

Two new genera of Madagascan Pentatominae (Hemiptera: Heteroptera: Pentatomidae)

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Abstract. Two new genera and species, *Jitka elegans* gen. & sp. nov. (Myrocheini) and *Nene undulatum* gen. & sp. nov. (Triplatygini) (both Hemiptera: Heteroptera: Pentatomidae: Pentatominae), are described and illustrated, including structures of the male and female genitalia of both taxa and the 4th instar larva of *J. elegans*. The tribal placement of both new genera is discussed. The Pentatomidae fauna of Madagascar currently comprises four subfamilies, 87 genera and subgenera and 176 species (Asopinae 9 genera and subgenera/11 species, Pentatominae 74/158, Phyllocephalinae 1/1, and Podopinae 3/6), of which 40 genera (46 %) and 176 species (85 %) are endemic.

Key words. Hemiptera, Heteroptera, Pentatomidae, biodiversity, endemism, taxonomy, new genus, new species, Madagascar

Introduction

The exceptionally rich, endemic, and strongly endangered biota of Madagascar has attracted biologists since the 19th century and their interest has not diminished so far, which is documented by the number of new species described each year. For example, among Heteroptera I register 19 new genus-group taxa and 83 new species described or submitted to press in 2010–2015, including 2 species of Enicocephalidae (BAŇAŘ et al. 2015), 1 species of Aphelocheiridae (ZETTEL 2012), 20 species of Veliidae (POLHEMUS & ANDERSEN 2010, 2015), 5 genera or subgenera and 24 species of Reduviidae (BAŇAŘ et al. in press; CHLOND 2010a,b,c, 2011a,b, 2014, in press; CHLOND & BAŇAŘ 2013; CHLOND & GUILBERT 2012; CHLOND & JUNKIERT 2010, 2011; CHLOND et al. in press; HWANG & WEIRAUCH 2010; ZHANG & WEIRAUCH 2011), 1 genus and 1 species of Miridae (CHÉROT 2013), 1 genus and 1 species of Plokiophilidae (ŠTYS & BAŇAŘ in press), 5 genera and 10 species of Aradidae (HEISS 2010, 2011; HEISS & BAŇAŘ 2013; HEISS & MARCHAL 2012; HEISS et al. 2012), 4 genera and 20 species of Coreidae

(BRAILOVSKY 2011, BAŇAŘ et al. 2014), and 3 genera and 4 species of Pentatomidae (KMENT 2011, 2013; this paper). In addition, a new tribe, Amberianini J. A. Lis & Kocorek, 2015, has recently been erected to accommodate *Amberiana* Distant, 1911, an endemic Madagascan genus of Dinidoridae (LIS et al. 2015). However, a number of additional new taxa (including at least one family-group taxon) are waiting for description (P. Kment, P. Baňář, P. Štys, D. Chlond, unpubl. data).

The Pentatomidae of Madagascar were monographed by CACHAN (1952) but received little attention in the following decades (LESTON 1953, 1955; SCHOUTEDEN 1954; DAY 1965; ORIAN 1965; GREATHEAD 1969; LINNAVUORI 1970, 1973, 1975, 1982; COUILLOU 1989; DAVIDOVÁ-VILÍMOVÁ 1993; THOMAS 1994; AHMAD 1995; RIDER 1998a,b, 2007; GÖLLNER-SCHIEDING 1999). During the last decade, however, there has been renewed interest in Madagascan pentatomids as illustrated by a series of recent papers (ŠTYS & EXNEROVÁ 2003; MALDÈS & PLUOT-SIGWALT 2004; GAPON 2005; GAPON & KONSTANTINOV 2006; KMENT 2008, 2011, 2012, 2013; KMENT & JINDRA 2009; FERRARI et al. 2010; ARNOLD 2011; KMENT et al. 2014; KMENT & BAENA 2015). Based on the above mentioned papers and the present contribution, the fauna of Pentatomidae in Madagascar is currently comprised of four subfamilies, 87 genera and subgenera and 176 species (Asopinae 9 genera and subgenera/11 species, Pentatominae 74/158, Phyllocephalinae 1/1, and Podopinae 3/6), of which 40 genera (46 %) and 176 species (85 %) are endemic (cf. CACHAN 1952, ROBERTSON 2009). This state of knowledge is, however, far from complete and several new genera, new species, as well as new synonyms are awaiting publication (P. Kment and P. Baňář, unpubl. results). On the other hand, a number of already described species is in need of revision.

The new taxa described here are placed into the tribes Myrocheini Stål, 1876 and Triplatyginini Cachan, 1952. Myrocheini is a rather heterogenous assemblage of 22 valid genera widely distributed in the Afrotropical and Oriental Regions, the southernmost areas of the Palearctic Region, and in Australia – *Aednulus* Breddin, 1901, *Aednus* Dallas, 1851, *Arniscus* Distant, 1899, *Delegorguella* Spinola, 1850, *Discimita* Kment & Garbelotto, in press, *Dictyotus* Dallas, 1851, *Dissocolpus* Bergroth, 1906, *Dollingiana* Ahmad & Kamaluddin, 1986, *Ennius* Stål, 1861, *Erachtheus* Stål, 1861, *Humria* Linnavuori, 1975, *Laprius* Stål, 1861, *Munshiana* Ahmad & Kamaluddin, 1987, *Myrochea* Amyot & Serville, 1843, *Neococalus* Bergroth, 1891, *Neodorpius* Ahmad & Afzal, 1989, *Neodymantis* Kment & Rider, 2015 (= *Dymantis* Stål, 1861 sensu LINNAVUORI (1982)), *Paradictyotus* Gross, 1975, *Phaeocoris* Jakovlev, 1887 (= *Lodosia* Ahmad & Önder, 1996), *Pretorius* Distant, 1898, *Stysicoris* Ahmad & Kamaluddin, 1985, *Tholosanus* Distant, 1899, and *Utheria* Gross, 1975 (GROSS 1975, LINNAVUORI 1982, AHMAD & AFZAL 1989, GAPON & BAENA 2005, DERJANSCHI & PÉRICART 2006, KMENT & RIDER 2015, RIDER 2015, KMENT & GARBELOTTO in press). In Madagascar, the tribe has so far been represented by only one endemic genus and species, *Dissocolpus fissiceps* Bergroth, 1905 (BERGROTH 1905, CACHAN 1952).

On the other hand, the tribe Triplatyginini is endemic to Madagascar and so far includes three genera: *Triplatyx* Horváth, 1904 (currently with 6 species – HORVÁTH 1904; JENSEN-HAARUP 1931; CACHAN 1952; KMENT 2008, 2011), *Anoano* Cachan, 1952 (one species – CACHAN 1952,

SCHOUTEDEN 1954, KMENT 2012), and *Tricompastes* Cachan, 1952 (one species – CACHAN 1952, KMENT & BAENA 2015). However, several Tertiary fossils of pentatomid bugs more or less habitually similar to Triplatygiini have recently been discovered in Argentina (PETRULEVIČIUS & POPOV 2014), USA, and Germany (WEDMANN et al. 2014), which raises new questions concerning the definition of the tribe and its historical distribution.

Material and methods

In quoting the labels of the type specimens, a slash (/) is used to divide data on different lines of one label, a double slash (//) to divide data on different labels, authors' comments are given in square brackets [], and the following abbreviations are used: hw = handwritten, p = printed; the cited labels are white with black print or handwriting unless stated otherwise.

External observations, dissections, measurements and line drawings were made under a Leica MZ75 stereomicroscope provided with an ocular micrometer and a camera lucida. The following dimensions were measured: body length (from apex of mandibular plates to apex of membrane or apex of tergite VII, in dorsal view), head length (from apex of mandibular plates to anterior margin of pronotum, in anterodorsal view, i.e. with surface of the head parallel with the plane of focus), head width (maximum width across eyes, in anterodorsal view), interocular width (between inner margins of compound eyes, in anterodorsal view), length of each antennal segment (maximum length), pronotum length (medially, in most exposed, i.e. anterodorsal view), pronotum width (maximum width including processes, in anterodorsal view), scutellum length (medially from base to apex, in dorsal view), scutellum width (maximum width at base, in dorsal view), and abdomen width (maximum width across laterotergites IV (*Jitka*) or III (*Nene*), in dorsal view). The measurements were subsequently standardized (i.e. multiplied by calibration constant) to provide absolute lengths. The measurements are presented as median, with minimum and maximum values given in parentheses.

Uncoated specimens were examined by a Hitachi S-3700N environmental scanning electron microscope at the Department of Palaeontology, National Museum, Prague. Habitus photographs were taken using a Canon MP-E 65 mm macro lens attached to a Canon EOS 550D camera and stacked from multiple layers using the Helicon Focus 5.1 Pro software.

The general morphological terminology follows mostly TSAI et al. (2011) and TSAI & RÉDEI (2014); parts of the thoracic efferent system of the metathoracic scent glands are named in accordance with KMENT & VILÍMOVÁ (2010) and those of the larval dorso-abdominal scent glands with VILÍMOVÁ & KUTALOVÁ (2012).

Specimens examined belong to the following collections:

- BMNH Natural History Museum, London, United Kingdom;
- ISNB Institut Royal des Sciences naturelles, Bruxelles, Belgium;
- MNHN Muséum national d'Histoire naturelle, Paris, France;
- MMBC Moravian Museum, Brno, Czech Republic;
- MRAC Musée Royal de l'Afrique Centrale, Tervuren, Belgium;
- NMPC National Museum, Praha, Czech Republic.

Taxonomy

Tribe Myrocheini Stål, 1876

Jitka gen. nov.

Type species. *Jitka elegans* sp. nov., here designated.

Description. Structure. *Body* (Figs 1–3) broadly oval, robust and biconvex, more convex ventrally than dorsally.

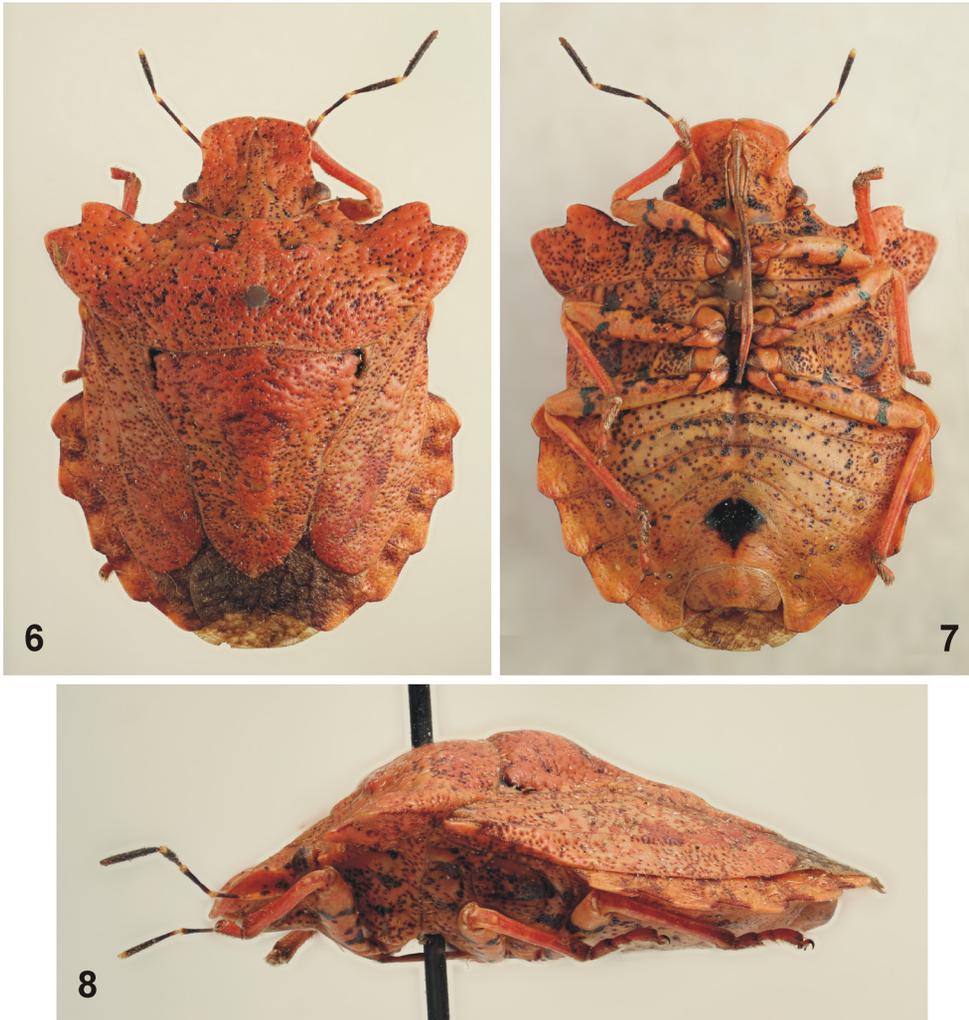
Head (Figs 9, 14–15) very slightly shorter than wide (ca. 1.0 : 1.1), horizontally positioned. Dorsal surface of head rather flat, clypeus and vertex slightly convex, anterior and lateral margins of mandibular plates laminately compressed and slightly raised upwards (Fig. 15). Posterior portion of head behind eyes surrounded by pronotum (Fig. 1). Compound eyes small, round, protruding from head outline by most of their width (Fig. 14). Postgenae (= tempora) behind eyes very narrow, vanishing and not surpassing eyes laterally (Fig. 14). Ocelli small, inconspicuous, situated posteromedially in respect of eyes, near anterior margin of pronotum (Fig. 14). Mandibular plates (Fig. 14) wide, explanate, starting just in front of eyes, without anteocular tubercle or incision, their lateral margins nearly straight in posterior half, only slightly converging anteriorly, widely rounded in anterior half, meeting and surpassing each other in front of clypeus, leaving only minute V-shaped incision in front of clypeal apex. Antenniferous tubercles small, situated close to anterior margin of eyes (Figs 9, 15), not visible from above (Fig. 14). Antenna pentamerous. Antennal segment I shortest and stoutest, nearly barrel-shaped, segments IIa and IIb narrowly cylindrical, IIb slightly thickening apically, segments III and IV narrowly spindle-shaped. Bucculae (Figs 9, 15: bc) low, ventrally straight, anteriorly subrectangular, posteriorly arcuately narrowing, quite short, reaching about posterior margin of eyes. Labrum (Figs 9, 15: lr) narrow and flat. Labium slender, segment I short, covered by bucculae in lateral view and only slightly surpassing apex of bucculae posteriorly and not nearly reaching posterior margin of head (Figs 9, 15: lb1); segment II longest, reaching between procoxae; apex of labium reaching between mesocoxae.

Pronotum (Figs 1, 3) transverse, nearly horizontal, only slightly sloping forwards, its surface nearly flat with one small shallow depression posteriorly of each callus (= cicatrix). Anterior margin of pronotum deeply arcuately concave to receive head (Fig. 1), anterolateral angles regularly arcuate, each marked only by a short triangular tooth. Anterolateral and lateral margins of pronotum flattened, sharp, and regularly arcuate throughout their length, humeri not prominent (Fig. 1). Posterior margin of pronotum slightly concave along base of scutellum.

Scutellum (Fig. 1) triangular, slightly longer than wide at base, with small callosities in anterolateral angles. Lateral margins only slightly incised just beyond apex of frena. Apex of scutellum broadly rounded. Disc of scutellum slightly convex, regularly sloping toward margins.

Figs 1–5. *Jitka elegans* sp. nov., habitus. 1–3 – habitus of adult (♀, paratype from Antanimora, body length 13.08 mm): 1 – dorsal view, 2 – ventral view, 3 – lateral view. 4–5 habitus of 4th instar larva (body length 6.62 mm): 4 – dorsal view, 5 – anterior view.





Figs 6–8. *Nene undulatum* sp. nov., habitus of adult (♂, paratype from Maroantsetra, body length 14.0 mm): 6 – dorsal view, 7 – ventral view, 8 – lateral view.

Hemelytra (Fig. 1). Clavus narrowly triangular, with 4–5 irregular lines of punctures in its widest, basal part. Costal margin of corium shallowly concave for basal third, arcuately convex for the rest of its length, corium slightly narrowing posteriad. Anterodistal angles of corium nearly rectangular, slightly rounded at apices, slightly surpassing apex of scutellum; posteromedian angles widely rounded. Membrane translucent, veins inconspicuous, simple, not reticulated. Apex of membrane slightly surpassing apex of abdomen (Figs 1–3).

Thoracic pleuron and sternum (Figs 2, 11). Meso- and metacoxae rather wide apart (distinctly wider than procoxae – see Fig. 2), meso- and metasternum flat or slightly concave, without median longitudinal carina. Pleura (Fig. 11) flat, ostiolar plate of metasternum not delimited by a groove-like metepimeral pseudosuture posterolaterally. Vestibule externally flat, without vestibular scar. Ostiole (Figs 11, 12, 18: o) of metathoracic scent gland situated between outer margins of meso- and metacetabulum, oval, opening posterolaterad into shallow periostiolar depression. Peritreme (Figs 11, 12, 18: pes) in form of short and slender spout, apically narrowly rounded, its peritremal surface turning anteriad from posterior position (basally) to ventral position (apically). Evaporatorium (Figs 11, 12, 18: ev) very large, covering posterior and lateral portion of mesopleuron (except its anterolateral angle) and anterior and central areas of metapleuron, reaching ventrally between meso- and metacetabulum, laterally emarginated by sharp longitudinal ridge. Evaporatorium smooth, punctured, with shallow gyrfication (Figs 11, 12). Metathoracic spiracle (Figs 11, 18: sp) long, narrow, opening ventrally.

Legs. Femora longer than corresponding tibiae (Fig. 2), thickening from base on, widest anteapically, oval in cross-section but distinctly flattened (not grooved) on inferior surface (Fig. 10), flattened surface delimited on each side by a line of denticles, the denticles becoming larger towards apex (most prominent on profemora – Fig. 10, less prominent on meso- and metafemora). Superior surface of protibia broadly explanate, forming a wide, arcuate, flat carina (Figs 2, 5, 19); superior surface of meso- and metatibiae flat, narrowly emarginated laterally. Tarsi 3-segmented (Fig. 19), all dorsally rounded.

Pregenital abdomen. Connexivum fully exposed dorsally (in Fig. 1 obscured due to slightly opened hemelytra), its lateral outline regularly arcuate with only minute notch after posterolateral angle of each segment (Fig. 2). Spiracle on ventrite II completely covered by metapleuron (Fig. 11). Ventrite III anteromedially regularly convex, without spine or depression (Fig. 2). Abdomen ventrally regularly convex, neither keeled nor grooved (Fig. 2). Ventrites III–VII laterally with slightly indicated transverse lateral muscle scar (= pseudosutures, i.e., outer impressions associated with the inner attachment points of the tergo-sternal muscles) posteriad of each spiracle; two trichobothria situated transversely posteriad of the muscle scar and posteriad of spiracle (i.e., on spiracular line) on each side of abdomen.

Male genitalia. Genital capsule (Figs 20–24) convex, posterior margin broadly concave with a pair of distinct posterolateral projections (Figs 20–24: plp) directed posterolaterad; ventral rim infolding simple, with wide V-shaped incision dorsally (Figs 20–23: vif); lateral rim infolding well-developed, large, shallowly concave, dish-shaped (Figs 20–22: lif), encompassing circular, posterodorsally directed posterior aperture (Fig. 22); dorsal sclerite not developed. Paramere (Figs 26–30) E-shaped, with well-developed, wide, apically rounded basal process (= sensory lobe), dorsoapically with group of long sensory setae (Figs 27, 29: blp); small, apically rounded middle process (Figs 27, 29: mep), and largest, dorsally widely arcuate and apically rounded apical process (Figs 26–27, 29–30: app). Inner surface of apical, middle and basal processes with scaled texture apically (Figs 27, 29). Proctiger of oval shape, in dorsal part glabrous, transversely sulcate, in ventral part hairy, with shallow median furrow (Fig. 25). Phallus as in Figs 31–35; conjunctiva with a voluminous, membranous dorsoapical lobe, ventrolateral portions of second conjunctival processes (cp-II) membranous, mesal portions closely associated with aedeagus, forming distinct ‘median penial plates’ (Figs 34–35:

mp); aedeagus (= vesica *sensu* authors) porrect, tube-like, directed posteriad, apically slightly curved dorsad (Figs 34–35: aed).

Female genitalia (Figs 13, 36–37). Laterotergites VIII (Figs 13, 36–37: lt8) triangular, narrowly projecting dorsomedially, encompassing valvifers VIII and tergite X, and fused together medially (Fig. 13). Visible portion of valvifers VIII (Figs 36–37: vf8) quarter-circular, dorsally slightly concave; laterotergites IX subtrapezoid, dorsally broadly arcuate (Figs 36–37: lt9); valvifers IX fused, small, triangular (Figs 36–37: vf9); triangulin not visible externally (Figs 37: tr). Gynatrium (Figs 37–38) with pair of oval ring sclerites (Figs 37–38: rs) and triangular sclerite surrounding spermathecal opening (Fig. 38: so). Spermatheca (Fig. 38): proximal duct short, narrow (Fig. 38: pd); dilation long, narrow (Fig. 38: dil), basal constricted portion restricted to about basal 1/5 of total length of distal invagination of spermathecal duct (= sclerotized rod), distinctly broadened distally; distal invagination (Fig. 38: div) subparallel in most of its length, weakly and gradually broadened subbasally, then relatively strongly narrowed to its base; distal duct (Fig. 38: dd) thin, about 1/3 of length of distal invagination; intermediate part of spermatheca (= spermathecal pump) rather narrow, broadened distally (Fig. 38: ip); apical receptacle subglobular (Fig. 38: ar) with one short projection directed proximad, hardly surpassing distal flange.

Differential diagnosis. The new genus can be easily recognized by its reddish coloration; head without anteocular spine or incision and with mandibular plates meeting in front of clypeus; pronotum with anterolateral and lateral margins arcuate, without prominent humeri; all femora with inferior surface flattened and margined by two lines of denticles; protibiae with superior surface forming a sharp, leaf-like carina; and E-shaped paramere. For detailed comments on its tribal placement see Discussion, for its identification see the Key below.

Etymology. The generic name is the Czech feminine personal name Jitka (to be pronounced as 'Yitka'!), an equivalent of Judith; the gender is feminine. I am pleased to dedicate the new name to the eminent Czech heteropterist and my former Ph.D. supervisor Jitka Vilímová (Charles University, Prague), and two of my dear friends, the Czech helminthologist and invaluable voluntary English language editor of *Acta Entomologica Musei Nationalis Pragae*, Jitka Aldhoun (Natural History Museum, London), and the Czech malacologist, botanist, ecologist and promising piper, Jitka Horáčková (Charles University, Prague), as well as to all my relatives and other praiseworthy bearers of this name I have met or may yet meet.

Discussion. The tribe Myrocheini represents a group of pentatomine bugs which are quite heterogenous in habitus (especially the Afrotropical taxa) and can be tentatively characterised as follows (GROSS 1975, LINNAVUORI 1982, AHMAD & AFZAL 1989, KMENT & GARBELOTTO in press):

Body elongate or ovate, fairly depressed, densely punctate. Head long and broad, lateral margins of head sharp and lamellate, neither incised nor spinose. Mandibular plates as long as or longer than clypeus. Antennae pentamerous. Antennal segment I not surpassing apex of head. Rostrum reaching at least mesocoxae. Lateral margins of pronotum lamellate and reflexed, smooth or very finely serrate; anterolateral angles of pronotum sharp, more or less prominent; humeri rounded (except of *Myrochea aculeata* (Westwood, 1837)). Scutellum long and narrow posteriorly. Hemelytra as long as abdomen; costal margin of corium sharp.

Propleural lobes (characteristic of Aeliini) not developed. Mesosternum grooved, usually without median longitudinal carina, but with carina in *Erachtheus* and *Neococalus*. Ostioles of metathoracic scent glands reduced, peritreme small or missing, and metapleural evaporatorium reduced (in Afrotropical genera *Myrochea*, *Neodymantis* and *Stysicoris*, and Oriental genera *Aednus*, *Dollingiana*, *Dorpius*, *Laprius*, *Munshiana*, *Neodorpius*) or peritreme long and evaporatorium large (in Afrotropical genera *Delegorguella*, *Discimita*, *Ennius*, *Erachtheus*, *Humria*, and *Neococalus*). Profemora usually incrassate and spinulose (but unarmed in *Humria* and *Discimita*). Tarsi 3-segmented. Base of abdomen without tubercle, spine or groove. Genital capsule with posterolateral projections subprominent, often also with submedian tumescences on posterior margin; phallosome and conjunctiva with sclerotised and membranous appendages in inflated phallus. Female genitalia with dorsal margin of valvifer VIII markedly concave, dilation of spermatheca with basal constriction, and apical receptacle of spermatheca usually with tubular processes.

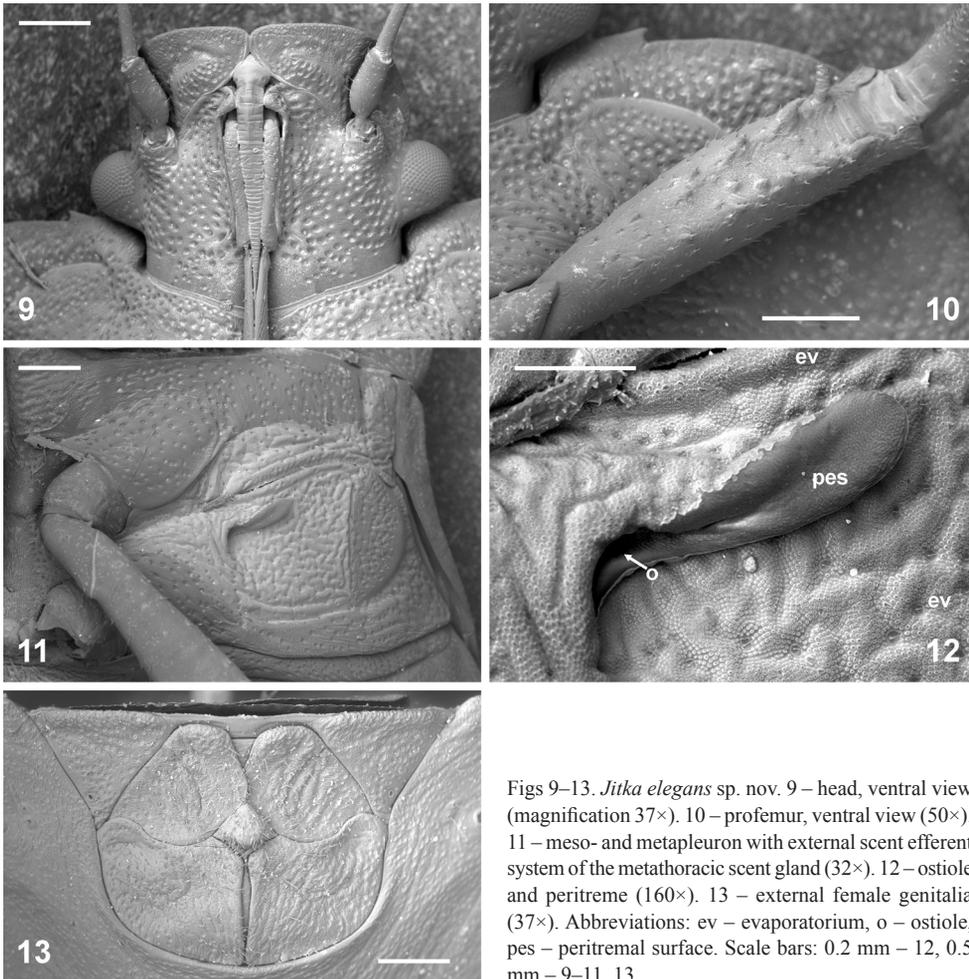
As *Jitka* gen. nov. fits well the above mentioned characteristics, I place it in Myrocheini. In the key to the genera of Afrotropical Myrocheini by LINNAUORI (1982) (supplemented by KMENT & GARBELOTTO in press), *Jitka* groups together with the genera *Delegorguella* and *Ennius*, all three sharing a sulcate mesosternum (carinate in *Erachtheus* and *Neococalus*), a long peritreme (short in *Myrochea*, *Neodymantis*, and *Stysicoris*), and tuberculate femora (unarmed in *Humria* and *Discimita*). *Jitka*, *Delegorguella* and *Ennius* further share the mandibular plates meeting in front of the clypeus and a large evaporatorium extending both on the meso- and the metapleuron which, on metapleuron, is laterally delimited by a raised longitudinal ridge. However, both *Delegorguella* and *Ennius* differ from *Jitka* in simple, not dilated protibiae and a C-shaped paramere without medial process (cf. LINNAUORI 1982: Figs 92f, 94d; AHMAD & ZAHID 2006, 2007; ZAHID & AHMAD 2011). *Delegorguella* further differs from *Jitka* in a regularly oval body and obtuse anterolateral angles of the pronotum. *Ennius* can be distinguished by a narrowly oval body, a trapezoid pronotum with lateral margins straight, and dark coloration. The dilated protibia and the E-shaped paramere seem to be autapomorphies of *Jitka*, so far not recorded in any of the genera of Myrocheini (cf. GROSS 1975; LINNAUORI 1975, 1982; AHMAD & AFZAL 1989; KMENT et al. 2014; KMENT & GARBELOTTO in press).

Jitka elegans sp. nov.

(Figs 1–5, 9–43, 72–74)

Type locality. Madagascar, Toliara Province, Sakaraha env., Zombitse-Vohibasy National Park, ca. 22°53'S 44°41'E.
Type material. HOLOTYPE: ♂ (MNHN), 'Sakaraha / Zombitsy / 11/12.IV.56 [p] // INSTITUT / SCIENTIFIQUE / MADAGASCAR [p, greyish label] // MUSEUM PARIS [p] // ♂ [p] // HOLOTYPUS / JITKA / ELEGANS / sp. nov. / det. P. KMENT 2015 [p, red label]'. The holotype is card-mounted, with a pin-hole in pronotum, right antennal segment IV, left antennal segments III and IV, right protarsus, right metatarsal segments II and III, and left hind leg all missing; the genital capsule is detached and dissected, glued with proctiger and parameres on a separate piece of card, the dissected phallus is placed in a plastic microvial with glycerol, both are attached to the same pin. PARATYPES: 1 ♀, 'Madagascar Sud-Ouest / Tuléar-Sakaraha / Zombitsy 630m / XII-59 / Raharizonina [p] // MUSEUM PARIS [p] // INSTITUT / SCIENTIFIQUE / MADAGASCAR [p, greyish label] // ♀ [p] // Genus not / in B. M. [hw] / W.E.China det. 196[p]4[hw]' (MNHN), pinned; 1 ♀, 'Madagascar Sud / det. Fort-Dauphin, Antanimora 300m / XII-59 / Raharizonina [p] // INSTITUT / SCIENTIFIQUE / MADAGASCAR [p, greyish label] // COLLECTIO / NATIONAL

MUSEUM / Praha, Czech Republic [p] // ♀ [p]' (NMPC), card-mounted, abdomen detached and dissected, internal female genitalia placed in microvial with glycerol; 1 ♂, 'COLL. MUS. TERVUREN [p, large label, the following two labels glued on it:] // Brit.Mus. / 1965-338 [p] / INSTITUT / SCIENTIFIQUE / MADAGASCAR [p, greyish label] // Sakaraha / Lambomakandro / P. Griveaud [p] // ♂ [p]' (MRAC), pinned; 1 ♀, 'COLL. MUS. TERVUREN [p, large label, the following two labels glued on it:] // Brit.Mus. / 1965-338 [p] / INSTITUT / SCIENTIFIQUE / MADAGASCAR [p, greyish label] // Genus not / in B. M. [hw] / W.E.China det. 196[p]4[hw]' // Sakaraha / Lambomakandro / P. Griveaud [p] // ♀ [p]' (MRAC), card-mounted, damaged, head detached. All paratypes bear the following identification label: 'PARATYPUS / *JITKA* / *ELEGANS* / sp. nov. / det. P. KMENT 2015 [p, red label]'. **Additional material examined. MADAGASCAR:** 1 4th instar larva, 'ZOM/Jan 2013/02 MADAGASCAR / ZOMBITSE N.P., 'Circuit Lobo' 771m / S22°53'10.9"E44°42'01.5"; 24.i.2013 / sifting litter. Winkler app. Extr.; L.S. / Rahanitriniaina & E.M. Rabotoson lgt. [p] // *JITKA* / *ELEGANS* / sp. nov. / P. KMENT det. 2015 [p]' (MMBC), glued on a triangular piece of card.



Figs 9–13. *Jitka elegans* sp. nov. 9 – head, ventral view (magnification 37×). 10 – profemur, ventral view (50×). 11 – meso- and metapleuron with external scent efferent system of the metathoracic scent gland (32×). 12 – ostiole and peritreme (160×). 13 – external female genitalia (37×). Abbreviations: ev – evaporatorium, o – ostiole, pes – peritremal surface. Scale bars: 0.2 mm – 12, 0.5 mm – 9–11, 13.

Description of adult. Coloration (Figs 1–3). Head, thorax and abdomen brick red, ventral surface slightly paler; compound eyes black, reddish or with silver luster; antennal segments I and IIa pale reddish with black punctures, remaining segments black except of basal 1/3 of IIb, basal 1/4 of III and basal 2/5 of IV reddish; labium reddish, segments II and III with black stripe ventrally, segment IV more or less black; legs pale reddish with dense black punctures concentrated in middle and apical portions of femora, on entire protibiae, and in basal and apical portions of meso- and metatibiae, giving them black appearance when seen from distance; apices of claws black; spiracles on abdominal ventrites III to VII black. Membrane clear or slightly infumated.

Integument and vestiture. Body covered with small, dense, concolorous to black punctures dorsally (except pronotal calli and narrow callose longitudinal midline extending from posterior portion of vertex to anterior third of scutellum – Fig. 1); punctures on connexivum concolorous, less prominent. Head and thorax ventrally with larger and sparser, mostly brown punctures (Figs 9, 11); abdomen ventrally with smaller and denser, brown to black punctures. Legs with prominent black punctures, nearly regularly distributed on profemur and protibia, concentrated in middle and apical portions of femora and basal and apical portions of tibiae of mid and hind legs, sparse on the remaining portions.

Body, hemelytra, coxae and femora, and outer walls of genital capsule glabrous, only posterior margin of abdominal ventrite VII in females and external female genitalia with short, pale setae; inferior surface of tibiae (Fig. 19) with stout, semierect brownish setae, apically intermingled with few longer and finer setae; tarsi (Fig. 19) densely (segment I) or sparsely (II and III) with short, semierect, brownish setae ventrally. Labium and antennal segments IIb and III with sparse short and fine whitish setae, antennal segment IV with dense whitish microsetae.

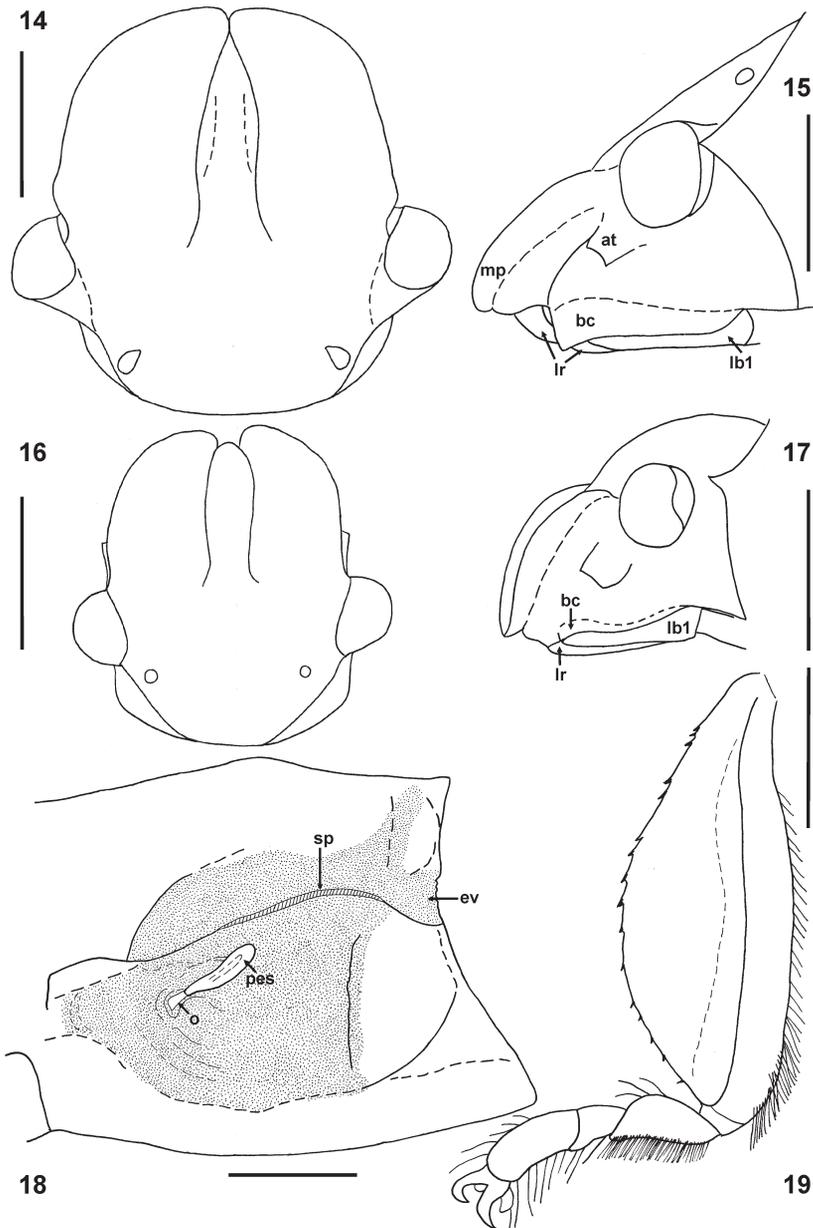
Structure. See the generic description.

Measurements (in mm). Males ($n = 2$; holotype / paratype). Body length 11.69 / 11.69; head: length 2.55 / 2.65, width (including eyes) 2.74 / 2.89, interocular width 1.91 / 2.06; lengths of antennal segments: I – 0.54 / 0.59, IIa – 0.88 / 0.98, IIb – 0.98 / 0.98, III – 1.13 / 1.13, IV – missing; pronotum: length 2.74 / 2.94, width 6.86 / 7.16; scutellum: length 4.41 / 4.61, width 4.31 / 4.41; abdomen: width (across segment IV) 8.14 / 8.43.

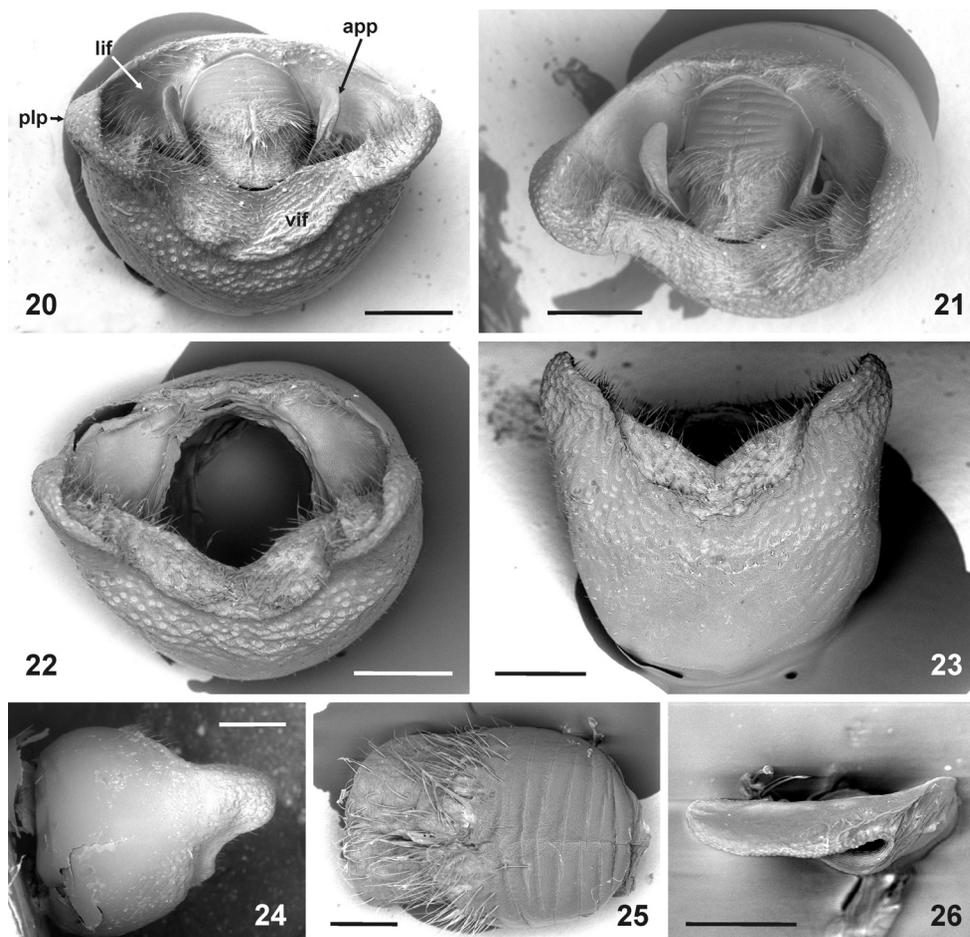
Females ($n = 3$; for body length, all head measurements, and antennal segments I–IIb: $n = 2$; for antennal segments III and IV: $n = 1$; minimum–maximum, where three measurements are available than median (minimum–maximum); single value means no span). Body length 12.62–13.08; head: length 2.65, width (including eyes) 2.99, interocular width 2.11; lengths of antennal segments: I – 0.54–0.59, IIa – 0.98–1.03, IIb – 0.98–1.08, III – 1.23, IV – 1.57; pronotum: length 3.04 (2.99–3.19), width 7.75 (7.65–7.84); scutellum: length 4.90 (4.90–5.24), width 4.80 (4.66–5.05); abdomen: width (across segment IV) 8.92 (8.81–9.31).

Intraspecific variation. Specimens examined seem uniform in structure (except for slight differences in measurements) and show only a limited variation in coloration (one specimen having labium, legs and outer margin of connexival segments paler, almost ivory in ground).

Description of 4th instar larva (Figs 4–5, 39–43). **Coloration, integument and vestiture** (Figs 4–5). Body pale brown with scattered black spots (especially adjacent to inner margin of eyes, on lateral margins of mandibular plates, on pronotal calli, on lateral margins of

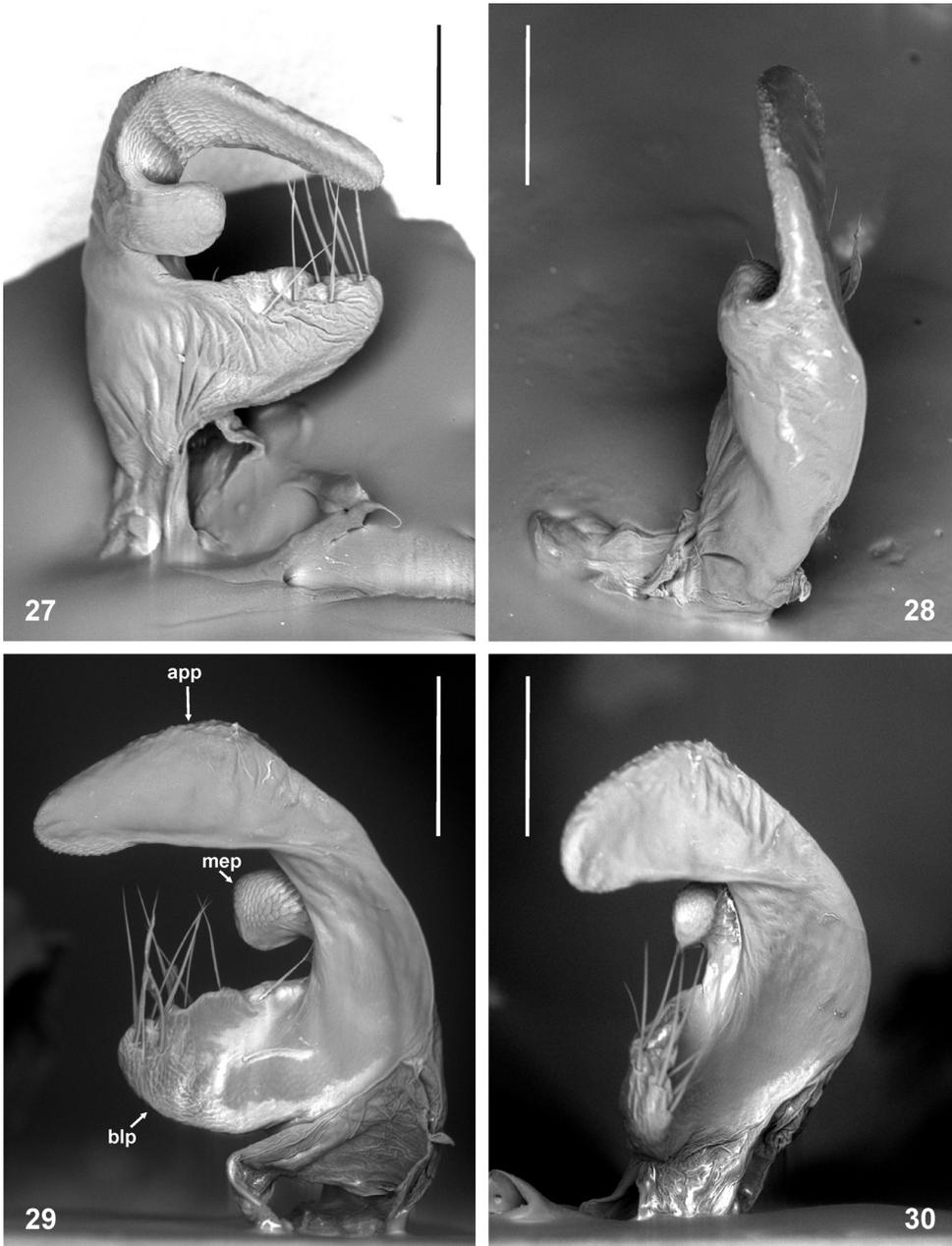


Figs 14–19. *Jitka elegans* sp. nov. 14–15 – head of adult (14 – dorsal view, 15 – lateral view). 16–17 – head of larva (16 – dorsal view, 17 – lateral view). 18 – meso- and metapleuron with external scent efferent system of the metathoracic scent gland (evaporatorium dotted). 19 – protibia and protarsus (lateral surface in anterior view of the bug). Abbreviations: at – antenniferous tubercle, bc – buccula, ev – evaporatorium, lb1 – labial segment I, lr – labrum, mp – mandibular plate, o – ostiole, pes – peritremal surface, sp – metathoracic spiracle. Scale bars: 1 mm.

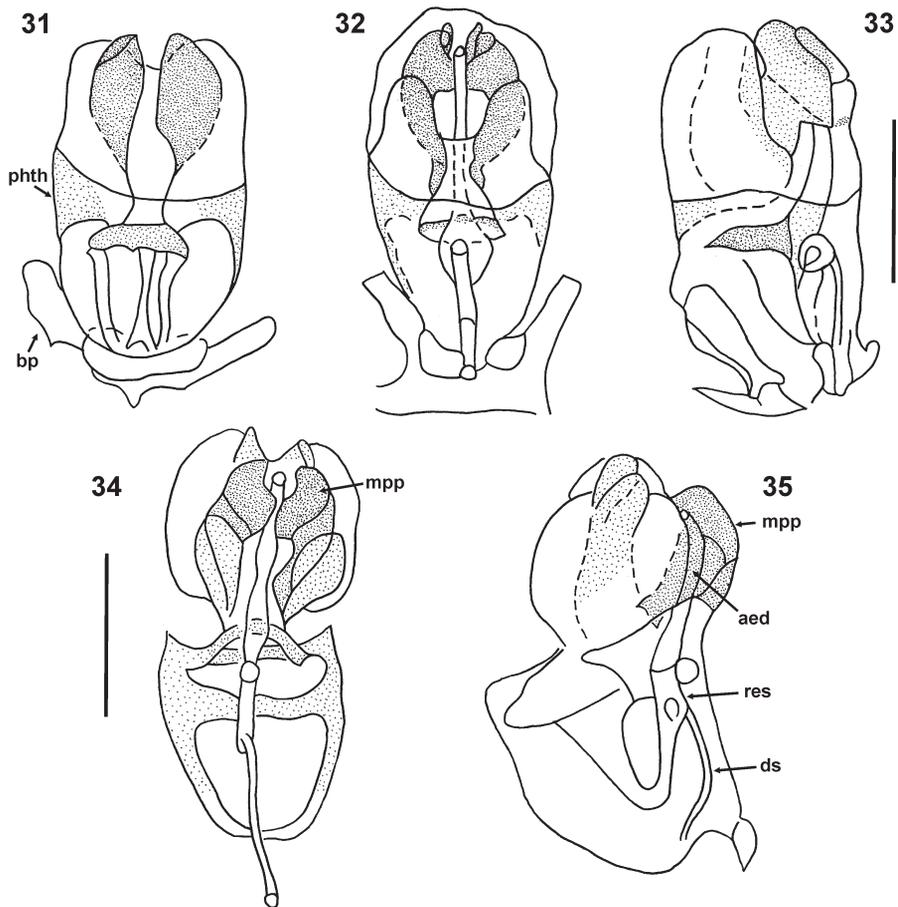


Figs 20–26. *Jitka elegans* sp. nov. 20–24 – genital capsule (20 – undissected, posterior view, magnification 47×; 21 – undissected, postero-dorsal view, 47×; 22 – dissected, posterior view, 45×; 23 – dissected, posteroventral view, 45×; 24 – undissected, lateral view, 47×). 25 – proctiger, dorsal view (120×). 26 – paramere, viewed from above (200×). Abbreviations: app – apical proces of paramere, lif – lateral rim infolding, plp – posterolateral projection of genital capsule, vif – ventral rim infolding. Scale bars: 0.2 mm – 25–26, 0.5 mm – 20–24.

thorax, in posterolateral angles of connexival segments, and around median and posterior pair of dorsal abdominal scent glands) and whitish callose spots (especially on thorax and connexiva). Antennal segment I brownish, segment II brownish with three longitudinal black stripes, segment III black. Apical halves of all femora, entire protibiae, and basal portions (widely) and apices (narrowly) of meso- and metatibiae appearing black due to densely distributed large black punctures; remaining parts of legs and labium beige. Pilosity as in the adult.



Figs 27–30. *Jitka elegans* sp. nov. 27–30 – paramere (four different views, 150 \times). Abbreviations: app – apical process of paramere, blp – basal process of paramere, mep – middle process of paramere. Scale bars: 0.2 mm.



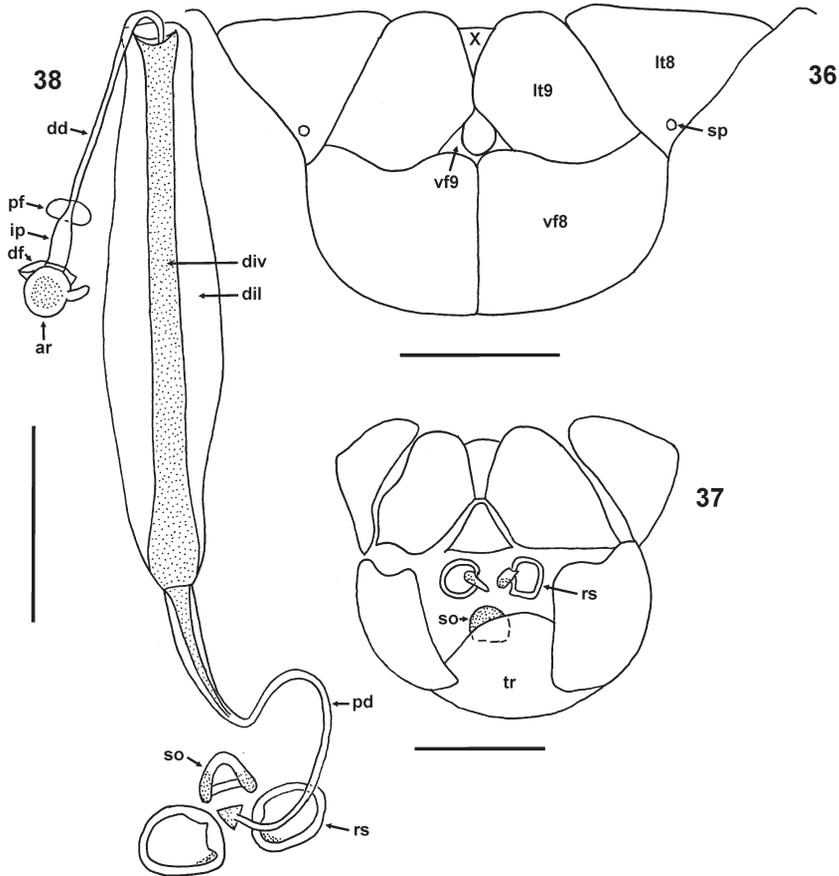
Figs 31–35. *Jitka elegans* sp. nov., phallus. 31–33 – uninflated (31 – dorsal view, 32 – ventral view, 33 – lateral view); 34–35 – partially inflated (34 – ventral view, 35 – lateral view). Abbreviations: aed – aedeagus, bp – basal plate, ds – ductus seminis, mpp – median penial plates, phth – phalotheca, res – endophallic reservoir. Scale bars: 0.5 mm.

Structure. Head (Figs 5, 16–17) narrower than in adult, more curved downwards anteriorly, mandibular plates less explanate, surpassing but not meeting in front of clypeus, apex of clypeus free (Fig. 16). Bucculae (Fig. 17: bc) very low, labial segment I (Fig. 17: lb1) almost fully exposed. Anterior margin of pronotum straight, anterolateral angles obtuse, toothed apically (Fig. 4). Lateral margins of pro- and mesothorax finely serrate. Fore wing pads reaching posterior margin of metathorax. Ostioles of anterior pair of dorso-abdominal scent glands (DAGs) not apparent, without ear-shaped structures or evaporatorium (Figs 39–40), median and posterior pair of DAGs with well developed round ostioles, each accompanied with closing valve, cuticular ridge, scimitar-like ear-shaped structure and surrounded by an evaporatorium of honeycomb-like microsculpture (Figs 41–43: o, v, cr, es, ev). Structure of

legs (Fig. 5) as in adults except of additional denticles on superior surface of apical (blackened) portions of femora (most prominent on profemora).

Measurements (in mm, $n = 1$). Body length 6.62; head: length 1.86, width (including eyes) 1.96, interocular width 1.32; lengths of antennal segments: I – 0.39, II – 1.32, III – 0.83, IV – missing; pronotum: length 1.27, width 3.77; abdomen: width (across segment IV) 3.77.

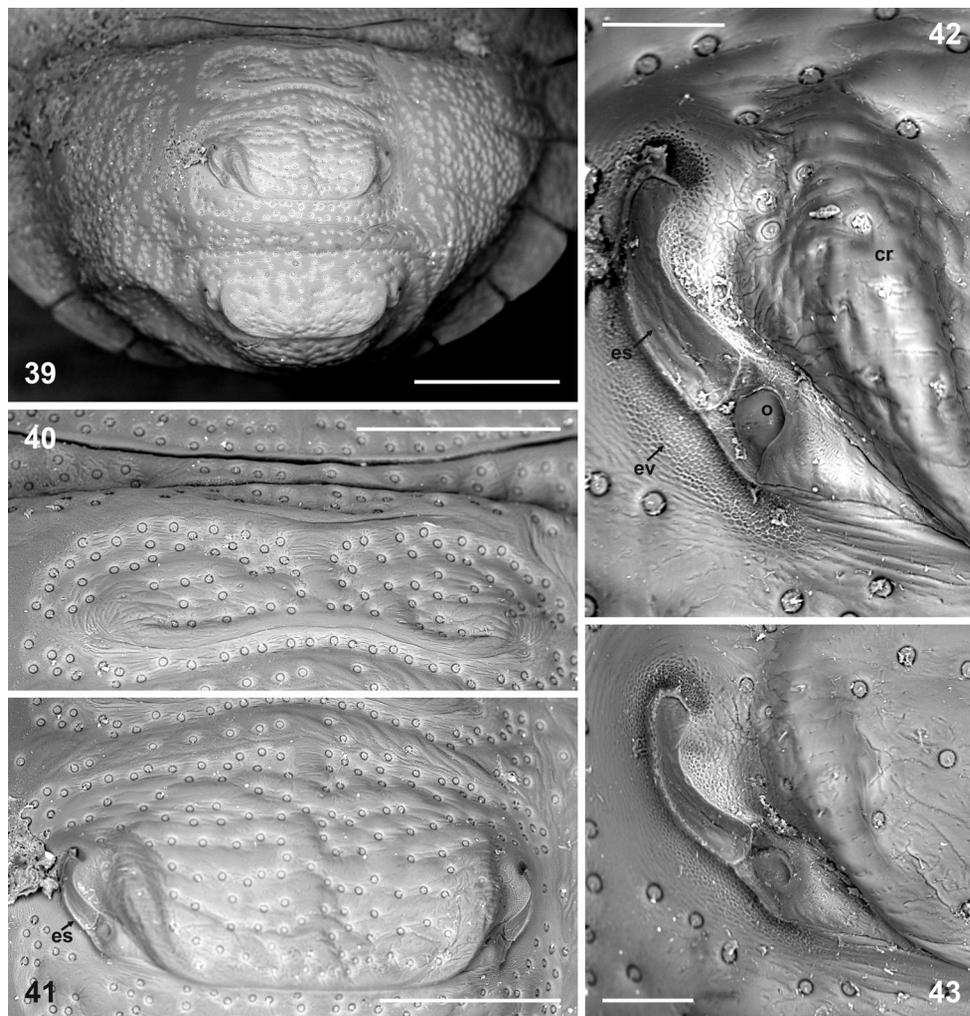
Etymology. The species name is the Latin adjective *elegans* meaning first of all elegant, fine, and handsome. It is given to mark the elegant shape and coloration of the species and also to fit the feminine personal name of the genus.



Figs 36–38. *Jitka elegans* sp. nov., female genitalia. 36–37 – external genitalia (36 – intact, 37 – dissected). 38 – gynatrium and spermatheca. Abbreviations: ar – apical receptacle of spermatheca, dd – distal duct of spermatheca, df – distal flange, dil – spermathecal dilation, div – distal invagination of spermathecal duct, ip – intermediate part of spermatheca, lt8,9 – laterotergite VIII and IX, pd – proximal duct of spermatheca, pf – proximal flange, sp – spiracle, rs – ring sclerite, so – sclerite surrounding spermathecal opening, tr – triangulin, vf8,9 – valvifer VIII and IX, X – segment X. Scale bars: 1 mm.

Collecting circumstances. The single available larva was collected in the Zombitse-Vohibasia National Park, an area covered with low semi-deciduous seasonal forests with a canopy height up to 10 m (see Figs 72–73). The specimen was collected by sifting of litter and a subsequent extraction in the Winkler apparatus (P. Baňář, pers. comm. 2015).

Distribution. Semi-arid area of south and south-western Madagascar (Fig. 74).



Figs 39–43. *Jitka elegans* sp. nov., larval dorso-abdominal scent glands (DAG). 39 – larval abdomen in dorsal view (magnification 32 \times). 40 – anterior pair of DAG (90 \times). 41 – median pair of DAG (80 \times). 42 – detail of median DAG (250 \times). 43 – detail of posterior DAG (200 \times). Abbreviations: cr – cuticular ridge, es – ear-shaped structure, ev – evaporatorium, o – ostiole covered by valve. Scale bars: 0.1 mm – 42, 43; 0.5 mm – 40, 41; 1 mm – 39.

Tribe Triplatygini Cachan, 1952

Nene gen. nov.

Type species. *Nene undulatum* sp. nov., here designated.

Description. Structure. *Body* (Figs 6–8) wide, subquadrate in outline, robust and biconvex, more convex dorsally than ventrally.

Head (Figs 44–45, 48) large, slightly wider than long (1.0 : 1.2), quadrate, directed forwards, its posterior part behind eyes encompassed by anterior pronotal margin (Fig. 6). Vertex slightly convex, remaining surface of head nearly flat, sloping obliquely downwards, parallel to surface of anterior portion of pronotum (Fig. 45). Compound eyes (Fig. 44) very small, completely protruding from head outline. Postgenae (= tempora) behind eyes very narrow, narrowing laterad and not surpassing eyes laterally (Fig. 44). Ocelli very small, situated posteromedially of eyes near anterior pronotal margin (Fig. 44). Mandibular plates (Fig. 44) very wide, explanate, slightly depressed in front of eyes, without anteoctular spine or incision; straight in basal two thirds, very slightly diverging anteriorly, rounded in apical third, meeting and surpassing each other in front of clypeus, leaving minute V-shaped incision anteriorly of clypeal apex. Antenniferous tubercles small (Figs 45, 48: at), situated immediately in front of eyes, concealed in dorsal view. Antenna pentamerous, slender. Antennal segments I, IIa and IIb cylindrical, segment I stout, segments IIa and IIb much more slender, segment III narrowly clavate, distinctly widening in its basal third, segment IV spindle-shaped. Bucculae (Figs 45, 48: bc) low, bisinuate, arcuate and highest in anterior third, slightly concave in middle third, continually narrowing posteriorly in wide arch in posterior third. Labrum (Figs 45, 48: lr) flat and narrow. Labial segment I (Figs 45, 48: lb1) slender, in lateral view completely covered by bucculae anteriorly, partly exposed posteriorly, slightly surpassing bucculae, not reaching posterior margin of head; labial segment III longest; apex of labium reaching base of ventrite IV.

Pronotum (Figs 6, 8, 46) transverse, its anterior margin concave to receive head. Anterolateral angles truncate, fitting posterior margin of compound eyes, each bearing a small denticle laterally (Fig. 46). Anterolateral margins convex and rounded, carinate. Humeri (Figs 6, 46) large, very prominent laterally, flattened, subtriangular, apically nearly rectangular, slightly rounded, provided with a smaller, wave-shaped preapical lobe anteriorly (anterior margin gently arched, lateral margin perpendicularly truncate). Posterior margin of pronotum broadly arcuate from humeri to anterolateral angles of scutellum (Fig. 46), nearly straight along base of scutellum. Disc of pronotum (Fig. 8) horizontal posteriorly of humeri, anteriorly obliquely sloping forward towards head, flat except for two very shallow depressions on base of humeri.

Scutellum (Fig. 6) large, long and wide, nearly calyx-shaped; lateral margins of frenal portion slightly convex, narrowing towards apex, there sinuate; sides of postfrenal portion straight, slightly narrowing posteriorly; outline of the apex in form of a wide pointed arch. Each anterolateral angle with narrow crevice-like C-shaped fovea with callose margins (Fig. 6). Disc of scutellum (Fig. 8) distinctly raised anteromedially, forming funnel-shaped gibbosity; its posterior part forming short longitudinal keel at level of apices of frena; apex flat.

Hemelytra (Fig. 6). Clavus long and narrow, triangular, with about 4 irregular lines of punctures in its widest, basal part and only a single line of punctures in middle and distal parts. Costal margin of corium very shallowly concave in basal third, convex and regularly

arcuately narrowing posteriad in its remaining length. Anterodistal angles of corium slightly surpassing apex of scutellum (Fig. 6); both anterodistal and posterodistal angles widely rounded. Membrane short and wide, reaching (♀) or slightly surpassing (♂) apex of abdomen; veins reticulate.

Thoracic pleuron and sternum (Fig. 7). Meso- and metacoxae widely separated, distinctly more widely than procoxae. Prosternum narrow, groove-like, emarginated laterally by callose inner margins of procoxal cavity. Mesosternum with median longitudinal carina, anteriorly in form of wide and low triangle, narrowing posteriad and forming low, narrow, but well emarginated keel in middle of mesosternum, gradually disappearing posteriad. Metasternum flat. Surface of pleura (Fig. 49) uneven, propleuron with one depression on base of both anterolateral and humeral angles, mesopleuron with two small depressions anterolaterally, metapleuron with well-delimited ostiolar plate divided from metepimeron by deep groove-like metepimeral pseudosuture. Vestibule externally flat, vestibular scar not developed (Figs 49–50). Ostiole (Figs 47, 49–51: o) shifted laterad, situated slightly laterad of meso- and metacetabula (ca. 1/3 of pleuron width), small, round, opening posterolaterad into small periostiolar depression. Peritreme (Figs 47, 49–51: pe, pes) in form of short and narrow spout, slightly depressed; peritremal surface narrow, oriented posteroventrally. Evaporatorium (Figs 47, 49–51, 53: ev) medium-sized, developed on both meso- and metapleuron: on metapleuron covering anteromedian and central portions, reaching ventrally between acetabula, laterally being delimited by sharp longitudinal ridge and posteriorly with groove-like metepimeral pseudosuture, further projecting laterad as narrow stripe along anterior metapleural margin, reaching nearly end of spiracle; evaporatorium smaller on mesopleuron, occupying posterior margin along spiracle, widened and lobe-like only medially. Surface of evaporatorium punctate, gyrfication in form of very fine longitudinal wrinkles. Metathoracic spiracle (Figs 52–53: sp) long, narrow, opening ventrally.

Legs (Fig. 7). Femora slightly longer than tibiae, widening from base on, widest anteapically, ventral surface then distinctly narrowed towards apex; oval in cross-section; ventral surface slightly depressed anteapically, unarmed. All tibiae narrow, their superior surface flat, distinctly narrowly emarginated. Tarsi 3-segmented, all segments dorsally rounded.

Pregenital abdomen (Fig. 7). Connexivum exposed (Figs 6, 8), each segment III–VII posterolaterally with low, lobe-like process (widest on segment III, narrowing gradually towards segment VII), connexival outline thus being distinctly undulated. Spiracle of abdominal ventrite II covered by metapleuron. Ventrite III medially and ventrite IV anteromedially with shallow and wide groove to receive labium (Fig. 7). Abdominal venter only slightly convex, medially flattened. Ventrites III–VII laterally with inconspicuous transverse lateral muscle scar (= pseudosuture, i.e., outer impression associated with the inner attachment points of the tergosternal muscle) posteriad of each spiracle; two trichobothria situated transversely posteriad of the muscle scar and posteriad of spiracle (i.e., on spiracular line) on each side of abdomen (Fig. 55).

Male genitalia. Genital capsule (Figs 56–59) trapezoid, wider posteriorly than anteriorly, slightly dorsoventrally flattened, with posterior aperture opening dorsally (Fig. 57: pap). Ventral wall deeply depressed posteriorly (Fig. 58: vwd), the depression emarginate ventrally by high, wide, rounded, glabrous, transverse ridge (Fig. 58: vr), and dorsally by pair of short, narrow,

sharp, setose transverse ridges (Fig. 58: dr). Ventral rim infolding (Figs 56–59: vif) with pair of small depressions basally (Fig. 58: vif), then turning anteriorly and forming pair of large triangular projections (Figs 56–57, 59: vif); dorsal surface of the triangular projections covered with brown setae (Fig. 57), each projection posteromedially with tuft of posteriorly oriented setae (Fig. 56). Lateral rim infolding (Figs 56–57: lif) concave, dish-shaped, inner margin posteriorly with narrow incision forming paramere socket (Fig. 62); lateral rim infolding posterolaterally projected into membranous lobe adpressed to the lateral margin of triangular projections of ventral rim infolding (Figs 56–57, 59, 62: ml). Dorsal process not developed. Dorsal rim infolding (Figs 56–57: dif) short, U-shaped posteriorly, merging with lateral rim infolding. Proctiger cordiform (Fig. 60). Paramere (Figs 61–63: p) reduced, weakly sclerotized, long, slender, flattened, C-shaped, devoid of any process; inner margin of paramere in apical half with line of long setae, and with tuft of long setae apically (Figs 56, 58, 62). Phallus (Figs 64–68) robust, phallosome (Figs 64–68: phth) barrel-shaped, provided with a median conical sclerotized process ventrobasally (Figs 64, 66–68: vpp). Conjunctiva voluminous, evertible, with a pair of dorsoapical lobes (cp-I?) membranous basally, elongate, hook-like, strongly sclerotized apically; second conjunctival processes (cp-II) sclerotized, hook-like dorsolaterally, ventrolateral portions (median penial plates, Figs 64–68: mpp) broadened in their distal portions, distal margin provided with 3+3 obtuse denticles, associated with a single ventromedian spoon-shaped process (probably homologous with cp-III). Aedeagus (= vesica *sensu* authors) strongly curved ventrad at base, then elongate and nearly straight, distal portion weakly curved posteroventrad (Fig. 68: aed).

Female genitalia (Figs 54, 67–71). Laterotergites VIII (Figs 54, 67–70: lt8) subtriangular, dorsally encompassing laterotergites IX and tergite X and medially fused above them. Visible portion of valvifers VIII (Figs 54, 67–70: vf8) subtriangular, dorsally broadly rounded. Laterotergites IX (Figs 54, 67–70: lt9) relatively small, exposed portions kidney-shaped, separated along midline. Valvifers IX (Figs 54, 67–70: vf9) bearing transverse ridge more pronounced laterally. Triangulin well-developed, large, triangular, not visible externally. Gynatrium (Figs 70–71) with pair of fused (pretzel-shaped) ring sclerites (Figs 70–71: rs) and a triangular sclerite surrounding spermathecal opening (Figs 70–71: so). Spermatheca (Fig. 71): proximal duct (Fig. 71: pd) long, distinctly longer than gynatrium, narrow; dilation (Fig. 71: dil) long and rather wide in middle, basal constricted portion not developed; distal invagination (= sclerotized rod) (Fig. 71: div) subparallel in most of its length, distinctly broadened basally and slightly broadened apically; distal duct (Fig. 71: dd) very short, slightly swollen, wider than proximal duct. Intermediate part of spermatheca (= spermathecal pump, Fig. 71: ip) narrow; proximal flange (Fig. 71: pf) narrower than distal flange (Fig. 71: df); apical receptacle (Fig. 71: ar) hemispherical, low, with three projections directed proximad: the longest projection reaching proximal flange, the intermediate one surpassing distal flange, and the shortest one reaching apex of distal flange.

Differential diagnosis. The new genus can be easily recognized by a combination of its large size; the brick red coloration; the quadrate head without an anteocular spine or incision; the mandibular plates meeting in front of the clypeus; the large and prominent, apically bilobate humeri; and the undulate connexival segments. For detailed comments on its tribal placement see Discussion, for its identification see the Key below.

Etymology. The word *Nene* is formed as an arbitrary combination of letters, the gender is neuter. CACHAN (1952) named another Triplatygini genus *Anoano*, which in Malgasy language means a ‘forest insect’ (see KMENT 2012). Coincidentally, *Anoano* means ‘Yes, Yes!’ in Czech. Because of this I have been tempted since years to accompany *Anoano* with another generic name, *Nene*, which means ‘No, No!’ in Czech. In addition, ‘nene’ means a ‘baby’ or, as a term of endearment, ‘darling’ in Portuguese, and in Hawaiian language ‘nēnē’ is the name of the Hawaiian Goose, *Branta sandvicensis* (Vigors, 1833) (the Czech name of that species being ‘berneška havajská’). This strange opportunity that has been given to me, and it is also a pleasure to dedicate the new name to my charming friend and Czech malacologist Dagmar Říhová (Charles University, Prague), usually known only under her nickname Berneška.

Discussion. The new genus fits well into the tribe Triplatygini as defined by CACHAN (1952), sharing most of the diagnostic characters, especially the shape of the head including large mandibular plates enclosing the clypeus anteriorly, prominent humeri of pronotum, and a spout-shaped peritreme. Based on the recent detailed revisions of all the taxa included in Triplatygini (KMENT 2008, 2011, 2012; KMENT & BAENA 2015; this paper) the tribe seems to be monophyletic and the following updated diagnosis of the tribe can be given:

Lateral margins of head explanate, sharp. Mandibular plates large, foliaceous, longer than clypeus and meeting in front of it, with anteocular spine or angle and small adjacent anteocular incision (except of *Nene*). Antenna pentamerous. Antennal segment I completely covered by head margins or only its apex visible. Humeri of pronotum forming large lobes, apically incised or spinose; lateral margins of pronotum never completely lamellate and sharp. Pronotum and scutellum convex. Scutellum triangular, large, shallowly incised at apices of frena, posteriorly rounded. Costal margin of corium not sharply lamellate. Femora incrassate (especially profemora) but unarmed (except pro- and mesofemora of *Tricompastes* with few minute tubercles anteapically). Tarsi 3-segmented. Mesosternum grooved, without median longitudinal carina (but low median carina developed in *Nene*). Metathoracic scent gland peritreme small, spout-shaped; metapleural evaporatorium small to medium sized. Connexivum large and exposed, lateral margin of abdomen usually undulated or serrate. Base of abdomen without tubercle, spine or groove (except ventrite III grooved in *Nene*). Genital capsule with lateral rim infolding well developed, dish-shaped, dorsal processes not developed, and with tendencies of ventral wall to expand dorsally and ventral rim infolding to form triangular, anteriorly oriented projections. Paramere simple, crescent-shaped (*Tricompastes*) or reduced, devoid of basal process (*Triplatyx*) and desclerotised (*Anoano*, *Nene*). Phallus with well developed median penial plates (= ventral conjunctival processes). Female genitalia with laterotergites IX small, not meeting each other medially, well developed triangulin and ring sclerites (but ring sclerites rather reduced and plate-like in *Anoano* and *Tricompastes*).

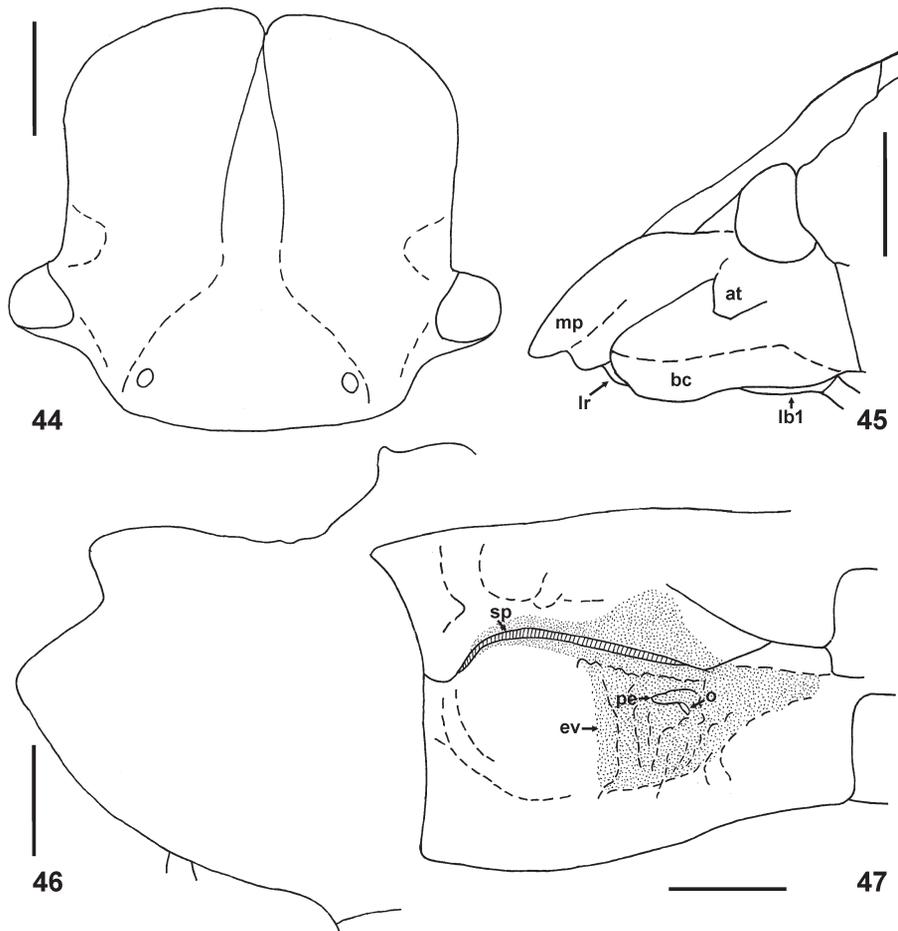
Considering the documented variability of characters, the external morphology and the structure of the female genitalia seem to be of limited information value for the phylogeny of the tribe, being composed of many shared characters, such as symplesiomorphies of Pentatomidae (e.g., the spout-shaped peritreme and possibly also the presence of the triangulin), and putative synapomorphies of Triplatygini as a whole (especially the structure of the mandibular

plates and the humeri of the pronotum, though such characters occur, perhaps as parallelisms, also in other tribes of Pentatominae – see e.g. KMENT 2013, or the externally exposed triangulin (in all genera except *Nene*), and autapomorphies of the particular genera (e.g., the shape of the humeri in all genera, an orthogonal head and a serrate abdominal margins in *Tricompestes*, the absence of the antecular spine, the mesothoracic carina, the labium reaching base of the abdomen, and the ventrite III grooved in *Nene*, the apical receptacle of spermatheca with many processes in *Triplatyx*, etc.). To figure out some phylogenetic hypothesis, the structure of the genital capsule and the paramere seem to provide most informative characters. In this regard, *Tricompestes* seems to be the most different and possibly most distantly related lineage, being characterised by the genital capsule with posterior aperture opening posteriorly, ventral rim infolding small and simple, and large posterolateral projections (KMENT & BAENA 2015: Figs 21–25), and the paramere with a robust and well sclerotised body, crescent-shaped, with developed basal process with tuft of setae apically (KMENT & BAENA 2015: Figs 27–30). The three remaining genera share the genital capsule with posterior aperture shifted dorsally, without prominent posterolateral projections but with expanding ventral rim infolding forming a pair of triangular, anteriorly oriented projections (Figs 56–57; KMENT 2008: Figs 35, 38–39, 41–42, 44–45; KMENT 2012: Figs 17–19), and a reduced paramere devoid of basal process (Figs 61–63; KMENT 2008: Figs 47–51; KMENT 2012: Figs 17–18). *Triplatyx* is characterised by the posterior aperture oriented posterodorsally, posterolateral angles slightly prominent, the pygophore less gibbose ventrally and the ventral rim infolding less well developed, and the paramere well sclerotised, without setae (KMENT 2008: Figs 35–46, 47–51). *Anoano* and *Nene* share the genital capsule somewhat dorsoventrally flattened, with the ventral wall expanding dorsally (and depressed antepically), the ventral rim infolding with a prominent pair of triangular projections, the posterior aperture opening dorsally, and the paramere reduced and desclerotised but bearing a line of sensory setae.

Nene undulatum sp. nov.

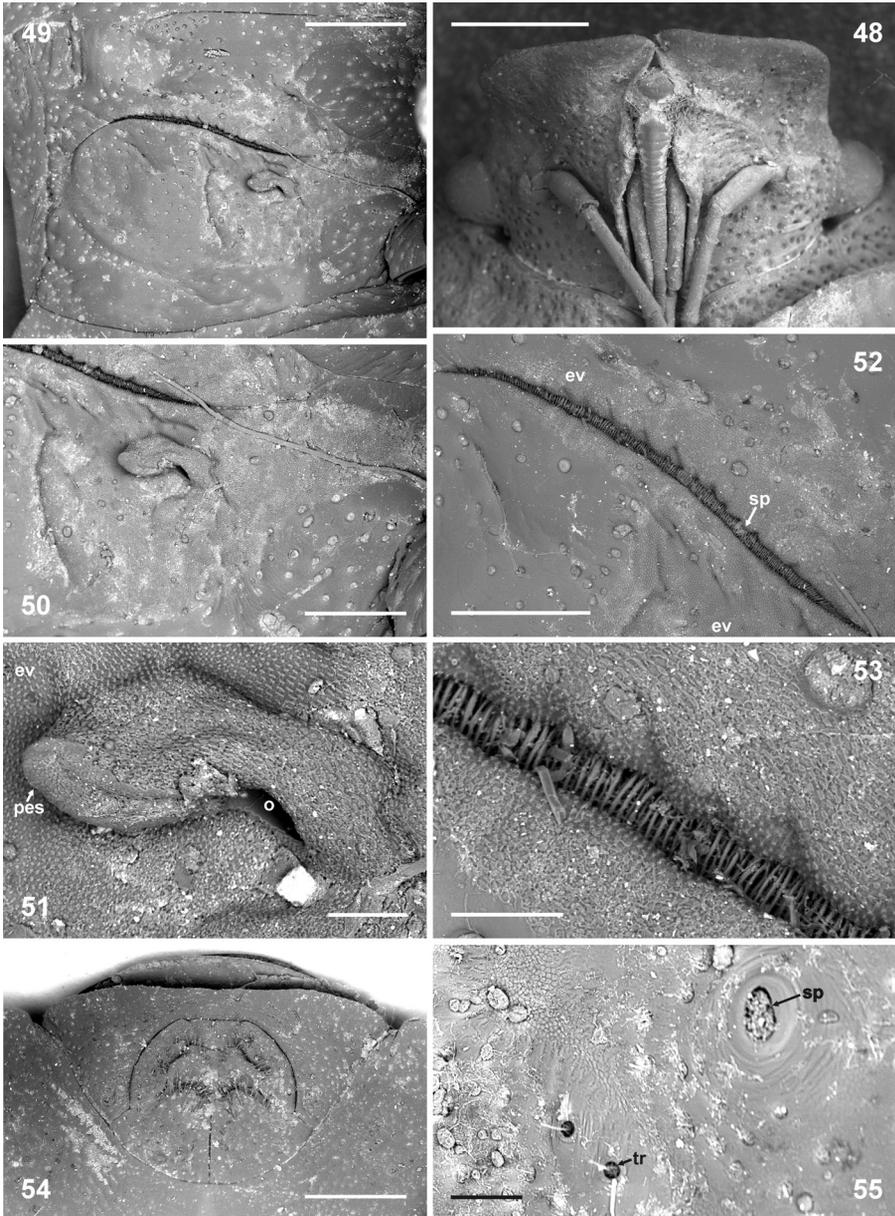
Type locality. Madagascar, Toamasina Province, Rogez, 18°48'00"S 48°37'06"E.

Type material. HOLOTYPE: ♂ (NMPC), 'Rogez / Madagascar / Mus.Praha [p] // COLLECTIO / NATIONAL MUSEUM / Praha, Czech Republic [p] // ♂ [p] // HOLOTYPE / NENE / UNDULATUM / sp. nov. / det. P. KMENT 2015 [p, red label]'. The holotype is pinned through scutellum, the detached right antennal segment IV sticking to the rest of the antenna. PARATYPES: 1 ♂, 'Rogez / Madagascar / Mus.Praha [p] // COLLECTIO / NATIONAL MUSEUM / Praha, Czech Republic [p] // ♂ [p]' (NMPC); male genitalia dissected: the dissected genital capsule, one paramere and the proctiger are glued on a separate piece of card, the phallus is stored in a plastic microvial in glycerol, all being attached to the same pin with the specimen; 1 ♀, 'Rogez / Madagascar / Mus.Praha [p] // COLLECTIO / NATIONAL MUSEUM / Praha, Czech Republic [p] // ♀ [p]' (NMPC). 1 ♂, '[M]aroantsetra [hw, first letter illegible] // INSTITUT / SCIENTIFIQUE / MADAGASCAR [p] // Brit. Mus. / 1965-338 [p] // Genus near / Triplatyx [hw] / W.E.China det. 196[p]4[hw] // ♂ [p]' (BMNH); 1 ♂ 2 ♀♀, 'environs de / Tananarive [hw, pale blue label with black margins] // Madagascar [hw, pale blue label with black margins] // ♂ or ♀ [p, respectively]' (MRAC); the male paratype has a detached but not dissected genital capsule glued on a separate piece of card attached to the same pin; one of the female paratypes has dissected abdomen glued to the specimen and internal genitalia stored in glycerol in a plastic microvial attached to the same pin. 1 ♀, 'environs de / Tananarive [hw, pale blue label with black margins] // Madagascar [hw, pale blue label with black margins] // MUSEUM PARIS [p] // ♀ [p]' (MNHN). All paratypes bear the following identification label: 'PARATYPUS / NENE / UNDULATUM / sp. nov. / det. P. KMENT 2015 [p, red label]'.

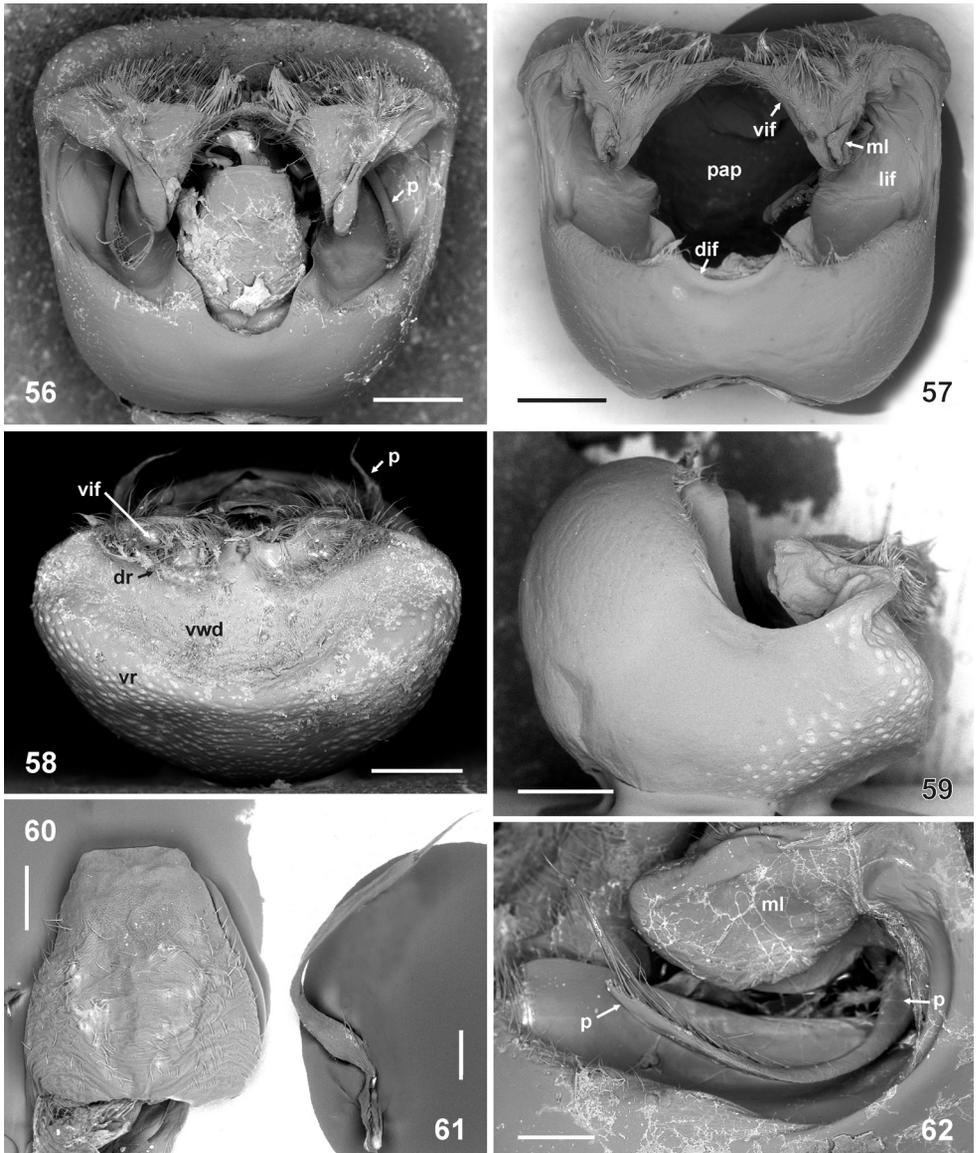


Figs 44–47. *Nene elongatum* sp. nov. 44–45 – head (44 – dorsal view, 45 – lateral view). 46 – humerus of pronotum, dorsal view. 47 – meso- and metapleuron with external scent efferent system of the metathoracic scent gland (evaporatorium dotted). Abbreviations: at – antenniferous tubercle, bc – buccula, ev – evaporatorium, lb1 – labial segment I, lr – labrum, mp – mandibular plate, o – ostiole, pe – peritreme, sp – spiracle. Scale bars: 1 mm.

Description of adult. Coloration (Figs 6–8). Entire body and legs brick red, dorsally with only few narrow black (on anterior margin of humeri, on inner margin of pronotal calli, in foveae in anterolateral angles of scutellum) and brown markings (anterolaterally on margins of connexival segments). Body ventrally and femora with numerous irregularly scattered black markings, most prominent on meso- and metapleuron; abdominal ventrite VII anteromedially with large black triangular spot pointed posteriad (Fig. 7); femora with few larger black spots on dorsal surface, the most lateral spot projecting ventrally and forming narrow, undulated, more or less complete ring. Antennal segment I reddish with black spots medially or in entire



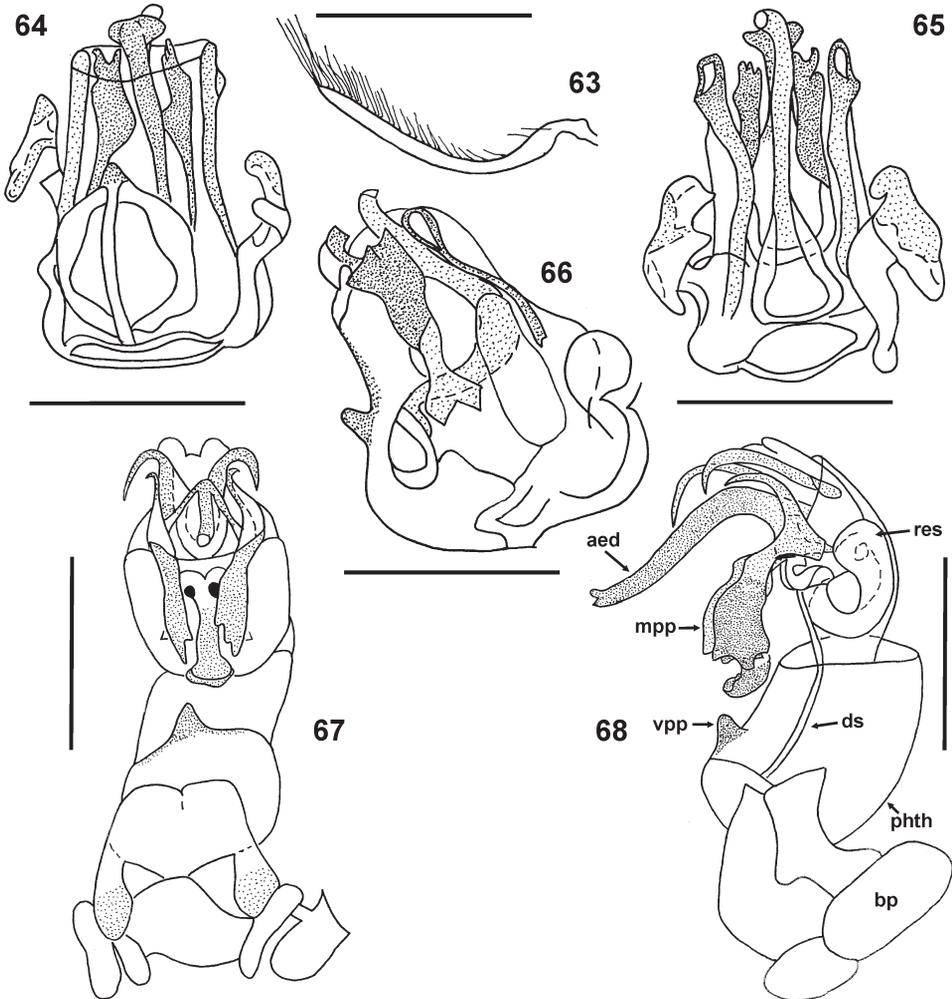
Figs 48–55. *Nene elongatum* sp. nov. 48 – head, ventral view (magnification 37×). 49 – meso- and metapleuron with external scent efferent system of the metathoracic scent gland (25×). 50–51 – ostiole and peritreme (50 – 60×, 51 – 230×). 52–53 – metathoracic spiracle (52 – 75×, 53 – 300×). 54 – female external genitalia (30×). 55 – detail of trichobothria and spiracle on ventrite VI (190×). Abbreviations: ev – evaporatorium, o – ostiole, pes – peritremal surface, sp – spiracle, tr – trichobothrium. Scale bars: 0.1 mm – 51, 53, 55; 0.5 mm – 50, 52; 1 mm – 48, 49, 54.



Figs 56–62. *Nene elongatum* sp. nov. 56–59 – genital capsule: 56 – undissected, dorsal view (magnification 35 \times); 57 – dissected, dorsal view (35 \times). 58 – undissected, posterior view (42 \times); 59 – dissected, lateral view (37 \times). 60 – proctiger, dorsal view (100 \times). 61 – paramere, extracted (85 \times). 62 – paramere, in situ (95 \times). Abbreviations: dif – dorsal rim infolding, dr – dorsal ridge of ventral wall, lif – lateral rim infolding, ml – membranous lobe of lateral rim infolding, p – paramere, pap – posterior aperture, vif – ventral rim infolding, vr – ventral ridge of ventral wall, vwd – ventral wall depression. Scale bars: 0.2 mm – 60–62; 0.5 mm – 56–59.

basal half, remaining antennal segments black with reddish apices. Labium reddish, apical segment darkened. Spiracles of abdominal ventrites III–VII black. Claws black apically. Membrane brown with dark brown veins.

Integument and vestiture. Body dorsally (Fig. 6) with irregular, small but deep punctures, concolorous to black, leaving more or less wide and callose impunctate interspaces (most prominent on head and pronotum); endocorium posteriorly with punctures more shallow than elsewhere; punctures on connexivum shallow and mostly concolorous. Body ventrally



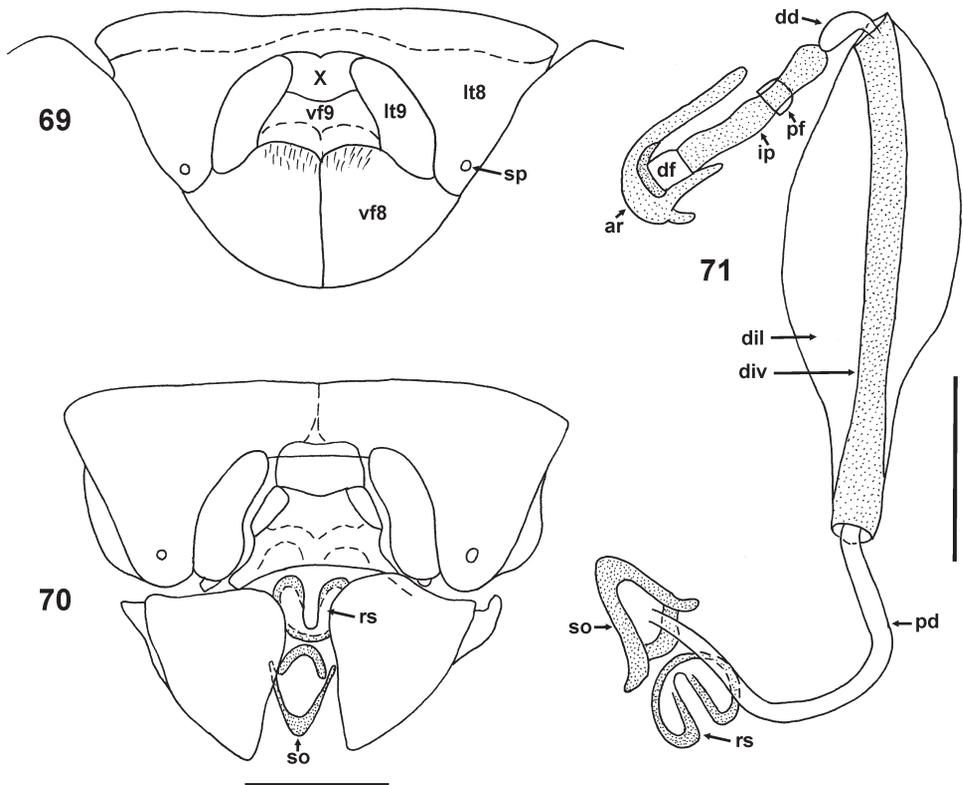
Figs 63–68. *Nene elongatum* sp. nov. 63 – paramere. 64–68 – phallus: 64–66 – uninflated (64 – ventral view, 65 – dorsal view, 66 – lateral view); 67–68 – inflated (67 – ventral view, 68 – lateral view). Abbreviations: aed – aedeagus (= vesica), bp – basal plate, mpp – median penial plates, phth – phallosome, res – endophallic reservoir, vpp – ventral process of phallosome. Scale bars: 1 mm.

(Figs 48–49) with small (head, connexiva) to large (pleura, base of abdomen), concolorous to black, irregularly distributed punctures. Femora with few scattered large black punctures; tibiae impunctate.

Body glabrous, only tibiae (on inferior surface and apically), tarsi (ventrally), ventral rim infolding of genital capsule (Figs 56–58), and external female genitalia (sparsely on valvifers VIII and IX, Fig. 54) covered with short, semierect to erect pale setae. Antennal segments III and IV densely covered with microtrichiae.

Structure. See the generic description.

Measurements (in mm). Males ($n = 4$, except antennal segments III ($n = 3$) and IV ($n = 2$); median (minimum–maximum); measurements of holotype presented in square brackets). Body length 13.85 (12.62–14.31) [14.31]; head: length 3.36 (3.23–3.58) [3.43], width (including eyes) 3.92 (3.63–4.02) [4.02], interocular width 2.94 (2.70–2.99) [2.99]; lengths of antennal

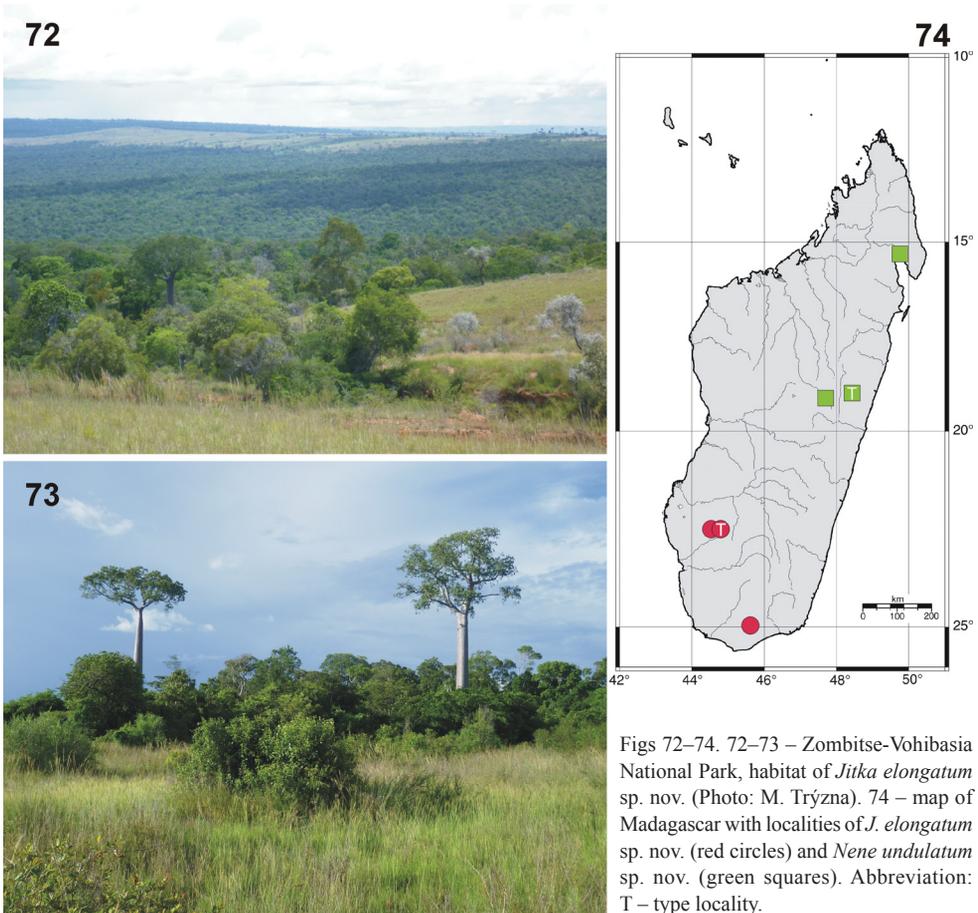


Figs 69–71. *Nene elongatum* sp. nov. 69–70 – external female genitalia (69 – intact, 70 – dissected). 71 – spermatheca. Triangulin not depicted. Abbreviations: ar – apical receptacle of spermatheca, dd – distal duct of spermatheca, df – distal flange, dil – spermathecal dilation, div – distal invagination of spermathecal duct, ip – intermediate part of spermatheca, lt8,9 – laterotergite VIII and IX, pd – proximal duct of spermatheca, pf – proximal flange, sp – spiracle, rs – ring sclerite, so – sclerite surrounding spermathecal opening, vt8,9 – valvifer VIII and IX, X – segment X. Scale bars: 1 mm.

segments: I – 0.72 (0.69–0.74) [0.74], IIa – 0.98 (0.93–1.03) [0.98], IIb – 1.06 (0.93–1.13) [1.13], III – 1.32 (1.23–1.37) [1.32], IV – 1.42–1.47 [1.42]; pronotum: length 3.56 (3.38–3.72) [3.68], width 10.98 (9.61–11.76) [10.98]; scutellum: length 6.47 (6.47–6.86) [6.47], width 6.03 (5.49–6.27) [6.08]; abdomen: width (across segment III) 10.88 (9.90–11.37) [10.88].

Females (n = 4, except antennal segments III and IV (n = 3); median (minimum–maximum)). Body length 13.77 (13.69–15.08); head: length 3.72 (3.68–3.72), width (including eyes) 4.07 (4.02–4.17), interocular width 3.04 (2.99–3.19); lengths of antennal segments: I – 0.78 (0.74–0.78), IIa – 0.98 (0.88–1.03), IIb – 1.01 (0.98–1.03), III – 1.27 (1.27–1.37), IV – 1.42 (1.37–1.47); pronotum: length 3.75 (3.68–3.97), width 11.42 (11.18–11.57); scutellum: length 6.96 (6.86–7.06), width 6.47; abdomen: width (across segment III) 11.47 (11.27–12.06).

Intraspecific variation. The specimens examined appear uniform in structure (except slight differences in measurements) and differ mostly in details of the black markings on the body



Figs 72–74. 72–73 – Zombitse-Vohibasia National Park, habitat of *Jitka elongatum* sp. nov. (Photo: M. Tryzna). 74 – map of Madagascar with localities of *J. elongatum* sp. nov. (red circles) and *Nene undulatum* sp. nov. (green squares). Abbreviation: T – type locality.

venter and the antennal segment I. Only in some specimens from the environs of Antananarivo the venter of abdomen is more or less bright red.

Etymology. The species name is the Latin adjective *undulatus* (-a, -um), meaning wavy, waved, undulate, referring to the characteristic undulated lateral margins of abdomen.

Habitat and biology. Unknown.

Distribution. Humid and subhumid forest areas of north-eastern and eastern Madagascar (Fig. 74).

Key to the genera of Madagascan Pentatominae with sharp margins of the head

The key is adapted from CACHAN (1952) and KMENT (2008) and expanded. It applies to genera with lateral margins of the head, and more or less also the margins of the pronotum and corium explanate and sharp, and the antennal segment I short, not surpassing the lateral margin of the head and not visible in dorsal view.

- 1 Humeri of pronotum not prominent, rounded, unarmed. 2
- Humeri of pronotum prominent, spinose or lobate. 5
- 2 Body short and oval, body length 3.5–8 mm. Head large, parabolic. Scutellum large, shortly triangular, not incised at apex of clavi (frena), posteriorly broadly rounded. Macropterous. External scent efferent system of metathoracic scent glands with peritreme and evaporatorium well developed.
..... **Sciocorini: *Sciocoris*** Fallén, 1829 (8 species keyed by CACHAN 1952)
- Body elongate to widely oval. Head triangular or semicircular, not parabolic. Scutellum U-shaped or triangular, incised at apex of clavi (frena), and narrowly rounded apically. 3
- 3 Small species (body length 7.4 mm). Body elongate, narrow (body length : abdomen width 2.6 : 1), lanceolate in shape (widest across abdominal segment IV). Head narrowly triangular (head length : width across eyes 1.24 : 1). Scutellum short, widely rounded posteriorly. Brachypterous, corium posteriorly truncate, nearly reaching apex of scutellum, membrane rudimentary. External scent efferent system of metathoracic scent glands reduced, peritreme and evaporatorium not developed.
..... **Aeptini: *Aeptus*** Dallas, 1851 (one undescribed species in MRAC).
- Large species (body length 11–13 mm). Body more robust, elongate-oval or widely oval, not lanceolate. Head broadly triangular or semicircular. Scutellum long, triangular. Macropterous with well developed membrane. External scent efferent system of metathoracic scent glands with peritreme and evaporatorium well developed. **Myrocheini**. 4
- 4 Body elongate-oval, pale brown. Head elongate, longer than wide, triangular, head margins slightly bisinuate in front of eyes. Pronotum trapezoid with anterolateral angles right-angled and lateral margins straight, slightly undulated. Protibiae not dilated. Body length 11–12 mm.
..... ***Dissocolpus*** Bergroth, 1905: ***D. fissiceps*** Bergroth, 1905 (see CACHAN 1952)

- Body widely oval, brick red. Head slightly wider than long, semicircular, head margins strongly arcuate in front of eyes. Anterolateral angles of pronotum widely arcuate, marked by a small tooth; lateral margins of pronotum arcuate. Protibiae dilated. Body length 11.7–13 mm. *Jitka* gen. nov.: *J. elegans* sp. nov.
- 5 Large (body length 12.5–23 mm). 6
- Small (body length 4.7–8.4 mm). 7
- 6 Head and anterior part of pronotum, in lateral view, inclined nearly orthogonally downwards. Head with strong anteocular spine followed by distinct incision in front of eyes. Lateral margin of each ventrite with two sharp triangular projections. Labium reaching mesocoxae. Ventrites convex, not grooved. Body brown, humeri black. Body length 18.5–22.7 mm.
..... *Tricompastes* Cachan, 1952: *T. gigas* Cachan, 1952 (see KMENT & BAENA 2015)
- Head and anterior part of pronotum, in lateral view, inclined obliquely (ca. 45°) downwards. Head margin in front of eyes straight, without anteocular spine or incision. Lateral margin of connexivum undulated. Labium reaching base of ventrite IV, ventrites III and IV (basally) grooved. Body brick red. Body length 12.5–15 mm.
..... *Nene* gen. nov.: *N. undulatum* sp. nov.
- 7 Body more elongate, pale ochraceous. Head lacking anteocular spines. Humeri of pronotum markedly produced anteriad, narrowing, and usually with bifid apices. Scutellum dorsally flat, without a hump. Lateral margins of connexivum straight. Body length 5.8–8.3 mm.
..... *Anoano* Cachan, 1952: *A. pronotalis* Cachan, 1952 (see KMENT 2012)
- Body shorter and wider, brown. Head with one anteocular spine on each side. Humeri of pronotum produced laterad and less markedly anteriad, wide and with widely rounded to nearly quadrangular apices. Scutellum often bearing a dorsal hump. Lateral margins of connexivum more or less sinuate. Body length 4.7–7.5 mm.
..... *Triplatyx* Horváth, 1904 (6 species keyed by KMENT 2008, 2011)

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