. This species is apparently monophagous as larvae on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), which is where copulation occurs, in karroid scrubby, rocky gravel habitats at low and intermediate altitudes (300–700 m). Adult activity probably occurs between March and May (collected in April). This species was collected on the same host plants in combination with *T. autumnalis* sp. nov., and *T. flavus*.

Geographic distribution. This species is known from South Africa, in the central portion of Eastern Cape Province (Fig. 96).

Etymology. The specific epithet is derived from the generic name *Thalycra* Erichson 1843, to emphasize its relatively short, convex and yellowish body (Fig. 5), resembling that of members of that Holarctic genus of mycetophagous Nitidulinae.

7. *Tarchonanthogethes hystrix* Audisio & Cline, sp. nov.

(Figs 27–28, 45, 67, 99)

Type material. ♂ Holotype from **SOUTH AFRICA: North West Province:** Magaliesberg (‘Transvaal, Magaliesberg’ in the original label), without indication of altitude and more detailed locality, 25°51'S, 27°29'E, 8.iv.1973, S. Endrödy-Younga leg., on unidentified ‘flowering shrubs’ (TMSA). Paratypes: same data as holotype, 3 ♂, 28 ♀ (TMSA, CAR, SAMC, BMNH); **Limpopo:** Strydpoortberge Pass, 24°02'44"S, 29°52'12"E, 1650 m, 21.ii.2007, hill slope, P. Audisio and M. Biondi leg., on male capitula of *Tarchonanthus parvicapitulatus* Herman (Asteraceae), 20 ♂, 26 ♀ (CAR, SAMC, TMSA, NMP).

Description (male holotype). Medium-sized (length 2.2 mm), body shape relatively short and convex (similar to *T. manconiae* sp. nov. as in Fig.2), body surface nut-brown to blackish-brown, pubescence long, golden to silvery-whitish, with partial brown maculation obscuring most of dorsal body surface, with paler pronotal sides;

legs, antennae and mouth parts orange-yellowish, with antennal club markedly darker, blackish-brown. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra nearly as long as combined width, not transversely strigose, with simple and moderately impressed punctation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small, composed of last three blackish-brown antennomeres (Fig. 67), 1.2–1.3 times as long as wide.

Protibiae minutely but distinctly toothed along distal outer edge (similar to *T. manconiae* **sp. nov.** as in Fig. 76).

Prosternal process nearly as wide distad as antennal club.

Male metaventricle with moderately distinct subtriangular impression on posterior two-thirds, almost flat and simple in females.

Male genitalia as in Figs 27–28, with peculiarly shaped paramera; median lobe of aedeagus exceptionally large (its length little less than 1.5 times the length of tegmen), elongate, and parallel-sided, with apex protruding.

Female. Similar to male in most external characters, but metaventricle almost flat and simple. Ovipositor as in Fig. 45.

Variation. This species shows little variability in external morphology (length 2.1–2.3 mm), except for the more or less dark and maculate dorsal coloration and pubescence. Antennal club dark brown to blackish-brown.

Comparative notes. Although placed in an unresolved basal position in association with *T. flavus*, *T. hermani*, and *T. rotundiclava* (Fig. 101), this species is characteristic in the genus *Tarchonanthogethes*, with almost unique autapomorphic characters such as the exceptionally large and peculiarly shaped aedeagus in males (Fig. 28), and the small, dark antennal club in both sexes (Fig. 67).

Biological notes. This species is associated with male capitula of *Tarchonanthus parvicapitulatus* Herman (Asteraceae), especially in rocky habitats and ravines at intermediate altitudes (*ca.* 1400–1800 m a.s.l.). This species is probably active on host-plants between late February and April. The type specimens were collected on the same host plants in conjunction with *Xenostromylogethes cychramoides* **sp. nov.**, and likely share this host with *Anthystrix endroedyi* and *Tarchonanthogethes fasciatus* **sp. nov.**

Geographic distribution. This species is known from the two above listed localities in the eastern portion of North West Province and southern Limpopo, South Africa (Fig. 99).

Etymology. The specific epithet is derived from the generic name *Hystrix* Linnaeus, 1758 (Mammalia, Rodentia) to emphasize its short and convex body shape, with long whitish and maculated pubescence, which resembles the spiny covering of the old world hedgehogs.

8. *Tarchonanthogethes manconiae* Audisio & Cline, **sp. nov.**

(Figs 2, 17–18, 47, 63, 76, 84, 98)

Type material. ♂ Holotype from **SOUTH AFRICA: Northern Cape:** 15 km N Kuruman, road to Hotazel, 1250 m a.s.l., 27°27'35"S, 23°26'52"E, 31.iii.2006, P. Audisio, R. Fochetti and R. Manconi leg., on male capitula of *Tarchonanthus camphoratus* L. (Asteraceae) (AMG). Paratypes: same data as holotype, 18 ♂, 25 ♀ (CAR, SANC, TMSA, AMG, NMP, BMNH, ZIL); 70 km NE Kuruman, 1350 m a.s.l., 27°12'11"S, 24°06'42"E, 31.iii.2006, P. Audisio, R. Fochetti and R. Manconi leg., on male capitula of *Tarchonanthus camphoratus* L. (Asteraceae), 4 ♂, 6 ♀ (CAR).

Other examined material. **SOUTH AFRICA: North West Province:** 4 km NE Vryburg, 1250 m a.s.l., 26°56'38"S, 24°48'12"E, 31.iii.2006, P. Audisio, R. Fochetti and R. Manconi leg., on male capitula of *Tarchonanthus camphoratus* L. (Asteraceae), 2 ♂, 4 ♀ (CAR); **NAMIBIA: Khomas Region:** Khomaschochl, Wissenfels Farm, 23°20'S, 16°25'E, 8.iii.1975, S. Endrödy-Younga leg., in groundtraps, 1 ♀ (TMSA).

Description (male holotype). Small (length 2.0 mm), moderately elongate body, yellowish-brown to reddish-brown body surface (pronotal sides yellowish), pubescence long and dense, golden to silvery-whitish, partially obscuring the dorsal body surface (Fig. 2); legs, antennae and mouth parts uniformly yellowish to orange. Setae on lateral margin of pronotum relatively long, 0.5–0.7 times as long as those on elytral disc. Elytra 1.0–1.1 times as long as combined width, not transversely strigose, with simple and moderately impressed punctation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small, narrow, composed of last three antennomeres (Fig. 63), 1.5–1.6 times as long as wide.

Protibiae minutely triangularly toothed along distal half (Fig. 76).

Prosternal process nearly as wide distad as antennal club.

Male sexually dimorphic with triangularly flattened and almost indistinctly impressed posterior two-thirds of metaventricle.

Male genitalia as in Figs 17–18.

Female. Similar to male in most external characters, but metaventricle flat and simple. Ovipositor as in Fig. 47, moderately darkened distad.

Variation. This species exhibits little variability in external morphology (length 1.6–2.3 mm); body yellowish-brown to reddish-brown.

Comparative notes. This species is easily distinguishable from other *Tarchonanthogethes* species by the wide and short tegmen and truncate apical portion of the median lobe of the aedeagus (the latter character is partially shared by *T. gratiellae* **sp. nov.** from Kenya), and the short subtruncate ovipositor apex. Further data from larvae, host, and molecular datasets may depict a closer relationship to the eastern African *T. gratiellae* **sp. nov.** and *T. maasai* **sp. nov.**

Biological notes. This species appears to be monophagous at larval stages on male capitula of *Tarchonanthus camphoratus* L. (Asteraceae), where copulation occurs, in bushy sandy habitats with karroid vegetation at intermediate altitudes (1200–1500 m), likely between March and May (collected in April). This species was frequently collected on the same host plants in combination with *Sebastiangethes anthystrixoides* Audisio, Kirk-Spriggs & Cline, 2008.

Geographic distribution. This species is known from NW South Africa (extreme W portion of North West Region, and Northern Cape), and from central Namibia (Fig. 98); true geographic range likely includes southern Namibia and Botswana.

Etymology. The new species is named after our friend and colleague Renata Manconi (University of Sassari, Italy), renowned specialist of Porifera, who collected part of the type series during a common field expedition to South Africa (iii/iv.2006).

9. *Tarchonanthogethes maasai* Audisio & Cline, **sp. nov.**

(Figs 15–16, 46, 64, 100)

Type material. ♂ Holotype, **KENYA: Rift Valley Province:** Nakuru District, national road Nairobi-Nakuru, ca. 25 km SE Nakuru, near Gilgil (savannah), 00°33'08"S, 36°20'51"E, 1950 m a.s.l., 9.ii.2011, on male inflorescences (capitula) of *Tarchonanthus camphoratus* L. (Asteraceae), P. Audisio, M. Mei and P. Cerretti leg. (NMKN). Paratypes: 8 ♂, 14 ♀, same data as holotype (CAR, NMP, CAS, SAMC, BMNH); 1 ♂, 8 ♀: national road Nairobi-Nakuru (disturbed savannah), ca. 45 km SE Nakuru, 00°46'01"S, 36°29'47"E, 2100 m a.s.l., 6.ii.2011, male inflorescences of *Tarchonanthus camphoratus* L. (Asteraceae), P. Audisio and A. Freidberg leg. (CAR, CAS, SAMC).

Description (male holotype). Small (length 2.1 mm), elongate, scarcely convex; body entirely orange-yellowish, pubescence long and dense, golden, partially obscuring dorsal body surface; legs, antennae and mouth parts uniformly yellowish. Setae on lateral margin of pronotum relatively long, 0.5–0.7 times as long as those on elytral disc. Elytra nearly 1.15–1.18 times as long as combined width, not transversely strigose, with simple, dense, and rather strongly impressed punctation.

Antennal furrows on ventral side of the head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club relatively narrow, composed of last three antennomeres (Fig. 64), 1.3–1.4 times as long as wide.

Protibiae relatively narrow and minutely toothed distad (similar to *T. manconiae* **sp. nov.**, Fig. 76), with slightly larger penultimate distal tooth; protarsi distinctly widened, slightly narrower than protibiae.

Prosternal process narrow, slightly narrower distad than antennal club.

Metaventricle in males with distinct but shallow subtriangular impression on posterior two-thirds.

Male genitalia as in Figs 15–16.

Female. Similar to male in most external characters, but metaventrite flat and simple, and protarsi *ca.* 1.5 times narrower than in male. Ovipositor as in Fig. 46.

Variation. This species exhibits moderate variability in external morphology, including length (1.8–2.3 mm), and body surface color from yellowish-brown to reddish-brown.

Comparative notes. This species is well characterized among other related species, chiefly due to presence of quite distinctive male genitalia (Figs 15–16), but is likely related to the South African *T. martini* and allied species. The species is easily distinguishable by an elongate and scarcely convex body shape, widely arcuately narrowed elytra distad (more narrowed in females than males), and a peculiar shape of the male genitalia, specifically the very narrowly and deeply incised tegmen (Figs 15–16). A possible relationship to the nearly sympatric *T. gratiellae* **sp. nov.** may be hypothesized based on the shared long elytra in both sexes (*ca.* 1.2 times as long than width), and the elytral apices more narrowed in females than males. However, *T. gratiellae* and *T. maasai* markedly differ from each other by the shape of male genitalia (Figs 15–16, 36–37), in *T. gratiellae* the metaventrite being much more deeply impressed, protarsi being only slightly wider in males than females, and distal teeth on outer edges of protibiae being subequal in size in *T. gratiellae* and smaller (largest teeth being *ca.* as long as, or slightly shorter than, width of fourth antennomere) than in *T. maasai* (in the latter species largest teeth being slightly longer than width of fourth antennomere).

Biological notes. The type specimens were all found in summer (early February) by beating male inflorescences (capitula) of *Tarchonanthus camphoratus* L. (Asteraceae). The host plants were localized at relatively high altitudes (1900–2100 m), in dry places along the Great Escarpment (Rift Valley) in sparsely forested savannah areas dominated by 3–8 m tall *Tarchonanthus* trees. The new species was collected at localities near Nakuru in combination with an unrelated monotypic genus of Meligethinae, *Tarchonanthopria freidbergi* Audisio & Cline, 2014 (Audisio *et al.* 2014). The flowering time of local *Tarchonanthus* trees at both localities was near its end when the new species was collected (6–9 February 2011). We believe that the local optimal reproductive time for *Tarchonanthogethes maasai* **sp. nov.** is between middle December and the first two weeks of January.

Geographic distribution. The species is known from two localities in SW Kenya (Fig. 100), but its geographic range likely includes at least part of the eastern African geographic distribution of its host plant, which is widespread along the Rift Valley from Tanzania to Ethiopia (Herman 2002).

Etymology. The specific epithet emphasizes its geographic distribution in high-altitude East African plateau, which is inhabited by one of the best known of African ethnic groups, the Maasai (sometimes spelled ‘Masai’ or ‘Masaai’), a Nilotic group of semi-nomadic people located in Kenya and northern Tanzania.

10. *Tarchonanthogethes gratiellae* Audisio & Cline, **sp. nov.**

(Figs 36–37, 85, 100)

Type material. ♂ Holotype, **KENYA: Central Province:** Nyandarua/Nyeri Districts, Aberdares National Park, *ca.* 0°25'S, 36°43'E, 3100 m a.s.l., 9.vi.1979, unknown collector (CAR). Paratypes: 1 ♀, same data as holotype (CAR).

Other examined material. **KENYA: Central Province:** Laikipia District, Naro Moru, 0°10'S, 37°01'E, 2000 m, 28.ix.1975, W. Rossi and G. Cesari leg., 1 ♀ (CAR).

Description (male holotype). Moderate size (length 2.3 mm), peculiarly elongate, moderately convex; body entirely orange-yellowish, pubescence long and dense, golden, partially obscuring the brown dorsal body surface; legs, antennae and mouth parts uniformly yellowish. Setae on lateral margin of pronotum relatively long, 0.5–0.7 times as long as those on elytral disc. Elytra 1.20–1.25 times as long as combined width, not transversely strigose, with simple, dense, and rather strongly impressed punctuation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club rather narrow, 1.3–1.4 times as long as wide (as in *T. maasai* **sp. nov.**, Fig. 64), composed of last three antennomeres.

Protibiae relatively narrow and minutely toothed (teeth slightly shorter than in *T. manconiae* **sp. nov.**, Fig. 76, more even in size along distal two-thirds of outer edge), protarsi rather distinctly widened, as wide as protibiae.

Prosternal process narrow, slightly narrower distad than antennal club.

Metaventricle with markedly distinct and deep subtriangular impression on posterior three-fourths.

Male genitalia as in Figs 36–37.

Female. Similar to male in most external characters, but metaventricle triangularly flattened on posterior three-fourths, and protarsi markedly narrower; body more elongate, and elytral apices more elongate and slightly more arcuately narrowed in females than in males (Fig. 85). Antennal club slightly smaller in females than in males. Ovipositor similar to *T. maasai* **sp. nov.** (Fig. 46).

Variation. This species exhibits moderate variability in length, 2.3–2.4 mm; and dorsal body surface coloration from brown to blackish-brown.

Comparative notes. This species is distinct within *Tarchonanthogethes*, likely most closely related to *T. manconiae* **sp. nov.** from NW South Africa. This new species is easily distinguishable from the latter by the more elongate body shape, arcuately narrowed elytra distad in females, and shape of male genitalia (Figs 36–37, 17–18). The latter clearly suggests a close relationship between *T. gratiellae* **sp. nov.** and *T. manconiae* **sp. nov.**, despite the body and ovipositor shape which are more similar to the nearly sympatric *T. maasai* **sp. nov.**

Biological notes. The single female from Naro Moru was collected at the end of September along the edge of a montane riverine forest (nearly at 2000 m a.s.l.). The type material from Aberdares N.P. was collected in November in a similar habitat, but at higher altitude (3100 m). The host plants are unknown, but almost certainly they belong to Tarchonantheae. Judging from the three type specimens, we suspect that the reproductive time for *Tarchonanthogethes gratiellae* **sp. nov.** is in spring, probably between September and November. The only known member of Kenyan Tarchonantheae occurring in these areas and at least partly flowering in spring is *Brachylaena huillensis* O.Hoffm., a forest tree widespread from northern South Africa to central Kenya (Kigomo *et al.* 1991). In Kenya, *B. huillensis* usually flowers twice a year, between mid-April and the end of June and between mid-November and early January. However, *Tarchonanthogethes gratiellae* **sp. nov.** may occur on the single other Kenyan representative of Tarchonantheae, *Tarchonanthus camphoratus* L., in different localities than those studied along the Kenyan Rift Valley.

Geographic distribution. This species is known from SW Kenya (Fig. 100), but its geographic range likely extends more widely to include other mountainous areas at least in central Kenya.

Etymology. The new species is named after Graziella Cesari, the late wife of our dear friend and colleague Walter Rossi (Professor in Botany at L'Aquila University, Italy), who collected the first available specimen during his honeymoon (IX.1975), then prompting us to perform further specialized field research in East Africa on representatives of this mostly southern African genus.

11. *Tarchonanthogethes flavus* (Kirejtshuk & Easton, 1988)

(Figs 23–24, 51, 71, 82, 97)

Meligethinus flavus Kirejtshuk & Easton, 1988: 50

Tarchonanthogethes flavus: Audisio *et al.*, 2009b: 442

Type material. ♂ Holotype, **SOUTH AFRICA: North West Province:** Rustenburg (*ca.* 25°41'S, 27°12'E, 1250 m a.s.l.), 4–7.xii.1951, A. L. Capener leg., deposited in BMNH (Kirejtshuk & Easton, 1988, under 'Transvaal, Rutenburg': *sic* !) [examined].

Other examined material. **SOUTH AFRICA: Eastern Cape:** road Grahamstown-Alexandria, 350 m a.s.l., roadsides, 33°23'58"S, 26°28'26"E, 3.V.2005, P. Audisio and E. Colonnelli leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 2 ♂, 3 ♀ (AMG, CAR, TMSA); *ca.* 9 km SW Grahamstown, 450 m a.s.l., roadsides, 33°21'23"S, 26°29'27"E, 5.IV.2006, P. Audisio, A. Kirk-Spriggs, R. Fochetti and R. Manconi leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 2 ♀ (CAR, AMG); road Grahamstown-Southwell, 250 m a.s.l., roadsides, 33°36'56"S, 26°36'41"E, 4.V.2005, P. Audisio and E. Colonnelli leg., on male capitula of *Brachylaena elliptica* (Thunb.) Less. (Asteraceae), 1 ♀ (CAR); **KwaZulu-Natal:** Santa Lucia Estuary, Estuary Beach, 28°22'31"S, 32°25'36"E, 5 m a.s.l., 8.ix.2009, on male inflorescences of *Brachylaena discolor*, P. Audisio and M.C. Angelici leg., 2 ♀ (CAR); *ca.* 47 km N Enpangeni, near Kwa Msane, 28°28'24"S, 32°08'44"E, 83 m a.s.l., 7.IX.2009, on male inflorescences of *Brachylaena discolor*, P. Audisio and M.C. Angelici leg., 1 ♂ (CAR); Richards Bay, 28°46'35"S, 32°04'36"E, 15 m a.s.l., 7.ix.2009, on male inflorescences of *Brachylaena*

discolor, P.Audisio and M.C.Angelici leg., 8 ♂, 20 ♀ (CAR, SANC, TMSA, BMNH); **Limpopo**: Soutpansberg, Hanglip, ca. 22°54'S, 30°00'E ('30°00'S, 29°54'E' is reported in the obviously erroneously printed original label), 1400 m a.s.l., 18.iii.1973, S. Endrödy-Younga leg., in hollow traps, 1 ♀ (TMSA); ca. 12 km SE of Haenerstburg, 23°58'S, 30°00'E, 1200 m, 10/11.ix.2009, on *Brachylaena transvaalensis* E.Phillips and Schweick. (Asteraceae), P.Audisio and M.C.Angelici leg., 1 ♀ (CAR); Orrie Baragwanath Pass, 24°08'57"S, 30°12'39"E, 1000–1250 m, 9.ix.2009, on *Brachylaena transvaalensis* E.Phillips and Schweick., P.Audisio and M.C.Angelici leg., 1 ♀ (CAR).

Description and diagnosis. Small to moderate in size (length 2.0–2.6 mm), short and moderately convex dorsally (Fig. 82), elytra ~0.9 times as long as combined width. Body yellowish to pale orange, pubescence moderately long, golden to silvery-whitish, not completely obscuring the typically orange-yellowish and rather shiny dorsal body surface; legs, antennae and mouth parts uniformly yellowish to orange in both sexes. Scutellar shield and abdominal ventrites occasionally darker, orange-brown to dark brown. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra with fine but strongly evident, almost complete, and very dense transverse strigosity.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small in both sexes, composed of last three antennomeres (Fig. 82), 1.2–1.3 times as long as wide.

Protibiae relatively wide, minutely, regularly, and acutely toothed (Fig. 71) along outer edge.

Prosternal process rather short and wide, distinctly wider distad than antennal club.

Ventral sexual characters scarcely developed, with metaventrite rather flat, only moderately impressed posteriorly in males, simple in females.

Male genitalia as in Figs 23–24, with peculiar shape, specifically the distal portion of paramera, which are lobed and partially mobile. Ovipositor as in Fig. 51, with long styli.

Variation. This species shows moderate variability in length from 2.0–2.6 mm.

Comparative notes. This species is isolated within *Tarchonanthogethes*, despite sharing a potential synapomorphic character (the markedly transversely strigose elytra) with *T. hermani* **sp. nov.** This species is easily distinguishable by its short and rather convex body shape, strigose elytra, and peculiarly shaped male genitalia. This species of African Meligethinae more closely resembles in general shape, colour, size, and elytral strigosity, certain species of Oriental genus *Cyclogethes* Kirejtshuk, 1979, in particular *C. aldridgei* Kirejtshuk, 1980 from Nepal and N India (Jelínek 2000b).

Biological notes. This species, at least in KwaZulu-Natal, is mostly associated with male capitula of *Brachylaena discolor* DC. (Asteraceae) in sandy habitats near the sea (coastal thicket vegetation on sand dunes or on fossil dunes in the interior) between 0 and 150 m a.s.l. Adult activity probably occurs between July and early October. Populations from Eastern Cape are associated with *Brachylaena elliptica* (Thunb.) Less. (Asteraceae) in karroid scrubs in rocky and gravel habitats at low and intermediate altitudes (250–1400 m), probably between March and June. Populations associated with *Brachylaena transvaalensis* E.Phillips and Schweick. in southern Limpopo live in rocky forest habitats between 800 and 1600 m a.s.l. (September). At the type locality in the North West Region it is likely that this species could be associated with *Brachylaena rotundata* (S. Moore) Beentje, representing a variety or subspecies of the widespread *B. discolor*. This species was collected in Eastern Cape on the same host plants in combination with *Tarchonanthogethes martini*, *T. autumnalis* **sp. nov.**, and *T. thalycriformis* **sp. nov.**; in southern Limpopo on the same host plants in combination with *T. martini*, *T. lilliputianus* **sp. nov.** and *T. rotundiclava*; and in North West Province probably on the same host plants with *T. capeneri*. This was the dominant species on *Brachylaena discolor* in the coastal locality near Richards Bay, while it was more rare on other host plants in the remaining localities.

Geographic distribution. This species is so far known only from South Africa, ranging from Eastern Cape Province northwards to the northern portion of Limpopo Province and the eastern portion of North West Province (Fig. 97).

Taxonomic notes. The original male genitalia drawings (i.e. the tegmen) of this species published by Kirejtshuk & Easton (1988; Figs 16–17 therein) do not correspond to their true shape (Figs 23–24 herein), which is otherwise visible in the recently examined holotype (BMNH). We believe it is likely that the original drawings were based on a misinterpretation of the peculiar distal semi-mobile portions of the paramera in the holotype, which were erroneously considered as teneral distal parts (then difficult to draw) of the same, with a believed 'normal' shape.

12. *Tarchonanthogethes hermani* Audisio & Cline, sp. nov.

(Figs 25–26, 79, 96)

Type material. ♂ Holotype from **SOUTH AFRICA: Eastern Cape:** road Elliot-Engcobo, 20 km SE Qiba, 1300 m a.s.l., 31°35'S, 27°56'E, 4.xii.1995, P. Audisio leg., grassnetting at the edges of an indigenous forest (AMG). Paratype: 10 km SW Grahamstown, 350 m a.s.l., roadsides, 33°22'18"S, 26°28'58"E, 14.xi.2006, E. Colonnelli leg., grassnetting, 1♂ (CAR).

Description (male holotype). Small (length 2.0 mm), elongate and moderately convex dorsally (Fig. 79), elytra ~1.1 times as long as combined width. Body yellowish-orange, pubescence moderately long, golden to silvery-whitish, only partially obscuring the dorsal body surface; legs, antennae and mouth parts uniformly yellowish. Scutellar shield and abdominal ventrites darker, orange-brown to dark brown. Setae on lateral margin of pronotum peculiarly short, 0.3–0.4 times as long as those on elytral disc. Elytra with distinct and dense transversal strigosity, uniformly distributed nearly on the whole elytral surface.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club composed of last three antennomeres (nearly as in *T. martini*, Fig. 61), ~1.4 times as long as wide.

Protibiae moderately narrow, minutely toothed along outer edges (Fig. 79).

Prosternal process rather short and wide, slightly wider distad than antennal club.

Ventral sexual characters scarcely developed, with metaventrite rather flat, only moderately impressed posteriorly.

Male genitalia as in Figs 25–26, peculiarly shaped. Ovipositor unknown.

Female. Unknown.

Variation. This species exhibits moderate variability in length from 1.9–2.0 mm; dorsal body surface yellowish to pale orange.

Comparative notes. This species is isolated within *Tarchonanthogethes*, despite sharing the markedly transversely strigose elytra as *T. flavus*. The species is easily distinguishable by the small body size, elongate body shape, strigose elytra, and shape of male genitalia.

Biological notes. The biology of this species is so far unknown despite some clues obtained with available information on the local co-occurrence of Tarchonanthaeae flowering at the beginning of the Austral summer (November–December) when this new species was collected. These data suggest that this species could be associated with male capitula of *Brachylaena ilicifolia* (Lam.) Phillips and Schweick. (Asteraceae). This plant is usually present in bushy scrub forest and on rocky hillsides at low and intermediate altitudes (type specimens were collected between 300 and 1300 m a.s.l.).

Geographic distribution. This species is known from South Africa, with an apparently narrow range in Eastern Cape Province only (Fig. 96), but it could be present in most of KwaZulu-Natal and Mpumalanga, where its presumed host plant occurs (Coates Palgrave 1983).

Etymology. The new species is named for our friend and colleague Paul Herman (National Herbarium, South African National Biodiversity Institute, Pretoria, South Africa), specialist on African Asteraceae, for his invaluable help with our research on pollen-beetles associated with this plant family.

13. *Tarchonanthogethes pectinipes* Audisio & Cline, sp. nov.

(Figs 4, 50, 78, 98)

Type material. ♀ Holotype from **SOUTH AFRICA: Limpopo:** Lillie Floral Nature Reserve near Mica, 24°05'S, 30°51'E, 550 m a.s.l., 23.x.1983, R. Oberprieler leg (SANC). Paratypes: same locality, same data, 1 ♀ (CAR); same locality, same data, S. Louw leg., 1 ♀ (NMBS).

Description (female holotype). Moderate in size (length 2.2 mm), body rather arcuate at sides and convex (Fig. 4), pale-yellowish, pubescence moderately long and dense, golden to silvery-whitish, scarcely obscuring the dorsal body surface; legs, antennae and mouth parts uniformly yellowish to orange-brown. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra with more or less faint traces of coarse,

orange-peel like transverse strigosity, with strongly impressed and moderately dispersed punctation, with somewhat shining spaces between punctures.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small, composed of last three, only moderately enlarged, antennomeres (Fig. 4).

Protibiae strongly and acutely toothed, with irregular and asymmetric denticulation (Fig. 78).

Metaventrite flat and nearly simple.

Ovipositor as in Fig. 50.

Male. Unknown.

Variation. This species shows little variability in length at 2.2–2.3 mm, and more considerable variation in the asymmetric denticulation of the anterior tibiae; body pale-yellowish to orange-yellowish.

Comparative notes. This species is isolated within *Tarchonanthogethes*, and is easily characterized by the unusual combination of coarse body punctation (on elytra orange-peel like), uniformly yellowish convex and oval body, relatively reduced pubescence, strongly developed and acute teeth on outer edge of protibiae, and distinctive female genitalia.

Biological notes. The biology of this species is so far unknown. A possible host plant at the type locality may be represented by *Tarchonanthus trilobus* DC. (Asteraceae), which is chiefly in rocky habitats and ravines at intermediate altitudes. This species was collected in late November.

Geographic distribution. This species is known from the type locality in southern Limpopo (Fig. 98).

Etymology. The specific epithet is derived from the latin names *pecten* (= comb) and *pes* (= foot), to emphasize its strongly serrate protibiae.

14. *Tarchonanthogethes bisignatus* Audisio & Cline, sp. nov.

(Figs 31–32, 49, 62, 98)

Type material. ♂ Holotype from **SOUTH AFRICA: Eastern Cape:** road to Gamtoosriviermond, 150 m a.s.l., 33°55'47"S 25°03'43"E, 5.v.2005, on male inflorescences of *Tarchonanthus littoralis* Herman (Asteraceae), P. Audisio and E. Colonnelli leg. (AMG). Paratypes: same data as holotype, 18 ♂, 20 ♀ (CAR, SANC, TMSA, AMG, NMP, ZIL). **Western Cape:** Wilderness National Park, 20 m a.s.l., 34°00'00"S, 22°39'01"E, 3.iv.2006, P. Audisio leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 4 ♂, 3 ♀ (CAR, AMG, BMNH); Cape Peninsula, Fish Hoek, Silvermine Wetland Conservation Area, 34°07'45"S, 18°26'00"E, 8 m a.s.l., 26.i.2012, P. Audisio and S. Sabatelli leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 12 ♂, 15 ♀ (SAMC, CAR, NMP); Western Cape, Cape Peninsula, Cape of Good Hope Nature Reserve, Cape Point, 34°21'04"S, 18°29'06"E, 140 m a.s.l., 28.i.2012, P. Audisio and S. Sabatelli leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 14 ♂, 18 ♀ (SAMC, CAR, NMP).

Description (male holotype). Small (length 1.8 mm), moderately long and convex (slightly more than in *T. fasciatus* sp. nov., Fig. 3), with elytra ~1.1 times as long as combined width. Body mostly dark brown to blackish, with orange pronotal sides and a large orange discal spot on each elytron; pubescence scarcely developed, golden to silvery-whitish, only partially obscuring the shining dorsal body surface (as in *T. fasciatus* sp. nov., Fig. 3); legs, antennae and mouth parts uniformly yellowish to orange. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra not transversely strigose, with simple and moderately impressed punctation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small, nearly as long as diameter of eyes, composed of last three antennomeres (Fig. 62), 1.2–1.3 times as long as wide.

Protibiae minutely toothed along outer edge (as in *T. fasciatus* sp. nov., Fig. 3).

Prosternal process rather short and wide, distad slightly wider than antennal club.

Ventral sexual characters scarcely developed, with metaventrite rather flat, only slightly impressed posteriorly.

Male genitalia as in Figs 31–32.

Female. Similar to male in most external characters, but metaventrite simple. Ovipositor as in Fig. 49.

Variation. This species shows little variability in length, 1.8–2.0 mm, but more variation in body coloration,

blackish to nut-brown, and the slightly variably shaped paler elytral spots from orange to yellowish.

Comparative notes. This species occupies a distinctly derived position in *Tarchonanthogethes*, in association with the closely related and geographically vicariant *T. fasciatus* **sp. nov.** These species share important synapomorphic characters including the yellowish-orange discal spots on the elytra (Fig. 3), small body size, and similarly shaped male genitalia (Figs 29–32). *T. bisignatus* is easily distinguishable from the closely related and again geographically vicariant *T. assutus* from Kenya by the different female genitalia (male genitalia of *assutus* are unknown, but ovipositor exhibits peculiarly acute outer gonocoxite subdivisions: Figs 44, 48–49), and the less elongate body shape.

Biological notes. This species appears to be strictly associated with male capitula of *Tarchonanthus littoralis* Herman (Asteraceae), where its larvae develop (and where copulation usually occurs). The host is typically found in sandy and gravel habitats near the sea (from sea level to 200 m), typically in coastal thicket vegetation. This species is active on its host plants between late January and late April, and was collected in combination with species of *Anthystrix* and *Xenostromylogethes luculentus* (Kirejtshuk & Easton, 1988).

Geographic distribution. This species is known from South Africa, with an apparently wide range in Western and Eastern Cape Provinces (Fig. 98), but could be more widespread in coastal areas of SW KwaZulu-Natal.

Etymology. The specific epithet is derived from the latin name *bisignatus* (= with two spots), to emphasize its large yellowish-orange discal spots on elytra.

15. *Tarchonanthogethes fasciatus* Audisio & Cline, **sp. nov.**

(Figs 3, 29–30, 48, 98)

Type material. ♂ Holotype from **SOUTH AFRICA: Limpopo:** Strydpoortberge Pass, 24°02'44"S, 29°52'12"E, 1650 m, 21.ii.2007, hill slope, P.Audisio and M.Biondi leg., on male capitula of *Tarchonanthus parvicapitulatus* Herman (Asteraceae) (AMG). Paratypes: same data as holotype, 12 ♂, 15 ♀ (CAR, AMG, TMSA, NMP); **North West Province:** Magaliesberg ('Transvaal, Magaliesberg' in the original label), without indication of altitude and more detailed locality, 25°51'S, 27°29'E, 8.iv.1973, S. Endrödy-Younga leg., on unidentified 'flowering shrubs', 4 ♀ (TMSA, CAR).

Description (male holotype). Small (length 1.8 mm), moderately long and convex (Fig. 3), elytra 1.0 times as long as combined width. Body mostly dark brown to blackish, with orange pronotal sides and a large discal orange spot on each elytron, partially occupying anterior half of elytra; pubescence moderately developed, golden to silvery-whitish, not obscuring shining dorsal body surface; legs, antennae and mouth parts uniformly yellowish-orange. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra not transversely strigose, with simple and moderately impressed punctation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club small, composed of last three antennomeres (as in Fig. 62), 1.3 times as long as wide.

Protibiae minutely toothed and not sinuate in both sexes (Fig. 3).

Prosternal process rather short and wide, wider than antennal club distad.

Ventral sexual characters scarcely developed, with metaventrite rather flat, only moderately impressed posteriorly.

Male genitalia as in Figs 29–30.

Female. Similar to male in most external characters, but metaventrite simple. Ovipositor as in Fig. 48.

Variation. This species shows little variability in length at 1.6–2.0 mm, but is somewhat variable in body coloration, ranging from blackish to nut-brown, and also in the slightly variably shaped paler elytral spots, orange to yellowish.

Biological notes. This species is associated with male capitula of *Tarchonanthus parvicapitulatus* Herman (Asteraceae), especially in rocky habitats and ravines at intermediate altitudes (1200–1800 m a.s.l.). This species is probably active on its host plants between late February and late April. This species was collected on the same host plants in combination with *Xenostromylogethes cychramoides* **sp. nov.**, *Tarchonanthogethes hystrix* **sp. nov.**, and *Anthystrix endroedyi* Audisio & Cline, 2009.

Comparative notes. This species is grouped with the related but geographically vicariant *T. bisignatus* **sp.**

nov. from South Africa and *T. assutus* from Kenya. All three species share yellowish-orange discal spots on the elytra and a similar shape of the ovipositor distal apex. This species is easily distinguished from *T. bisignatus* **sp. nov.** by the different male genitalia, and from *T. assutus* by the ovipositor exhibiting normally shaped (not acute) outer subdivisions of the gonocoxites.

Geographic distribution. This species is known from the two above listed localities in the eastern portion of North West Province and SW Limpopo, South Africa (Fig. 98).

Etymology. The specific epithet is derived from the latin name *fasciatus* (= with a large band), to emphasize the large yellowish-orange elytral spots.

16. *Tarchonanthegethes assutus* (Easton, 1960), comb. nov.
(Figs 44, 100)

Meligethes assutus Easton, 1960: 278

Afrogethes assutus: Audisio *et al.*, 2009b: 379

Type material. ♀ Holotype from **KENYA: Central Province:** Kiambu District, Muguga [*ca.* 01°15'13"S, 36°39'47"E, and *ca.* 2000 m a.s.l.], vi.1954, B. Verdcourt leg., preserved in BMNH (Easton 1960) [examined].

Other examined material. A damaged specimen (lacking ovipositor), is probably to be referred to this same species: **KENYA: Naivasha District:** 'Kinangop, March 1930, Turner leg.', without further indications [*ca.* 2500 m a.s.l.], 1 ♀ (BMNH).

Description and diagnosis. Small (length 1.9 mm), narrowly elongate and convex, elytra 1.2 times as long as combined width. Body mostly dark brown to blackish, with orange pronotal sides and a large discal yellowish spot on each elytron (similar to *T. fasciatus* **sp. nov.**, Fig. 3, but slightly more elongate), widely occupying the anterior half of elytra; pubescence scarcely developed, golden to silvery-whitish, not obscuring the shining dorsal body surface; legs, antennae and mouth parts uniformly yellowish to orange in both sexes. Setae on lateral margin of pronotum short, 0.3–0.5 times as long as those on elytral disc. Elytra not transversely strigose, with simple and moderately impressed punctation.

Antennal furrows on ventral side of head distinct and nearly parallel-sided, slightly convergent in posterior third.

Antennal club in female small, composed of last three antennomeres (as in *T. bisignatus* **sp. nov.**, Fig. 62), 1.2–1.3 times as long as wide.

Protibiae minutely toothed and not sinuate in either sex (as in *T. fasciatus* **sp. nov.**, Fig. 3).

Prosternal process rather short and wide, wider than antennal club distad.

Metaventricle flat and simple in females.

Ovipositor as in Fig. 44.

Male. Unknown.

Biological notes. This species was collected on *Aspilula* sp. (Asteraceae; Easton 1960), but it is likely that this plant (only distantly related to Tarchonantheae) represented no more than an occasional food-source for the adult. We suspect that the possible host-plant for this species is *Brachylaena huillensis* O.Hoffm., a forest tree widespread from northern South Africa to central Kenya (Kigomo *et al.* 1991). This plant locally flowers from April to June, which was when the holotype was collected. Moreover, the only other known member of Kenyan Tarchonantheae, the relatively common *Tarchonanthus camphoratus* L., is known to host *Tarchonanthegethes maasai* **sp. nov.** and *Tarchonanthopria freidbergi* Audisio & Cline, 2014 (Audisio *et al.* 2014), the latter being a member of the unrelated *Pria* generic complex.

Comparative notes. This is the sister-species to the geographically vicariant *T. fasciatus* **sp. nov.** and *T. bisignatus* **sp. nov.**, both from South Africa. These species share a similar general body shape and protibiae, yellowish-orange large discal spots on elytra, and obliquely subtruncate distal ovipositor apex. This species is easily distinguished by the different, peculiarly acute outer gonocoxite subdivisions (Fig. 44).

Geographic distribution. This species is known from the above indicated localities in central Kenya (Fig. 100).

Taxonomic notes. This species, based on analysis of its original description (Easton 1960), was tentatively

attributed to *Afrogethes* Audisio & Cline, 2009, by Audisio *et al.* (2009b). Recent examination (May 2012) of the holotype (BMNH) by the senior author validated the transfer of this taxon to *Tarchonanthogethes* (comb. nov.). Easton (1960) in his original description noted that this species was without parallel in the genus (*Meligethes* s.l.), and had a doubtful taxonomic position within that genus.

Excluded species

Meligethes singularis Grouvelle, 1919: 53

Tarchonanthogethes singularis: Audisio *et al.*, 2009b: 442

Meligethinus singularis (Grouvelle, 1919), **comb. nov.**

Based on characters reported in the original description, *Meligethes singularis* Grouvelle, 1919 was tentatively attributed to *Tarchonanthogethes* by Audisio *et al.* (2009b). Recent examination (January 2012) of the single type specimen (SANC) allowed the senior author to unequivocally transfer this taxon to the unrelated genus *Meligethinus*, as *Meligethinus singularis* (Grouvelle, 1919) (**comb. nov.**). Despite the poor state of preservation (the specimen has been badly dissected and re-mounted with partly detached elytra and partly destroyed abdomen), the type specimen appears rather similar in size, shape and colour to the recently described *Meligethinus zimbabwensis* Kirejtshuk, 2011 (Kirejtshuk 2011), only known from southern Zimbabwe. However, the definition of the specific status of both these taxa is outside the aim of the present paper.

Meligethes singularis Grouvelle, 1919 was described from ‘*Afrique Australe, Keutani près Peglor*’ (Grouvelle 1919). The original label (SANC) clearly reports the locality ‘Kentani, Miss Pegler [*legit*]’. Kentani is a village in South Africa, NE Eastern Cape, some fifty km NE of East London (ca. 32° 31'S, 28° 19'E, ca. 450 m a.s.l.), where the research activity of the famous botanist and naturalist Alice Marguerite Pegler (1861–1929) was performed during the first decades of the 20th century [see, e.g., Van der Bijl (1922)]. True *Meligethinus*, as discussed in the Introduction above, are strictly associated with male inflorescences of palms (Arecaceae) in their larval stages (Jelínek 1992; Audisio 1993; Audisio *et al.* 2009b). As deduced from Grouvelle (1919), *Meligethinus singularis* (Grouvelle, 1919), *M. dolosus* Grouvelle, 1919, and *M. peringueyi* (Grouvelle, 1919) were collected all together in 1917 by Miss A. Pegler and by H.P. Abornelly, probably on the same host plants, in an area where at least two autochthonous palm species (Arecaceae) are present (*Hyphaene coriacea* Gaertn. and *Phoenix reclinata* Jacq.).

Xenostromylogethes Audisio & Cline, 2009

Type species. *Anthystrix luculenta* Kirejtshuk & Easton, 1988 (original designation by Audisio & Cline 2009, in Audisio *et al.* 2009b).

Diagnosis. This taxon includes the single type species (from southern South Africa) indicated above, and a new species described below (from northern South Africa). Members of *Xenostromylogethes* share the following combination of diagnostic characters (Audisio *et al.* 2009b):

- pubescence golden to silvery-whitish, long and developed like in members of the genus *Anthystrix* and largely obscuring the orange-brown to dark brown dorsal body surface (Fig. 6);
- setae on lateral margin of pronotum 0.5–0.7 times as long as those on elytral disc (Fig. 6);
- only very small teeth present on outer edges of protibiae (Figs 6, 57, 70);
- anterior margin of clypeus slightly arcuately emarginate, with a hardly distinct border (Figs 6, 57);
- prosternal process rather parallel-sided and narrow, its maximum width slightly narrower than maximum width of protibiae (teeth excluded); apex bluntly pointed (Fig. 29d in Audisio *et al.* 2009b);
- proepisternal-prosternal sutures visible but almost obliterated, and not distinctly raised (as in Fig. 91);
- antennal furrows on ventral side of head distinct and convergent (Fig. 29d in Audisio *et al.* 2009b);
- arched impressions on last visible abdominal ventrites strongly marked and deeply impressed;
- tarsal claws simple (never toothed at base);

- circum-ocular (postocular) furrows on dorsal side of head not impressed and almost absent;
- labial palpi short, even in males, *ca.* as long as length of the second antennomere;
- posterior edge of the pronotum bearing a series of flat hairs, 'hydroid' and multifid distad (not differing from those in Fig. 93);
- antennal inter-sexual dimorphism scarcely expressed, male antennal club 3-segmented as in females (the eighth antennomere being only slightly wider than seventh: Fig. 66), or moderately enlarged and 4-segmented (Figs 6, 65); metaventrite sexual characters with scarcely developed differences;
- markedly distinct transverse tuft of short dark setae on first two abdominal ventrites in males (Fig. 95);
- male genitalia without processes along inner side of paramera (Figs 52, 55), and without median longitudinal de-sclerotization from proximal portion of tegmen distad, with tegmen exhibiting a shallow median arcuate excision distad; median lobe of aedeagus without lateral emargination (Figs 53, 56), more or less narrowed at apex. Main sclerites of internal sac (flagellum) large, usually 0.7 times as long as aedeagus (Fig. 54);
- ovipositor with a single heavily pigmented area on pre-distal outer side, gonocoxites with proximal base simple, not indentate (Figs 58, 59);
- elytral punctation simple, not transversely strigose;
- body length between 1.9 and 2.7 mm;
- larval development of both known species is apparently strictly associated with male inflorescences (capitula) of Asteraceae, specifically in the isolated tribe Tarchonantheae, genus *Tarchonanthus*.

1. *Xenostromylogethes luculentus* (Kirejtshuk & Easton, 1988)

(Figs 6, 52–54, 70, 95, 99)

Anthystrix luculenta Kirejtshuk & Easton, 1988: 42, 45

Xenostromylogethes luculentus: Audisio *et al.*, 2009b: 448

Type material. ♂ Holotype from **SOUTH AFRICA: Eastern Cape:** Port St. John (*ca.* 31°36'S, 29°32'E, 20 m a.s.l.), R.E. Turner leg., preserved in BMNH ('Port St. John, Pondoland': Kirejtshuk & Easton 1988) [examined]; Mossel Bay (*ca.* 34°12'S, 29°08'E, 100 m a.s.l.), 1 # paratype (BMNH) ('Mossel Bay, Cape province': Kirejtshuk & Easton 1988).

Other examined material. **SOUTH AFRICA: Eastern Cape:** East London (*ca.* 33°00'S, 27°54'E, 30 m a.s.l.), 1923, R. Ellenberger leg., 3 ♂, 2 ♀ (MHNP, CAR); Sardinia Bay near Port Elizabeth, 34°05'S, 25°30'E, 10 m a.s.l., 7.iv.2006, P. Audisio leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 2 ♂, 2 ♀ (CAR); road Uitenhage-Sunland, 33°37'S, 25°31'E, 260 m a.s.l., 4.iv.2006, P. Audisio leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 1 male (CAR); **Western Cape:** Wilderness National Park near George, 34°00'S, 22°38'E, 10 m a.s.l., 3.iv.2006, P. Audisio leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 12 ♂, 9 ♀ (CAR, SAMC, TMSA); Little Karoo, Meringspoort, N of De Rust, 33°23'S, 22°33'E, 600 m a.s.l., 2.iv.2006, P. Audisio leg., gorges, on male capitula of *Tarchonanthus littoralis* Herman, 12 ♂, 20 ♀ (CAR, NMBS, NMP); Cape Peninsula, Cape of Good Hope Nature Reserve, Cape Point, 34°21'04"S, 18°29'06"E, 140 m a.s.l., 28.i.2012, P. Audisio and S. Sabatelli leg., coastal thicket vegetation, on male capitula of *Tarchonanthus littoralis* Herman, 1 ♀ (CAR).

Description and diagnosis. Medium-sized (length 2.1–2.7 mm), body relatively short and oval, brown to reddish-brown, pubescence long and dense, golden to silvery-whitish, partially obscuring the reddish-brown to dark brown (pronotal sides yellowish to orange, ventral side brown to blackish except proepimera) dorsal body surface (Fig. 6); legs, antennae and mouth parts uniformly yellowish to orange-brown in both sexes. Setae on lateral margin of pronotum 0.5–0.7 times as long as those on elytral disc.

Antennal club distinctly 4-segmented and larger in males (Figs 6, 65), 3-segmented and smaller in females, in both sexes unicolored yellowish-orange as in remaining portion of antennae.

Protibiae simple, strongly and acutely toothed and not sinuate in both sexes (Fig. 70).

Ventral sexual characters in males represented by moderately triangular impressed posterior two-thirds of metaventrite, nearly simple in females, and by a large tuft of short dark setae in middle of two first visible abdominal ventrites in males (absent in females).

Male genitalia as in Figs 52–54. Ovipositor as in Fig. 58, rather large and moderately blunt at apex, with a

single outer subdivision of the gonocoxites on each side.

Variation. This species shows variability in length (2.1–2.7 mm), and coloration.

Comparative notes. This species is related to *X. cycchramoides* Audisio & Cline **sp. nov.**, but is easily distinguished by the larger and more elongate body shape, the distinctly 4-segmented antennal club in males, and the different male genitalia shape.

Biological notes. This species appears to be strictly associated with male capitula of *Tarchonanthus littoralis* Herman (Asteraceae), where its larvae develop (and where copulation usually occurs). The plant inhabits sandy, rocky and gravel areas near the sea (between sea level and 600 m, usually in coastal thicket vegetation or river canyons). The species is active on its host plants between late January and late April. Most specimens were collected on host plants, in different localities, in combination with several different species of *Anthystrix* and *Tarchonanthogethes*, including *A. longiclava* Kirejtshuk & Easton, 1988, *A. nigroclava* Kirejtshuk & Easton, 1988, *A. squamosa* (Grouvelle, 1899), *A. flabellicornis* Audisio & Cline, 2009, *A. megalocera* Audisio & Cline, 2009, and *T. bisignatus* **sp. nov.**

Geographic distribution. This species is known from South Africa, with an apparently wide range in Western and Eastern Cape Provinces (Fig. 99), but is likely more widespread in coastal areas of SE KwaZulu-Natal.

2. *Xenostromylogethes cycchramoides* Audisio & Cline, **sp. nov.**

(Figs 55–57, 59, 66, 99)

Type material. ♂ Holotype from **SOUTH AFRICA: Limpopo:** Strydpoortberge Pass, 24°02'44"S, 29°52'12"E, 1650 m, 21.ii.2007, hill slope, P.Audisio and M.Biondi leg., on male capitula of *Tarchonanthus parvicapitulatus* Herman (Asteraceae) (AMG). Paratypes: same data as holotype, 12 ♂, 15 ♀ (CAR, AMG, TMSA, NMP); **North West Province:** Magaliesberg ('Transvaal, Magaliesberg' in the original label), without indication of altitude and more detailed locality), 25°51'S, 27°29'E, 8.iv.1973, S. Endrödy-Younga leg., on unidentified 'flowering shrubs', 4 ♀ (TMSA, CAR).

Description (male holotype). Small (length 2.0 mm; Fig. 57), reddish-brown, pubescence long and dense, golden to silvery-whitish, widely obscuring the dark-brown (pronotal sides yellowish-orange) dorsal body surface; legs, antennae and mouth parts uniformly yellowish. Setae on lateral margin of pronotum 0.5–0.7 times as long as those on elytral disc.

Antennal club ~1.3 times as long as wide, relatively small, yellowish, composed of last three antennomeres, with antennomere 8 short but relatively wide (Fig. 66).

Protibiae minutely toothed along outer edge (Fig. 57).

Ventral sexual characters represented by moderately triangular impressed posterior two-thirds of metaventricle, and a large tuft of short dark setae in middle of first two abdominal ventrites (as in Fig. 95).

Male genitalia as in Figs 55–56.

Female. Posterior two-thirds of metaventricle nearly simple and flat; without tuft of short dark setae in middle of first two abdominal ventrites. Antennal club with 8th antennomere short as in males, but slightly narrower than in males. Ovipositor as in Fig. 59, rather large and moderately blunt at apex, with a single outer pre-distal spicule on each side.

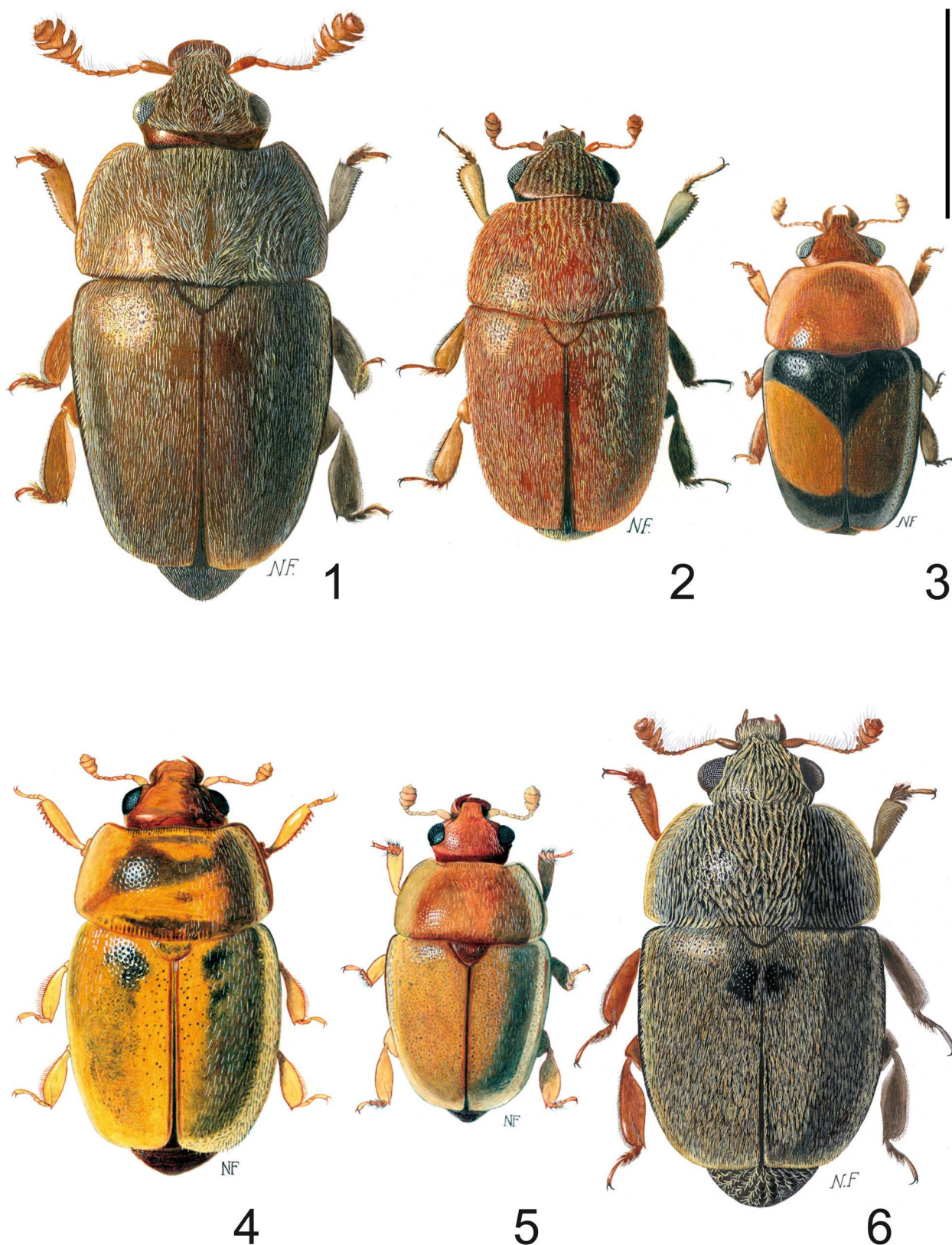
Variation. This species exhibits limited variability in length, 1.9–2.2 mm, and body coloration (pronotal sides yellowish to orange; legs, antennae and mouth parts uniformly yellowish to orange).

Biological notes. This species is associated with male capitula of *Tarchonanthus parvicapitulatus* Herman (Asteraceae), especially in rocky habitats and ravines at intermediate altitudes (1400–1800 m a.s.l.). This species is probably active on its host-plants between late February and late April, and was collected on the same host plants in combination with *Tarchonanthogethes hystrix* **sp. nov.**, *T. fasciatus* **sp. nov.**, and *Anthystrix endroedyi* Audisio & Cline, 2009.

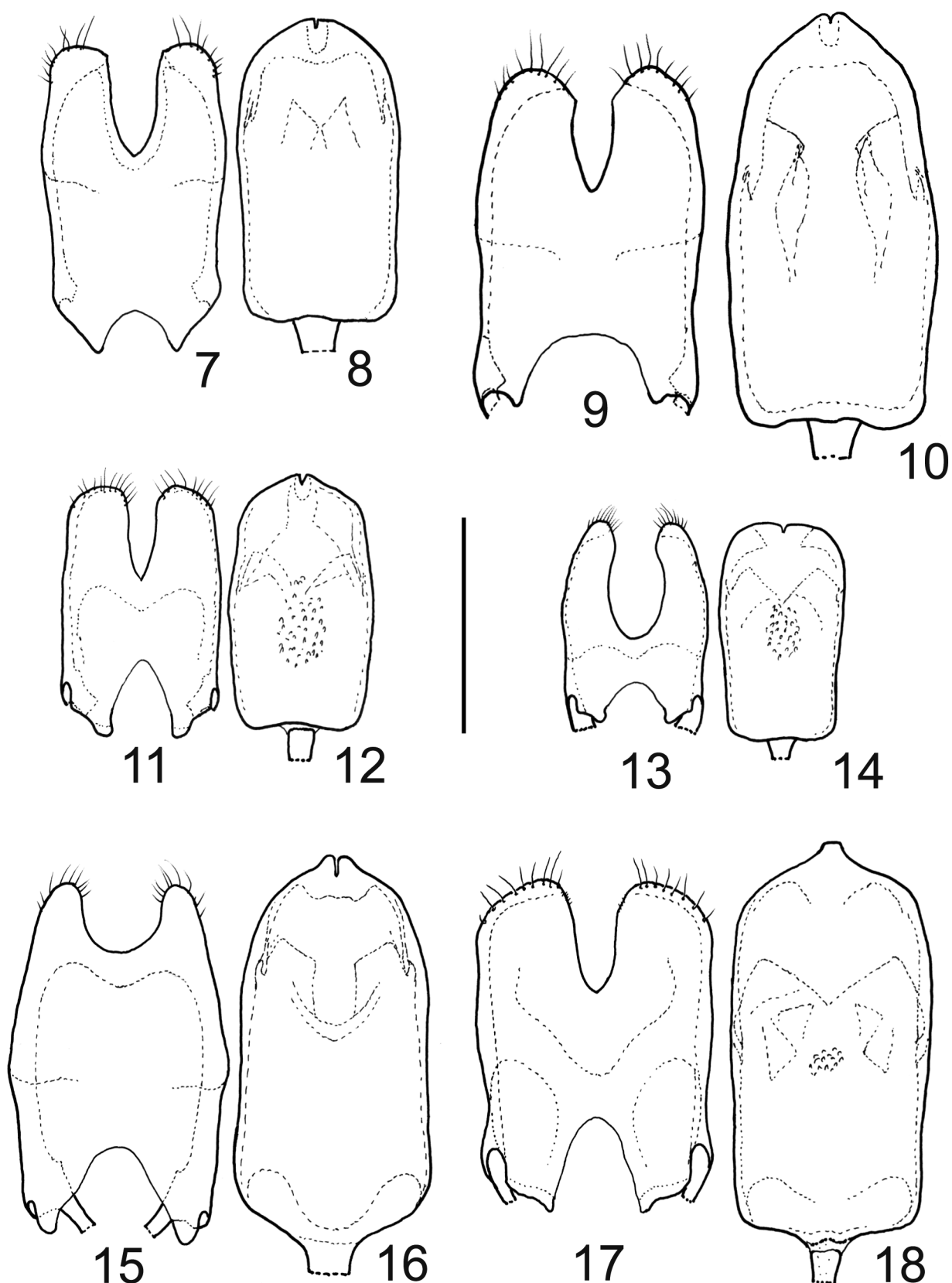
Comparative notes. This species is easily distinguished from the geographically vicariant *X. luculentus* by the 3-segmented antennal club in both sexes, smaller body, and different male genitalia.

Geographic distribution. This species is known from the two above listed localities in the eastern portion of North West Province and SW Limpopo, South Africa (Fig. 99).

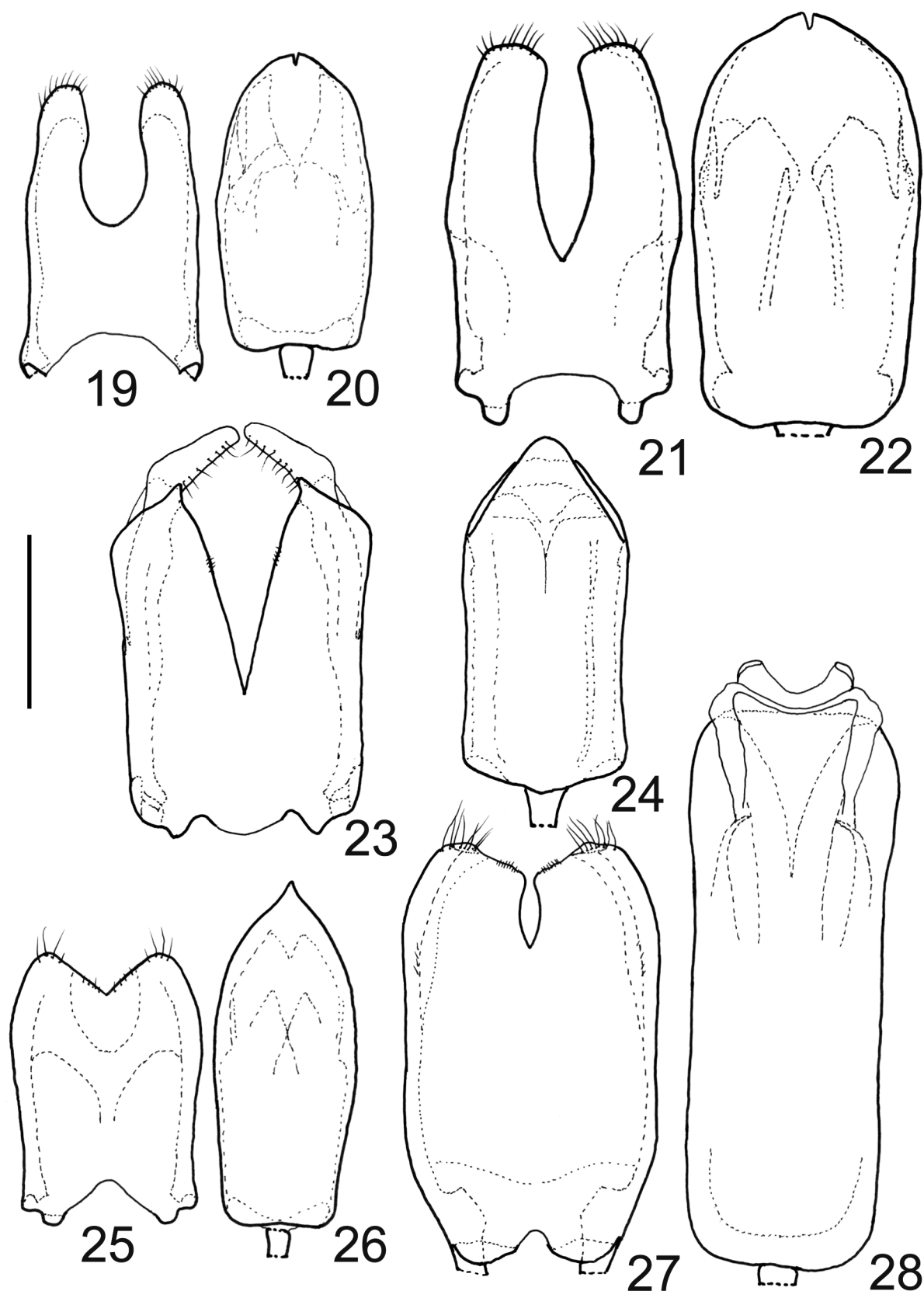
Etymology. The specific epithet is derived from *Cychnus* Kugelann, 1794, to emphasize its short and convex body, which is similar to that of this nitidine genus.



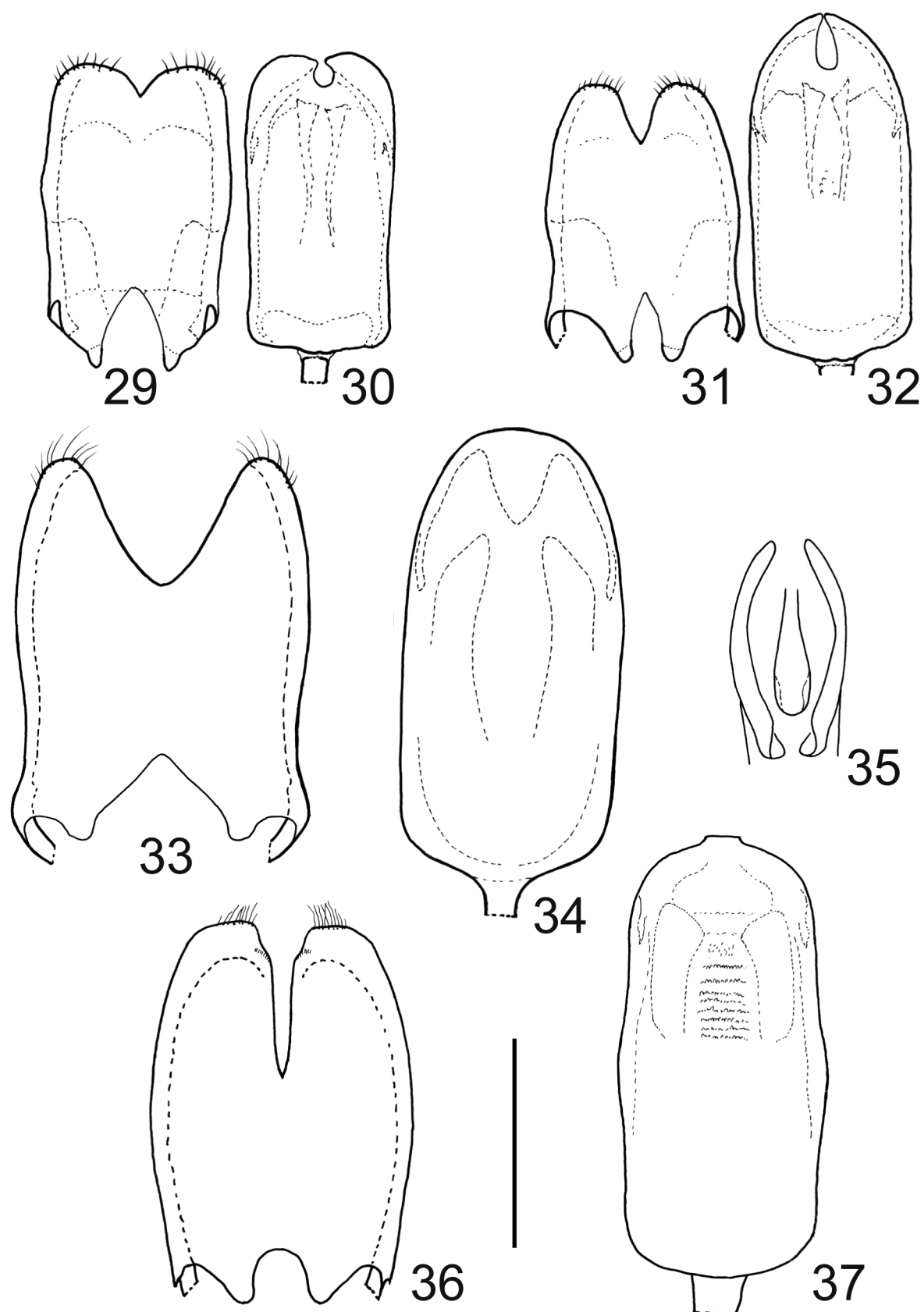
FIGURES 1–6. Dorsal habitus of *Tarchonanthogethes* and *Xenostromgylogethes* spp.: 1) *T. rotundiclava* (Kirejtshuk & Easton, 1988), ♂ from Colchester, South Africa; 2) *T. manconiae* sp. nov. ♂ paratype from Kuruman, South Africa; 3) *T. fasciatus* sp. nov., ♀ paratype from Magaliesberg, South Africa; 4) *T. pectinipes* sp. nov., ♀ paratype from Lillie Floral Nature Reserve, South Africa; 5) *T. thalycrifformis* sp. nov., ♂ paratype from Zuurberg Pass, South Africa; 6) *X. luculentus* (Kirejtshuk & Easton, 1988), ♂ from Wilderness National Park, South Africa. Scale bar = 1 mm.



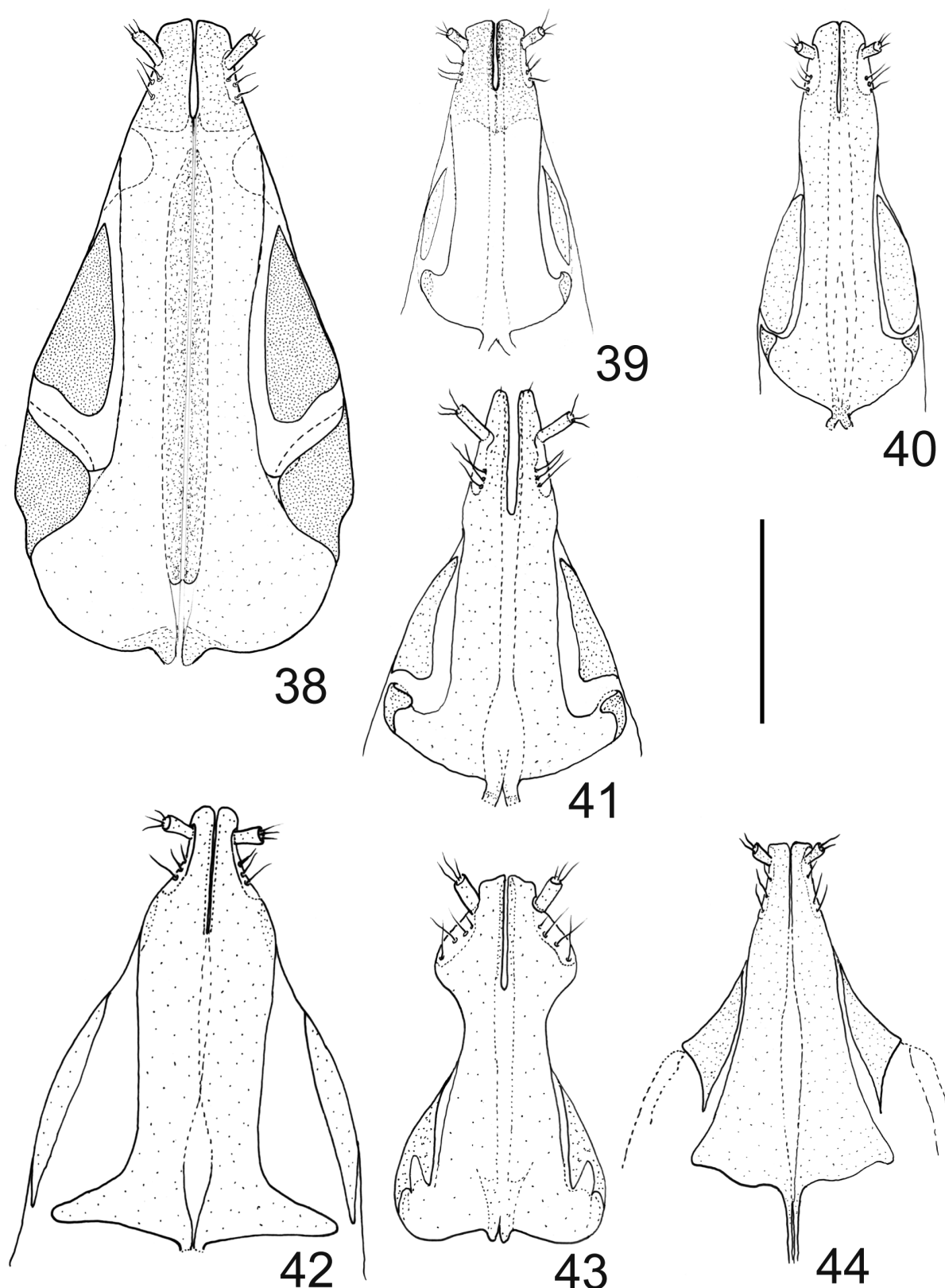
FIGURES 7–18. Tegmen and median lobe of aedeagus, dorsal view, for *Tarchonanthogethes* spp.: *T. martini* (Grouvelle, 1899), ♂ from South Africa, Tzaneen (7–8) and Richard’s Bay (9–10); *T. autumnalis* sp. nov., ♂ paratype from South Africa, Grahamstown (11–12); *T. lilliputianus* sp. nov., ♂ paratype from South Africa, Haenerstburg (13–14); *T. maasai* sp. nov., ♂ paratype from Kenya, Gilgil (15–16); *T. manconiae* sp. nov., ♂ paratype from South Africa, Kuruman (17–18). Scale bar = 0.20 mm.



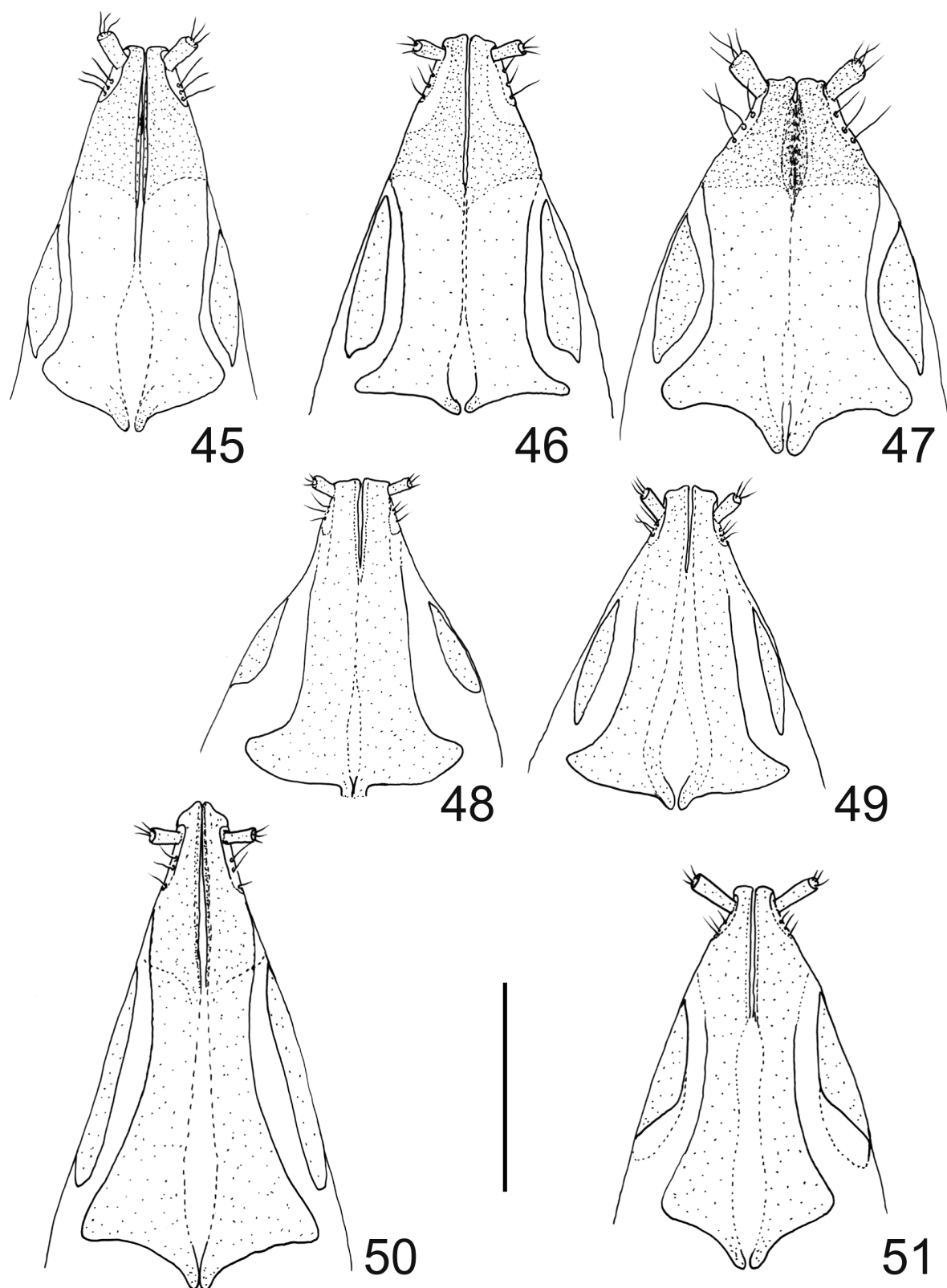
FIGURES 19–28. Tegmen and median lobe of aedeagus, dorsal view, for *Tarchonanthogethes* spp.: *T. thalycriformis* sp. nov., ♂ paratype from South Africa, Zuurberg Pass (19–20); *T. capeneri* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Pretoria (21–22); *T. flavus* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Richard's Bay (23–24); *T. hermani* sp. nov., ♂ paratype from South Africa, Grahamstown (25–26); *T. hystrix* sp. nov., ♂ paratype from South Africa, Magaliesberg (27–28). Scale bar = 0.20 mm.



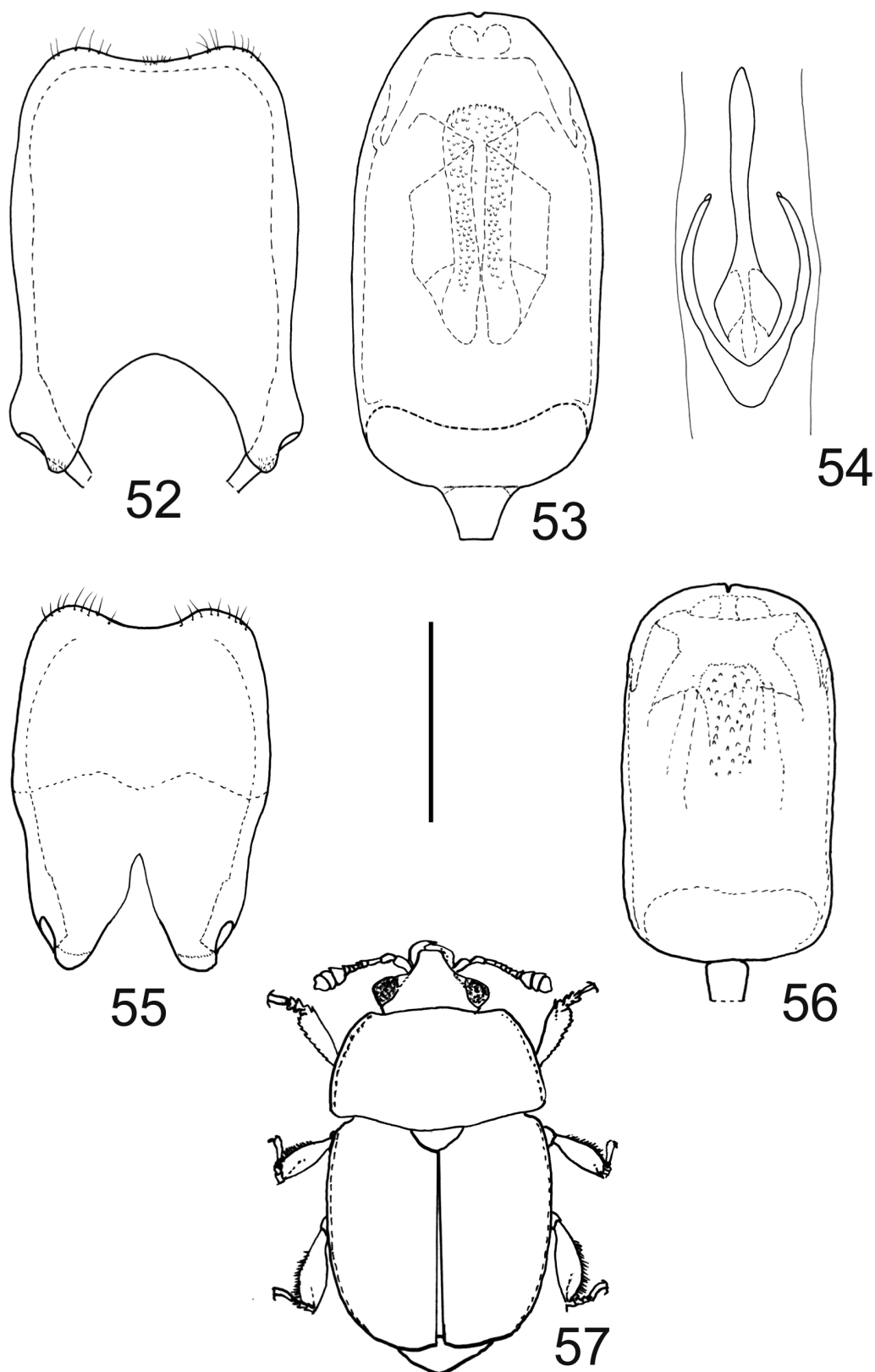
FIGURES 29–37. Tegmen and median lobe of aedeagus, dorsal view, for *Tarchonanthogethes* spp.: *T. fasciatus* sp. nov., ♂ paratype from South Africa, Magaliesberg (29–30); *T. bisignatus* sp. nov., ♂ paratype from South Africa, Gamtoosriviermond (31–32); *T. rotundiclava* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Colchester (33–34; main aedeagal sclerites of the same, dorsal view, 35); *T. gratiellae* sp. nov., ♂ holotype from Kenya, Aberdares National Park (36–37). Scale bar = 0.20 mm.



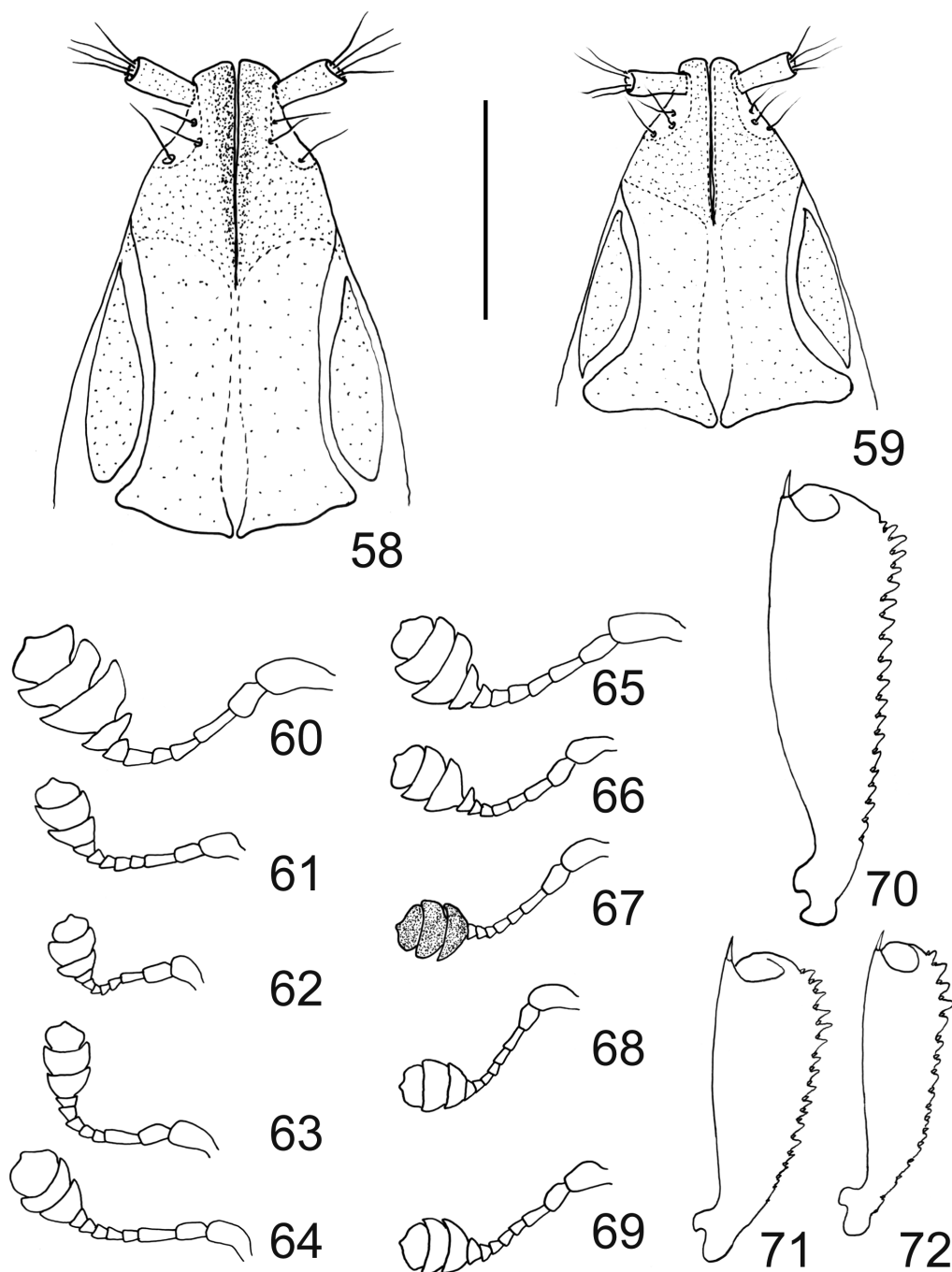
FIGURES 38–44. Distal portion of ovipositor, ventral view, for *Tarchonanthogethes* spp.: *T. martini* (Grouvelle, 1899), ♀ from South Africa, Richard's Bay (38); *T. autumnalis* **sp. nov.**, ♀ paratype from South Africa, Grahamstown (39); *T. lilliputianus* **sp. nov.**, ♀ paratype from South Africa, Haenerstburg (40); *T. capeneri* (Kirejtshuk & Easton, 1988), female from South Africa, Middelburg (41); *T. rotundiclava* (Kirejtshuk & Easton, 1988), ♀ from South Africa, Colchester (42); *T. thalycriformis* **sp. nov.**, ♀ paratype from South Africa, Zuurberg Pass (43); *T. assutus* (Easton, 1960), ♀ holotype from Kenya, Central Province, Muguga (44). Scale bar = 0.10 mm.



FIGURES 45–51. Distal portion of the ovipositor, ventral view, for *Tarchonanthogethes* spp.: *T. hystrix* **sp. nov.**, ♀ paratype from South Africa, Magaliesberg (45); *T. maasai* **sp. nov.**, ♀ paratype from Kenya, Gilgil (46); *T. manconiae* **sp. nov.**, ♀ paratype from South Africa, Kuruman (47); *T. fasciatus* **sp. nov.**, ♀ paratype from South Africa, Magaliesberg (48); *T. bisignatus* **sp. nov.**, ♀ paratype from South Africa, Gamtoosriviermond (49); *T. pectinipes* **sp. nov.**, ♀ paratype from South Africa, Lillie Floral Nature Reserve (50); *T. flavus* (Kirejtshuk & Easton, 1988), ♀ from South Africa, Richard's Bay (51). Scale bar = 0.10 mm.

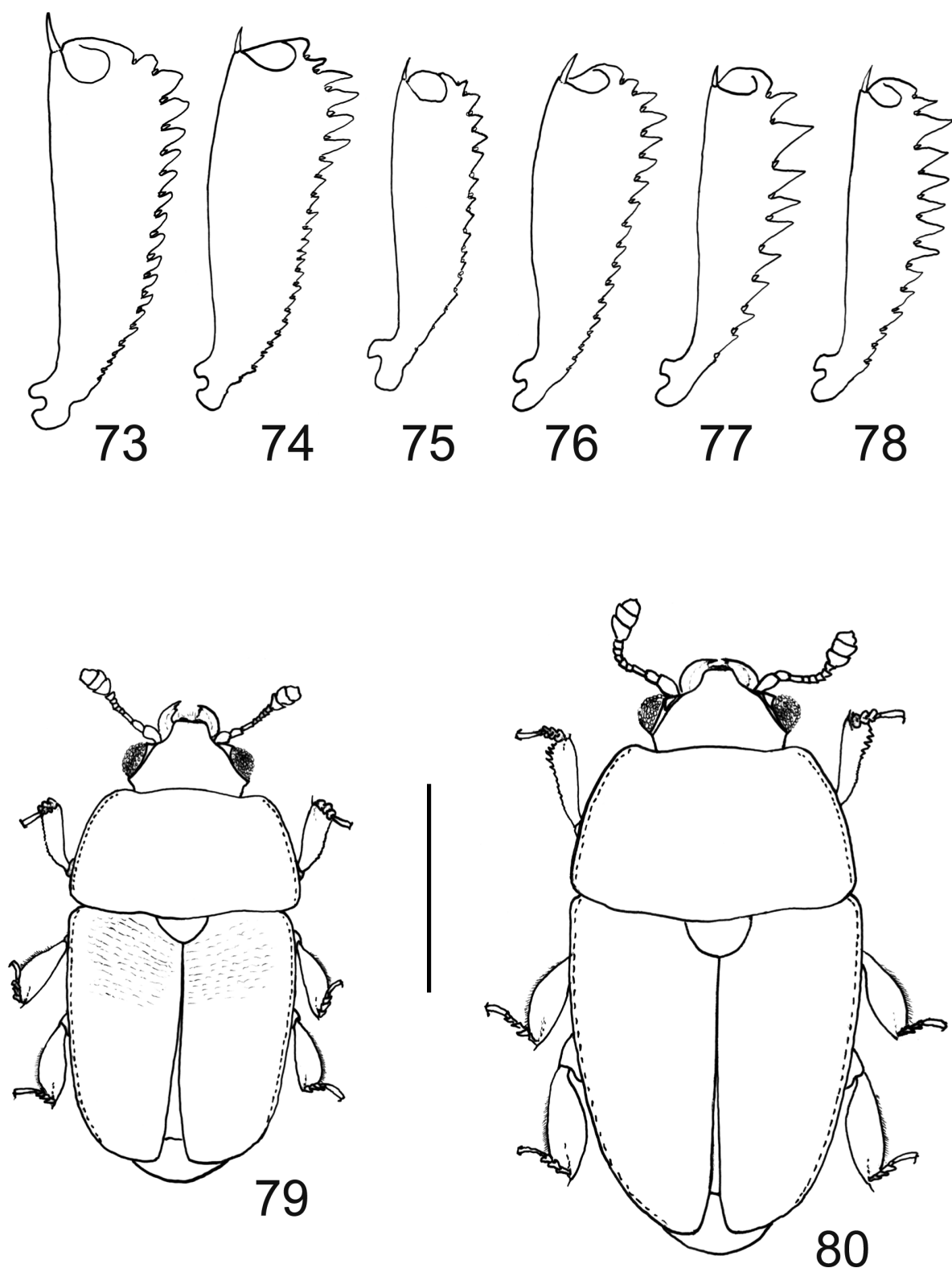


FIGURES 52–57. Tegmen and median lobe of aedeagus, dorsal view, for *Xenostromgylogethes* spp. (52–56): *X. luculentus* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Wilderness National Park (52–53; main aedeagal sclerites of the same, dorsal view, 54); *X. cychramoides* sp. nov., ♂ paratype from South Africa, Strydpoortberge Pass (55–56). Body outline of *X. cychramoides* sp. nov., ♂ paratype from South Africa, Strydpoortberge Pass (57). Scale bar = 0.20 mm (for Figs 52–56) and 1 mm (for Fig. 57).

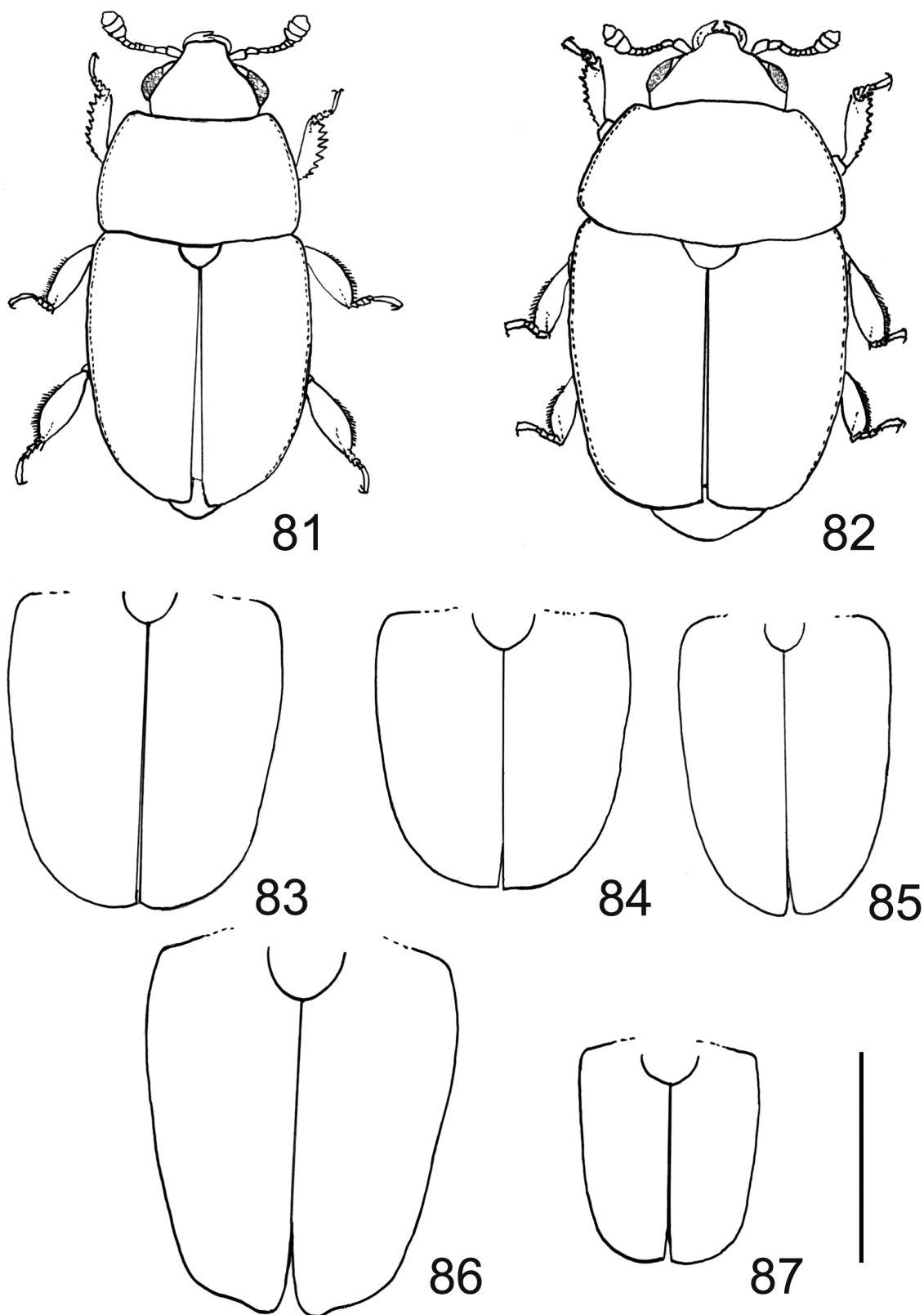


FIGURES 58–72. Distal portion of the ovipositor, ventral view, for *Xenostromgylogethes* spp. (58–59): *X. luculentus* (Kirejtshuk & Easton, 1988), ♀ from South Africa, Wilderness National Park (58); *X. cychramoides* **sp. nov.**, ♀ paratype from South Africa, Strydpoortberge Pass (59).

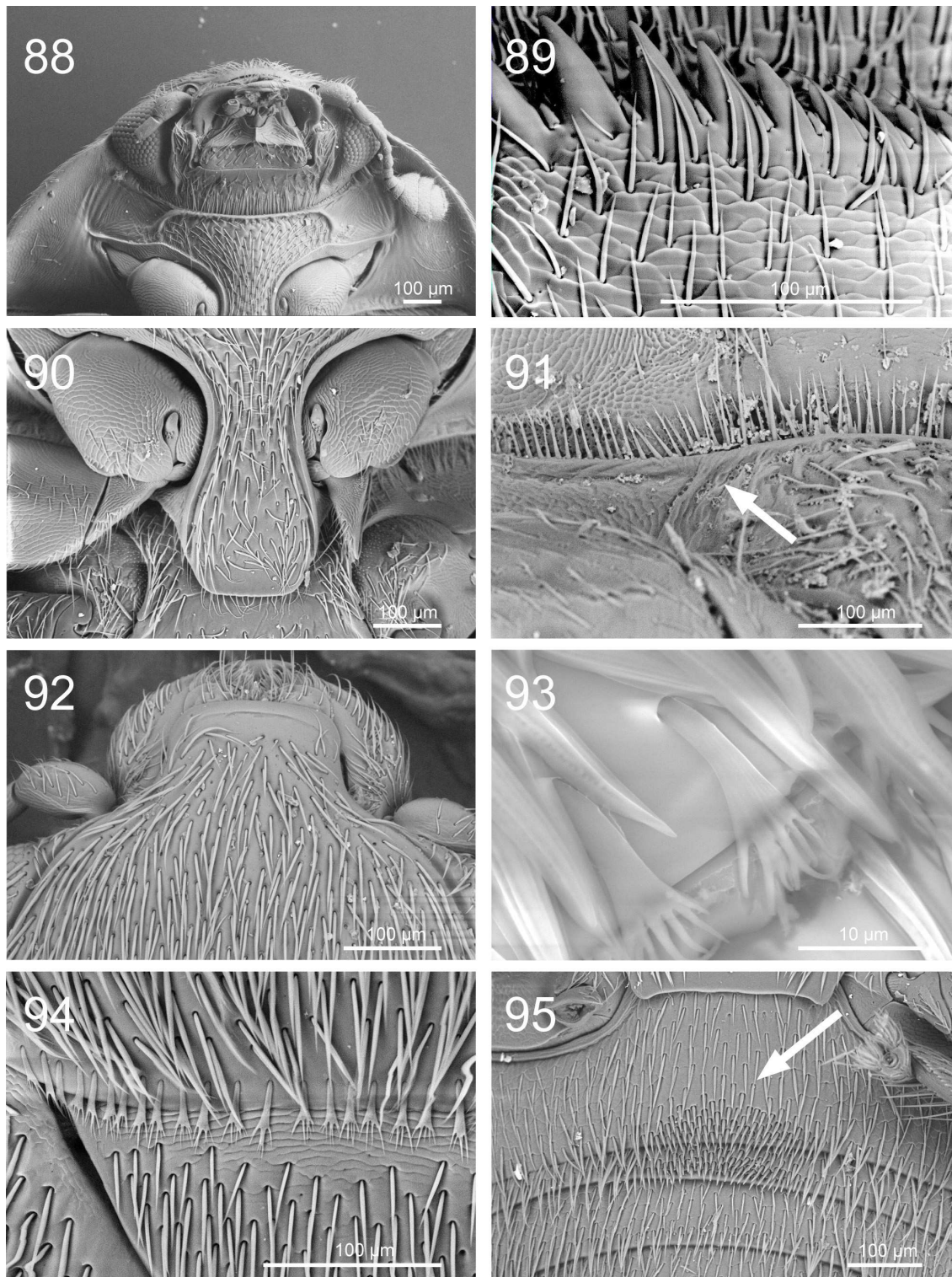
Male left antenna, dorsal view, for *Tarchonanthogethes* and *Xenostromgylogethes* spp. (60–69): *T. rotundiclava* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Colchester (60); *T. martini* (Grouvelle, 1899), ♂ from South Africa, Tzaneen (61); *T. bisignatus* **sp. nov.**, ♂ paratype from South Africa, Gamtoosriviermond (62); *T. manconiae* **sp. nov.**, ♂ paratype from South Africa, Kuruman (63); *T. maasai* **sp. nov.**, ♂ paratype from Kenya, Gilgil (64); *X. luculentus* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Wilderness National Park (65); *X. cychramoides* **sp. nov.**, ♂ paratype from South Africa, Strydpoortberge Pass (66); *T. hystrix* **sp. nov.**, ♂ paratype from South Africa, Magaliesberg (67); *T. thalycriformis* **sp. nov.**, ♂ paratype from South Africa, Zuurberg Pass (68); *T. capeneri* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Pretoria (69). Protibiae of *Tarchonanthogethes* and *Xenostromgylogethes* spp. (70–72): *X. luculentus* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Wilderness National Park (70); *T. flavus* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Richard's Bay (71); *T. thalycriformis* **sp. nov.**, ♂ paratype from South Africa, Zuurberg Pass (72). Scale bar = 0.10 mm (for Figs 58–59) and 0.50 mm (for Figs 60–72).



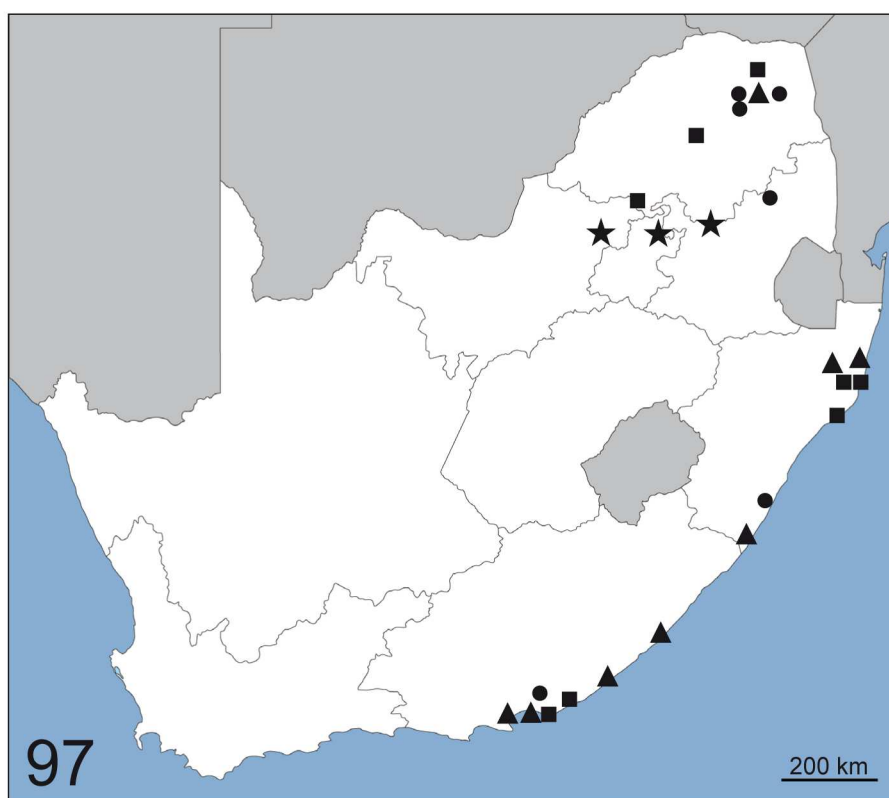
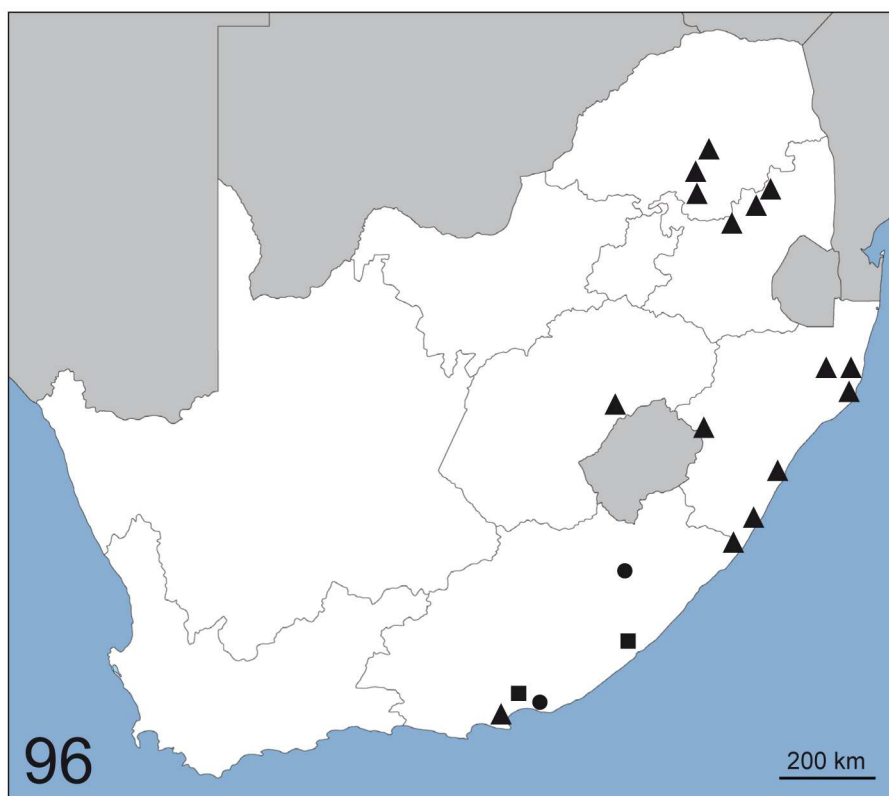
FIGURES 73–80. Protibiae of *Tarchonanthogethes* spp. (73–78): *T. rotundiclava* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Colchester (73); *T. martini* (Grouvelle, 1899), ♂ from South Africa, Richard's Bay (74); *T. lilliputianus* **sp. nov.**, ♂ paratype from Haenerstburg, South Africa (75); *T. manconiae* **sp. nov.**, ♂ paratype from South Africa, Kuruman (76); *T. capeneri* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Pretoria (77); *T. pectinipes* **sp. nov.**, ♀ paratype from South Africa, Lillie Floral Nature Reserve (78). Body outline of *Tarchonanthogethes* spp. (79–80): *T. hermani* **sp. nov.**, ♂ paratype from South Africa, Grahamstown (79); *T. martini* (Grouvelle, 1899), ♂ from South Africa, Santa Lucia Estuary (80). Scale bar = 0.20 mm (for Figs 73–78) and 1 mm (for Figs 79–80).



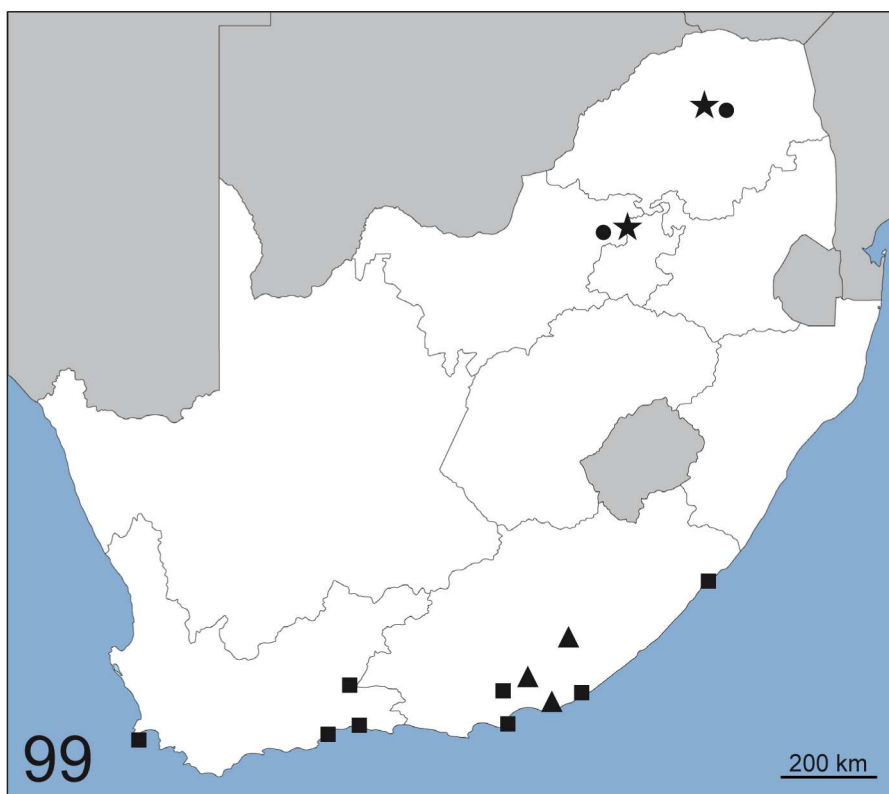
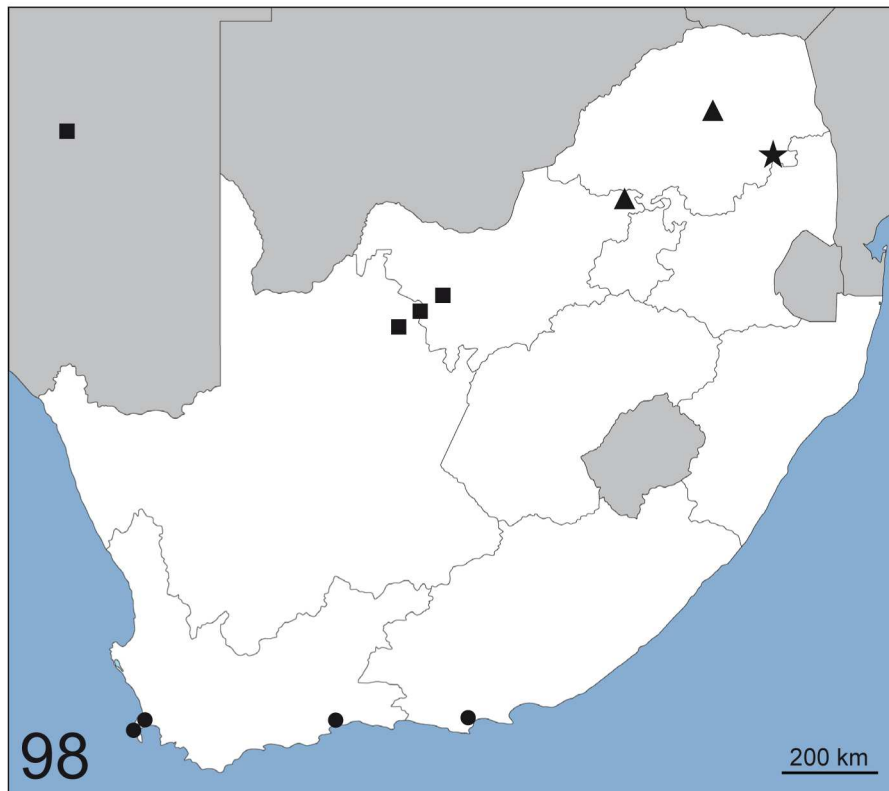
FIGURES 81–87. Body outline of *Tarchonanthogethes* spp. (81–82): *T. capeneri* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Pretoria (81); *T. flavus* (Kirejtshuk & Easton, 1988), ♂ from South Africa, Richard's Bay (82). Elytral shape of *Tarchonanthogethes* spp. (83–86): *T. martini* (Grouvelle, 1899), ♀ from South Africa, Colchester (83); *T. manconiae* **sp. nov.**, ♀ paratype from South Africa, Kuruman (84); *T. maasai* **sp. nov.**, ♀ paratype from Kenya, Gilgil (85); *T. rotundiclava* (Kirejtshuk & Easton, 1988), ♀ from South Africa, Colchester (86); *T. lilliputianus* **sp. nov.**, ♀ paratype from South Africa, Haenerstburg (87). Scale bar = 1 mm (for Figs 81–82); = 0.80 mm (for Figs 83–87).



FIGURES 88–95. SEM images. *Tarchonanthogethes martini* (Grouvelle, 1899), ♀ from Colchester, South Africa, head (ventral view) with antennal grooves and prosternum with proepisternal-prosternal sutures (88); same specimen, prosternal process (90); same specimen, periocular portion of head, dorsal view (92); same specimen, microchetae on posterior edge of pronotum, anterior to scutellar shield (94); same specimen, teeth on prolegs, with annexed basal spicules (89). *Sebastiangethes anthystrixoides* Audisio, Kirk-Spriggs & Cline, 2008, ♂ paratype from Kuruman, South Africa, proepisternal-prosternal suture (91); same specimen, microchetae on posterior edge of pronotum, anterior to scutellar shield (93). *Xenostromylogethes luculentus* (Kirejtshuk and Easton, 1988), ♂ from Wilderness National Park, South Africa, ventrites (arrow indicates tufts of dark setae) (95). Scale bar = 450 µm (for Fig. 88), 280 µm (for Figs 90, 92, 95), 140 µm (for Figs 91, 94), 70 µm (for Fig. 89), and 45 µm (for Fig. 93).



FIGURES 96–97. Maps of known geographic distribution of *Tarchonanthogethes* spp. in South Africa (96–97). *T. martini* (Grouvelle, 1899) (triangles); *T. hermani* **sp. nov.** (circles); *T. thalycriformis* **sp. nov.** (squares) (96); *T. rotundiclava* (Kirejtshuk & Easton, 1988) (triangles); *T. lilliputianus* **sp. nov.** (circles); *T. flavus* (Kirejtshuk & Easton, 1988) (squares); *T. capeneri* (Kirejtshuk & Easton, 1988) (stars) (97).



FIGURES 98–99. Maps of known geographic distribution of *Tarchonanthogethes* and *Xenostromylogethes* spp. in South Africa and Namibia (98–99). *T. fasciatus* **sp. nov.** (triangles); *T. bisignatus* **sp. nov.** (circles); *T. manconiae* **sp. nov.** (squares); *T. pectinipes* **sp. nov.** (star) (98); *T. autumnalis* **sp. nov.** (triangles); *T. hystrix* **sp. nov.** (circles); *X. luculentus* (Kirejtshuk & Easton, 1988) (squares); *X. cychramoides* **sp. nov.** (stars) (99).



FIGURE 100. Map of known geographic distribution of *Tarchonanthogethes* spp. in Kenya. *T. maasai* sp. nov. (stars); *T. gratiellae* sp. nov. (circles); *T. assutus* (Easton, 1960) (squares).

Identification key to African Genera and Species of the ‘*Anthystrix* genus-complex’

- 1 (2) Anterior portion of prosternum with distinct but partially obliterated proepisternal-prosternal sutures, not raised to form two distinct ridges (Fig. 91). Postocular furrows on dorsal side of head absent or almost obliterated anteriorly. Anterior edge of clypeus markedly concave (Fig. 1 in Audisio *et al.* 2008), or subtruncate (Fig. 6) 3
- 2 (1) Anterior portion of prosternum with long, markedly raised proepisternal-prosternal sutures, which form two distinct ridges to receive the antennal flagellomeres when beetles are motionless (Fig. 88). Postocular furrows on dorsal side of head distinct, complete, and relatively deep (Fig. 92). Anterior edge of clypeus distinctly transversely truncate (Fig. 92). 7
- 3 (4) Anterior margin of clypeus strongly concave (Fig. 1 in Audisio *et al.* 2008). Prosternal process narrow, its maximum width little less than the length of second antennomere (Fig. 16 in Audisio *et al.* 2008). Male antennae *Pria*-like in shape (i.e., antennomeres 3 to 5 peculiarly elongate, with slender club), and exhibiting allometric development, i.e. club with markedly larger and slender articles in largest specimens (Figs 1, 13 in Audisio *et al.* 2008). Postocular furrows on dorsal side of head almost obliterated. Ventral side in both sexes without dense tufts of dark brown hairs on first two visible ventrites. Male and female genitalia as figured (Figs 3–5, 11 in Audisio *et al.* 2008), ovipositor with outer proximal portion of gonocoxites distinctly indented. Length: 1.9–2.9 mm. NW South Africa (North West Province) and S Namibia. Larvae on male inflorescences of *Tarchonanthus camphoratus* L. *Sebastiangethes anthystrixoides* Audisio, Kirk-Spriggs & Cline, 2008
- 4 (3) Anterior margin of clypeus truncate to feebly concave (Fig. 6). Prosternal process more obtusely rounded distad and wider, its maximum width little more than the length of second antennomere (Fig. 29d in Audisio *et al.* 2009b). Male antennae with compact club, never exhibiting allometric development (Figs 6, 65–66). Postocular furrows on dorsal side of head distinct. Ventral side in males with a widely transverse dense tuft of dark brown hairs on first two visible ventrites (Fig. 95). Ovipositor with outer proximal portion of gonocoxites simple, not indented (Figs 58–59). [Genus *Xenostromylogethes*] 5
- 5 (6) Antennal club distinctly four-segmented in males (Figs 6, 65), three-segmented in females. Body larger on average (Length:

- 2.1–2.7 mm) (Fig. 6). Male and female genitalia as figured (Figs 52–54, 58), median lobe of aedeagus distinctly narrowed distad. Southern South Africa (from Cape Peninsula in Western Cape Province, to NE Eastern Cape Province). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Xenostromylogethes luculentus* (Kirejtshuk & Easton, 1988)
- 6 (5) Antennal club three-segmented in both sexes (Figs 57, 66). Body smaller on average (Length: 1.9–2.2 mm) (Fig. 57). Male and female genitalia as figured (Figs 55–56, 59), median lobe of aedeagus rounded distad. Northern South Africa (from southern portion of Limpopo to eastern portion of North West Province). Larvae on male inflorescences of *Tarchonanthus parvicapitulatus* Herman *Xenostromylogethes cycchramoides* Audisio & Cline, **sp. nov.**
- 7 (8) Male antennal club peculiarly large, flat, and foliaceous (Figs 6–8, 9–11 in Audisio *et al.* 2009a). Antennal furrows on ventral side of head arcuately convergent posteriorly (Fig. 35 in Audisio *et al.* 2009a). Males exhibiting a peculiar violin-shaped aedeagus, with distinct pocket-shaped impressions on both sides, and T-shaped distal apex (Figs 15–25 in Audisio *et al.* 2009a); tegmen with a peculiarly deep and narrow proximal excision (Figs 14–24 in Audisio *et al.* 2009a). Females with ovipositor possessing long styli and long distal setae (Figs 26–30 in Audisio *et al.* 2009a). [Genus *Anthystrix*]. 9
- 8 (7) Male antennal club smaller, more convex, never markedly flat and foliaceous (Figs 1–5, 60–64, 67–69). Antennal furrows on ventral side of head straight, regularly and moderately convergent posteriorly, or nearly parallel-sided in anterior two-thirds (Fig. 88). Males exhibiting a normal-shaped aedeagus, without distinct pocket-shaped impressions on both sides, and with simple (acute to narrowly truncate or obtusely rounded) distal apex (Figs 8–37); tegmen without a peculiarly deep and narrow proximal excision (Figs 7–36). Females with ovipositor possessing variably shaped styli and typically shorter distal setae (Figs 38–51). [Genus *Tarchonanthogethes*] 20
- 9 (10) Antennal club in both sexes uniformly yellowish, as well as flagellum (Figs 10–11 in Audisio *et al.* 2009a). 11
- 10 (9) Antennal club in both sexes entirely, or at least in part darker, blackish-brown to brown, remaining portion of antennae yellowish (Figs 6–9, 12–13 in Audisio *et al.* 2009a). 13
- 11 (12) Antennal club in males flat, fan-shaped, composed of the last eight or nine antennomeres (Fig. 10 in Audisio *et al.* 2009a). Last two maxillary palpomeres blackish-brown in both sexes. Both meso- and metatibiae in males markedly sinuate along inner edges (Fig. 4 in Audisio *et al.* 2009a). Male and female genitalia as figured (Figs 24–25, and 30 in Audisio *et al.* 2009a). Length: 2.1–2.7mm. South Africa (eastern portion of the Western Cape). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Anthystrix flabellicornis* Audisio & Cline, 2009
- 12 (11) Antennal club in males less flat, oval and shorter, composed of last five antennomeres (Fig. 11 in Audisio *et al.* 2009a). Last two maxillary palpomeres orange in both sexes. Only metatibiae in males moderately sinuate along inner edge (Fig. 3 in Audisio *et al.* 2009a). Male and female genitalia as figured (Figs 20–21 and 28 in Audisio *et al.* 2009a). Length: 2.0–2.5 mm. South Africa (North West Province, KwaZulu-Natal). Larvae likely on male inflorescences of *Tarchonanthus parvicapitulatus* Herman *Anthystrix endroedyi* Audisio & Cline, 2009
- 13 (14) Last one or two antennomeres in both sexes, or only outer portion of entire antennal club, much darker, blackish to brown, than remaining yellowish portion of antennae (Figs 8–9, 13 in Audisio *et al.* 2009a). 16
- 14 (13) Entire antennal club in both sexes markedly darker, blackish to brown, than remaining yellowish portion of antennae (Figs 6–7, 12 in Audisio *et al.* 2009a) 18
- 16 (17) Last two antennomeres in both sexes dark (Figs 9, 13 in Audisio *et al.* 2009a). Antennal club in males flat, composed of last seven or eight antennomeres, 2.8–3.0 times as long as wide, with last seven antennomeres strongly enlarged, and antennomere 8 only moderately larger than antennomere 7 (Fig. 9 in Audisio *et al.* 2009a). Antennal club in females composed of last three, only moderately enlarged, antennomeres (Fig. 13 in Audisio *et al.* 2009a). Length: 2.0–2.7 mm. Male and female genitalia as figured (Figs 22–23 and 29 in Audisio *et al.* 2009a). South Africa (Eastern Cape). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Anthystrix longiclava* Kirejtshuk & Easton, 1988
- 17 (16) Only outer two-fifths of last six antennomeres of male antennal club dark, piceous-brown (Fig. 8 in Audisio *et al.* 2009a), and the whole last antennomere of female club piceous-brown. Antennal club in males flat, composed of the last seven antennomeres (Fig. 8 in Audisio *et al.* 2009a), nearly 2.0 times as long as wide, with the last five antennomeres strongly enlarged, especially antennomere 9, which is nearly as long as the combined length of antennomeres 7 and 8. Length: 2.0–2.4 mm. Male and female genitalia as figured (Figs 18–19 and 27 in Audisio *et al.* 2009a). South Africa (Eastern portion of the Western Cape). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Anthystrix megalocera* Audisio & Cline, 2009
- 18 (19) Male antennal club narrow and longer (Fig. 6 in Audisio *et al.* 2009a), 1.8–1.9 times as long as wide, antennomere 8 1.6 times wider than antennomere 7. Length: 2.2–2.7 mm. Male and female genitalia as figured (Figs 14–15 and 26 in Audisio *et al.* 2009a). South Africa (SW portion of the Western Cape). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Anthystrix squamosa* (Grouvelle, 1899)
- 19 (18) Male antennal club wide and shorter (Fig. 7 in Audisio *et al.* 2009a), 1.5–1.6 times as long as wide, antennomere 8 2.0 times wider than antennomere 7. Length: 2.1–2.6 mm. Male genitalia as figured (Figs 16–17 in Audisio *et al.* 2009a). Ovipositor as in preceding species. South Africa (southern and eastern portion of the Western Cape). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Anthystrix nigroclava* Kirejtshuk & Easton, 1988
- 20 (21) Elytra markedly and regularly transversely strigose 22
- 21 (20) Elytra not transversely strigose, sometimes only with evidence of orange-peel-like transverse spaces between discal punctures 24
- 22 (23) Elytra arcuately narrowed distally at sides, slightly shorter than combined width (Fig. 82). Male and female genitalia as figured (Figs 23–24, 51). Length: 2.0–2.6 mm. South Africa (Eastern Cape, KwaZulu-Natal to Limpopo, and eastern North West Province). Larvae on male inflorescences of *Brachylaena* spp. (in particular *Brachylaena discolor* DC.). *Tarchonanthogethes flavus* Kirejtshuk & Easton, 1988
- 23 (22) Elytra more parallel-sided, as long as or slightly longer than combined width (Fig. 79). Length: 1.9–2.1 mm. Male genitalia as figured (Figs 25–26). Ovipositor unknown. South Africa (Eastern Cape). Larvae likely on male inflorescences of *Brachylaena*

- ilicifolia* (Lam.) Phillips and Schweick. *Tarchonanthogethes hermani* Audisio & Cline, **sp. nov.**
- 24 (25) Protibiae with a series of strongly developed, sharp and acute teeth on most of outer edge (Figs 77–78). 26
- 25 (24) Protibiae with a series of smaller, blunt to moderately acute teeth on distal third of outer edge (Figs 72, 73–76). 28
- 26 (27) Elytra as long as or slightly shorter than combined width (Fig. 4). Body wide, oval, almost entirely pale yellow to pale orange and more shiny, elytra with peculiarly deep and coarse punctures nearly 2.0 times as large as eye facets, space between punctures shiny, with irregular traces of orange peel-like and coarse transverse strigosity. Male genitalia unknown; female genitalia as figured (Fig. 50). Length: 2.0–2.2 mm. South Africa (Limpopo). Larval host-plants unknown; likely on male inflorescences of *Tarchonanthus trilobus* DC. *Tarchonanthogethes pectinipes* Audisio & Cline, **sp. nov.**
- 27 (26) Elytra distinctly longer (1.2–1.3x) than combined width (Fig. 81). Body narrow, more parallel-sided, pale orange to brown, elytra with moderately impressed and dense punctures nearly as large as eye facets, space between punctures smooth and shiny. Male and female genitalia as figured (Figs 21–22, 41). Length: 1.9–2.1 mm. South Africa (Gauteng and North West Province to Limpopo). Larval host plants unknown; likely on male inflorescences of *Brachylaena* sp. *Tarchonanthogethes capeneri* (Kirejtshuk & Easton, 1988)
- 28 (29) Elytra brown to blackish, with two large yellowish or orange discal spots (Fig. 3). Body dorsally covered only by relatively shorter and finer pubescence, exposing most of shining dorsal surface (Fig. 3). 30
- 29 (28) Elytra uniformly yellowish to blackish-brown, without large and distinct yellowish or orange discal spots, or entirely orange, sometimes with darker elytral apex or confused darker discal spots (Figs 1–2, 5). Body dorsally covered by long and dense pubescence, exposing only part of shining dorsal surface (Figs 1–2, 5). 34
- 30 (31) Ovipositor as figured (Fig. 44), with outer gonocoxite subdivisions rather acutely and peculiarly pointed outwards. Body long and peculiarly narrow (length: 1.9 mm), elytra 1.1 times longer than combined width. Male genitalia unknown. Kenya (Central Province). Larvae likely on male inflorescences of *Brachylaena huillensis* O.Hoffm., or of *Tarchonanthus camphoratus* L. *Tarchonanthogethes assutus* (Easton, 1960)
- 31 (30) Ovipositor as figured (Figs 48–49), with outer gonocoxite subdivisions normally shaped and widely arcuate. Body less long and narrow, elytra 1.0 times longer than combined width (Fig. 3; length: 1.9–2.0 mm.). Male genitalia as figured (Figs 29–32). South Africa. Host plant variable 32
- 32 (33) Male and female genitalia as figured (Figs 29–30, 48), with more obtusely truncate median lobe of the aedeagus distad, and tegmen less deeply incised distad. Northern South Africa (southern Limpopo, North West Province). Larvae on male inflorescences of *Tarchonanthus parvicapitulatus* Herman *Tarchonanthogethes fasciatus* Audisio & Cline, **sp. nov.**
- 33 (32) Male and female genitalia as figured (Figs 31–32, 49), with more acutely shaped median lobe of the aedeagus distad, and tegmen more deeply incised distad. Southern South Africa (Western Cape Province and Eastern Cape Province). Larvae on male inflorescences of *Tarchonanthus littoralis* Herman *Tarchonanthogethes bisignatus* Audisio & Cline, **sp. nov.**
- 34 (35) Antennal club dark brown and three-segmented in both sexes (Fig. 67). Length: 2.1–2.3 mm. Male and female genitalia as figured (Figs 27–28, 45). South Africa (southern Limpopo, North West Province). Larvae on male inflorescences of *Tarchonanthus parvicapitulatus* Herman. *Tarchonanthogethes hystrix* Audisio & Cline, **sp. nov.**
- 35 (34) Antennal club uniformly yellowish, as remaining portion of antennae in both sexes (Figs 1–2, 5, 60–61, 63–64, 68). 36
- 36 (37) Antennal furrows on ventral side of head straight, uniformly slightly convergent backwards. Antennal club large, rounded and four-segmented in males (Figs 1, 60), smaller and 3-segmented in females. Apical tips of elytra in females prolonged into a short lobe (Fig. 86), arcuately narrowed in males (Fig. 1). Male and female genitalia as figured (Figs 33–35, 42). Length: 2.2–2.8 mm. South Africa (Eastern Cape, KwaZulu-Natal, southern Limpopo). Larvae on male inflorescences of *Brachylaena discolor* DC. and *B. transvaalensis* E.Phillips and Schweick. *Tarchonanthogethes rotundiclava* (Kirejtshuk & Easton, 1988)
- 37 (36) Antennal furrows on ventral side of head almost parallel-sided, at most only slightly convergent backwards in posterior third or fourth (Fig. 88). Antennal club small and 3-segmented in both sexes (Figs 2, 5, 61, 63–64, 68). Apical tips of elytra arcuately narrowed or subtruncate in both sexes, never prolonged into a short lobe in females. Male and female genitalia differently shaped (Figs 7–20, 36–37, 38–40, 43, 46–47) 38
- 38 (39) Body short and dorsally convex, vaguely *Thalycra*-like in appearance (Fig. 5). Antennal furrows on ventral side of head short (shorter than clypeal width), straight, and parallel-sided. Prosternal process much wider than width of antennal club. Body small (length: 1.6–2.0 mm). Female ovipositor very peculiarly shaped distad (Fig. 43). Male genitalia as figured (Figs 19–20). South Africa (Eastern Cape). Larvae on male inflorescences of *Brachylaena elliptica* (Thunb.) Less. *Tarchonanthogethes thalycriformis* Audisio & Cline, **sp. nov.**
- 39 (38) Body more elongate, not *Thalycra*-like (Figs 2, 80). Antennal furrows on ventral side of the head long (longer than clypeal width; Fig. 88). Prosternal process as wide as width of antennal club. Male and female genitalia differently shaped (Figs 7–18, 36–37) 40
- 40 (41) Protibiae with a small group of smaller teeth confined to distal portion of outer edge (Figs 74–75). Male genitalia always with a minute distinct distal excision on median lobe of aedeagus (Figs 8, 10, 12, 14). Ovipositor with outer gonocoxite subdivisions distinctly divided into two small pigmented and more sclerotized arcuate portions (Figs 38–39, 40). 42
- 41 (40) Protibiae with a more regular series of small short teeth on both mesal and distal portions of outer edge (Figs 2, 76). Male genitalia with or without minute distinct apical excision on median lobe of aedeagus (Figs 16, 18, 37). Ovipositor with outer gonocoxite subdivisions possessing a single arcuate and lightly pigmented area (Figs 46–47). 46
- 42 (43) Distal portion of elytra more subtruncate in both sexes (see Fig. 87). Body on average smaller (length: 1.4–1.8 mm), frequently dark brown with markedly paler pronotal sides, and whitish, more erect and contrasting dorsal pubescence, occasionally entire body orange-brown. Tegmen with medial distal excision deeper than 0.5 times length of tegmen, paramera narrower distad, and median lobe of aedeagus blunt distad (Figs 13–14). Ovipositor with distinctly narrower and longer distal portion of gonocoxites (Fig. 40), 2.4–2.5 times longer than wide, and rounded distad. Species from South Africa (Eastern Cape, KwaZulu-

- Natal, Mpumalanga, southern Limpopo). Larvae on male inflorescences of *Brachylaena* spp. *Tarchonanthogethes lilliputianus* Audisio & Cline, **sp. nov.**
- 43 (42) Distal portion of elytra more arcuately narrowed in both sexes (see Figs 80, 83). Body on average larger (length: 1.6–2.8 mm), usually dorsally orange-brown or paler, with slightly paler pronotal sides, and golden, more prostrate and less contrasting dorsal pubescence. Tegmen with medial distal excision shallow less than 0.5 times length of tegmen, paramera wider distad, and median lobe of aedeagus more acute distad (Figs 7–12). Ovipositor with distinctly wider and shorter distal portion of gonocoxites (Figs 38–39), 1.9–2.0 times longer than wide, and obliquely subtruncate distad 44
- 44 (45) Body on average larger (length: 1.9–2.8 mm). Protibiae with a distal group of relatively large and sharp teeth along distal portion of outer edge (Fig. 74). Tegmen with inner pre-distal portion of paramera usually with more or less distinct minute projection (Figs 7, 9). Female genitalia larger and more uniformly and distinctly pigmented (Fig. 38). South Africa (Eastern Cape, KwaZulu-Natal, Mpumalanga, Limpopo). Adult activity in spring (viii–xi). Larvae on male inflorescences of *Brachylaena discolor* DC. and *B. transvaalensis* E. Phillips and Schweick *Tarchonanthogethes martini* (Grouvelle, 1899)
- 45 (44) Body on average smaller (length: 1.6–2.0 mm). Protibiae with smaller, triangular, and subequal teeth along distal portion of outer edge (similar to Fig. 75). Tegmen with inner pre-distal portion of paramera without projection (Fig. 11). Female genitalia smaller and heavily pigmented only distad (Fig. 39). South Africa (Eastern Cape). Adult activity in autumn (iv–v). Larvae on male inflorescences of *Brachylaena elliptica* (Thunb.) Less *Tarchonanthogethes autumnalis* Audisio & Cline, **sp. nov.**
- 46 (47) Elytra not elongate, nearly 1.00 times as long as combined width, obtusely truncate distad in both sexes (Figs 2, 84). Male genitalia as figured (Figs 17–18), with truncately pointed distal projection on median lobe of aedeagus. Female genitalia as figured (Fig. 47). Body length: 1.6–2.3 mm. Species from NW South Africa (Northern Cape, North West Province) and Namibia (Khomas Province). Larvae on male inflorescences of *Tarchonanthus camphoratus* L. *Tarchonanthogethes manconiae* Audisio & Cline, **sp. nov.**
- 47 (46) Elytra more elongate, nearly 1.20–1.25 times as long as combined width, females with more narrowly arcuate shape distad (Fig. 85) than males. Male genitalia as figured (Figs 15–16, 36–37), with minute distal excision or projection on median lobe of aedeagus. Female genitalia as figured (Fig. 46). Species from East Africa (Kenya). 48
- 48 (49) Elytra slightly more elongate, nearly 1.20–1.25 times as long as combined width (Fig. 85). Metaventricle in males deeply impressed in posterior two-thirds. Protarsi in males as wide as protibiae. Protibiae with slightly shorter, less sharp, and more even teeth along most of distal two-thirds of outer edge. Male genitalia as figured (Figs 36–37), with short and wide subtruncate distal projection on median lobe of aedeagus, and narrower distal excision on tegmen. Female genitalia nearly as in the following species (Fig. 46). Body on average larger (length: 2.3–2.4 mm). Kenya (Central Province). Larvae probably on male inflorescences of *Brachylaena huillensis* H. Hoffm., or of *Tarchonanthus camphoratus* L. *Tarchonanthogethes gratiellae* Audisio & Cline, **sp. nov.**
- 49 (48) Elytra less elongate, nearly 1.15–1.18 times as long as combined width. Metaventricle in males only shallowly to weakly impressed in posterior two-thirds. Protarsi in males slightly narrower than protibiae. Protibiae with slightly longer and sharper teeth in distal third of outer edge. Male genitalia as figured (Figs 15–16), with minute distal excision on median lobe of aedeagus, and wider, U-shaped distal excision on tegmen. Female genitalia as figured (Fig. 46). Body on average smaller (length: 1.8–2.3 mm). SW Kenya (Rift Valley Province). Larvae on male inflorescences of *Tarchonanthus camphoratus* L. *Tarchonanthogethes maasai* Audisio & Cline, **sp. nov.**

Phylogenetic results

Our cladistic analysis produced 36 most parsimonious trees with a tree length of 66 steps, a Consistency Index of 0.773 and a Retention Index of 0.883. The strict consensus cladogram with Bremer support values (decay index) is shown in Fig. 101. Apomorphic character states were mapped onto one of the 36 most parsimonious trees (Fig. 102).

Tarchonanthopria freidbergi from Kenya was retrieved as sister group to the remaining Meligethinae taxa included in this analysis (clade A); this taxon is supported by three non-homoplasious autapomorphies (6:1; 12:1; 20:1). Monophyly of clade A is well supported by nine non-homoplasious autapomorphies (7:1; 13:1; 22:1; 23:1; 25:1; 27:1; 28:1; 29:1; 34:1). Within clade A, *Meligethinus dolosus* is retrieved as sister group of clade B, which is subsequently supported by three non-homoplasious autapomorphies (5:1; 17:2; 18:1). Clade B is divided into two subclades: clade C is weakly supported by one homoplasious autapomorphy (8:1) and clade D (= *Anthystrix*-complex) is supported by two non-homoplasious autapomorphies (3:1; 14:1). The *Anthystrix*-complex, i.e. clade D, is composed, without exception, of species feeding on male inflorescences of Asteraceae. Clade D is divided into two sub-clades: clade E, which is supported by two non-homoplasious autapomorphies (17:1; 30:1), and clade F, which is supported by two homoplasious autapomorphies (1:2; 2:1). Within clade E the monotypic *Sebastiangethes* is retrieved as sister group of *Xenostromylogethes* (clade G).

Both *Anthystrix* (clade H) and *Tarchonanthogethes* (clade I) emerge as monophyletic. *Anthystrix* is strongly supported by four non-homoplasious apomorphies (11:2; 32:1; 33:1; 34:3). *Tarchonanthogethes* (clade I) is supported by one non-homoplasious (18:2), and one homoplasious (8:1) apomorphy.

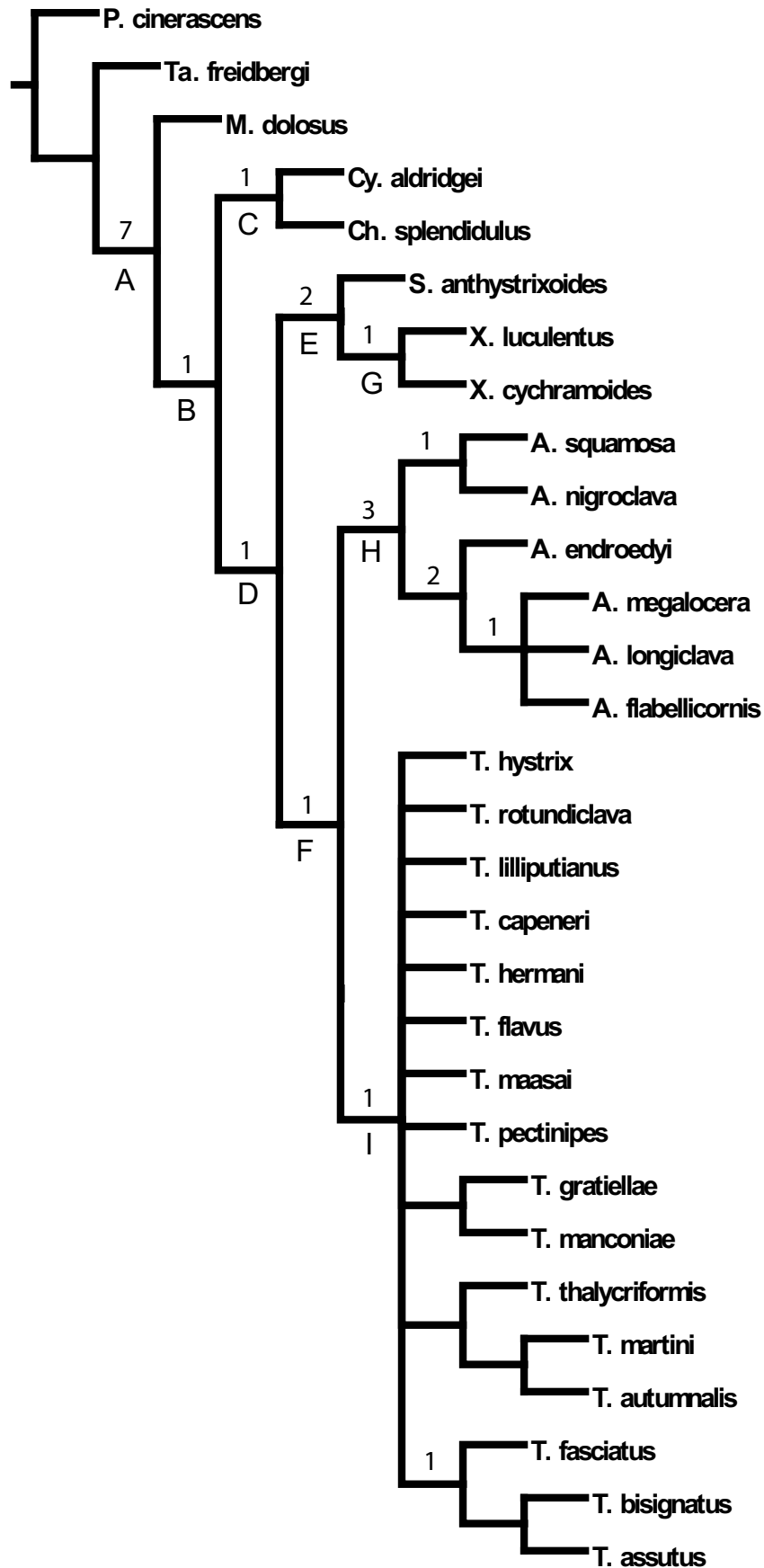


FIGURE 101. Strict consensus cladogram obtained from 36 most parsimonious trees under equal weighting; numbers above branches indicate Bremer support values. Capital letters refer to the corresponding main clades discussed in the text.



FIGURE 102. One of the 36 most parsimonious trees with unambiguous synapomorphies traced. Capital letters refer to the corresponding main clades discussed in the text.

TABLE 2. Natural history data for *Anthysrix* complex taxa

Genera	Species	Distribution	Habitat	Altitude Phenology	Larval Host Plants	Trophic Rank
<i>Anthysrix</i> Kirejtshuk 1981	<i>squamosa</i> (Grouvelle, 1899)	South Africa (Western Cape)	rocky habitats, coastal xerophilous habitats with thicket vegetation	0–500 m I-V	<i>Tarchonanthus littoralis</i> Herman	monophagous
	<i>nigroclava</i> Kirejtshuk & Easton, 1988	South Africa (Western Cape)	rocky habitats xerophilous habitats with thicket vegetation	100–800 m XI-V	<i>Tarchonanthus littoralis</i> Herman	monophagous
	<i>longiclava</i> Kirejtshuk & Easton, 1988	South Africa (Eastern Cape)	rocky coastal and subcoastal xerophilous habitats with thicket vegetation	0–200 m III-V	<i>Tarchonanthus littoralis</i> Herman	monophagous
	<i>flabellicornis</i> Audisio & Cline, 2009	South Africa (Western Cape)	coastal xerophilous habitats with thicket vegetation	0–100 m III-V	<i>Tarchonanthus littoralis</i> Herman	monophagous
	<i>megalocera</i> Audisio & Cline, 2009	South Africa (Western Cape)	coastal xerophilous habitats with thicket vegetation	0–100 m III-V	<i>Tarchonanthus littoralis</i> Herman	monophagous
	<i>endoedyi</i> Audisio & Cline, 2009	South Africa (North West Province, KwaZulu-Natal)	rocky xerophilous mountain habitats	1000–1600 m III-IV	? <i>Tarchonanthus parvicapitulatus</i> ? Herman	monophagous
<i>Xenostrongilogethes</i> Audisio & Cline 2009	<i>luculentus</i> (Kirejtshuk & Easton, 1988)	South Africa (Western Cape)	rocky habitats, coastal xerophilous habitats with thicket vegetation, river canyons	0–600 m I-IV	<i>Tarchonanthus littoralis</i> Herman	monophagous
	<i>cychramoides</i> Audisio & Cline, sp.nov.	South Africa (Limpopo, North West Province)	rocky xerophilous mountain habitats	1000–1700 m III-IV	<i>Tarchonanthus parvicapitulatus</i> Herman	monophagous
<i>Sebastiangelthes</i> Audisio, Kirk- Spriggs & Cline 2008	<i>anthysrixoides</i> Audisio, Kirk-Spriggs & Cline, 2008	South Africa (Northern Cape, North West Province)	xerophilous savannah	1000–1600 m III-IV	<i>Tarchonanthus camphoratus</i> L.	monophagous

TABLE 2. (Continued)

<i>Tarchonanthes</i> Audisio & Cline 2009	<i>rotundiclava</i> (Kirejtshuk & Easton, 1988)	South Africa (Eastern Cape, KwaZulu- Natal, Limpopo)	coastal xerophilous habitats with thicket vegetation, rocky bushy habitats	0–1500 m V-X	<i>Brachylaena discolor</i> DC., <i>B. elliptica</i> (Thunb.) Less., <i>B. transvaalensis</i> E.Phillips & Schweick.	oligophagous
	<i>hermani</i> Audisio & Cline, sp.nov.	South Africa (Eastern Cape)	rocky habitats, bushy xerophilous habitats	300–1300 m XI-XII	? <i>Brachylaena ilicifolia</i> (Lam.) Phillips & Schweick.	? monophagous
	<i>flavus</i> (Kirejtshuk & Easton 1988)	South Africa (North West Province, Eastern Cape, KwaZulu- Natal, Limpopo)	rocky habitats, coastal xerophilous habitats with thicket vegetation, bushy habitats	0–500 m I-XII	<i>Brachylaena discolor</i> DC., <i>B. elliptica</i> (Thunb.) Less., <i>B. transvaalensis</i> E.Phillips & Schweick., ? <i>B. rotundata</i> (S. Moore) Beentje	oligophagous
	<i>pectinipes</i> Audisio & Cline, sp.nov.	South Africa (Limpopo)	rocky bushy habitats and ravines	500–600 m X-XI	? <i>Tarchonanthus trilobus</i> DC.	? monophagous
	<i>martini</i> (Grouvelle, 1899)	South Africa (Eastern Cape, KwaZulu- Natal, Limpopo)	rocky habitats, coastal xerophilous habitats with thicket vegetation	0–1600 m V-XI	<i>Brachylaena discolor</i> DC., <i>B. transvaalensis</i> E.Phillips & Schweick.	oligophagous
	<i>autumnalis</i> Audisio & Cline, sp.nov.	South Africa (Eastern Cape)	rocky bushy habitats, xerophilous habitats	300–1200 m IV-V	<i>Brachylaena elliptica</i> (Thunb.) Less.	monophagous
	<i>lilliputianus</i> Audisio & Cline, sp.nov.	South Africa (Eastern Cape, KwaZulu- Natal, Limpopo)	rocky bushy habitats, xerophilous habitats	0–500 m IV-IX	<i>Brachylaena transvaalensis</i> E.Phillips & Schweick., <i>B. elliptica</i> (Thunb.) Less.	oligophagous
	<i>capeneri</i> (Kirejtshuk & Easton, 1988)	South Africa (North West Province, Mpumalanga, Gauteng)	rocky bushy habitats, xerophilous habitats	1200–1500 m III-XII	? <i>Tarchonanthus trilobus</i> DC.	? monophagous
	<i>thalycrifformis</i> Audisio & Cline, sp.nov.	South Africa (Eastern Cape)	rocky bushy habitats	500–800 m IV-V	<i>Brachylaena elliptica</i> (Thunb.) Less.	monophagous
	<i>manconiae</i> Audisio & Cline, sp.nov.	South Africa (Northern Cape, North West Province), Namibia	xerophilous savannah habitats, sandy habitats	1000–1600 m III-IV	<i>Tarchonanthus camphoratus</i> L.	monophagous
	<i>gratiellae</i> Audisio & Cline, sp.nov.	Kenya (Central Province)	forest and bushy high altitude habitats	2000–3100 m VI-X	unknown	unknown
	<i>maasai</i> Audisio & Cline, sp.nov.	Kenya (Rift Valley Province)	xerophilous high altitude savannah habitats	1900–2100 m XII-II	<i>Tarchonanthus camphoratus</i> L.	monophagous
	<i>hystrix</i> Audisio & Cline, sp.nov.	South Africa (NW Province, Limpopo)	rocky bushy habitats	1200–1700 m II-IV	<i>Tarchonanthus parvicapitulatus</i> Herman	monophagous
	<i>assutus</i> (Easton, 1960)	Kenya (Central Province)	high altitude bushy habitats	1900–2000 m VI	unknown	unknown
	<i>fasciatus</i> Audisio & Cline, sp.nov.	South Africa (North West Province, Limpopo)	rocky bushy habitats	1000–1600 m II-IV	<i>Tarchonanthus parvicapitulatus</i> Herman	monophagous
	<i>bisignatus</i> Audisio & Cline, sp.nov.	South Africa (Western and Eastern Cape)	coastal xerophilous thicket habitats	0–200 m I-V	<i>Tarchonanthus littoralis</i> Herman	monophagous

Anthystrix is composed of three monophyletic species-groups: i) *squamosa*-group, composed of *A. nigroclava* and *A. squamosa*, which is weakly supported by one homoplasious autapomorphy (10:2); ii) *endroedyi*-group (monotypic), supported by one non-homoplasious autapomorphy (19:1); and iii) *longiclava*-group, composed of *A. longiclava*, *A. flabellicornis* and *A. megalocera*, supported by one non-homoplasious apomorphy (9:1). The sister-group relationship between “*endroedyi*-group” and “*longiclava*-group” is supported by two synapomorphic character states, one non-homoplasious (22:2) and one homoplasious (23:0).

Clade I, which comprises the genus *Tarchonanthogethes*, contains a basal polytomy of: *T. flavus*, *T. hystrix*, *T. rotundiclava* and clade J. The latter clade comprises all the remaining *Tarchonanthogethes* species and is supported by one non-homoplasious autapomorphy (40:1). Clade J has a basal polytomy consisting of *T. pectinipes*, *T. hermani*, *T. gratiellae*, *T. manconiae* and clade K. Clade K is supported by one non-homoplasious apomorphy (34:2), which also possesses a basal polytomy of three species groups: i) *T. masaii* (monotypic); ii) *bisignatus*-group, composed of *T. bisignatus*, *T. fasciatus* and *T. assutus*; iii) *martini*-group composed of *T. lilliputianus*, *T. capeneri*, *T. autumnalis*, *T. martini* and *T. thalycrifformis*.

Clade A received the highest Bremer value of 7, whereas the *Anthystrix*-complex (clade D) was weakly supported by a Bremer value of 1. The sister-group relationships between *Sebastiangethes* and *Xenostromylogethes* received a Bremer support of 2, while the sister-group relationships between *Anthystrix* and *Tarchonanthogethes* obtained a Bremer support value of 1. Monophyly of *Anthystrix* and *Tarchonanthogethes* is supported by values of 3 and 1, respectively.

Conclusions

The phylogenetic position of *Tarchonanthogethes* and *Xenostromylogethes* within Meligethinae is now sufficiently well documented, with both belonging to the ‘*Anthystrix* genus-complex’, i.e. the clade [[*Xenostromylogethes* + *Sebastiangethes*] + [*Tarchonanthogethes* + *Anthystrix*]] (Audisio *et al.* 2008, 2009a, b, 2014). Based on morphological data, *Xenostromylogethes* is the sister group of *Sebastiangethes* and both taxa occupy a basal position within the complex. *Tarchonanthogethes* and *Anthystrix* are relatively more derived within the complex, which is likely associated with an evolutionary radiation and morphological differentiation on Tarchonantheae host plants. The well-supported monophyly of the clade [*Chromogethes* + *Anthystrix* genus-complex] suggests that the *Anthystrix* genus-complex arose from a common ancestor of African Meligethinae associated with Asteraceae. *Tarchonanthopria freidbergi* from Kenya (Audisio *et al.* 2014), which is also associated with Tarchonantheae, is positioned in an isolated basal lineage that likely independently colonized Tarchonantheae in East Africa (see Table 2 for natural history data of all *Anthystrix* complex taxa). The above reported conclusions agree almost perfectly with evidence from preliminary molecular analyses on the same Meligethine clades, as recently discussed by Audisio *et al.* (2014).

Tarchonanthogethes apparently represents a clade characterized by a long-term evolutionary history on Tarchonantheae, which exhibits a marked species radiation and morphological diversification. This scenario clearly parallels a recently proposed evolutionary hypothesis for members of the Oriental genus *Cyclogethes* (Jelínek 2000b; Audisio *et al.* 2009b). Data from molecular analyses with additional taxon sampling of most of the inclusive *Anthystrix* generic complex will further improve our knowledge on the phylogenetic composition of the entire assemblage.

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References

- Audisio, P. (1993) *Nitidulidae–Kateretidae. Fauna d'Italia, XXXII*. Calderini, Bologna, 971 pp.
- Audisio, P., Cline, A. R., De Biase, A., Antonini, G., Mancini, E., Trizzino, M., Costantini, L., Strika, S., Lamanna, F. & Cerretti, P. (2009b) Preliminary re-examination of genus-level taxonomy of the pollen beetle subfamily Meligethinae (Coleoptera: Nitidulidae). *Acta Entomologica Musei Nationalis Pragae*, 49, 341–504.
- Audisio, P., Cline, A.R., Lamanna, F., Trizzino, M., Antonini, G., Mancini, E. & De Biase, A. (2009a) Revision of the southern African pollen beetle genus *Anthystrix* (Coleoptera: Nitidulidae: Meligethinae). *Annals of the Entomological Society of America*, 102, 998–1012.
- Audisio, P., Cline, A.R., Mancini, E., Trizzino, M., Avgin, S.S. & De Biase, A. (2011c) Four new Palaearctic *Brassicogethes* (Coleoptera, Nitidulidae, Meligethinae), and phylogenetic inference on the *B. coracinus* group. *Rendiconti Lincei*, 22, 235–268. [Springer]
<http://dx.doi.org/10.1007/s12210-011-0126-4>
- Audisio, P., Cline, A.R., Mancini, E., Trizzino, M., Lamanna, F. & Antonini, G. (2011b) A new species of southern African pollen beetles and discussion of the taxonomic position of *Jelinekigethes* Audisio and Cline, 2009 (Coleoptera: Nitidulidae: Meligethinae). *Zootaxa*, 2909, 47–56.
- Audisio, P., Cline, A.R., Solano, E., Mancini, E., Lamanna, F., Antonini, G. & Trizzino, M. (2014) A peculiar new genus and species of pollen-beetle (Coleoptera, Nitidulidae) from eastern Africa, with a molecular phylogeny of related Meligethinae. *Systematics and Biodiversity*, 12 (1), 77–91.
<http://dx.doi.org/10.1080/14772000.2013.877539>
- Audisio, P. & De Biase, A. (2004) Additions to the South African *Meligethes* of the subgenus *Chromogethes* and taxonomic notes on other southern African species of the genus (Coleoptera, Nitidulidae, Meligethinae). *Fragmenta entomologica*, 36, 221–246.
- Audisio, P., Jelínek, J., Cline, A.R., Mancini, E., Trizzino, M., Cerretti, P. & Antonini, G. (2011a) Description and taxonomic position of a new genus and species of southern African pollen beetle (Coleoptera: Nitidulidae: Meligethinae). *Zootaxa*, 2927, 49–56.
- Audisio, P., Kirk-Spriggs, A.H., Cline, A.R., Trizzino, M., Antonini, G., Mancini, E. & De Biase, A. (2008) A new genus of pollen-beetle from South Africa (Coleoptera: Nitidulidae), with discussion of the generic classification of the subfamily Meligethinae. *Insect Systematics and Evolution*, 39, 419–430.
<http://dx.doi.org/10.1163/187631208788784282>
- Coates Palgrave, K. (1983) *Trees of Southern Africa*. C. Struik Publisher, Cape Town, 959 pp.
- Cooper, M.C. (1980) Species of the genus *Meligethinus* Grouvelle (Coleoptera: Nitidulidae). *Entomologica Scandinavica*, 11, 32–36.
<http://dx.doi.org/10.1163/187631280X00301>
- Cooper, M.C. (1982) The species of the genus *Pria* Stephens (Coleoptera: Nitidulidae). *Zoological Journal of the Linnean Society*, 75, 327–390.
<http://dx.doi.org/10.1111/j.1096-3642.1982.tb01952.x>
- Easton, A.M. (1960) The *Meligethes* of East Africa (Coleoptera: Nitidulidae). *Transactions of the Royal Entomological Society of London*, 112, 263–318.
<http://dx.doi.org/10.1111/j.1365-2311.1960.tb00489.x>
- Fukatsu, T. (1999) Acetone preservation: a practical technique for molecular analysis. *Molecular Ecology*, 8, 1935–1945.
<http://dx.doi.org/10.1046/j.1365-294x.1999.00795.x>
- Goloboff, P.A., Farris, J.S. & Nixon, K.C. (2003) T.N.T.: Tree Analysis Using New Technology. Version 1.1. Available at: <http://>

/www.zmuc.dk/public/phylogeny (accessed 15 September 2012)

- Goloboff, P.A., Farris, J.S. & Nixon, K.C. (2008) TNT, a free program for phylogenetic analysis. *Cladistics*, 24, 774–786.
<http://dx.doi.org/10.1111/j.1096-0031.2008.00217.x>
- Grouvelle, A. (1899) Descriptions de Clavicornes d'Afrique et de la région Malgache, 2-me mémoire. *Annales de la Société Entomologique de France*, 68, 136–185.
- Grouvelle, A. (1919) Description d'espèces nouvelles de Coléoptères de l'Afrique australe. *Mémoires Entomologiques. Études sur les coléoptères*, 2, 47–61.
- Hansen, L.M. (2003) A model for determination of the numbers of pollen beetles (*Meligethes aeneus* F.) (Col., Nitidulidae) per plant in oil-seed rape crops (*Brassica napus* L.) by estimating the percentage of plants attacked by pollen beetles. *Journal of Applied Entomology*, 127, 163–166.
<http://dx.doi.org/10.1046/j.1439-0418.2003.00652.x>
- Hatch, M.H. (1957) The North American status of *Meligethes nigrescens* Steph. (Nitidulidae). *The Coleopterists' Bulletin*, 11, 65–66.
- Hayashi, N. (1978) A contribution to the knowledge of the larvae of Nitidulidae occurring in Japan. *Insecta Matsumurana*, 14, 1–97.
- Herman, P.P.J. (2002) Revision of the *Tarchonanthus camphoratus* complex (Asteraceae-Tarchonantheae) in southern Africa. *Bothalia*, 32, 21–28.
- Howard, F.W., Moore, D., Giblin-Davis, R.M. & Abad, R.G. (2001) *Insects on Palms*. CABI Publishing, New York, 400 pp.
- Jelínek, J. (1975) New genus of Oriental Meligethinae with notes on supergeneric classification of Nitidulidae (Coleoptera, Nitidulidae). *Annotationes Zoologicae Botanicae* (Bratislava), 101, 1–12.
- Jelínek, J. (1992) Nitidulidae (Coleoptera) associated with flowers of oil palm, *Elaeis guineensis* (Arecales, Arecaceae), in Rwanda. *Acta Entomologica Bohemoslovaca*, 89, 409–427.
- Jelínek, J. (2000a) New genus and species of Oriental Meligethinae with new observations on the genera *Cryptarchopria* and *Kabakovia* (Coleoptera: Nitidulidae). *European Journal of Entomology*, 97, 413–418.
<http://dx.doi.org/10.14411/eje.2000.063>
- Jelínek, J. (2000b) New species of the genus *Cyclogethes* (Coleoptera: Nitidulidae: Meligethinae). *Klapalekiana*, 36, 81–88.
- Jelínek, J., Carlton, C., Cline, A. & Leschen, R. (2010) 10.26. Nitidulidae Latreille. In: Beutel, R.G., Leschen, R.A.B. & Lawrence, J.F. (Eds.), *Handbook of Zoology Volume IV. Arthropoda: Insecta. Coleoptera. Vol. 2. Morphology and Systematics* (Elateroidea, Bostrichiformia, Cucujiformia partim). Walter De Gruyter, Berlin, pp. 390–407.
- Jourdheuil, P. (1962) *Meligethes aeneus* F. In: Balachowsky, A.S. (Ed.), *Entomologie appliquée à l'agriculture. Tome I*. Masson, Paris, pp. 321–329.
- Kelm, M. (1976) Z obserwacji nad rozwojem slodyszka - *Meligethes picipes* Sturm (Col., Nitidulidae) na bobiku - *Vicia fabae minor* L. *Polskie Pismo Entomologiczne*, 46, 353–358.
- Kigomo, B.N., Savill, P.S. & Woodell, S.J.R. (1991) The pattern and distribution of *Brachylaena huillensis* in semi-deciduous dry forests in Kenya. *African Journal of Ecology*, 29, 275–288.
<http://dx.doi.org/10.1111/j.1365-2028.1991.tb00465.x>
- Kirejtshuk, A.G. (1979) Dva novykh roda i novye vidy zhukov-blestyanok podsem. Meligethinae (Coleoptera, Nitidulidae) iz Vietnama. [Two new genera and new species of the subfam. Meligethinae (Coleoptera, Nitidulidae) from Vietnam]. *Entomologicheskoe Obozrenie*, 58, 355–368. [in Russian, English title].
- Kirejtshuk, A.G. (1980) Novye vidy zhukov-blestyanok podsem. Meligethinae (Coleoptera; Nitidulidae) iz Oriental'noi oblasti i sopredel'nykh territorii. [New species of Meligethinae (Coleoptera, Nitidulidae) from the Oriental region and adjacent territories]. *Entomologicheskoe Obozrenie*, 59, 833–851. [in Russian, English title]
- Kirejtshuk, A.G. (1981) Novyi rod zhukov podesem. Meligethinae (Coleoptera, Nitidulidae) iz Yuzhnoy Afriki. [A new genus of the subfamily Meligethinae (Coleoptera, Nitidulidae) from South Africa]. *Annales Historico-Naturales Musei Nationalis Hungarici*, 73, 133–135. [in Russian, English abstract]
- Kirejtshuk, A.G. (2011) 'Paradoxal' new genus and species of the family Nitidulidae (Polyphaga: Coleoptera) from Afro-Madagascarean and Australian Regions. *Zoosystematica Rossica*, 20, 274–298.
- Kirejtshuk, A.G. & Easton, A.M. (1988) Reviziya roda *Anthystrix* Kirejtshuk i novye vidy podsem. Meligethinae (Coleoptera, Nitidulidae) iz yuzhnoy Afriki. [Revision of the genus *Anthystrix* Kirejtshuk and new species of the subfamily Meligethinae (Coleoptera, Nitidulidae) from South Africa]. *Trudy Vsesoyuznogo Entomologicheskogo Obshchestva*, 70, 41–55. [in Russian]
- Kirejtshuk, A.G. & Kirejtshuk, P.A. (2012) Revision of the subgenus *Kabakovia* Kirejtshuk, 1979 of the genus *Cryptarchopria* Jelínek, 1975 (Coleoptera: Nitidulidae) and notes on the systematics and evolution of the subfamily Meligethinae. *Zoosystematica Rossica*, 21, 254–269.
- Kirk-Spriggs, A.H. (1985) *Meligethes heteropus* Gerstaecker (Coleoptera: Nitidulidae), a new pest of bulrush millet in West Africa. *Bulletin of Entomological Research*, 75, 443–449.
<http://dx.doi.org/10.1017/S0007485300014541>
- Kirk-Spriggs, A.H. (1996) *Pollen Beetles, Coleoptera: Kateretidae and Nitidulidae: Meligethinae. Handbooks for the Identification of British Insects*. Royal Entomological Society, London, 157 pp.
- Lamanna, F. (2009) *Filogenesi molecolare della sottofamiglia Meligethinae (Coleoptera, Nitidulidae), attraverso l'utilizzo di marcatori molecolari (PEPCK, ITS2)*. Master degree dissertation in Biological Sciences, Department of Human and

- Animal Biology, Sapienza Rome University, 107 pp. [unpublished; papery version and CD-ROM available at Library of the Department of Biology and Biotechnologies “C. Darwin”, Sapienza Rome University, Italy]
- Mancini, E., De Biase, A., Mariottini, P., Bellini, A. & Audisio, P. (2008) Structure and evolution of the mitochondrial control region of the pollen-beetle *Meligethes thalassophilus* (Coleoptera: Nitidulidae). *Genome*, 51, 196–207.
<http://dx.doi.org/10.1139/G07-116>
- Nixon, K.C. (1999) *Winclada*, version 1.00.08. Available from: <http://www.cladistics.com> (accessed 15 September 2012)
- Ormerod, E.A. (1874) Life history of *Meligethes*. *Entomologist's Monthly Magazine*, 11, 46–52.
- Reibaldi, A. (2013) *La morfologia larvale nella tassonomia e filogenesi della sottofamiglia Meligethinae (Coleoptera, Nitidulidae)*. Master degree dissertation in Natural Sciences, Department of Biology and Biotechnologies “C. Darwin”, Sapienza Rome University, 80 pp. [unpublished; paper version and CD-ROM available at Library of the Department of Biology and Biotechnologies “C. Darwin”, Sapienza Rome University, Italy]
- Strika, S. (2004) *Morfologia al SEM e filogenesi Cladistica del genere Meligethes Stephens (Insecta, Coleoptera, Nitidulidae)*. Master degree dissertation in Biological Sciences, Department of Human and Animal Biology, Sapienza Rome University, 107 pp. [unpublished; papery version and CD-ROM available at Library of the Department of Biology and Biotechnologies “C. Darwin”, Sapienza Rome University, Italy]
- Trizzino, M., Audisio, P., Antonini, G., De Biase, A. & Mancini, E. (2009) Comparative analysis of sequences and secondary structures of the rRNA internal transcribed spacer 2 (ITS2) in pollen-beetles of the subfamily Meligethinae (Coleoptera, Nitidulidae): potential use of slippage-derived sequences in molecular systematics. *Molecular Phylogenetics and Evolution*, 51, 215–226.
<http://dx.doi.org/10.1016/j.ympev.2008.11.004>
- van der Bijl, P.A. (1922) Fungi of the Stellenbosch District and immediate vicinity. *Transactions of the Royal Society of South Africa*, 10, 281–288.
<http://dx.doi.org/10.1080/00359192209519288>

APPENDIX 1. Data matrix for the phylogenetic analysis and list of characters and character states. Characters are ordered from head to abdomen, from dorsal to ventral side, from anterior to posterior appendages of each body region, from male to female genital parts. Character states separated by “/” may be co-present in the same species; question marks refer to unknown character states (one of the two sexes being unknown).