

## Study on Trachyploeini of the Oriental Region (Coleoptera: Curculionidae: Entiminae)

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### Taxonomy, new genus, new species, Coleoptera, Curculionidae, Entiminae, Trachyploeini, Cyphicerini, Oriental Region

**Abstract.** *Pseudotrachyploeosoma* gen. nov. is erected for the species *Trachyploeosoma alternatum* Marshall, 1916, living in South India. *Laohajekia* gen. nov. is described as a monotypic genus for the new species *L. trachyploeiformis* sp. nov. from Laos. One new species of *Trachyodes* Marshall, 1916, *Trachyploeosoma* Wollaston, 1869 and one new species of *Myosides* Roelofs, 1873, the later from the tribe Cyphicerini Lacordaire, 1863, are described and illustrated: *Trachyodes kejvali* sp. nov. from South India, *Trachyploeosoma nudum* sp. nov. from Vietnam and *Myosides morimotoi* sp. nov. from Taiwan. *Trachyploeophana* Heller, 1929 as a junior synonym of *Trachyploeosoma* Wollaston, 1869 and *Myosides formosanus* Morimoto et Lee, 1993 as a junior synonym of *Myosides marshalli* (Heller, 1931) are proposed. Lectotypes of the following species are designated: *Trachyodes horrescens* Marshall, 1916; *Trachyodes marshalli* Heller, 1931; *Trachyploeophana buruana* Heller, 1929; *Trachyploeops setosus* Roleofs, 1873 and *Trachyploeosoma alternatum* Marshall, 1916. Redescriptions of all *Trachyodes* and *Trachyploeosoma* species and the genus *Trachyodes* are provided. The taxonomic position of *Trachyodes* is discussed. *Trachyploeosoma setosum* Wollaston, 1869 is recorded from Taiwan for the first time. Male and female genitalia of most of the species are studied and illustrated for the first time.

## INTRODUCTION

The study of eastern Trachyploeini (Borovec 2003), of which this is the second part, provides in this paper redescriptions of all the known species of the genera *Trachyodes* Marshall, 1916 and *Trachyploeosoma* Wollaston, 1869 and description of two new genera and three new species. In addition, the genus *Trachyodes*, known only from South India, and not included in the generic revision of Palaearctic Trachyploeini (Borovec 2009) is redescribed here and its relationships are discussed. Moreover, a type of *Trachyploeophana buruana*, the only known genus and species of Trachyploeini from the Australian Region, was examined.

Thus, beyond the Nearctic Region, the tribe Trachyploeini includes 18 genera and 263 species, 13 genera and 253 species being known from Palaearctic Region (Borovec 2009). Only 2 more genera and 5 species are known from South Africa (Borovec & Meregalli 2013) and 4 genera and 8 species from the Oriental Region (based on the present paper). Following these numbers, the fauna of the Oriental Region is only of peripheral importance, but it includes authentic genera and species, having in individual species several original characters not known from Palaearctic taxa, as femora with small teeth, body without adherent scales, claws as long as exceeding part of onychium and gonocoxites of the ovipositor without apical styli.

## MATERIAL AND METHODS

Examined specimens were measured in profile from the anterior border of eyes to the apex of the elytra, excluding the rostrum. Ratios between width and length of rostrum, pronotum, elytra and antennal and tarsal segments are presented for the maximum width and length of the respective parts in dorsal view. Dissected female genitalia were embedded in Solakryl BMX, male genitalia were mounted dry. Genitalia are mounted on the same card as the respective specimen. The terminology of the rostrum follows Oberprieler (1988), terminology of female genitalia follows Borovec (2006), with the exception of the use of gonocoxites instead of hemisternites.

The material including types is deposited in the following collections (identified by the acronyms):

BMNH	British Museum Natural History, London, United Kingdom;
CAUO	College of Agriculture, University of Osaka Prefecture, Osaka, Japan;
JPMF	coll. Jean Pelletier, Monnaie, France;
SMDG	Staatliches Museum für Tierkunde, Dresden, Germany;
MWWP	coll. Marek Wanat, Wrocław, Poland;
NMPC	National Museum, Praha, Czech Republic;
NHMW	Naturhistorisches Museum Wien, Austria;
PHPC	coll. Peter Hlaváč, Praha, Czech Republic;
PKSC	coll. Petr Kresl, Spùle, Czech Republic;
RBSC	coll. R. Borovec, Sloupno, Czech Republic;
ZMAN	Zoölogisch Museum Amsterdam, Netherlands;
ZMOC	Zoological Museum, University of Oslo, Norway.

## TAXONOMIC PART

### *Trachyodes* Marshall, 1916

(Figs 1, 2, 11-24)

*Trachyodes* Marshall, 1916: 277.

*Trachyodes*: Lona 1937: 347; Alonso-Zarazaga & Lyal 1999: 183; Borovec 2009: 26.

**Type species.** *Trachyodes horrescens* Marshall, 1916, by monotypy.

**Diagnosis.** Small Trachyphloeini, less than 3 mm; antennal scrobes in lateral view reaching ventral margin of eye; epistome distinct, V-shaped; apex of protibiae at apical quarter curved inside; metaventral process wide; abdominal ventrites matt, unpunctured; metatibial corbels bald and tarsal claws free.

**Redescription.** Body length: 1.8-2.7 mm.

Body dark brown to black, only antennal funicles, basal parts of antennal scapes, tarsi and apical parts of tibiae paler, red or brown. Entire body, except antennal funicles with clubs and tarsi densely covered by rounded, dense scales concealing structures. Elytra with one regular row of almost perpendicularly erect, long, slender setae. Pronotum and head with rostrum



1



2



3



4

Figs 1-4. Habitus: 1- *Trachyodes horrescens* Marshall; 2- *T. kejvali* sp. nov.; 3- *Myosides marshalli* (Heller); 4- *M. morimotoi* sp. nov.



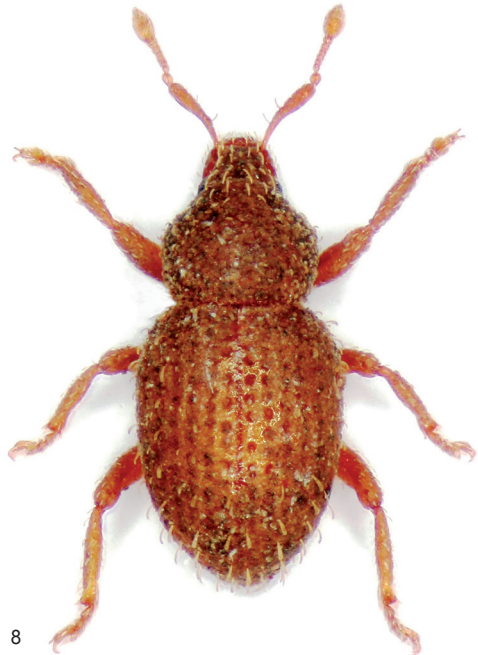
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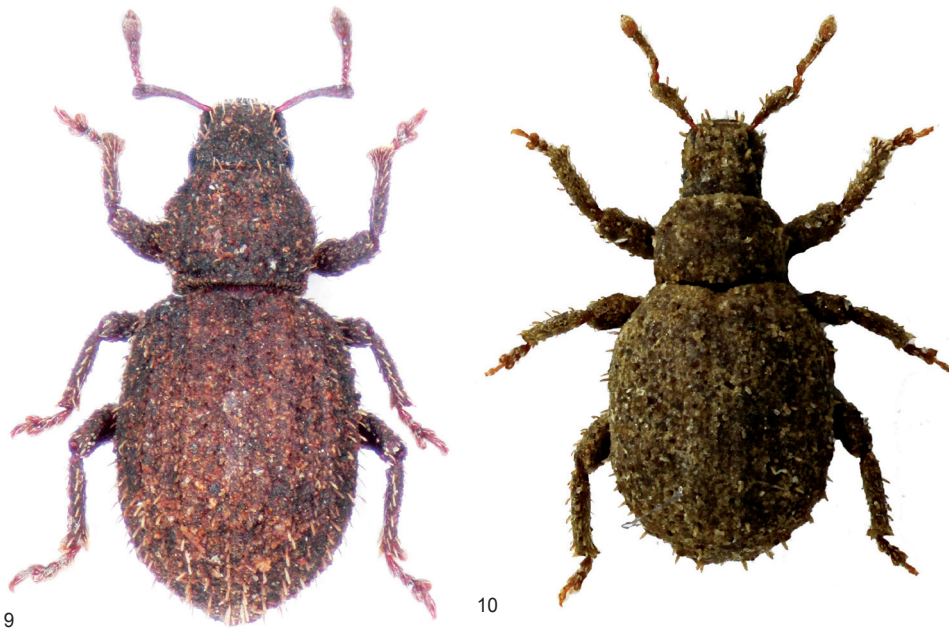


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Figs 5-8. Habitus: 5- *Trachyploeosoma advena* Zimmerman; 6- *T. buruana* (Heller); 7- *T. nudum* sp. nov.; 8- *T. setosum* Wollaston.



Figs 9-10. Habitus: 9- *Pseudotrachyphloeosoma alternatum* (Marshall); 10- *Laohajekia trachyphloeiformis* sp. nov.

with similar, but distinctly shorter slender or long-oval setae. Antennal scapes, femora and tibiae with semierect, slender, dense setae; antennal funicle with semierect to semiadherent piliform setae; clubs with short adherent setae and tarsi covered by semierect long-oval as well as piliform setae. Elytra irregularly spotted by dark brownish scales (Figs 1, 2).

Rostrum short and wide, distinctly wider than long, feebly regularly enlarged from base to apex with straight sides. Epifrons in basal half strongly tapered anteriorly, in apical half about parallel-sided, shallowly but distinctly depressed in almost whole width, with very narrow longitudinal median carina, almost completely covered by scales. Rostrum continuous to frons in the same plane on dorsum, in lateral view strongly vaulted. Epistome bare, delimited posteriorly by distinct V-shaped carina and with a bare space behind it. Antennal scrobes in dorsal view narrow, furrow-shaped, visible along the whole length and reaching eye, in the middle of rostrum angle-shaped curved. Scrobes in lateral view reaching eye, bow- or angle-shaped in the middle, ventral margin directed to ventral margin of eye, dorsal margin continued right up to the anterior margin of the eye in anterior part, in posterior portion curved down, directed to middle of eye and being much narrower than in anterior part. Head separated from rostrum by indistinct, shallow, transversal depression. Eyes moderately large and convex, moderately prominent from outline of head; in lateral view long-oval in longitudinal direction and placed slightly above the middle of height of head (Figs 1, 2, 11, 12, 19, 20).

Antenna with short and widened scapes, scapes somewhat longer than funicle, slightly exceeding eye when folded, reaching anterior margin of pronotum, regularly and significantly

enlarged to apex, in apical part as wide as antennal clubs or protibiae at midlength. Antennal funicle slender, 7-segmented.

Pronotum slender, with feebly or moderately rounded sides, widest at midlength, with anterior margin only slightly narrower than posterior margin and only slightly wider than head with eyes. Disc without any sculpture, usually shows well visible anterior and feebly visible posterior transversal line (Figs 1, 2). Pronotum in lateral view flat, without ocular lobes or setae in lateral part of anterior margin.

Procoxal cavities contiguous, semiglobular, situated at midlength of pronotum.

Scutellum invisible.

Elytra oval, shoulders obsolete, width of elytral base equal to width of base of pronotum. Elytra widest at posterior third (Figs 1, 2). Striae narrow, indistinctly punctate, intervals feebly vaulted.

Mesocoxa semiglobular, mesosternal process narrow. Metacoxa transversal, metasternal process narrow, feebly arrow-shaped, strikingly narrower than transversal diameter of metacoxa.

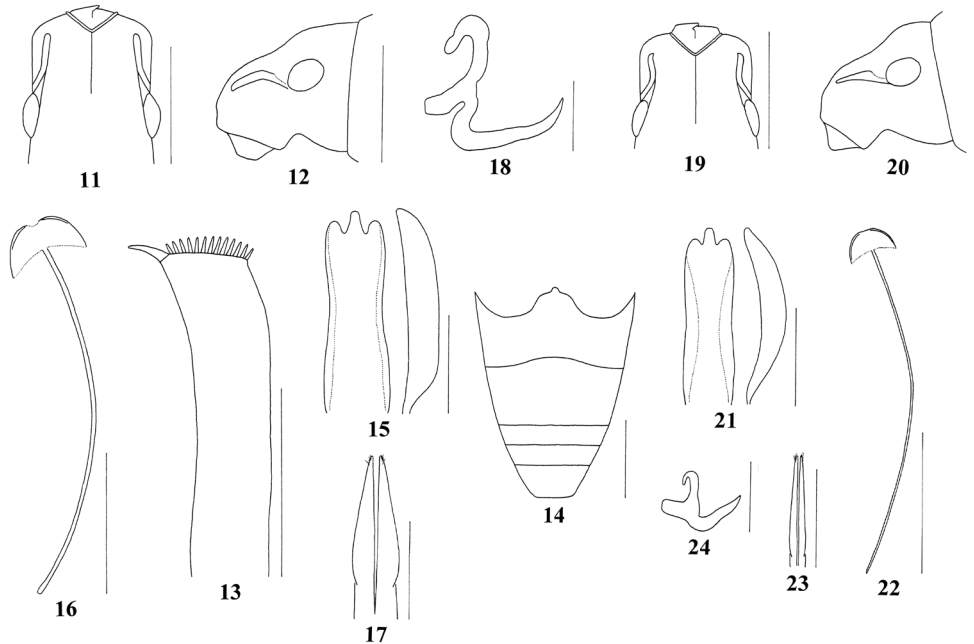
All femora with very small, hardly visible teeth or without it. Protibiae moderately slender, at apical portion enlarged mesally and straight laterally, in apical quarter curved inside (Fig. 13). Apex obliquely subtruncate, with a fringe of short, fine, yellowish setae and with one long tooth at internal angle. Mesal edge of protibiae bisinuate. Meso- and metatibiae armed with one long spine at internal angle. Metatibial corbels small, oval, bald, fringed only on outer side by yellowish, almost translucent setae. Metatarsi somewhat more slender than protarsi. Tarsal segment 3 of all tarsi deeply bilobed, wider than the others; onychium of about equal length as previous one. Claws free.

Abdominal ventrite 1 as long as ventrite 2 and slightly longer than ventrites 3 and 4 combined. Suture 1 (between abdominal ventrites 1 and 2) sinuose and fine, sutures 2-4 straight, wide and deep (Fig. 14). Ventrites densely covered by adherent scales, with scarce, long-oval, semiadherent setae.

Sexual dimorphism. Abdominal ventrite 1 in males shallowly concave, in females slightly convex.

Male genitalia. Aedeagus short, well sclerotised, with apex split to three slender projections separated by deep and slender incurvations (Figs 15, 21), temones about equally as long as body of aedeagus and 1.1-1.2 as long as tegminal manubrium. Tegmen with slender complete ring but without parameres. Sternite IX with spiculum gastrale moderately long, anteriorly tapered and curved, posteriorly with fused basal arms, apical plate absent.

Female genitalia. Ovipositor very feebly sclerotised, very slender, gonocoxites tapered apicad, without stylus and with irregularly scattered, laterally directed apical setae (Figs 17, 23). Apodeme of sternite VIII very long, slender, curved, 8-10 times as long as plate, apically terminated at base of plate, not creating basal margin. Plate small, feebly sclerotised, subtrapeziform, wider than long, with very slender apical margin, sometimes somewhat indistinct in middle part, concave at apex with apical setae (Figs 16, 22). Spermatheca C-shaped, with slender, long, irregularly curved cornu and well distinguished nodulus and ramus. Ramus short and wide, nodulus strikingly longer than ramus, at apex curved back (Figs 18, 24).



Figs 11-24. *Trachyodes horrescens* Marshall: 11- head with rostrum in dorsal view; 12- head with rostrum in lateral view. Scale = 0.50 mm; 13- apex of protibia. Scale = 0.25 mm; 14- abdominal ventrites. Scale = 0.50 mm; 15- aedeagus in dorsal and lateral views. Scale = 0.25 mm; 16- sternite VIII in female. Scale = 0.50 mm; 17- ovipositor. Scale = 0.25 mm; 18- spermatheca. Scale = 0.125 mm. *Trachyodes kejvali* sp. nov.: 19- head with rostrum in dorsal view; 20- head with rostrum in lateral view. Scale = 0.50 mm; 21- aedeagus in dorsal and lateral views. Scale = 0.25 mm; 22- sternite VIII in female. Scale = 0.50 mm; 23- ovipositor. Scale = 0.25 mm; 24- spermatheca. Scale = 0.125 mm.

**Bionomics.** Not known. Type material of *T. kejvali* sp. nov. was collected by sifting of litter in forest.

**Distribution.** The exact distribution of *Trachyodes* have never been cleared, being known only from one species known only from type locality. The contemporaneous discovery of the second species shows that it appears to be possibly more speciose and also more distributed in humid, high-altitude forests of southern parts of India. But up to this time the genus is known only from Nilgiri hills.

**Taxonomic position and differential diagnosis.** *Trachyodes* belongs very clearly to Trachyphloeini by epifrons of rostrum with well defined and visible borders along the whole length, at base as wide as the space between anterior borders of eyes, scrobes in lateral view furrow shaped, directed towards the eye, rostrum wide and short, not separated from the rest of the head by a sharp, narrow, deep, transversal stria, elytra without developed shoulders and the entire dorsal part of body densely covered by adherent scales. On the contrary, this genus clearly differs by two characters from all other Palaearctic Trachyphloeini - femora with very small dent and gonocoxites of ovipositor without stylus. Dentate femora is no rigid

generic character, because *T. kejvali* nov. spec. has femora edentate and it is most likely to occur due to convergence. For example all species of *Myosides* Roelofs, 1873 (Cyphicerini Lacordaire, 1863), genus occurring in Japan, Korea and Taiwan and living in the same habitat, have femora with a small sharp teeth. The same character is possible to find in genus *Asphalmus* Sharp, 1896 (Omiini Shuckard, 1840), known from China and Japan. Also in Omiini this character is exceptional and *Asphalmus* clearly differs by this character from similar, west-palaeartic genus *Rhinomias* Reitter, 1894. The second character, gonocoxites lacking stylus is more serious. All Palaeartic genera and species of Trachyphloeini have this stylus, without exception. Also all South-African species of Trachyphloeini have long and slender stylus (Borovec, unpublished data). This lack is thought to be an apomorphy. *Trachyodes* is by apex of protibiae distinctly curved inside in apical quarter, anterior margin of pronotum without ocular lobes, claws free, apodeme of sternite VIII in females with very long and slender apodeme, terminating inside of small plate without basal margin similar to the genus *Trachyphloeosoma*. It is possible to distinguish it from this genus by a combination of characters stated below in the key.

### ***Trachyodes horrescens* Marshall, 1916**

(Figs 1, 11-18)

*Trachyodes horrescens* Marshall, 1916: 277.

*Trachyodes horrescens*: Lona 1937: 347; Alonso-Zarazaga & Lyal 1999: 183.

**Type material examined.** Marshall (1916) described this species from “Madras: Nilgiri Hills (Sir G. Hampson, H. L. Andrewes)” based on an unspecified number of specimens. I have found in Marshall’s collection (BMNH) 12 syntypes of both sexes. Male specimen labelled as type and measured 2.53 mm I chose as lectotype, the other eleven specimens as paralectotypes, using red printed labels LECTOTYPUS [PARALECTOTYPUS, respectively] *Trachyodes horrescens* Marshall, R. Borovec des. 2009. Lectotype is labelled as follows: Type [printed, circular label with red margins] / Nilgiri Hills G. F. Hampson 94-89 [printed] / *Trachyodes horrescens* TYPE Mshl [Marshall’s handwriting]. Paralectotypes are labelled by similar labels, only either as “Syntype” or as “Cotype”. I have remounted and extracted genitalia and ventrites of the lectotype on the same card as the respective specimen. The lectotype is designated in order to stabilize the nomenclature in this genus according to Article 74.7.3 of the Code (ICZN 1999).

**Additional material examined.** 5 spec., Nilgiri Hills, S. India, T. V. Campbell, (4 BMNH, 1 RBSC).

**Redescription.** Body length: 2.50-2.66 mm.

Body dark brown, with paler antennal funicles, apical parts of tibiae and tarsi. Body densely covered by rounded adherent scales with longitudinal striae. One elytral interval with 5-6 scales across of the interval. Elytral interval with one regular row of erect setae, about as long as interval width, setae widest at apical third. Pronotum and head with long-oval erect setae, distinctly shorter than elytral ones. Body brown, pronotum with significant narrow longitudinal stripe on lateral parts, elytra with not contrast dark brown irregular spots (Fig. 1).

Rostrum short, 1.61-1.72 times as wide as long, widened anteriorly with straight sides. Epifrons in basal half tapered anteriorly, in apical half enlarged anteriorly. Epifrons shallowly depressed, with extremely slender central longitudinal carina along the whole length, almost completely hidden by adherent scales. Antennal scrobes in dorsal view constricted in the middle, slightly enlarged anteriorly and posteriorly, in lateral view long, distinctly longer than



longitudinal diameter of eye. Eyes small, rostrum in dorsal view as long from base to posterior point of epistome as longitudinal diameter of eye (Figs 11, 12).

Antennal scapes regularly curved and enlarged, at apex equally wide as clubs. Antennal funicle slender; segment 1 slender, conical, 1.6 times as long as wide and 1.1-1.2 times as long as segment 2; segment 2 slender, 2.1-2.2 times as long as wide; segments 3-6 1.2 times as wide as long; segment 7 1.3 times as wide as long.

Pronotum slender, 1.26-1.41 times as wide as long, widest in the middle with moderately arcuate sides. Anterior margin only slightly narrower than posterior margin and only slightly wider than head with eyes. Disc regularly vaulted, without sculpture (Fig. 1). Pronotum in lateral view flat.

Elytra oval, 1.25-1.36 times as wide as long, widest at posterior third, from base strongly widened to basal quarter and from this point feebly widened posteriad (Fig. 1). Striae narrow, intervals feebly vaulted.

All femora with very small, fine dent. Protarsi with segment 2 1.4-1.5 times as wide as long; segment 3 1.5 times as wide as long and 1.4-1.5 times as wide as segment 2; onychium 1.1 times as long as segment 3. Metatarsi with segment 2 1.3-1.4 times as wide as long; segment 3 1.4 times as wide as long and 1.4 times as wide as segment 2; onychium 1.1 times as long as segment 3.

Male genitalia. Aedeagus long, in basal half significantly tapered apicad, in apical half feebly enlarged apicad. Apex split to three slender projections separated by deep and slender incurvations. In lateral view feebly curved, apex about obtuse (Fig. 15).

Female genitalia. Ovipositor unsclerotised, inconspicuous, with gonocoxites regularly tapered apicad (Fig. 17). Sternite VIII with plate about “arch”-shaped, about twice as wide as long (Fig. 16). Spermatheca with slender and long, irregularly curved cornu, with ramus about twice as long as wide and with nodulus about three times longer than ramus, enlarged apicad with short slender tube going back, “swan”-shaped (Fig. 18).

**Bionomics.** Unknown.

**Distribution.** Known only from South India: Tamil Nadu, Nilgiri Hills.

**Differential diagnosis.** Distinguishing characters from newly described *Trachyodes kejvali* is discussed in the same chapter of that species.

***Trachyodes kejvali* sp. nov.**

(Figs 2, 19-24)

**Type material.** Holotype (♂): S [south] INDIA, Tamil Nadu, Nilgiri hills, 15 km SE of Kotagiri, Kunchappanai, 22.11.1993, 900 m, Kejval & Boukal leg., (NMPC). Paratypes: (26 spec.): the same data as HT (13 PKSC, 12 RBSC, 1 BMNH).

**Description.** Body length: 1.84-2.22 mm (holotype 2.15 mm).

Body dark brown to black, antennal funicles, basal part of antennal scapes, tarsi and apical portion of tibiae lighter, red to red brownish. Body except antennal funicles and tarsi densely covered by wide, almost regularly rounded scales, significantly depressed in the middle, sometimes visible only as rings of borders. Scales partly overlapping, one elytral

interval with 3-4 scales across. Elytra on each interval with one regular row of erect, grey brownish setae, about as long as width of one interval. Setae slender, widest at midlength. Pronotum and head with similar, but distinctly shorter, irregularly but densely scattered setae. Elytra with irregular, dark brownish spots, more in apical than in basal half (Fig. 2).

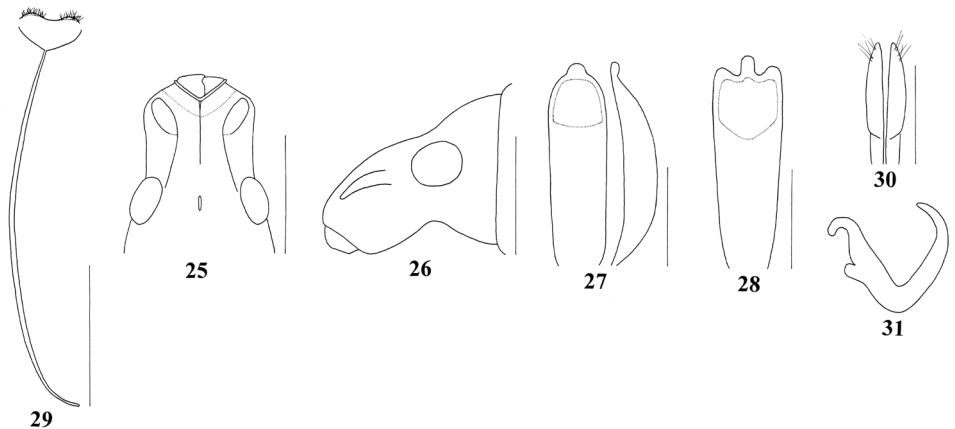
Rostrum very short, 1.64-1.81 times as wide as long, distinctly widened towards the apex, with straight sides. Epifrons in basal part distinctly tapered anteriorly, in apical part very feebly enlarged anteriorly, shallowly depressed. Antennal scrobes in dorsal view in equal width along the whole length, in lateral view short, only somewhat longer than longitudinal diameter of eye. Eyes large, rostrum in dorsal view as long from base to posterior point of epistome as 1.5 longitudinal diameter of eye (Figs 19, 20).

Antennal scapes visibly curved in the middle, regularly enlarged, at apex slightly wider than clubs. Antennal funicle short; segment 1 long, conical, 1.5-1.6 times as long as wide and 1.7-1.8 times as long as segment 2; segment 2 1.3-1.4 times as long as wide; segments 3-5 1.2 times as wide as long; segment 6 1.4 times; segment 7 1.6 times as wide as long.

Pronotum slender, 1.33-1.43 times as wide as long, widest at midlength, anteriorly only slightly more tapered than posteriorly with anterior and posterior margin of about equal width. Disc of the pronotum almost regularly vaulted, with visible anterior transverse line (Fig. 2). Pronotum in lateral view flat.

Elytra oval, 1.19-1.26 times as long as wide, widest at posterior third, from base regularly widened posteriorly (Fig. 2). Striae narrow, intervals feebly vaulted.

All femora edentate, without small and fine teeth. Protarsi with segment 2 1.2 times as wide as long; segment 3 1.4 times as wide as long and 1.4 times as wide as segment 2; onychium as long as segment 3 or slightly shorter. Metatarsi with segment 2 1.1 times as wide as long; segment 3 1.5 times as wide as long and 1.6 times as wide as segment 2; onychium as long as segment 3.



Figs 25-31. *Myosides morimotoi* sp. nov.: 25- head with rostrum in dorsal view; 26- head with rostrum in lateral view. Scale = 0.50 mm; 27- aedeagus in dorsal and lateral views, locality Jienshih Twansl.; 28- aedeagus in dorsal view, locality Wufeng Twansn. Scale = 0.25 mm; 29- sternite VIII in female. Scale = 0.50 mm; 30- ovipositor. Scale = 0.25 mm; 31- spermatheca. Scale = 0.125 mm.

Male genitalia. Aedeagus short, in basal half feebly tapered anteriorly, in apical half about parallel-sided. Apex split to three projections separated by deep incurvations. In lateral view feebly curved, apex about regularly tapered apically (Fig. 21).

Female genitalia. Gonocoxites of ovipositor very slender, small, inconspicuous, unsclerotised (Fig. 23). Plate of sternite VIII about semicircle, wider than long (Fig. 22). Spermatheca with slender, irregularly curved cornu, with large, wide ramus and about twice longer slender nodulus, at apex curved back (Fig. 24).

**Bionomics.** Kejval collected the type material of that species by sifting of litter in forest (pers. comm.).

**Distribution.** South India: Tamil Nadu, Nilgiri Hills.

**Etymology.** I dedicated this interesting new species with pleasure to its collector, Zbyněk Kejval (Czech Republic), my friend and specialist in Anthicidae and excellent illustrator of Coleoptera.

**Differential diagnosis.** *Trachyodes kejvali* sp. nov. differs from the only still known species of the genus based on the following set of characters:

#### KEY TO THE SPECIES OF *TRACHYODES*

1. Larger species, 2.50-2.66 mm. Antennal funicle longer, segment 1 1.1-1.2 times as long as segment 2, which is very slender, 2.1-2.2 times as long as wide; segment 7 1.3 times as wide as long. All femora with very small, fine dent. Adherent elytral scales with longitudinal striae. Aedeagus long (Fig. 15). Spermatheca with nodulus three times longer than ramus, enlarged at apex with slender tube going back (Fig. 18). ..... *T. horrescens* Marshall
- Smaller species, 1.84-2.22 mm. Antennal funicle shorter, segment 1 1.7-1.8 times as long as segment 2, which is only 1.3-1.4 times as long as wide; segment 7 1.6 times as wide as long. All femora edentate. Adherent elytral scales distinctly depressed in the middle. Aedeagus short (Fig. 21). Spermatheca with nodulus less than twice longer than ramus, simply curved back (Fig. 24). ..... *T. kejvali* sp. nov.

#### *Trachyphloeosoma* Wollaston, 1869

(Figs 5-8, 32-58)

*Trachyphloeosoma* Wollaston, 1869: 414.

*Trachyphloeosoma*: Sharp 1896: 92; Marshall 1916: 275; Winkler 1932: 1438; Lona 1937: 334; Zimmerman 1956: 27; O'Brien 1984: 181; Alonso-Zarazaga & Lyal 1999: 183; Hong et al. 2000: 197; Kojima & Morimoto 2004: 130; Borovec 2009: 52; Borovec 2013: 419.

*Trachyphloeophana* Heller, 1929: 108. Type species: *Trachyphloeophana buruana* Heller, 1929 (by monotypy).

*Trachyphloeophana*: Alonso-Zarazaga & Lyal 1999: 183.

*Trachyphloeops* Roelofs, 1873: 165. Type species: *Trachyphloeops setosus* Roelofs, 1873 (non Wollaston, 1869) = *Trachyphloeops roelofsi* Sharp, 1896 (by monotypy).

**Type species:** *Trachyphloeosoma setosum* Wollaston, 1869, by monotypy.

**Diagnosis.** Small Trachyphloeini, less than 3 mm; antennal scrobes in lateral view triangular, separated from eye; apex of protibiae at apical quarter curved inside; metaventral process wide; abdominal ventrites shiny, punctured; metatibial corbels bald and tarsal claws free, long, divergent.

The genus was already completely redescribed and compared to all other Palaearctic Trachyphloeini by Borovec (2009). Discovering of other material of that genus, examination of types of *Trachyphloeophana buruana* Heller, 1929 completed the concept of genus variability, and discovering of other material of *Trachyphloeosoma alternatum* Marshall, 1916 allowing deeper study of that atypical species of the genus, which must be separated to another, independent genus according to characters, assumed in the Trachyphloeini as generic.

The distribution of that genus shows a considerable discontinuity. Zimmerman (1956) stated: "...such discontinuity in distribution indicates that the species has been artificially spread by commerce. At this time it is not possible to tell whence the species has come. It may have been introduced from a western Pacific island or from Asia or the Orient during or after the recent world war". Discovering of a male of *Trachyphloeosoma advena* from China, Yunnan as well as discovering of an amphigonic new species *T. nanus* sp. nov. from Vietnam indicates, that the genus comes from Asia (China, Vietnam, Japan) and it was introduced to Polynesia (Hawaii), continental USA (Alabama, Florida) and island St. Helena in Atlantic ocean. *Trachyphloeosoma brevicolle* Voss, 1974, described from South Africa, belongs to another, not described genus, having about ten more, also not described, independent species living only in South Africa (Borovec, unpublished data).

### ***Trachyphloeosoma advena* Zimmerman, 1956**

(Figs 5, 32-39)

*Trachyphloeosoma advena* Zimmerman, 1956: 28.

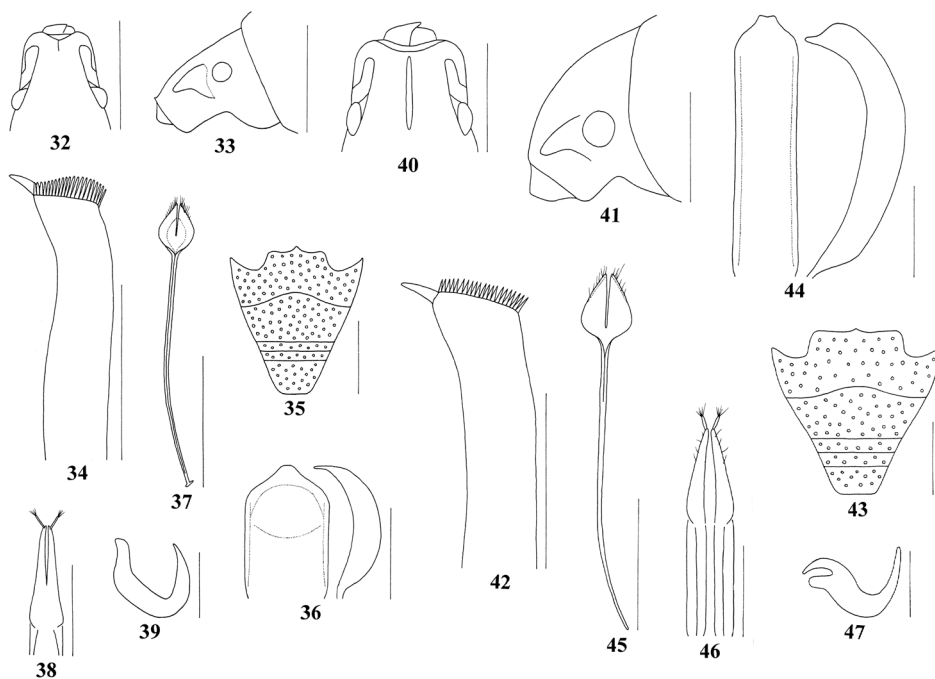
*Trachyphloeosoma advena*: O'Brien 1984: 181; Sawada et al. 1999: 166; Morimoto & Lee 1992: 4; Nomura & Morimoto 2005: 175; Borovec 2009: 78; Borovec 2013: 419.

*Trachyphloeosoma sawadai* Nakane, 1963: 35.

**Type material examined.** Species described from "Hawaiian Islands, Mt. Tantalus, Oahu between March and December 1954 by F. A. Bianchi". I have found two females in BMNH, labelled as follows: Mt. Tantalus Oahn Hawaii F. A. Bianchi 1954 [printed] / *Trachyphloeosoma advena* ♀ E. C. Zimmerman Paratype [printed, yellow label] / Brit. Mus. 1956 - 442 [printed]. Holotype is according to original description deposited in Bishop Museum, Honolulu.

*Trachyphloeosoma sawadai* Nakane, 1963. Species described from locality Icoma, Osaka, Honshu, based on 4 specimens. Nakane compared it with *Trachyphloeosoma roelofsi* Sharp (*Trachyphloeosoma setosum* now) and distinguished by "coarse seriate punctures on pronotum and almost similarly convex intervals of elytra". Species was later synonymised with *Trachyphloeosoma advena* (Kojima & Morimoto 2004).

**Additional material examined.** 1 ♂, China - Yunnan, Lunan env. - Stone Forest, 29.vii.1995, Zd. Jindra lgt., (RBSC); 4 ♀♀, China - Zhejiang, Lin'an County, E Tianmu Shan N. R., sieved mixed forest floor litter, 16.v.1996, 500 m, J. Cooter lgt., (MWWP); 5 ♀♀, the same locality as previous, but 22.v.1996, 300 m, (MWWP); 1 spec., China, Hainan isl., Bawangling Nat. Forest Park, 12.3 km SEE of Baotie, 19°5.20'N 109°11.80'E, 1050 m, 8.v.2011, sifting, moist accumulations of leaf litter along a stream in a primary forest, M. Fikáček lgt., (NMPC); 92 ♀♀, Japan, Honshu, Mt. Mikusayama, Osaka pref., 12.v.1993, 22.vii.1993, 26.viii.1993, 31.x.1993, Y. Sawada lgt., (CAUO); 2 ♀♀, Japan, Wakayama Pref., Kainan City, 26.x.1988, (JPMF); 2 ♀♀, Japan, Honshu, Kinagawa pref., Mt. Hasugesan, ikawa-chô, 7.i.2006, T. Lackner lgt., (PHPC); 2 ♀♀, Japan, Kyushu, Uji City, Kyoto pref., Amagase Forest Park, Makishima-cho, 30.iii.2006, T. Lackner lgt., (PHPC); 2 ♀♀, Japan, Honshu, Kyoto env., Kurama-yama, 27.iii.2006, T. Lackner lgt., (PHPC); 5 ♀♀, Florida, Leon Co, Tallahassee, 6.xii.1977, berlese hardwood litter, C. W. O'Brien lgt., (RBSC).



Figs 32-47. *Trachyphloeosoma advena* Zimmerman: 32- head with rostrum in dorsal view; 33- head with rostrum in lateral view. Scale = 0.50 mm; 34- apex of protibia. Scale = 0.25 mm; 35- abdominal ventrites. Scale = 0.50 mm; 36- aedeagus in dorsal and lateral views. Scale = 0.25 mm; 37- sternite VIII in female. Scale = 0.50 mm; 38- ovipositor. Scale = 0.25 mm; 39- spermatheca. Scale = 0.125 mm. *Trachyphloeosoma buruana* (Heller): 40- head with rostrum in dorsal view; 41- head with rostrum in lateral view. Scale = 0.50 mm; 42- apex of protibia. Scale = 0.25 mm; 43- abdominal ventrites. Scale = 0.50 mm; 44- aedeagus in dorsal and lateral views. Scale = 0.25 mm; 45- sternite VIII in female. Scale = 0.50 mm; 46- ovipositor. Scale = 0.25 mm; 47- spermatheca. Scale = 0.125 mm.

**Redescription.** Body length: 1.97-2.34 mm.

Body dark brown to piceous brown, antennal funicle with clubs, basal part of antennal scapes and tarsi paler. The entire body except of frons, antennal funicle and tarsi covered with a brown, earth-like incrustation which conceals most of the surface. Adherent scales, covering the whole body, very hardly visible through this incrustation, irregularly star-shaped. Elytra with one conspicuous, dense row of erect, slender, feebly subspatulate setae on each interval. Setae slightly longer than width of one interval. Pronotum with similar setae, somewhat shorter than elytral ones, arising from the top of pronotal granules. Head, antennal scapes, femora and tibiae with shorter erect, slender subspatulate setae, shorter than pronotal ones. Setae on pronotum, head and rostrum orientated anteriad (Fig. 5).

Rostrum 1.29-1.35 times wider than long, regularly tapered anteriad. Epifrons in basal part very strongly tapered anteriad, in apical part very feebly tapered anteriad, with wide longitudinal furrow in the middle concealed by the incrustation. Frons glabrous, in lateral view angular to dorsal surface of epifrons; epistome small, separated by half-moon shaped,

slender, vague raised line from frons. Scrobes in dorsal view well visible in apical two thirds of rostral length, in lateral view short, wide, triangular, with dorsal margin directed above eye and ventral margin strongly concave, directed between eye and ventral border of head. Scrobes separated from eye by wide squamose stripe. Eyes small, in dorsal view hardly visible in outline of head, in lateral view about in dorsal third of head, with shorter diameter than distance between hind margin of eye and pronotum (Figs 33, 33).

Antennae with moderately long scapes, exceeding anterior pronotal margin, somewhat curved in the middle, gradually thickened to apex. Funicles 7-segmented; segment 1 conical, long, 1.7-1.8 times as long as wide and 1.7-1.8 times as long as segment 2, which is short, 1.3-1.4 times as long as wide; segments 3-7 successively widened apicad, segments 3-4 1.4 times; segment 5 1.5 times; segment 6 1.6 times and segment 7 1.7 times as wide as long. Clubs ovoid, large, 1.3-1.4 times as wide as antennal scapes at apex.

Pronotum 1.11-1.20 times as wide as long, widest near middle, with anterior border narrower than posterior. Disc coarsely punctate granulate (this structure to be seen only when surface is denuded of scales and incrustation, the derm shiny when cleaned) (Fig. 5). In lateral view pronotum feebly vaulted, anterior margin strongly obliquely directed back beneath towards coxae.

Scutellum invisible.

Elytra oval, 1.26-1.31 times as long as wide, widest at midlength. Intervals somewhat vaulted, almost flat (Fig. 5). Striae widely punctured (as seen when properly cleaned), punctures about as large as width of interval, separations of them is shorter than their diameter, striae only slightly impressed between the punctures.

Femora of all legs edentate. Protibiae short, with inner edge double sinuated, at apical quarter strongly curved inside (Fig. 34); at apex obtuse with a fringe of very fine, short, yellowish setae and at inner angle with a long spine. Tarsi short. Tarsal segment 2 1.6-1.7 times as wide as long; deeply bilobed segment 3 1.4 times as wide as long and 1.4 times as wide as segment 2; onychium slightly shorter than segment 3, strongly widened apicad. Claws almost as long as exceeding part of onychium, strongly forced.

Male genitalia. Aedeagus very short, in ventral view almost parallel-sided, slightly widest in apical third. Apex abruptly tapered, with rounded point and concave sides before it. In lateral view curved, widest at midlength, apex shortly lengthened, sharply pointed (Fig. 36).

Female genitalia. Gonocoxites of ovipositor very slender and long, apically strongly tapered, in apical part well sclerotised, laterally at apex setose, bearing very slender and long, cylindrical stylus with apical setae (Fig. 38). Sternite VIII with very long and slender apodeme, apically divergent, not creating basal margin. Plate small, oval, pointed, with arms not apically fused, leaving slender, apically opened fenestra. Apical margin indistinct, setose (Fig. 37). Spermatheca with long, slender cornu, without developed ramus and with elongate, somewhat long, curved nodulus (Fig. 39).

**Bionomics.** The species seems to be parthenogenetic, described by Zimmerman (1956) only according to females, also almost one hundred of specimens, examined by authors of that paper and coming from Japan Honshu were also only females. O'Brien (1984) stated from Florida collection of nearly 1 000 specimens and all of those were also only females. Only

from China one male is known. Brief discussion to it is stated below. *T. advena* was collected in China by sifting of leaf litter, in Hawaiian islands to Berlese funnel, from litter on the ground beneath an *Acacia koa* trees. In Florida, the species was also collected using Berlese funnel in mixed hardwood litter.

**Distribution.** China (Yunnan, Zhejiang), Vietnam (Tam Dao, Tonkin), Japan, Korea (Cheju island), introduced into USA (Florida, Alabama, Hawaii).

**Differential diagnosis.** The species is most similar to *Trachyphloeosoma setosum*, from which it is distinguished by equal elytral erect setae on all intervals (Figs 5, 8).

**Note.** One male, collected in China, Yunnan, is the only male known in this species. The male is slightly different from all the known parthenogenetic females, by slightly more slender antennal funicles and slightly shorter and wider elytral erect setae. Based on the only one specimen it is difficult to decide, if this one male represents the amphigonic population of *T. advena* or some other, different species. However, this finding of the male indicated that the original region of that species, widely spread in large areas, could be southeastern Asia. Zimmerman (1956) stated two specimens (unfortunately without sex identification) from North Vietnam, “which appear to be a form of *advena*”. Nine females from eastern China, Zhejiang, seem to be identical with all other phenotypes of that species. Also these next two Asian findings are in support of the Asian origin of the species.

***Trachyphloeosoma buruana* (Heller, 1929) comb. nov.**  
(Figs 6, 40-47)

*Trachyphloeophana buruana* Heller, 1929: 108.

*Trachyphloeophana buruana*: Alonso-Zarazaga & Lyal 1999: 183; Borovec 2009: 26.

**Type material examined.** Heller (1929) stated in his original description that the genus and species are described based on 8 specimens collected in: “1. statione: Leksula”.

I have been able to examine 3 syntype specimens housed in ZMAN, from which I chose a 2.75 mm long female with original identifying label as lectotype, which has the following labels: L. J. TOXOPEUS Buru. Station 1 10.II-16.III'21 [printed] / Cotypus [red, printed] / COTYPE: Trachyphloeophana buruana 1926 Heller [printed, name of genus and species handwritten] / Trachyphloeophana g. n. buruana sp. n. Det. K. M. Heller 1926 [name of author printed, name of genus and species handwritten] / SYNTYPE [red, printed] / Trachyphloeophana buruana Heller, 1929 ZMAN type COLE.1617.1 [red, printed] / LECTOTYPUS Trachyphloeophana buruana Heller, R. Borovec desig. 2010 [red, printed] / Trachyphloeosoma buruana (Heller), R. Borovec det. 2010. The other two specimens, male and female, labelled here by me as paralectotypes, have the identical labels except of label fourth and have subsequent numbers 1617.2 and 1617.3. Only the specimen with number 1617.3 is without second label, but with one label more, placed as fourth from above: Otior. XXVII [handwritten]. I remounted and dissected both paralectotypes, and put the female genitalia into a small tube with glycerol, pinned on the same pin as the respective specimen; the male genitalia were mounted dry. I herein designate the lectotype and paralectotypes in order to stabilize the nomenclature in the genus according to Article 74.7.3 of the Code (ICZN 1999).

**Redescription.** Body length: 2.69-2.88 mm.

Body rusty to dark brown, antennal scapes, femora and tibiae brown, frons, antennal funicles with clubs, apical portion of all tibiae and tarsi rusty brown. The entire body except of frons, antennal funicles with clubs, apical parts of tibiae and tarsi covered with a brown, earth-like incrustation concealing most of the surface. Adherent scales very hardly visible,

oval. Elytra with conspicuous, one dense row of erect setae. Setae slender, very feebly subspatulate, somewhat longer than half the length of one interval. Pronotum with similar setae, slightly shorter than elytral ones, directed anteriorly. Head and rostrum with somewhat shorter setae than pronotum; antennal scapes, funicles, femora and tibiae with slender, almost parallel-sided, conspicuously erect setae (Fig. 6).

Rostrum very short and wide, 1.91-1.94 times as wide as long, regularly tapered anteriorly. Epifrons regularly tapered anteriorly, short and wide, with shallow, ill-defined longitudinal median groove, concealed by incrustation. Frons glabrous, impunctate, shiny, sharply separated from squamose epifrons. Epistome ill-defined, vaguely distinguished from frons. Scrobes in dorsal view well visible as strongly curved wide furrow, in lateral view irregularly triangular, short and wide, distinctly enlarged distad, with dorsal margin directed above eyes and ventral margin strongly curved downwards, not reaching eyes. Eyes small, in dorsal view hardly prominent from outline of head, in lateral view placed near the middle of head height, with diameter slightly bigger than width of apical part of antennal scapes (Figs 40, 41).

Antennae slender, with moderately long scapes, about 1.5 times as long as funicles, curved in basal third, regularly thickened to apex and here more slender than protibiae at midlength. Funicles 5-segmented. Segment 1 slender, 1.5-1.6 times as long as wide; segment 2 very slender, conical, 2.2-2.4 times as long as wide, 1.2 times as long as segment 1; segments 3 and 4 1.2-1.3 times as long as wide; segment 5 1.1 times as long as wide. Clubs pointed, 1.7-1.8 times as long as wide and slightly wider than apex of scapes.

Pronotum wide, 1.27-1.30 times as wide as long, widest at midlength, with strongly arcuate sides, more tapered anteriorly than posteriorly, with anterior border narrower than posterior. Disc granulate, granules completely concealed by incrustation (Fig. 6). In lateral view pronotum somewhat vaulted, anterior margin strongly obliquely directed back beneath towards coxae.

Scutellum invisible.

Elytra short-oval, in male 1.05 times as long as wide, in females 1.15-1.18 times as long as wide. Elytra behind the base obliquely subtruncate, shoulders inclined. Shoulders in females inconspicuous, in males creating subhumeral bumps, prominent laterally. Elytra widest behind the base, in females slightly, in males distinctly (Fig. 6). Striae conspicuously punctured, punctures about twice as wide as width of slightly elevated interval.

Femora of all legs edentate. Protibiae moderately long, at apical quarter strongly curved inside (Fig. 42); apex obliquely subtruncate with a fringe of very fine, yellowish white dense setae, shorter at mesal than at outer part and with one long brown spine at inner angle. Tarsi slender; segment 2 isodiametric; deeply bilobed segment 3 1.3-1.4 times as wide as long and about twice as wide as segment 2; onychium almost as long as segment 3, regularly widened apically. Claws as long as exceeding part of onychium, strongly divergent.

Sexual dimorphism. Males with distinctly widened elytra with more conspicuous posthumeral bump. Elytra in males almost as long as wide, in females slightly longer than wide.

Male genitalia. Aedeagus slender, long. In ventral view almost parallel-sided, with slightly concave sides, at apex abruptly tapered with a shallow concavity at point, with concave sides at apex. In lateral view irregularly curved, abruptly tapered at apex, point in ventral margin shortly lengthened (Fig. 44).



Female genitalia. Ovipositor with gonocoxites long and slender, tapered apicad, with long apical styli divorced laterally, with a clump of setae at apices of styli and scarce irregular row of setae in apical third of gonocoxites (Fig. 46). Sternite VIII with long and slender apodeme, plate with very short basal margin and very slender apical margin, with scarce irregular row of setae in apical half of plate and slender, V-shaped fenestra (Fig. 45). Spermatheca with very slender cornu, tapered apicad, without corpus, ramus and nodulus well differentiated. Ramus short and wide, nodulus longer and more slender, curved, almost parallel with ramus (Fig. 47).

**Bionomics.** Unknown.

**Distribution.** Moluccas: Buru Island.

**Discussion.** Heller (1929) described the new genus *Trachyphloeophana* only by a comparison with the Palaearctic genus *Trachyphloeus* Germar, 1817 without any discussion with other genera of the Trachyphloeini as for example *Trachyphloeosoma*. He distinguished *Trachyphloeophana* from *Trachyphloeus* in the Latin part of his description by antennal funicles 5-segmented, protibiae without spines and lobes and by claws free, divergent. In the German part of the description, he used one more character procoxal cavities remote from anterior border of pronotum by identical distance as width of protibiae. Eight species of *Trachyphloeus* sg. *Lacordairius* Ch. Brisout, 1866 have antennal funicles 5-segmented (Heller stated *Trachyphloeus seidlitzii* (Ch. Brisout, 1866) from this subgenus), while three species of the sg. *Pseudolacordairius* Escalera, 1923 have 6-segmented antennal funicles and all other species, listed in the sg. *Trachyphloeus* s. str. have 7-segmented antennal funicles. In general, the reduction of antennal segments is not assumed as a generic character in Entiminae and their reduction to two or even three positions is possible to find in more genera; for example the south African genus *Heisonyx* Marshall, 1947 contains species with 5-, 6- and 7-segmented funicles, too (Borovec et al., 2009). Protibiae without spines and lobes very clearly distinguished *Trachyphloeophana* from *Trachyphloeus*, but except of *Trachyphloeus* and several species of *Cathormiocerus*, all other species and genera of the Trachyphloeini have apex of protibiae rounded or obliquely subtruncate with fringe of setae, without spines and lobes. On the other hand claws free is a typical character for a differentiation from almost all species of *Trachyphloeus*, except of species of *Trachyphloeus* sg. *Lacordairius*, where claws are slightly fused at base, which is assumed as a reversal character (Borovec 2009). Procoxal cavities are in equal distance from anterior border of pronotum, but in the Trachyphloeini, the procoxal cavities have two locations: they are placed either in midlength between anterior and posterior border or they are strikingly nearer to anterior than posterior part. From this point of view, positions of procoxal cavities situated at the midlength of the pronotum are not conspicuous in the tribe and somewhat longer distance from anterior border is the cause of longer pronotum in comparison with *Trachyphloeus* species.

Distinguishing characters stated by Heller, although some of them are not precisely interpreted, are enough for distinguishing *Trachyphloeophana* from *Trachyphloeus*. When *Trachyphloeophana* is compared with all other genera of the tribe, it is very similar to species of *Trachyphloeosoma*. *Trachyphloeosoma* is very specific by the following set of characters: antennal scrobes in lateral view short and triangular, with dorsal border directed above eyes and lateral border directed below eyes; apex of protibiae distinctly curved inside; claws

free, as long as exceeding part of onychium, strongly divergent; apodeme of sternite VIII in females slender, very long, apically divergent, not forming margo basalis; plate of sternite VIII in females with arms not apically fused, leaving slender, apically opened fenestra. In all these characters, *Trachyphloeosoma* is identical with *Trachyphloeophana*, so the latter is newly placed under synonymy of the former.

**Differential diagnosis.** *Trachyphloeosoma buruana* is easily distinguished from all other species of *Trachyphloeosoma* by 5-segmented antennal funicles. Except of this character, *T. buruana* differs from all other species of the genus also by very short rostrum, 1.91-1.94 times as wide as long (Fig. 40) (remaining three species have rostrum at most 1.56 times as wide as long (Figs 32, 48, 54)); pronotum 1.27-1.30 times as wide as long (Fig. 6) (in other species at most 1.20 times as wide as long (Fig. 5, 7, 8)); elytra 1.05-1.18 times as long as wide (Fig. 6) (in other species at least 1.26 times as long as wide (Figs 5, 7, 8)); funicle segment 2 very slender, 2.2-2.4 times as long as wide (in other species at most 1.5 times as long as wide) and tarsal segment 2 isodiametric (in other species tarsal segment 2 at least 1.2 times as wide as long).

***Trachyphloeosoma nudum* sp. nov.**

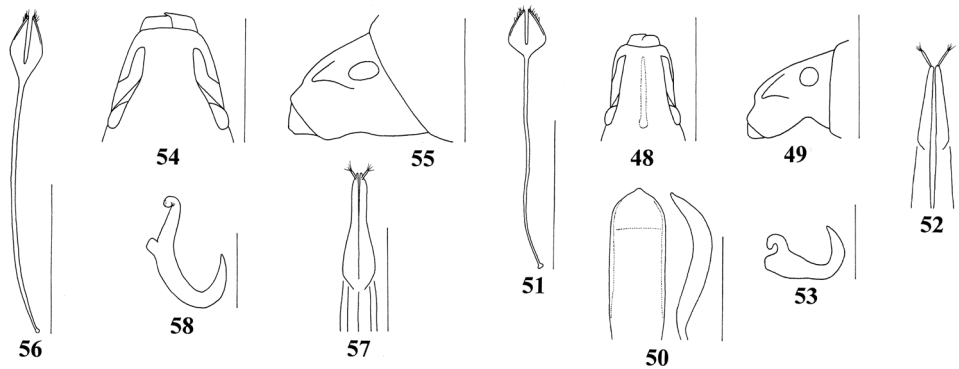
(Figs 7, 48-53)

**Type material.** Holotype (♂): N [north] Vietnam (Ben En), 180 km SSW of Hanoi, 40 km [=km?] SW of Thanhhoa, 11.-13.viii.1997 [printed] / Ben En Natn. Park 50 m A. V. Napolov [lgt.] [printed], (ZMOC). Paratype: (1 ♀): first label identical with HT, but second label: N Vietnam, Tamdao, 15.-23.ix.1997 [paratype has two different dates], A. V. Napolov [lgt.] [printed], (RBSC).

**Description.** Body length: holotype 1.47 mm, paratype 1.69 mm.

Body dark piceous brown, antennal funicles with clubs, basal part of antennal scapes and tarsi light yellow brownish. The entire body glabrous, without adherent scales, only lateral parts of head and rostrum with inconspicuous, scarce, adherent scales. Distance between scales is about equal to their diameter. Each elytral interval with one dense row of erect, conspicuous, subspatulate setae. Setae only somewhat shorter than width of one interval. Pronotum and head with rostrum with similar, only slightly shorter erect setae, setae on head and rostrum irregularly scattered, on pronotum arising from the top of granules. Antennal scapes, femora and tibiae with conspicuous, long slender setae, almost as long as elytral ones. Antennal funicles with short, semierect piliform setae, clubs with very dense, short, hair-shaped setae, tarsi with short semierect scarce setae (Fig. 7).

Rostrum long, only 1.13-1.14 times as wide as long, very feebly tapered anteriorly, almost parallel-sided. Epifrons in basal half very strongly tapered anteriorly, in apical part very feebly tapered anteriorly. Frons conspicuous, large, strongly shiny, in lateral view frons angularly separated from dorsal surface of epifrons. Epistome small, indistinct, separated from frons by ill-defined very narrow, raised line. Scrobes in dorsal view visible in apical two thirds as narrow furrows, in lateral view very strikingly enlarged posteriorly. Dorsal margin of scrobes directed towards dorsal surface of head, ventral margin feebly curved, directed towards ventral surface of head. Head and rostrum with conspicuous, wide and deep, longitudinal median channel from fovea between posterior margins of eyes to base of frons. Space behind



Figs 48-58. *Trachyphloeosoma nudum* sp. nov.: 48- head with rostrum in dorsal view; 49- head with rostrum in lateral view. Scale = 0.50 mm; 50- aedeagus in dorsal and lateral views. Scale = 0.25 mm; 51- sternite VIII in female. Scale = 0.50 mm; 52- ovipositor. Scale = 0.25 mm; 53- spermatheca. Scale = 0.125 mm. *Trachyphloeosoma setosum* Wollaston: 54- head with rostrum in dorsal view; 55- head with rostrum in lateral view. Scale = 0.50 mm; 56- sternite VIII in female. Scale = 0.50 mm; 57- ovipositor. Scale = 0.25 mm; 58- spermatheca. Scale = 0.125 mm.

eyes in dorsal view longitudinally multisulcate, epifrons coarsely punctate. Eyes of medium large, in dorsal view feebly protruding from outline of head, in lateral view placed in dorsal third (Figs 48, 49).

Antennae moderately long, scapes exceeding anterior margin of pronotum, in midlength visibly curved, gradually thickened to apex. Funicles 7-segmented; segment 1 long, slender, conical, 1.6-1.7 times as long as wide and 1.6-1.7 times as long as segment 2, which is 1.5 times as long as wide; segments 3-7 successively wider, segment 3 1.3 times; segments 4-5 1.4 times and segments 6 and 7 1.5 times as wide as long. Clubs ovoid, large, 1.7-1.8 times as wide as scapes at apex.

Pronotum 1.11-1.13 times as wide as long, widest near anterior third. Pronotum flat and irregularly granulate and among granules irregularly punctured by inequally large punctures. Granulation creates irregular lateral outline of pronotum (Fig. 7). In lateral view pronotum feebly vaulted, anterior margin strongly obliquely directed back beneath towards coxae.

Scutellum very small, poorly visible.

Elytra oval, 1.30-1.41 times as long as wide, widest at midlength. Striae very wide, coarsely punctured, striae only slightly impressed between the punctures. Punctures large, about twice as wide as intervals, separations of them much shorter than their diameters, with very short, hardly visible, fine seta inside of each puncture. Intervals feebly vaulted, with very fine punctures (Fig. 7).

All femora edentate. Anterior tibiae with mesal edge bisinuate and with apical portion strongly obliquely subtruncate, with a fringe of fine, yellowish setae, shorter in mesal than in lateral part and with a long, hook-shaped spine at internal angle. Tarsi short; segment 2 1.3 times as wide as long; segment 3 1.2 times as wide as long and 1.5 times as wide as segment 2; onychium slightly longer than segment 3, strikingly widened apicad with very long, strongly forked claws, longer than exceeding part of onychium.

Male genitalia. Aedeagus short, parallel-sided, regularly pointed at apex with strongly convex sides, small point very shortly separated. In lateral view regularly curved and pointed (Fig. 50).

Female genitalia. Gonocoxites of ovipositor very slender and long, apically strongly tapered, in apical part well sclerotised, laterally at apex setose, bearing very slender and long, cylindrical stylus with apical setae (Fig. 52). Sternite VIII with very long and slender apodeme, apically divergent, not creating basal margin. Plate small, regularly pointed, in majority of length about triangular, with arms not apically fused, leaving slender, apically opened fenestra. Apical margin somewhat distinct, setose (Fig. 51). Spermatheca with long slender cornu, corpus large, ramus short and wide, nodulus slender, turned back (Fig. 53).

**Bionomics.** Unknown. Amphigonic species.

**Etymology.** The entire body of this species is glabrous, which suggested the use of the Latin adjective equivalent to „naked“.

**Distribution.** Vietnam.

**Differential diagnosis.** There is a highly fascinating fact that this is the only exception among almost 300 members of Trachyphloeini: a species having shiny body. All other characters differentiating it from other *Trachyphloeosoma* species are stated in the key below.

### *Trachyphloeosoma setosum* Wollaston, 1869

(Figs 8, 54-58)

*Trachyphloeosoma setosum* Wollaston, 1869: 415.

*Trachyphloeosoma setosum*: Zimmerman 1956: 27; O'Brien 1984: 182; Alonso-Zarazaga & Lyal 1999: 183; Borovec 2009: 78; Borovec 2013: 419.

*Trachyphloeosoma roelofsi* Sharp, 1896: 92.

*Trachyphloeosoma roelofsi*: O'Brien 1984: 182.

*Trachyphloeops setosus* Roelofs, 1873: 166.

*Trachyphloeops setosa* (lapsus): Zimmerman 1956: 27.

**Type material examined.** Wollaston (1869) described the species based on “many examples taken by Mr. Melliss at St. Helena”. Type material of this species was not examined, only series of specimens from St. Helena, deposited in BMNH.

*Trachyphloeops setosus* Roelofs, 1873. Roelofs (1873) described the genus and species according to “deux individus de Nagasaki”. I have been able to study two specimens from Nagasaki, housed in BMNH. Both specimens have the following labels: Japan G. Lewis 1910-320 [printed] / Type H. T. [printed, circular label with orange margins] / Trachyphloeops n. g. R. [= Roelofs] setosus R. [handwritten] and Japan G. Lewis 1910-320 [printed] / Nagasaki 13.II.-21.IV.81 [printed] / Trachyphloeosoma roelofsi Type D. S. [= David Sharp] Japan Lewis [handwritten]. I chose the specimen labelled by name *Trachyphloeops* as lectotype, the second one as paralectotype, using red printed labels: LECTOTYPUS [PARALECTOTYPUS, respectively] *Trachyphloeops setosus* Roelofs, R. Borovec des. 2009. The lectotype is designated in order to stabilize the nomenclature in this genus according to Article 74.7.3 of the Code (ICZN 1999).

Sharp (1896) enunciated, that *Trachyphloeops* Roelofs is identical with *Trachyphloeosoma* Wollaston and synonymised this genus. He contemporaneously changed name *setosus* to *roelofsi*, in the view of the fact that *setosum* was already used by Wollaston for species from St. Helena.

Zimmerman (1956) compared Wollaston's series of *T. setosus* from St. Helena with Sharp's material of *T. roelofsi* from Japan, found the two series to represent only one species and synonymised them. This synonymisation is also confirmed by the author of this paper, after study of material from both localities kept in BMNH.

**Additional material examined.** 7 ♀♀ labelled “St. Helena” and “Japan, Nagasaki” (BMNH); 5 ♀♀, Japan, Ryukyu islands, Iriomote isl., Funauki env., 21.-25.iii.2007, T. Lackner lgt., (PHPC, RBSC); 1 ♀, Taiwan, TianMu Gudao Hik. Trail (Taipei) Beitou Twنش., Taipei Co., S.Samau MT., 3.i.2009, dead leaves, S. Vit lgt., (NMPC); 1 ♀, Taiwan, Rd. Jhuzihhu/Shuiwei, Yangmingshan Mts., slopes E of Mt. Datun, Taipei Co., 24.x.2007, 650 m, putresc. base of *Cryptomeria* (?), S. Vit lgt. (NMPC).

**Redescription.** Body length: 2.06-2.22 mm.

Body piceous brown, antennal funicles with clubs, basal part of antennal scapes and tarsi paler. The entire body except of frons, antennal funicles and tarsi covered with a brownish, earth-like incrustation which conceals most of the surface. Adherent scales, covering the whole body, very hardly visible through this incrustation, irregularly star-shaped. Elytra with one conspicuous, dense row of erect, slender, feebly subspatulate setae on odd intervals and with very short, slender, inconspicuous semiadherent setae on even intervals. Setae on even intervals about as long as a quarter the length of setae on odd intervals. Pronotum with similar setae, somewhat shorter than elytral ones, arising from the top of pronotal granules. Head, antennal scapes, femora and tibiae with shorter erect, slender, subspatulate setae, shorter than pronotal ones. Setae on pronotum, head and rostrum directed anteriad, rostrum with four longitudinal rows of erect setae (Fig. 8).

Rostrum short, 1.56-1.73 times wider than long, strongly regularly tapered anteriad. Epifrons with strongly concave sides, in basal part very strongly, in apical part very feebly tapered anteriad, almost parallel-sided, with very shallow longitudinal furrow in the middle, concealed by the incrustation. Frons glabrous, wide, shiny, in lateral view angular to dorsal surface of epifrons; epistome hardly visible, separated by half-moon shaped, slender, vague raised line from frons. Scrobes in dorsal view well visible in apical two thirds of rostral length, in lateral view very short and wide, triangular, with dorsal margin directed between dorsal margin of eyes and dorsal surface of head, with ventral margin very strongly concave, directed down to ventral border of head. Scrobes separated from eyes by wide squamose stripe. Eyes small, in dorsal view hardly visible in outline of head, in lateral view about in dorsal third of head, with much shorter diameter than distance between hind margin of eyes and pronotum (Figs 54, 55).

Antennae with moderately long scapes, exceeding anterior pronotal margin, somewhat curved in the middle, gradually thickened to apex. Funicles 7-segmented; segment 1 strongly widened, 1.2 times as long as wide, 1.5 times as long as short segment 2, which is 1.3-1.4 times as long as wide; segments 3-7 short, segments 3-5 1.5 times as wide as long; segment 6 1.7-1.8; segment 7 twice as wide as long. Clubs ovoid, 1.5 times as wide as apex of scapes.

Pronotum slender, 1.08-1.17 times as wide as long, widest near anterior third, with anterior border narrower than posterior. Disc coarsely punctate granulate (this structure to be seen only when surface is denuded of scales and incrustation, the derm shiny when cleaned) (Fig. 8). In lateral view pronotum feebly vaulted, anterior margin strongly obliquely directed back beneath towards coxae.

Scutellum invisible.

Elytra oval, 1.19-1.27 times as long as wide, widest at midlength (Fig. 8). Intervals almost flat. Striae widely punctured (as seen when properly cleaned), punctures about as large as width of interval, separations of them shorter than their diameter, striae only slightly impressed between punctures.

Femora of all legs edentate. Protibiae short, with inner edge bisinuate, at apical quarter strongly curved inside; at apex feebly obliquely subtruncate with a fringe of very fine, short, yellowish setae and at inner angle with a long spine. Tarsi short; segment 2 1.2-1.3 times as wide as long; deeply bilobed segment 3 1.4 times as wide as long and 1.4 times as wide as previous segment; onychium short, slightly shorter than segment 3, strongly widened apicad. Claws about as long as exceeding part of onychium, strongly forked.

Male genitalia. Male unknown.

Female genitalia. Gonocoxites of ovipositor very slender and long, apically strongly tapered, in apical part almost parallel-sided, well sclerotised, laterally at apex setose, bearing very slender and long, cylindrical stylus with apical setae (Fig. 57). Sternite VIII with very long and slender apodeme, apically divergent, not creating margo basalis. Plate small, slender, long-oval, pointed, with arms not apically fused, leaving slender, apically opened fenestra. Margo apicalis indistinct, setose (Fig. 56). Spermatheca long and slender. Cornu short, slender, ramus very short, nodulus strikingly longer, at apex turned back (Fig. 58).

**Bionomics.** Unknown. Most likely parthenogenetic species.

**Distribution.** Japan, Taiwan, introduced to St. Helena I.

**Differential diagnosis.** Easy distinguishable from all other *Trachyphloeosoma* species by long, erect setae only on odd elytral intervals (Fig. 8).

#### KEY TO THE SPECIES OF *TRACHYPHLOEOSOMA*

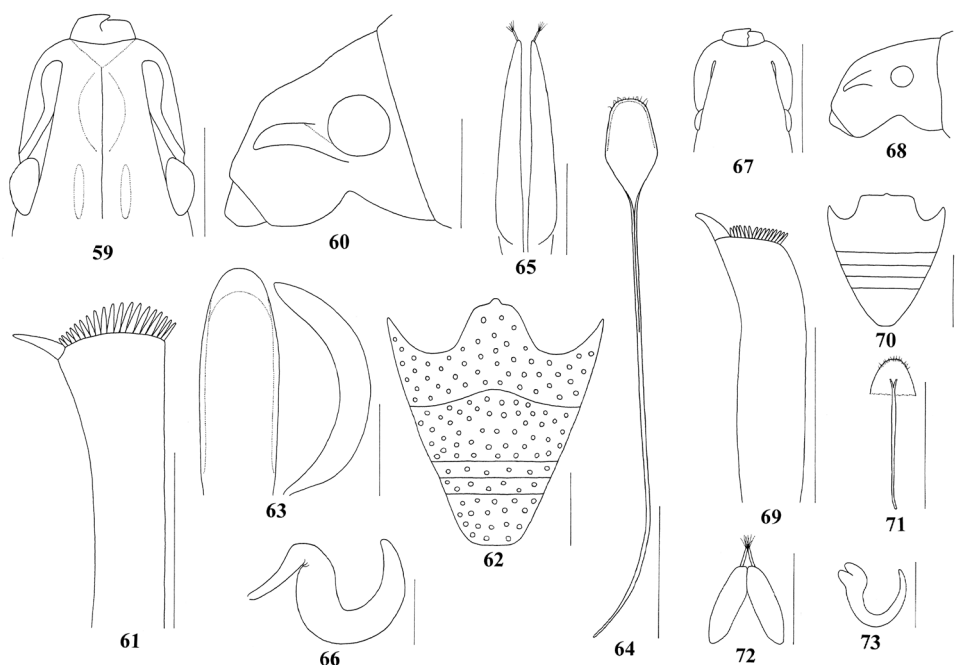
1. Antennal funicles 5-segmented. Rostrum shorter, 1.9 times as wide as long (Fig. 40). Funicle segment 2 very slender, more than twice as long as wide. Size: 2.7-2.9 mm. .... *T. buruana* (Heller)
- Antennal funicles 7-segmented. Rostrum longer, at most 1.6 times as wide as long (Figs 32, 48, 54). Funicle segment 2 shorter, at most 1.5 times as long as wide. .... 2
2. The whole body glabrous, shiny (Fig. 7). Rostrum longer, at most 1.15 times as wide as long (Fig. 48). Punctures in elytral striae twice as large as width of interval. Smaller species, 1.5-1.7 mm. .... *T. nudum* sp. nov.
- The whole body with adherent scales and earth-like incrustation (Figs 5, 8). Rostrum shorter, at least 1.3 times as wide as long (Figs 32, 54). Punctures in elytral striae about as large as width of interval. Larger species, at least 2.0 mm long. .... 3
3. All elytral intervals with row of long, erect setae (Fig. 5). Rostrum narrower, 1.29-1.35 times as wide as long (Fig. 32). Size: 2.0-2.3 mm. .... *T. advena* Zimmerman
- Only odd elytral intervals with row of long, erect setae, even intervals with very short setae (Fig. 8). Rostrum wider, 1.56 times as wide as long (Fig. 54). Size: 2.0-2.2 mm. .... *T. setosum* Wollaston

#### *Pseudotrachyphloeosoma* gen. nov.

(Figs 9, 59-66)

**Type species.** *Trachyphloeosoma alternatum* Marshall, 1916, by present designation.

**Diagnosis.** Larger Trachyphloeini, more than 3 mm; eyes large, antennal scrobes reaching ventral half of eyes in lateral view, furrow-shaped in dorsal view; apex of protibiae straight; metatibial corbels bald; temones more than three times as long as aedeagus, and tarsal claws free.



Figs 59-73. *Pseudotrachyphloeosoma alternatum* (Marshall): 59- head with rostrum in dorsal view; 60- head with rostrum in lateral view. Scale = 0.50 mm; 61- apex of protibia. Scale = 0.25 mm; 62- abdominal ventrites. Scale = 0.50 mm; 63- aedeagus in dorsal and lateral views. Scale = 0.25 mm; 64- sternite VIII in female. Scale = 0.50 mm; 65- ovipositor. Scale = 0.25 mm; 66- spermatheca. Scale = 0.125 mm. *Laohajekia trachyphloeiformis* sp. nov.: 67- head with rostrum in dorsal view; 68- head with rostrum in lateral view. Scale = 0.50 mm; 69- apex of protibia. Scale = 0.25 mm; 70- abdominal ventrites. Scale = 0.50 mm; 71- sternite VIII in female. Scale = 0.50 mm; 72- ovipositor. Scale = 0.25 mm; 73- spermatheca. Scale = 0.125 mm.

**Description.** Body length: 3.2-3.9 mm.

Body dark brown to black, antennal funicles with clubs, basal part of antennal scapes and tarsi paler, brown. The entire body except of frons, antennal funicles and tarsi covered with adherent scales and a brown to black, earth-like incrustation which conceals most of the surface. Adherent scales, very hardly visible through this incrustation, scarce, small, long-oval. Elytra with one dense row of erect setae. Pronotum and head with rostrum with irregularly scattered erect setae, shorter than elytral ones. Antennae and legs except of clubs and tarsi with conspicuous, erect setae (Fig. 9).

Rostrum short, distinctly wider than long, tapered anteriorly with straight sides. Epifrons strikingly tapered anteriorly, with straight sides, shallowly depressed. Frons short and wide, glabrous, densely coarsely punctate, in lateral view slightly angularly inclined; epistome short and wide, separated by crescent, very slender line from frons. Scrobes in dorsal view well visible, pit-shaped in anterior part, furrow-shaped before the eyes; in lateral view enlarged distad, dorsal border of scrobes curved, directed to middle part of eyes and almost reaching

it, ventral border of scrobes distinctly curved, directed to ventral border of eyes and very closely missing it. Epifrons very slightly separated from remaining part of head by shallow, transversal depression. Eyes large, in dorsal view slightly prominent from outline of head, in lateral view placed in dorsal third of head, very near to anterior margin of pronotum, with diameter about twice as wide as apex of antennal scapes and distinctly bigger than height of antennal scrobes (Figs 59, 60).

Antennae slender, with slender short scapes, feebly thickened to apex, shortly exceeding anterior pronotal margin. Funicles slender, 7-segmented.

Pronotum slender, with feebly rounded sides, with anterior border only slightly narrower than posterior one, and only slightly wider than head including eyes. Disc coarsely granulate (Fig. 9). Pronotum in lateral view without ocular lobes or setae.

Procoxal cavities contiguous, semiglobular, nearer to anterior border of pronotum than posterior.

Scutellum very small, about triangular.

Elytra long-oval, shoulders obsolete, width of elytral base equal to width of pronotal base. Elytra widest at midlength (Fig. 9). Striae wide, punctured.

Mesocoxae semiglobular, mesosternal process narrow. Metacoxae transversal, metaventral process narrow, feebly arrow-shaped, strikingly narrower than transversal diameter of metacoxa.

Femora of all legs edentate. Protibiae long and slender, at apical quarter straight (Fig. 61). Apex rounded with a fringe of very fine, yellow setae. Mesotibiae armed with long and conspicuous, metatibiae with short and hardly visible brown yellowish spine. Metatibial corbels oval, bald, fringed by very dense, yellowish, almost translucent long setae. Tarsi slender and long; segment 2 isodiametric; segment 3 of all tarsi deeply bilobed, strikingly wider than the others; onychium about as long as segment 3. Claws short, free, about parallel-sided, seems to be fused at short basal part.

Abdominal ventrite 1 as long as ventrite 2 and distinctly longer than ventrites 3 and 4 together. Suture 1 (between ventrites 1 and 2) sinuose and fine, sutures 2-4 straight, wide and deep. Ventrites densely covered by adherent scales, with scarce, moderately long, semierect piliform setae. Ventrites 1, 2 and 5 coarsely and densely punctured (Fig. 62).

Sexual dimorphism. Not apparent in morphological characters; only ventrite 1 and 2 in males slightly shallowly concave, in females slightly convex.

Male genitalia. Aedeagus short, well sclerotised (Fig. 63), tementes long, about 3-3.5 times as long as body of aedeagus and twice as long as tegminal manubrium. Tegmen with slender complete ring but without parameres. Sternite IX with spiculum gastrale moderately long, anteriorly tapered and curved, posteriorly with fused basal arms, apical plate absent.

Female genitalia. Gonocoxites of ovipositor desclerotised, long, slender, distinctly tapered apically, styli terminal, short, directed outwards with apical setae (Fig. 65). Apodeme of sternite VIII very long and slender, apically shortly divergent, not creating basal margin. Plate small, oval, arcuate, longer than wide, without fenestra, with very slender inconspicuous apical margin, with irregular row of short setae (Fig. 64). Spermatheca C-shaped, with slender, regularly curved cornu, without differentiated corpus and ramus, with long and slender nodulus (Fig. 66).

**Bionomics.** Unknown. Recent material was collected by sifting in forest.



**Distribution.** South India: Nilgiri Hills.

**Included taxa.** Genus is described as monotypic.

**Etymology.** Derived from Greek *pseudos*, false, and *Trachyphloeosoma*, genus, to which the species *alternatum* was originally listed.

**Taxonomic position and differential diagnosis.** Marshall (1916) described the species *Trachyphloeosoma alternatum* from Nilgiri Hills in the genus *Trachyphloeosoma*, as a very unusual and well differentiable species from all other known species of the genus. In Palaearctic revision of Trachyphloeini (Borovec 2009), the genus *Trachyphloeosoma* is defined by following five characters, two of them assumed as plesiomorphic: (1) rostrum in the same level as head and (2) procoxae situated in midlength of pronotum, and three others as apomorphic: (1) antennal scrobes in lateral view triangular, its dorsal border parallel with the dorsal border of the rostrum, ventral border curved down; (2) apex of protibiae distinctly curved inside in terminal quarter and (3) abdominal ventrites shiny. If “*Trachyphloeosoma*” *alternatum* is compared with these five characters, it is clearly different in all of them, by rostrum separated from head by shallow, transversal depression, procoxae nearer to anterior than posterior border of pronotum, antennal scrobes in lateral view furrow-shaped, curved to ventral part of eyes, apex of protibiae straight and abdominal ventrites densely covered by adherent scales, matt. Except of these characters, “*Trachyphloeosoma*” *alternatum* differs from all other species of *Trachyphloeosoma* by other characters, used in Trachyphloeini as distinguishing in generic level (Borovec 2009): Metaventral process conspicuously narrower than transversal diameter of metacoxa (Fig. 62) (in *Trachyphloeosoma* metaventral process wider than transversal diameter of metacoxa (Figs 35, 43)); temones three times longer than aedeagus (in *Trachyphloeosoma* temones as long as aedeagus); plate of sternite VIII in females without fenestra (Fig. 64) (in *Trachyphloeosoma* plate of sternite VIII in females with fenestra (Figs 37, 45, 51, 56)); claws short, strikingly shorter than exceeding part of onychium, parallel (in *Trachyphloeosoma* claws conspicuously long, forked, as long as or longer than exceeding part of onychium); eyes large, its height is more than three times larger than width of apex of antennal scapes (Figs 59, 60) (in *Trachyphloeosoma* eyes very small, its height is only slightly larger than width of apex of antennal scapes (Figs 32, 33, 40, 41, 48, 49, 54, 55)). The analysis of the characters results in the following conclusions - “*Trachyphloeosoma*” *alternatum* differs from all other species of *Trachyphloeosoma* by the same amount of characters, as from the genus *Trachyodes*: epistome not developed (in *Trachyodes* epistome emarginate by V-shaped carina); frons large, glabrous (in *Trachyodes* frons narrow, inconspicuous); apical part of protibiae straight (Fig. 61) (in *Trachyodes* apical quarter of protibiae curved inside (Fig. 13)); plate of sternite VIII in females longer than wide with apodeme not terminated inside of plate (Fig. 64) (in *Trachyodes* plate of sternite VIII in females wider than long with apodeme apically contiguous inside of plate (Figs 16, 22)); temones three times as long as aedeagus (in *Trachyodes* temones equally long as aedeagus); abdominal ventrites with large, conspicuous punctures (Fig. 62) (in *Trachyodes* abdominal ventrites unpunctured (Fig. 14)); eyes large, in lateral view its height is more than three times larger than width of apex of antennal scapes (Fig. 60) (in *Trachyodes* eyes small, in lateral view its height is less than twice larger than width of apex of antennal scapes (Figs 12, 20)). Because the species *alternatum* is not possible to accommodate in any from the two genera

known from Oriental region and because this species is also not possible to accommodate in any other Trachyphloeini genus from Palaearctic region (see the key in Borovec 2009), I propose here to describe a new genus for it - *Pseudotrachyphloeosoma* gen. nov.

***Pseudotrachyphloeosoma alternatum* (Marshall, 1916) comb. nov.**  
(Figs 9, 59-66)

*Trachyphloeosoma alternatum* Marshall, 1916: 276.

*Trachyphloeosoma alternatum*: Zimmerman 1956: 27; O'Brien 1984: 182; Borovec 2009: 78.

**Type material examined.** I have studied 3 type specimens housed in Marshall's collection (BMNH). They are glued on small triangular cards and have the following labels: Type [printed, circular label with red margins] / Nilgiri Hills H. L. Andrews 1909-51 [printed] / *Trachyphloeosoma alternatum* Mshl. TYPE [Marshall's handwriting] / LECTOTYPUS *Trachyphloeosoma alternatum* Marshall, R. Borovec desig. 2010 [red, printed]. The second specimen has the following labels: Cotype [printed, circular label with green margins] / 594 [handwritten] / Nilgiri Hills H. L. Andrews [printed] / Andrews Request B. M. 1922-221. [printed] / *Trachyphloeosoma alternatum* Mshl. COTYPE [Marshall's handwriting] / Nilgiri Hills [printed] / PARALECTOTYPUS *Trachyphloeosoma alternatum* Marshall, R. Borovec desig. 2010 [red, printed]. The third specimen has identical labels as the second, only second and sixth labels are missing and third label is written as follows: Nilgiri hills, H. L. Andrews, 6000 ft. [printed]. Not dissected lectotype seems to be a female, 3.91 mm long, lacking both antennal funicles starting with segment 3 and right protarsus. One paralectotype is lacking complete left antenna and left protarsus, second paralectotype is lacking tarsal segments 3 and 4 in both hind legs and left middle leg. One female paralectotype is dissected and genitalia are mounted on the same card as the respective specimen. I herein designate the lectotype and paralectotypes in order to stabilize the nomenclature in this genus according to Article 74.7.3 of the Code (ICZN 1999).

**Additional material examined.** 3 ♂♂ 2 ♀♀, South India, Nilgiri Hills, Tamil Nadu, 15 km SE of Kotagiri, Kunchappanai, 22.11.1993, 900 m, Kejval & Boukal lgt. (PKSC, RBSC).

**Redescription.** Body length: 3.19-3.91 mm.

Body dark brown to black, antennal funicles with clubs, basal part of antennal scapes and tarsi dark brown to brown, lighter than remainder part of body. Adherent scales, covering the whole body, very hardly visible through the earth-like incrustation, in dorsal part of elytra sometimes visible as scarce, small, irregularly-shaped, long-oval scales. The distance between two scales is almost equal to their diameter. Elytra with one conspicuous, dense row of erect, slender, parallel-sided setae on each interval, setae on odd intervals somewhat denser than on even ones, in some specimens arranged in two dense, irregular rows. Setae in females as long as, in males slightly longer than half the width of one interval. Pronotum, head and rostrum with similar setae as on elytra, but distinctly finer and shorter, irregularly scattered. Antennal scapes and funicles, femora and tibiae with identical setae as pronotum, conspicuously erect from outline. Setae on pronotum, head and rostrum directed anteriorly (Fig. 9).

Rostrum 1.36-1.43 times as wide as long, regularly distinctly tapered anteriorly with straight sides. Epifrons more tapered anteriorly than rostrum, with straight sides, widely and shallowly depressed on majority of surface, partly concealed by the incrustation. Scrobes in dorsal view well visible, wider in anterior part and before the eyes than in its midlength. In lateral view curved, directed to ventral half of eyes and almost reaching it. Eyes large, in dorsal view moderately vaulted, in dorsal as well as in lateral view conspicuous (Figs 59, 60).

Antennae slender, antennal scapes in basal half very slender, shortly exceeding anterior

pronotal margin, in apical half feebly gradually thickened to apex, in the middle somewhat curved. Funicle segments 1 and 2 slender, conical; segment 1 1.8 times as long as wide and 1.3-1.4 times as long as segment 2, which is 1.6-1.7 times as long as wide; segments 3-5 isodiametric; segment 6 1.1-1.2 times as wide as long; segment 7 1.3-1.4 times as wide as long. Clubs oval, 1.2-1.3 times as wide as apex of scapes.

Pronotum 1.21-1.33 times as wide as long, widest shortly before middle, very slightly constricted behind anterior margin. Disc coarsely punctate granulate, concealed by the incrustation (Fig. 9). In lateral view pronotum feebly vaulted, anterior margin not strongly directed back towards coxae.

Elytra 1.32-1.39 times as long as wide, widest at midlength (Fig. 9). Odd intervals more vaulted than even, almost flat ones. Striae widely punctured, concealed by the incrustation, punctures about twice as large as width of interval, not impressed between the punctures.

Protibiae long and slender, with inner edge conspicuously bisinuate, at apical quarter straight (Fig. 61). Apex rounded with a fringe of very fine, dense, yellowish setae, longer in lateral than in mesal part and with a long brownish spine at inner angle. Pro- and mesotibiae with segment 2 isodiametric; metatibiae with segment 2 slightly longer than wide; deeply bilobed segment 3 1.3-1.4 times as wide as long and 1.8-1.9 times as wide as segment 2; onychium about as long as segment 3.

Male genitalia. Aedeagus short, about parallel-sided, in apical quarter gradually pointed, apex rounded. In lateral view aedeagus regularly curved and pointed (Fig. 63).

Female genitalia. Spermatheca C-shaped, without differentiated corpus and ramus and with very long and slender nodulus, tube-shaped, in basal part strongly curved, perpendicular to longitudinal axis of corpus (Fig. 66).

**Bionomics.** Unknown. Kejval sifted 5 specimens in litter of forest (pers. comm.).

**Distribution.** South India: Tamil Nadu, Nilgiri Hills.

**Differential diagnosis.** See the same paragraph in the genus description.

### ***Laohajekia* gen. nov.**

(Figs 10, 67-73)

**Type species.** *Laohajekia trachyphloeiformis* sp. nov., by present designation.

**Diagnosis.** Small Trachyphloeini, less than 3 mm, with *Trachyphloeus*-like rostrum with dorsally invisible antennal scrobes, furrow-shaped in lateral view and separated from eyes; elytra subglobular, behind base obliquely sloping to shoulders; apex of protibiae at apical quarter curved inside; metatibial corbels squamose and tarsal claws fused.

**Description.** Body length: 2.1 mm.

Body dark brownish to black, antennal funicles with clubs, basal part of antennal scapes and tarsi paler, red brownish. The entire body except of antennal funicles with clubs and tarsi covered by star-shaped adherent scales. Elytra with one row of erect setae. Pronotum and head with rostrum with similar erect setae as elytra, irregularly scattered. Femora, tibiae and

antennal scapes with conspicuous erect setae, somewhat shorter than elytral ones (Fig. 10).

Rostrum *Trachyphloeus*-like, distinctly wider than long, with rounded sides. Epifrons strikingly tapered anteriorly, with straight sides, shallowly longitudinally depressed. Frons very short, indistinct, densely squamose. Epistome small, inconspicuous, U-shaped, separated from frons by ill-defined slender line. Scrobes in dorsal view invisible, only in apical part hardly visible as a short and very slender furrow; in lateral view furrow-shaped, slender, directed to eyes, glabrous only in apical part, separated from eyes by wide squamose stripe. Epifrons with the remaining part of head in the same level. Eyes small, in dorsal view inconspicuous, hardly visible, in lateral view small, placed in the middle of head height (Figs 67, 68).

Antennae short and robust, with robust scapes, distinctly enlarged to apex, hardly reaching anterior pronotal margin when folded. Funicles 6-segmented.

Pronotum moderately wide, with anterior border distinctly narrower than posterior one. Pronotum behind anterior border distinctly constricted, disc without any sculpture (Fig. 10). Pronotum in lateral view without ocular lobes or setae.

Procoxal cavities contiguous, semiglobular, placed in the midlength.

Scutellum invisible.

Elytra subglobular, strongly vaulted, behind base obliquely sloping to shoulders and then slightly, regularly rounded. Sloping part between base and shoulders slightly concave. Elytra broadly apically rounded. Base double sinuated (Fig. 10). Striae narrow, hardly visible.

Mesocoxa semiglobular, mesosternal process narrow. Metacoxae transversal, metaventral process wide, obtuse, somewhat wider than transversal diameter of metacoxa.

Femora of all legs edentate. Protibiae short and robust, at apical quarter strongly curved inside (Fig. 69). Apex of protibiae obliquely subtruncate, with a fringe of very short and fine, yellow setae. Internal portion armed with long, conspicuous, hook-shaped and inside curved brownish spine. Meso- and metatibiae armed with one short, brownish spine. Metatibial corbels small, squamose, fringed by short stout brownish setae. Tarsi moderately slender; segment 3 deeply bilobed, strikingly wider than the others. Claws short, feebly divergent, at basal third fused.

Abdominal ventrite 1 distinctly longer than ventrite 2 which is as long as ventrite 3 or 4. Suture 1 straight, fine, sutures 2-4 straight, wide and deep. Ventrites below adherent scales shiny, densely covered by star-shaped adherent scales with very long and slender tips and with scarce, moderately long, subspatulate semierect setae. Ventrites not punctured (Fig. 70).

Sexual dimorphism unknown.

Male genitalia unknown.

Female genitalia. Gonocoxites of ovipositor desclerotised, slender but not long, tapered apically with long and very slender apical styli with apical setae (Fig. 72). Apodeme of sternite VIII long and slender, apically terminated just inside of plate, not creating basal margin, feebly forked. Plate small, umbrella-shaped, feebly sclerotised, translucent, with very slender apical margin with a fringe of short setae (Fig. 71). Spermatheca C-shaped, with long and slender, regularly curved cornu, with distinct corpus and well differentiated ramus and nodulus (Fig. 73).

**Bionomics.** Unknown. Probably living in wood litter, see collection circumstances below.

**Distribution.** Laos.

**Included taxa.** Genus is described as monotypic.

**Etymology.** Dedicated to the collector, specialist in aquatic beetles, Jiří Hájek from National Museum of Prague with preposition Lao-, reminding Laos as a state, where the new species was surprisingly discovered.

**Taxonomic position and differential diagnosis.** *Laohajekia* gen. nov. belongs very clearly to the Trachyphloeini by structure of rostrum, very similar to the nominal genus *Trachyphloeus* - antennal scrobes invisible in dorsal view and furrow shaped in lateral view, directed towards the eyes and separated from it by squamose stripe, rostrum and head in the same level, very small eyes placed in the middle of head height, small epistome and squamose frons (Figs 67, 68), short and robust antennae with robust scapes, and also metatibial corbels squamose. But *Laohajekia* gen. nov. is quite different from *Trachyphloeus* by the apical part of protibiae, which is curved inside and obliquely subtruncate, with a fringe of short setae (Fig. 69) (in *Trachyphloeus* straight and clearly lobed, armed with spines), claws connected in basal third (free in *Trachyphloeus*), plate of sternite VIII in females umbrella-shaped, without basal margin and with apodeme terminated inside of plate (Fig. 71) (in *Trachyphloeus* plate transversally oval with basal margin developed and with apodeme terminated just in the base of plate), and suture II of abdominal ventrites straight (Fig. 70) (in *Trachyphloeus* suture II sinuose). In comparison with three genera known from the Oriental Region, *Laohajekia* gen. nov. differs from all of them by tarsal claws fused in basal third (in contrast with claws free of three other genera), metatibial corbels squamose (in contrast with glabrous corbels of three other genera), antennal scrobes in dorsal view invisible and in lateral view furrow shaped, not reaching eyes (Figs 67, 68) (in contrast with scrobes in dorsal view visible and in lateral view either triangular, or furrow shaped but reaching the eyes of three other genera (Figs 11, 12, 32, 33, 59, 60)), sternite VIII in females umbrella-shaped with apodeme terminated just inside (Fig. 71) (in contrast with plate oval or transversally oval with apodeme terminated just in base of plate of three other genera (Figs 16, 37, 64)), and suture I of abdominal ventrites straight (Fig. 70) (in contrast with suture I sinuose of three other genera (Figs 14, 35, 62)). *Laohajekia* gen. nov. moreover differs from *Trachyodes* by rostrum and head in the same level, epistome small, not conspicuous, long styli of ovipositor and metaventral process wide, obtuse. *Laohajekia* gen. nov. moreover differs from *Trachyphloeosoma* by squamose frons, apex of antennal scapes as wide as clubs, abdominal ventrites matt, unpunctured and short claws, shorter than onychium. *Laohajekia* gen. nov. moreover differs from *Pseudotrachyphloeosoma* gen. nov. by rostrum and head in the same level, frons squamose, eyes small, apical part of protibiae curved inside, long styli of ovipositor, unpunctured abdominal ventrites and metaventral process wide, obtuse.

***Laohajekia trachyphloeiformis* sp. nov.**

(Figs 10, 67-73)

**Type material.** Holotype (♀): LAOS, CHAMPASAK prov., Bolavens Plateau, waterfall ca. 2 km E TAD KATAMTOK, 415 m, 15°08.1'N, 106°38.8'E, 10.-12.v.2010, Jiří Hájek leg. [printed], (NMPC).

**Description.** Body length: 2.13 mm.

Body partly covered by earth-like incrustation, with adherent scales hardly visible. Elytral adherent scales star-shaped, with hole in the middle, the distance between two scales somewhat shorter than their diameter. Elytra with one conspicuous, scarce row of perpendicular erect setae, moderately slender, subspatulate, widest at the middle, about as long as half width of one interval. Pronotum, head with rostrum with similar erect setae as elytra, irregularly scattered, scarce. Legs except of tarsi and antennal scapes with the same erect setae, prominent from outline, only somewhat shorter than elytral ones (Fig. 10).

Rostrum 1.40 times as wide as long, with distinctly rounded sides. Epifrons conspicuously tapered anteriorly, with straight sides, shallowly and indistinctly depressed along longitudinal midline. Scrobes in lateral view short, somewhat curved, with dorsal and ventral margins directed to dorsal and ventral margins of the eyes. Eyes small, in dorsal view not prominent from outline of the head (Figs 67, 68).

Antennae robust, antennal scapes in the middle feebly curved, in basal half gradually enlarged apically, in apical half almost parallel-sided, wide, as wide as clubs, 1.1 times as long as funicles. Funicle segments 1 and 2 slender, conical; segment 1 1.7 times as long as wide, 1.1 times as long as segment 2 which is 1.6 times as long as wide; segments 3-7 are difficult to measure, because they are incrustated by soil, but they are apparently slightly to distinctly transverse, regularly gradually enlarged towards clubs. Clubs oval, 1.4 times as long as wide, with segment 1 distinctly exceeding midlength of clubs.

Pronotum 1.51 times as wide as long, widest at midlength, with arcuate sides, distinctly more tapered anteriorly than posteriorly. Pronotum behind anterior margin distinctly constricted, disc before base with ill-defined, wide, shallow depression (Fig. 10). In lateral view pronotum somewhat vaulted, anterior quarter lowered.

Elytra 1.19 times as long as wide, widest at midlength. Interval 1 half as wide as interval 2, intervals 2, 4 and 6 slightly elevated, all intervals with ill-defined, low, scarce bumps (Fig. 10). Striae narrow, hardly visible by elytral incrustations.

Protibiae short and robust, with inner edge somewhat bisinuate, at apical quarter curved inside. Apex obliquely subtruncate with a fringe of very short and wide, yellow spines and with one long, brownish, hook-shaped spine at inner portion (Fig. 69). Tarsal segment 2 1.5 times as wide as long; segment 3 1.5 times as wide as long and 1.3 times as wide as previous segment; onychium 1.5 times as long as segment 3, moderately widened apically.

Male genitalia. Unknown.

Female genitalia. Spermatheca with distinct corpus and about parallel ramus and nodulus, nodulus slightly shorter and narrower than ramus (Fig. 73).

**Bionomics.** The type specimen was collected from small pile of wet leaves, in group of stone in the middle of small river, running through deciduous wood (Fig. 74) (J. Hájek, pers. comm.).

**Etymology.** The general morphological aspect of the newly described species suggested its name, meaning being in the form similar of *Trachyphloeus* species.

**Distribution.** Laos: Champasak prov.

**Differential diagnosis.** See the same paragraph in genus description.

## KEY TO THE TRACHYPHLOEINI GENERA OF THE ORIENTAL REGION

1. Claws at basal third connate at base. Antennal scrobes in dorsal view hardly visible only in short apical part (Fig. 67); in lateral view furrow shaped, not reaching eyes (Fig. 68). Metatibial corbels squamose. Abdominal ventrite 1 distinctly longer than ventrite 2; suture between ventrites 1 and 2 straight (Fig. 70). Apodeme of sternite VIII in females apically terminated inside of plate; plate umbrella-shaped (Fig. 71). ..... *Laohajekia* gen. nov.
- Claws free. Antennal scrobes in dorsal view visible along the whole length as furrows (Figs 11, 32, 59); in lateral view triangular or reaching eyes (Figs 12, 33, 60). Metatibial corbels bald. Abdominal ventrite 1 as long as ventrite 2; suture between ventrites 1 and 2 sinuose (Figs 14, 35, 62). Apodeme of sternite VIII in females apically terminated at base of plate; plate oval or subtrapeziform (Figs 16, 37, 64). ..... 2
2. Antennal scrobes in lateral view separated from eyes by wide squamose stripe, its dorsal margin directed above eyes, ventral margin directed below eyes (Figs 33, 41, 49, 55). Rostrum with the head in the same level (Figs 33, 41, 49, 55). Metaventral process wide, as wide as transverse diameter of metacoxa (Figs 35, 43). Abdominal ventrites shiny. Claws as long as exceeding part of onychium, conspicuously divergent. Plate of sternite VIII in females with arms not apically fused, leaving slender, apically opened fenestra (Figs 37, 45, 51, 56). Size: 1.5-2.9 mm. .... *Trachyphloeosoma* Wollaston
- Antennal scrobes in lateral view reaching eyes, its dorsal margin reaching eyes about in the middle, ventral margin reach ventral edge of eyes or directed very closely to ventral edge (Figs 12, 20, 60). Rostrum separated from the head by shallow transversal sulcus (Figs 12, 20, 60). Metaventral proces narrow, conspicuously narrower than transverse diameter of metacoxa (Figs 14, 62). Abdominal ventrites matt. Claws shorter than exceeding part of onychium, almost parallel. Plate of sternite VIII in females without fenestra (Figs 16, 22, 64). ..... 3
3. Larger species, 3.2-3.9 mm. Apical part of protibiae straight (Fig. 61). Dorsal margin of antennal scrobes reaching middle of eyes, ventral margin directed closely below eyes (Fig. 60). Epistome not developed. Eyes large (Figs 59, 60). Elytra widest at midlength (Fig. 9). Scapes slender, clubs wider than apex of scapes. Abdominal ventrites conspicuously punctured (Fig. 62). Plate of sternite VIII longer than wide (Fig. 64). Gonocoxites of ovipositor with apical styli (Fig. 65). Manubrium almost twice, temones more than three times as long as aedeagus. .... *Pseudotrachyphloeosoma* gen. nov.
- Smaller species, 1.8-2.7 mm. Apical part of protibiae curved inside in apical quarter of length (Fig. 13). Dorsal margin of antennal scrobes reaching ventral part of eyes, ventral margin reaching ventral edge of eyes (Figs 12, 20). Epistome emarginated by V-shaped, slender carina. Eyes small (Figs 11, 12, 19, 20). Elytra widest at posterior third, pyriform (Figs 1, 2). Scapes robust, clubs equally wide as apex of scapes. Abdominal ventrites unpunctured (Fig. 14). Plate of sternite VIII wider than long (Figs 16, 22). Gonocoxites of ovipositor without apical styli (Figs 17, 23). Manubrium and temones equally long as aedeagus. .... *Trachyodes* Marshall



Fig.74. Forest with stream and with pile of wet leaves, where type specimen of *Laohajekia trachyphloeiformis* sp. nov. was collected.

## CHECK-LIST OF THE TRACHYPHLOEINI OF THE ORIENTAL REGION

An asterisk after the name indicates type species of the genus. “I” after a country name means that the species was introduced to that country.

### ***Laohajekia* gen. nov.**

*L. trachyphloeiformis*\* sp. nov. Laos

### ***Pseudotrachyphloeosoma* gen. nov.**

*P. alternatum*\* (Marshall, 1916) comb. nov. India

### ***Trachyodes* Marshall, 1916**

*T. horrescens*\* Marshall, 1916 India

*T. kejvali* sp. nov. India

### ***Trachyphloeosoma* Wollaston, 1869**

= *Trachyphloeops* Roelofs, 1873

= *Trachyphloeophana* Heller, 1929 syn. nov.

*T. advena* Zimmerman, 1956

China, Vietnam, Japan, Korea,

Hawaii (I),

= *Trachyphloeosoma sawadai* Nakane, 1963

USA (I)

*T. buruana* (Heller, 1929) comb. nov.

Moluccas (island Buru)

*T. nudum* sp. nov.

Vietnam

*T. setosum*\* Wollaston, 1869

Japan, Taiwan, St. Helena (I)

= *Trachyphloeosoma roelofsi* Sharp, 1896

= *Trachyphloeops setosus* Roelofs, 1873

## RELATIONSHIPS WITHIN ORIENTAL TRACHYPHLOEINI GENERA

Characters used by Borovec (2009), for phylogenetic analysis of Palaearctic

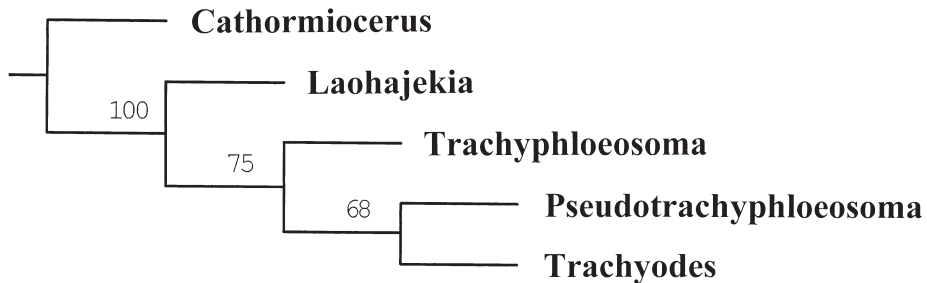


Fig.75. Dendrogram with hypothetical relationships among genera of Oriental Trachyphloeini, including the outgroup *Cathormiocerus*.



Trachyphloeini, could also be used for analysis of Oriental Trachyphloeini. But many of these characters have autapomorphic status for individual genera in the Oriental Region and they were thus excluded from the analysis and they are considered only in discussion. The reconstruction of the relationships within the group is thus based on a reduced matrix comprising 12 adult morphological binary characters, using the basal speciose genus from the analysis of Palaearctic Trachyphloeini (Borovec 2009), *Cathormiocerus* Schoenherr, 1842, as an outgroup. The data matrix was analysed using WinClada programme (Nixon 2002). The tree with length 17 steps, consistency index 0.70 and retention index 0.58 was obtained and it is shown in Fig. 75.

#### CHARACTERS USED FOR STUDY

1. Antennal scrobes in lateral view: 0 - not reaching eyes; 1 - reaching eyes.
2. Dorsal border of scrobe: 0 - directed towards or above dorsal border of eye; 1 - directed to middle or ventral border of eye.
3. Eyes: 0 - small, distant from anterior border of pronotum by distance longer than eye diameter; 1 - large, distant from anterior border of pronotum by distance smaller than eye diameter.
4. Frons: 0 - squamose; 1 - bald.
5. Head and rostrum: 0 - in the same level; 1 - separated by shallow transversal furrow.
6. Pronotum: 0 - not granulated; 1 - granulated.
7. Abdominal ventrites: 0 - indistinctly finely punctured; 1 - conspicuously roughly punctured.
8. Abdominal ventrites: 0 - shiny; 1 - matt.
9. Metaventral process: 0 - wider than transversal diameter of metacoxa; 1 - narrower than transversal diameter of metacoxa.
10. Apex of protibiae: 0 - straight; 1 - distinctly curved inside in terminal quarter.
11. Apodeme of sternite VIII in females: 0 - short, at most 3 x longer than length of plate; 1 - long, at least 4 x longer than length of plate.
12. Apodeme of sternite VIII in females: 0 - terminated inside of plate; 1 - terminated at base of plate.

#### DATA MATRIX FOR ORIENTAL GENERA OF TRACHYPHLOEINI, INCLUDING *CATHORMIOCERUS* AS AN OUTGROUP

Character	00000 00001 11 12345 67890 12
<i>Cathormiocerus horrens</i>	00000 00000 00
<i>Laohajekia</i>	00000 00101 00
<i>Pseudotrachyphloeosoma</i>	11111 11110 11
<i>Trachyodes</i>	11101 00111 11
<i>Trachyphloeosoma</i>	00010 11001 11

## RESULTS

Using *Cathormiocerus* as an outgroup, *Cathormiocerus* shows the plesiomorphic state in all characters examined. Genera from the Oriental Region are supported by four characters: 1) abdominal ventrites matt, 2) apex of protibiae distinctly curved inside in terminal quarter, 3) apodeme of sternite VIII in females long and 4) terminated at base of plate. But only character 10. apex of protibiae curved is authentic for Oriental genera (with reversal state in *Pseudotrachyphloeosoma* gen. nov.), while the other three characters are also possible to find in several other Palaearctic genera.

Within Oriental Trachyphloeini, *Pseudotrachyphloeosoma* gen. nov. and *Trachyodes* seem to be sister groups, sharing the following synapomorphies: 1) antennal scrobes in lateral view reaching eyes, 2) dorsal border of scrobe directed to middle or ventral border of eye, 3) eyes large, 4) head and rostrum separated by shallow transversal furrow and 9) metaventral process narrower than transversal diameter of metacoxa.

*Pseudotrachyphloeosoma* gen. nov. presents the following apomorphous characters: 1) epistome not developed, 2) procoxal cavities situated nearer to anterior border of pronotum, 3) apical part of protibiae straight and 4) tementes about three times longer than body of aedeagus. *Trachyodes* presents the following apomorphous characters: 1) dorsal margin of antennal scrobes reaching ventral part of eyes, 2) elytra widest at posterior third, pyriform, 3) gonocoxites without apical styli and 4) plate of sternite VIII in females wider than long.

*Trachyphloeosoma* represents the sister group to *Pseudotrachyphloeosoma* gen. nov. and *Trachyodes*, sharing with them the following synapomorphies: 1) apodeme of sternite VIII in females long and 2) terminated at base of plate.

*Trachyphloeosoma* differs clearly by following apomorphous characters: 1) antennal scrobes in lateral view triangular, 2) claws very long, 3) abdominal ventrites shiny and 4) plate of sternite VIII in females with fenestra.

*Laohajekia* gen. nov. represents the sister taxon of the previous genera, sharing with them the synapomorphy which defines the tribe Trachyphloeini. It can be readily distinguished by the following apomorphous characters: 1) antennal scrobes in dorsal view invisible, 2) abdominal ventrite 1 distinctly longer than ventrite 2, 3) ventrite 2 as long as ventrite 3 or 4, 4) suture between abdominal ventrites 1 and 2 straight, 5) claws connate at base, 6) metatibial corbels matt and 7) apodeme of sternite VIII in females short and terminated inside of plate.

### SPECIES EXCLUDED FROM TRACHYPHLOEINI

Within the present study, type material of *Myosides marshalli* (Heller, 1931) was also examined. Although this species is listed in Cyphicerini Lacordaire, 1863 (for example Yunakov 2013), it was originally described in the genus *Trachyodes*, which is topic of the present study. However, examination of the material leads to description of new species of *Myosides* Roelofs, 1873.

#### ***Myosides marshalli* (Heller, 1931)**

(Fig. 3)

*Trachyodes marshalli* Heller, 1931: 98.

*Trachyodes marshalli*: Lona 1937: 347.

*Myosides marshalli*: Morimoto & Lee, 1993: 64; Yunakov 2013: 272.

*Myosides formosanus* Morimoto et Lee, 1993: 64; Yunakov 2013: 272.

**Type material examined.** Heller (1931) stated in his original description: “Takao (in Mehrzahl gesammelt)”. I examined 12 type specimens, deposited in SMDG, has the following labels: 1 ♀, Formosa Takao H.Sauter’07 [yellowish label, printed] / *Trachyodes marshalli* H. Typus [red label, handwritten and printed] / 1908 10 [yellowish label, printed] / Staatl. Museum für Tierkunde, Dresden [printed] / LECTOTYPUS *Myosides marshalli* (Heller), R. Borovec desig. 2009 [red, printed] / *Myosides marshalli* (Heller), R. Borovec det. 2009 [printed]; 11 ♀♀, Formosa Takao H.Sauter’07 [8 spec. yellow, 3 spec. grey label, printed] / Paratypus *Marshalli* Hell. [red label, handwritten and printed, in 4 spec. only printed Paratypo] / 1908 10 [yellowish label, printed, only in 7 spec.] / Staatl. Museum für Tierkunde, Dresden [printed] / PARALECTOTYPUS *Myosides marshalli* (Heller), R. Borovec desig. 2009 [red, printed] / *Myosides marshalli* (Heller), R. Borovec det. 2009 [printed].

I chose as a lectotype female specimen, labelled by Heller as Typus, 3.09 mm long with right funicle with club broken off and glued separately on the same card.

**Other examined material:** 2 ♀♀, TAIWAN, Yangmingshan, Sanjhih Twnsh., Bailaka Rd., envs Yuyouren Cem. N-Taipei Co., 21.x.2008, North Road No.11 km 5.5, alt. ± 600 m, sifting fern litter, S. Vit lgt., (NMPC); 1 ♀, TAIWAN, Yangmingshan Mts., slopes E of Mt. Cising, Taipei Co, Lenghuiskeng Visit C., 25.x.2007, alt. 800 m, fern litter, S. Vit lgt., (RBSC); 1 ♀, TAIWAN, Yangmingshan Mts., Lengshuikeng Visit C., Taipei Co., 23.x.2007, alt. ± 600 m, mountain forest, fern litter, S. Vit lgt., (NMPC); 3 spec., Takao, Formosa, Sauter, (NHMW).

This species was described as *Trachyodes* by Heller (1931). Morimoto & Lee (1993) transferred it to genus *Myosides*, according to rostrum expanded laterally at well-marked pterygia, epifrons in basal part strikingly narrower than the space between anterior borders of eyes and dorsally placed and posteriorly opened antennal scrobes. The placement in *Myosides* is undoubtedly correct. This transferring was done without study of Heller’s type material, which is not cited in the revision. Using the key to the species and the description, done by Morimoto & Lee (1993), type material of *Myosides marshalli* I examined seems to be identical with newly described species *Myosides formosanus* Morimoto & Lee, 1993 according to elytral intervals 2, 3 and 4 of the same width and height at base, elytra wide, widest at the middle, evenly rounded posteriorly. This fact I confirmed also by study of the material, coming from the same locality, as type material of *M. formosanus*, Yangmingshan near Taipei. Material from Yangmingshan is conspecific with type series of *M. marshalli*, and thus, *M. formosanus* is a junior subjective synonym of *M. marshalli*, syn. nov. Series of five specimens from Hsinchu and Chiayi, I have possibility to examine from Taiwan too, are clearly different from *M. marshalli* by conspicuous, long elytral setae and are described below as a new species. Material assumed as *M. marshalli* by Morimoto & Lee (1993) and stated by them from Chiayi, belong most likely to the newly described species, too.

***Myosides morimotoi* sp. nov.**

(Figs 4, 25-31)

**Type material.** Holotype (♂): TAIWAN, Hsinchu Co., envs. Yulao Scen. View., Rd No. 60, Jienshih Twnsl., 25.iii.2008 (alt. ± 1400 m), road side slope’s litter, S. Vit leg., (NMPC). Paratype: (1 ♂, 1 ♀): the same data as

holotype (NMPC, RBSC); (1 ♂): TAIWAN, Chiayi Co., Nat. Scen. Area, Alishan, Rd. to Youth Activ, Rd. 18, alt. 2000 m, old tree, base hollow, 7.i.2009, S. Vit leg., (NMPC).

**Non type specimen.** 1 ♂, TAIWAN, Hsinchu Co., km 26 / road for Shei-Pa (Rd. 122), Wufeng Twnsn, 26.iii.2008, (alt. ± 2000 m), mountain frst. Litter, S. Vit leg., (NMPC).

**Description.** Body length (rostrum excluded): holotype 3.50 mm, paratypes 2.94-3.19 mm.

Body dark brownish to blackish, funicle with clubs, tibiae and tarsi red brownish. The entire body except for funicle with clubs and tarsi densely covered by small, regularly rounded scales, completely hidden integument. Scales dark brownish and white greyish, with feeble pearly sheen, create irregular wide transverse stripes on elytra and longitudinal stripes on pronotum. Elytra with conspicuous, regular row of perpendicularly erect setae on each interval, setae slender, feebly enlarged apicad, distinctly longer than half the elytral width, distance between two setae somewhat longer than length of one seta. Pronotum and head with rostrum with very short, inconspicuous, semierect setae, visible only in lateral view. Pronotum with anterior fringe of long setae, directed anteriorad, eyes with subocular fringe of similar setae. Outer border of tibiae with dense row of short, semierect setae. Inner border of scales with conspicuous erect setae, longer than transversal diameter of one scale. Funicles and tibiae setose (Fig. 4).

Rostrum 1.27-1.36 times as long as wide, with distinctly concave sides, tapered apicad, at apex slightly narrower than at base. Epifrons at base about as wide as interocular space in level of anterior eyes border, strongly tapered anteriorad, narrowest about at anterior third and feebly enlarged again, flat, with very narrow, longitudinal median keel, visible only in apical part and then hidden by adherent scales. Rostrum in lateral view feebly vaulted, separated from remaining part of head by shallow and wide, transversal depression. Epistome short, with posterior border distinctly keel-shaped, very feebly angulate, placed between anterior margin of pterygia. Frons deepened, glabrous, conspicuous, reaching level of posterior borders of scrobes. Scrobes in dorsal view open posteriorad, well visible, in lateral view furrow-shaped, feebly curved and feebly enlarged posteriorad, directed to ventral border of eye and separated from it by wide squamose stripe. Eyes feebly vaulted, feebly prominent from outline of head, in lateral view placed in anterior half of head (Figs 25, 26).

Antennae slender and long. Scapes feebly exceeding anterior border of pronotum when folded, 1.1 times as long as funicle, at basal quarter distinctly curved, then straight, regularly gradually enlarged apicad, at apex as wide as clubs. Funicle segment 1 slender, long, conical, 1.9-2.1 times as long as wide and 1.1 times as long as segment 2, which is 2.5-2.6 times as long as wide; segments 3 and 4 1.2 times as long as wide; segments 5-7 1.1 times as long as wide. Clubs long and slender, 2.1-2.2 as long as wide.

Pronotum 1.17-1.28 times as wide as long, with slightly rounded sides, feebly widest at midlength, with anterior border only slightly narrower than posterior. Dorsal part of pronotum with irregular, large and shallow punctures, hidden by adherent scales but visible as ill-defined depressions (Fig. 4). In lateral view pronotum feebly vaulted.

Scutellum very small, hardly visible, squared, densely squamose.

Elytra oval, 1.22-1.31 times as wide as long, at base only slightly wider than base of pronotum, strongly widened to midlength, with pointed apex. Striae very narrow, discreetly

punctured, intervals wide, vaulted. Interval 3 at base widened, wider than intervals 2 or 4 (Fig. 4). Elytra in lateral view strongly vaulted.

Ventrites 1-5 slender, 1.19-1.24 times as long as wide, with metasternal process narrow, arrow-shaped.

Legs slender. Femora clavate, with very small and sharp tooth. Tibiae slender, long, with lateral border straight and mesal border feebly double sinuated, mucronate, apex of protibiae subtruncate, with a dense fringe of short and fine, yellowish setae. Tarsal segment 2 1.2-1.3 times as long as wide; segment 3 1.6 times as long as wide and twice as wide as segment 2. Onychium equally long as segment 3. Claws free.

Male genitalia. Aedeagus short, in ventral view narrowest at base and widest in apical part, with about straight sides. Apex rounded, with small, obtuse, hump-shaped point at apex. In lateral view aedeagus slightly curved, about parallel-sided, at apical quarter regularly tapered, with short, lengthened apex (Fig. 27).

Female genitalia. Gonocoxites of ovipositor long and slender, translucent, with apical setae, without styli (Fig. 30). Sternite VIII with very long and slender apodeme without caput and with small, transversal, translucent plate, with visible apical margin with setae, with concavity in the middle (Fig. 29). Spermatheca with long and tapered cornu, straight, only in apical quarter curved. Ramus small, hump-shaped, nodulus long, in the shape of question mark without point (Fig. 31).

**Bionomics.** Unknown. Amphigonic species. All type material was collected by sifting of litter.

**Etymology.** The newly described species is dedicated to the one of the authors of the *Myosides* revision, the eminent Japanese weevilologist, Katsura Morimoto.

**Distribution.** Taiwan.

**Differential diagnosis.** *Myosides morimotoi* sp. nov. is similar to *M. marshalli* by short epistome, not exceeding anterior margin of pterygia and funicle segments 3-7 longer than wide. These two species are possible to distinguish by following set of characters:

1. Raised elytral setae short, distinctly shorter than half the width of one interval (Fig. 3), in lateral view equally long as raised setae at pronotal disc. Elytra wider, 1.13-1.18 times as long as wide (Fig. 3). Elytral intervals 2 and 3 at base equally wide. Size: 2.6-3.3 mm. .... *M. marshalli* (Heller)
- Raised elytral setae long, distinctly longer than half the width of one interval (Fig. 4), in lateral view more than five times as long as raised setae at pronotal disc. Elytra slender, 1.22-1.31 times as long as wide (Fig. 4). Elytral interval 3 at base wider than interval 2. Size: 2.9-3.5 mm. .... *M. morimotoi* sp. nov.

**Note.** One male from Hsinchu, Wufeng Twnsn, was not listed within type material, because although it is morphologically identical with all the four type specimens, its aedeagus is different, not having apex rounded as in type specimens (Fig. 28). Based on the only one specimen, it is difficult to decide if this is due to a variability or presence of another species.

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